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## **A Critical Evaluative Enquiry of the Community Based Management Model and Alternative Approaches for Sustainable Rural Water Management**



THE THESIS IS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIRMENTS FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY OF THE UNIVERSITY OF PORTSMOUTH.



“Of course, what works is more than an empirical question. It involves the politics of evidence” (Denzin and Giardina, 2009 p. 19).

# Abstract

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This empirical study evaluates the outcomes of community managed rural groundwater sources in mid-west Uganda based on the fundamentals of the Community Based Management (CBM) model: the neo-liberal consensus of user payment to cover recurrent maintenance costs of a water system and, the grassroots ideal of community control and ‘bottom-up’ development.

The thesis demonstrates why the two wings of the CBM model form an unholy alliance amidst the messy reality of rural environments. It shows how user payment tends to corrupt and prevent collective action, how it destabilises community relations and, adversely, encourages free-riding.

The study goes beyond criticising CBM and studies an alternative rural water management model – *CBM-lite*’ – piloted by a water and sanitation NGO in Uganda. *CBM-lite* alters the organisational and governance arrangements of the CBM model but remains within the institutional CBM framework. While the innovation builds upon local agreement about the problem of non-payment and inactivity of Water User Committees and uses practitioner recommendations for improving sustainable rural water management, the illuminative case illustrates why – in a user pays era – community control may need to be removed from rural water management arrangements.

The thesis shows, however, a rural water sector intransigent to change due to disagreement about the root causes of handpump non-functionality and consequent solutions towards sustainability. It demonstrates that known risks of the CBM model may be preferable to potential harm to ideology, policy coherence, organisational reputation and social and cultural norms. The study reveals a discomfort with user payment and, CBM, ironically, as a vehicle to avoid the user pays principle. To remove the deadlock in the rural water sector, a research agenda is proposed to investigate alternative approaches for reliable access to water in rural areas.

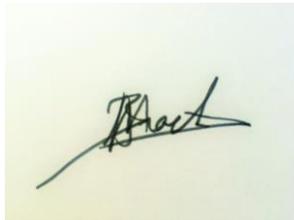
# Declaration

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Whilst registered as a candidate for the above degree, I have not been registered for any other research award. The results and conclusions embodied in this thesis are the work of the named candidate and have not been submitted for any other academic award.

Word Count: 76,598

Signed:

A photograph of a handwritten signature in black ink on a light-colored surface. The signature is cursive and appears to read 'Bart'.

Date: 06-02-2017

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# List of Abbreviations

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<b>BMU</b>	Borehole Maintenance Unit
<b>CBM</b>	Community Based Management
<b>CDO</b>	Community Development Officer
<b>CPR</b>	Common Pool Resource
<b>DRA</b>	Demand Responsive Approach
<b>DWD</b>	Directorate of Water Development
<b>DWO</b>	District Water Officer
<b>DWSCC</b>	District Water Supply and Sanitation Coordination Commission
<b>ERP</b>	Economic Recovery Programme
<b>FGD</b>	Focus Group Discussion
<b>HPM</b>	Hand Pump Mechanic
<b>IMF</b>	International Monetary Fund
<b>LC</b>	Local Councillor
<b>M&amp;E</b>	Monitoring and Evaluation
<b>MDG</b>	Millennium Development Goal
<b>MWE</b>	Ministry of Water and Environment
<b>NGO</b>	Non-Governmental Organisation
<b>NRA</b>	National Resistance Army
<b>NRM</b>	National Resistance Movement
<b>NWSC</b>	National Water and Sewerage Company
<b>O&amp;M</b>	Operation & Maintenance
<b>PEAP</b>	Poverty Eradication Action Plan
<b>PPP</b>	Public Private Partnership
<b>RDC</b>	Resident District Commissioner
<b>SACCO</b>	Savings and Credit Cooperative
<b>SAP</b>	Structural Adjustment Programme
<b>SDG</b>	Sustainable Development Goal

<b>SHDW</b>	Shallow Hand Dug Well
<b>SSA</b>	Sub-Saharan Africa
<b>TSU</b>	Technical Support Unit
<b>TWT</b>	The Water Trust
<b>UGX</b>	Ugandan Shilling
<b>USD</b>	United States Dollar
<b>WASH</b>	Water, Sanitation and Hygiene
<b>WB</b>	World Bank
<b>WtP</b>	Willingness to Pay
<b>WUA</b>	Water User Association
<b>WUC</b>	Water User Committee

# Acknowledgements

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Riding over a bumpy dirt road with on both sides green pastures and scattered grass thatched houses, the Masindi District Engineer shouted the Bunyoro proverb: ‘You only know a house once you have entered it’! We were on our way to a village to talk to community members about the management of their water sources.

Despite my prior working experiences in the study area and background in the water and sanitation sector in Uganda from 2011-2014, a degree of ‘knowing’ the villages only gradually materialised during the research process. The shift from water practitioner to PhD researcher characterised a significant attitude change. Where I had previously been driven to see project success through planning and clear-cut implementation steps that followed a logical sequence of positive progress, ranging from the scales of input to impact, my focus now shifted to an endeavour to thoroughly understand the status quo; to dig into, and to grasp, the experiences and social realities of community members.

This shift in attitude did, however, not occur overnight. At the beginning of the PhD project I was concerned about the progress of an alternative rural water management model, termed *CBM-lite*, that I had steered in my role as a Programme Manager for the NGO The Water Trust in mid-west Uganda. Only a few months after I left Uganda and had decided to dedicate myself full-time to the research project, I heard the saddened news that the pilot struggled to meet its determined aims. My daily supervisor, Dr. Julia Brown – a renowned champion in one-liners – pointed at my new role, arguing not to grieve about the proceedings of the *CBM-lite* model and said: “an experiment can never fail, there is always an explanation”.

For this ‘explanation’ I am highly indebted to a range of different actors. Many of the insights in this study related to local water management practices and community dynamics are derived from conversations with community members and key informants that opened a door towards a deeper understanding of visible and hidden social processes and practices within their social environments. At local water management level, the political nature of water seeped through power relations, identity and strongly held beliefs, norms and habits. A ‘way of life’ that I learned to understand through the respondents that trusted me with their inner thoughts, beliefs, struggles, hopes and fears. The thesis has endeavoured to reflect these different voices and is a tribute to the community members that repeatedly welcomed me into their homes.

My gratitude also goes to the key informants at the local government in Masindi and Kiryandongo districts. In particular, the District Water Officer of Kiryandongo, the Sub-County Chief of Kigumba, the Masindi District Engineer and the SACCO Manager. I am grateful for your engagement in the research project and the interesting and frank discussions on community management.

Thanks also goes to SNV in Uganda and in specific the (former) Sector Lead for the WASH Sector with whom I have had insightful discussions about the rural water sector in Uganda and

who invited me to present my research results at the SNV office in Kampala and Lira to a wide range of rural water actors.

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I can rightly assert that this thesis would not have existed without my supervisor, Dr. Julia Brown. In July 2012, we met in my local hangout ‘New Court View’ in Masindi town (a faulty towers style hotel, run by a remarkable English lady ‘Sally’ with a host of charming staff) where I usually gathered with a group of local friends for a meal, a chat and occasionally a Friday night quiz. Coming from Kampala and at the end of your trip to find an interesting research topic, you joined our company. Soon, we were engaged in a passionate debate (what later would become our unique communication style, involving lively facial mimicking with hands and pointing fingers) about participatory processes, water management and the *CBM-lite* pilot that was in the process of development. In the year that followed we kept in touch and you provided feedback on the ideas and proposals for the *CBM-lite* model. During your research trip in August 2013 on the implementation of the *CBM-lite* model, ideas developed for starting a PhD project on rural water management at the Department of Geography of the University of Portsmouth. I was fortunate to obtain a bursary from the University of Portsmouth to commit myself to the research.

Dr. Julia Brown, you have the exceptional gift to combine a professional work ethic and safeguard quality with friendship, kindness and politeness (however, the last is probably the result of your British heritage). I remember the grimaces on the faces of PhD candidates when I told them that I stayed with my PhD supervisor and her husband (Graeme), during the periods I spend at Portsmouth. Periods that I greatly enjoyed, that were highly productive, as we were able to sit, debate and write together, and that were incredibly healthy due to the running exercises, the fun board games and the general health doctrine in your household. In sum, I am convinced that I could not have met a better PhD supervisor, who responds immediately to emails, provides constructive feedback, is passionate about her work and made me to persevere during times of hardship, as you said: “this too will pass”.

While joy and hardship may both pass and alternate, I am lucky to have such wonderful friends with whom I can share both: Suus, Maria, David, Caroline, Florens, Reinko, Merel, Sara, Rianne, Maz and Britte. In particular, a big thanks to Suus, who has been of major moral support in the last months of the PhD.

Because I was working from the Netherlands, I missed colleagues and chats next to a coffee machine. Thanks go to Sara, Suus, Maria, Geurt and David that regularly came to the library of the University of Utrecht to drink a cup of coffee with me. To switch working places, I often worked from the study of my parents. I will warmly remember the cups of coffee, the extraordinary lunches with my mother on Thursday's and Friday's and the passionate debates with my father about my thesis. I am blessed with the most wonderful parents who have been a tremendous support during my PhD and all my other endeavours. As it happens with a good pair of parents, I also have a wonderful brother (Geurt) and sister (Neelke). Thanks for your 'being there' and for having such nice counterparts (Willemijn and Willem).

Lastly, I am grateful for the loving support from Folkert. With you, this venture started in Uganda. Thank you for your listening ear, your humour, optimism and tremendous believe in me.

For those who have been asking when I am finally done: I am afraid this is just the beginning...

# Dissemination

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# Chapter 1

## Rural Water Management in Sub-Saharan Africa at a Crossroads?

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This doctoral thesis discusses the impact of the Community Based Management (CBM) approach on realising long-term and reliable access to water in rural Sub-Saharan Africa (SSA). The belief that rural water sources are best managed according to the Community Based Management (CBM) model is the dominant paradigm across SSA since the 1990s (Mugumya, 2013; Roe et al., 2009). The CBM model was introduced to overcome the failings of the state that had largely ignored rural areas and had failed to maintain rural water infrastructure that had already been constructed (Fritz and Menocal, 2006; Harvey and Reed, 2006; Le Gouais and Wach, 2013; Moriarty et al., 2013; Miller, 1980; Parry-Jones et al., 2001). To overcome the lack of service provision in rural areas and to ensure sustainable access to water in developing countries, the top-down approach of the state was replaced with a high level of confidence in participatory and ‘bottom-up’ approaches that promised to empower communities to control the management of their rural water systems. In the CBM model, communities demand a water source, decide the technology, contribute towards the construction, voluntarily manage the water source and pay for its upkeep (Briscoe and Ferranti, 1988). The assumption that the combination of community demand, upfront contributions and participatory approaches result in a willingness to pay and collective action is, however, increasingly contested in academic and practitioner literature (Cooke and Kothari, 2001; Cleaver 1999; 2001; 2002; 2012; Naiga et al., 2015).

The key purpose of this thesis is to demonstrate that the CBM model is an amalgam of conflicting ideologies from left-wing grassroots developmentalists and right-wing neo-liberals that ignore the messy reality of rural environments (van den Broek and Brown, 2015). Both ideologies advocate community control, the former in the absence of trust in African politicians and government agencies (Page, 2003) and the private sector (Shiva, 2002), the latter in order to cut state deficits by promoting the commodification of water, thereby ensuring the community covers Operation and Maintenance (O&M) costs (Blaikie, 2006). The CBM model is a paradigm of its era (1990s) when there was faith in so-called Third Way politics and policy

programmes that promised win–win outcomes (Mohan, 2002). Because support comes from both ends of the political spectrum, the CBM model has proved very dominant and to date the prevailing view of donor agencies, policy makers and academics in the rural water circle is “that communities can and should take full responsibility for their [water] systems” (Whittington et al., 2009 p. 714).

At any one time, however, one out of three handpumps is non-functional across SSA (Baumann, 2006; Oxford/RFL, 2014; RWSN, 2010). Statistics for non-functionality of handpumps are no better than they were in the state-led era (Evans, 1992) – maintenance has been, and continues to be, the stumbling block. To combat the lack of collective maintenance of community handpumps, some authors suggest self-supply from rain water harvesting and shallow wells (Smits and Sutton, 2012; Sutton, 2010) or recommend the extension of piped water connections common in peri-urban and urban areas to rural communities (Hall et al., 2014). Nevertheless, the handpump technology is likely to remain the dominant technology in developing countries as they are relatively cheap and easy to maintain (Carter et al., 2010; Parry-Jones et al., 2001). The magnitude of the challenge is evident when in 2020 it is estimated that 57% of the rural global population will be dependent on communally-managed water points (Joint Monitoring Programme, 2011), further exacerbated by growing populations and the often detrimental impact of climate change (Oates et al., 2014; Schlosser et al., 2014). **The aim of this thesis** is therefore to contribute to the growing geography of water literature and the rural water sustainability debate by **critically evaluating the challenges of the Community Based Management (CBM) model and alternative approaches for sustainable rural water management.**

The evaluation of the CBM approach for rural water sources in SSA comes at an opportune moment. The topic of water security is high on the international agenda. With the declaration of the United Nations human right to water in 2010 as its goal, and having met the 2015 Millennium Development Goal (MDG) target of halving the proportion of people without access to an improved water source, the sixth post-2015 Sustainable Development Goal (SDG) aims to achieve universal and sustainable access to water. To date, it is estimated that 663 million people worldwide have no access to clean drinking water (Joint Monitoring Programme, 2015) of which the majority resides in rural SSA (Sadoff et al., 2015). Meanwhile, ‘slippage’ (Franceys et al., 2016) of rural water infrastructure – where the pace of construction cannot keep up with the failure of previously constructed water sources – is impeding the challenge of meeting the ambitious sixth SDG goal (Sadoff et al., 2015). To achieve universal and

sustainable access to clean water, a number of actors across the academic, non-profit and profit spectrum are increasingly calling to ‘innovate’<sup>1</sup> rural water service delivery.

A crucial bottleneck, however, is ambiguity about the interpretation of ‘innovation’ in the rural water sector, as theoretical Chapter 6 will highlight. This is partly the result of sector-wide disagreement about the root causes of handpump non-functionality. According to a large-scale UK aid, NERC, ESRC funded project ‘Unlocking the Potential of Groundwater for the Poor’ (UPGro) the primary reason for the failure of rural water schemes is the low yield of groundwater, poor water quality and mechanical failure (see also Carter and Ross 2016). Another body of literature, which this thesis subscribes to, argues that the dearth of Operation and Maintenance (O&M) finance is the key explanation (Burr and Fonseca, 2013; Fonseca et al., 2013; Jones, 2011;2013; Kalulu et al., 2012; Peter and Nkambule, 2012, IRC/Triple-S, 2012; Le Gouais and Wach, 2013) in conjunction with an inactive WUC to organise community meetings, collect user funds, carry out O&M tasks, organise handpump repairs and maintain proper hygiene and sanitation practices near the water source (Carter et al., 2010; Mugumya, 2013; Naiga et al., 2015). Amid such differences of opinion, there is little common ground over a possible way forward. Even where there is a shared problem analysis – dearth of O&M funds and inactivity of WUCs – that literature itself has a multitude of diverging recommendations, ranging from the use of mobile phone technologies (Koehler et al., 2015; Thomson et al., 2012) to capacity building efforts (Carter and Kidega, 2013; Mandara et al., 2013; Marks and Davis, 2012) and more external post-construction support (Baumann and Furey, 2013; Lockwood and Smits, 2011; Moriarty et al., 2013; Whittington et al., 2009), which represent only minor alterations to mainstream CBM (van den Broek and Brown, 2015). Nevertheless, a number of practitioners and academics are keen to adapt rural water management arrangements to local practices and circumstances (Booth, 2012; Jones, 2015), but little is known whether such innovations address lack of user funds and issues of O&M.

Thus, when Jane Nabunnya Mulumba, the Country Director of the Sustainable Services at Scale (Triple-S) initiative<sup>2</sup> in Uganda commented that: “... if effectively sensitised, community members exhibit willingness to take up the responsibility of managing their sources. They appreciate the benefits that accrue from well-managed and maintained sources” (Nabunnya et

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<sup>1</sup> Alternative strategies for improving rural water service delivery was a key topic during the 7<sup>th</sup> Rural Water Supply Network (RWSN) forum on 28 November – 2 December 2016 in Côte D’Ivoire.

<sup>2</sup> The Triple-S (Sustainable Services at Scale) initiative is a six year programme that aims to improve access to rural water services in developing countries. The initiative is hosted by IRC WASH.

al., 2012 p.5), she adopted the persistent perception that the CBM model can be effectively enforced with the ‘right set of tools’, conditions and capacity building efforts. It is important to note that this thesis does not pass judgments on the merits of capacity building and technological innovations, but seeks to clarify *why* there has been little appetite to innovate the rules and incentives that guide the management of handpumps given the mounting empirical evidence that the CBM model has failed to secure long-term access to rural water sources (Kamruzzaman et al., 2013; Koestler, 2009).

## 1.1 Origin of the work

This thesis is a critical examination of the outcomes of the CBM model on handpump functionality in Sub-Saharan Africa (SSA), using mid-west Uganda as a case study. My interest in studying the outcomes of the CBM model and to investigate a potential effective substitute is rooted in my working experiences in the Water, Sanitation and Hygiene (WASH) sector in northern and mid-west Uganda from 2011-2014. The thesis draws upon action research when I was the Programme Manager of a local Non-Governmental Organisation (NGO) ‘The Water Trust’ (TWT) from June 2012 until January 2014. In this period, I took the lead in developing (working closely with TWT staff members and local government officials) an alternative rural water management model, referred to as *CBM-lite*. In the *CBM-lite* model, handpump downtime is anticipated to be reduced by replacing the voluntary Water User Committees (WUCs) in the CBM model with an incentivised Water Operator to strengthen the user pays principle (Carter et al., 1999; Harvey, 2007; Lockwood and Le Gouais, 2011; Moriarty et al., 2013; Quin et al., 2011), and through an insurance style micro-finance product that ensures funds are available for expedient repairs (Fonseca et al., 2013; Foster et al., 2015; Zeug, 2011). The innovation refines organisation and governance arrangements of the CBM model (which will be explained in detail in Chapter 6), but as the rules of operation and enforcement of sanctions are communally arranged, remains within the existing institutional framework of CBM. As the model could potentially prove an inexpensive and practical solution for rural water sustainability, TWT introduced the *CBM-lite* model in four pilot villages in Kiryandongo district from August 2013.

In October 2013, working remotely from Uganda, I started my research project at the Department of Geography at the University of Portsmouth where I was able to rigorously study the outcomes of the CBM model and the proceedings of the *CBM-lite* pilot. The fieldwork took place in mid-west Uganda in Masindi and Kiryandongo districts. Figure 1.1. depicts the research area and the locations of the studied villages. The fieldwork was partly undertaken in my dual role as the TWT Programme Manager and PhD researcher in the period between October 2013 and January 2014. Hereafter, the fieldwork was undertaken on four separate visits between June 2014 and November 2015. Due to the various research trips over time, the thesis has been the result of an iterative research strategy wherein research results were complemented with an extensive review of the literature on local resources management and institutional change. During this research process, I gradually realised that the quest for sustainability was a complex and daunting endeavour.

## **1.2 From Water Management Arrangement to Water Management Practice**

A main part of this thesis investigates how formal rules guiding user payment and community control influence actual management practices. Both CBM and *CBM-lite* are grounded in ‘mainstream institutionalism’ (Cleaver, 2012), that claims ‘institutions’ – understood as ‘the rules of the game’ (North, 1991 p. 98) – can be effectively designed to improve resource management outcomes. In this school of thought, formal rules engineer transparency and trust, guide human behaviour, enable monitoring of resource use, provide an incentive for good behaviour and sanction misconduct (North, 1990; Bromley, 1992; Tang, 1992; Lam, 1998; Ostrom, 1990; Baland and Platteau, 1996; Varughese and Ostrom, 2001). As a water practitioner I was inspired by the assumption that the right set of conditions, rules and incentives could endorse storage of funds, willingness to pay (Foster et al., 2015) and a commitment to manage the water system (WaterAid, 2011). However, the rational-choice principle within mainstream institutionalism wherein selfish, cooperative and altruistic behaviour may coexist (Ostrom, 1998) was insufficient to explain the often unexpected and uneven outcomes of rural water management arrangements in the case study area. As a local government official wittily commented in a conversation about community management: “[w]hen we each have two bottles of beer, would the outcome of our venture be the same? I could become jolly and you could become moody” (24<sup>th</sup> of October, 2014).

**Figure 1.1**  
Map of the Research Area



In order to better understand *why* communities struggle to fulfil formal rural water management arrangements that promote user payment *and* community management this thesis draws upon an extensive review of the literature that indicates an increasing criticism against participatory approaches and institutional design as a panacea for good developmental outcomes. This thesis therefore builds on the insights of this ‘critical institutional’ scholarship (Cleaver, 2012) to understand how community management works in practice and why its outcomes do not always yield the desired policy results of user payment and collective action. Critical institutionalism points at the complexity of institutions – understood as the formal and informal rules, norms and social arrangements present in a certain social context or, in the form of an organisation (Cleaver, 2012; Jones, 2015) – that shape natural resource management outcomes. Frances Cleaver’s (2002; 2012) concept of ‘institutional bricolage’, that draws on the work of Giddens (1984), Long (2001) and Douglas (1987), helps to explain the interaction between actors and institutions. Here, institutions both constrain and enable human agency, and are in turn reshaped by human actors (Cleaver, 2012). It argues institutions are consciously and unconsciously shaped by everyday social practices, historical events, informal and formal rules, politics, powerful actors such as local leaders and elites and authoritative resources involving worldviews and strongly held beliefs about proper human behaviour (Cleaver, 2001; 2012; Mosse, 1997; Mehta et al., 2001; Lund, 2006). Noteworthy, this scholarship debunks the promise of mainstream institutionalists that formal community management arrangements lead to fair and ‘good’ developmental outcomes for all actors involved (Cleaver, 2012).

This thesis provides a ‘thick’ case study description that critically reflects on the outcomes of formal rural water management arrangements in mid-west Uganda. The thesis moves, however, beyond criticising the CBM model by analysing alternative rural water management models and, by introducing and critically examining the outcomes of the ‘CBM-*lite* model’ – an alternative rural water management model – that has been polited by TWT in Kiryandongo district. The thesis uses the CBM-*lite* model as a lens to reflect on the risk perceptions of key actors in rural water services provisioning to better understand the attempts of contemporary rural water management innovations that aim to improve reliable access to water but only marginally deviate from the CBM model. The role of risk perceptions in the handpump sustainability debate have been largely under acknowledged in the rural water literature. As this thesis will show in the empirical Chapters 7 and 8, a rigorous understanding of people’s risk perceptions and their strongly held values may provide a powerful tool for understanding why present-day rural water management innovations remain entrenched within the fundamentals

of the CBM model, despite increasing criticism of its promise to elicit reliable and long-term access to water.

Overall, this thesis makes a contribution to the discipline of human geography by unravelling how internationally influenced CBM policy takes shape in the study area and how local forces impact on water resource management outcomes. Working from an inter-disciplinary field, the thesis brings insights from anthropological theories and approaches into the geography of water literature. While this thesis lies outside the domain of cultural anthropology, my practitioner background, in conjunction with my earlier anthropology training, enabled deepened understanding on the local social context and how the power of place shapes behaviour and drives local dynamics. The original desire at the starting point of this study, to understand why people in the study area could not effectively manage their water systems, and, importantly, to improve rural water management outcomes, is interwoven with the focus of human geography research on human well-being. The practitioner lens in this thesis, moves the analysis beyond understanding current practices and patterns towards exploring alternative approaches for achieving sustainable water management practices. Findings are therefore interpreted through what is termed by Brown (2008): a ‘weakly constructivist positionality’. This means that social reality is being approached as unconsciously and consciously co-constructed by individuals that interact and give meaning to their world, but that policy arrangements can be modified to improve the outcomes of natural resource management practices. As a result, the thesis’ recommendations comprehend a practical angle, aiming to improve rural water management outcomes and, as such, human wellbeing.

### **1.3 Community Based Management in Uganda and Research Objectives**

Similar to other sub-Saharan African (SSA) countries, economic and public reforms in the 1980s and 1990s guided the implementation of the CBM model in Uganda. While Community Based Management (CBM) was already introduced in Uganda in 1986 by UNICEF (Mugumya, 2013), it was only in 1999 that the CBM framework was formalised in the Ugandan water policy. The CBM model is implemented in rural areas that comprises villages and rural growth centres, affecting 82% of the Ugandan population and involving 28.4 million people (World

Bank, 2016). The focus of this study is on rural villages that have less than 2,000 people and rely on drinking water from community managed water sources such as deep and shallow wells fitted with a handpump and protected springs.

According to figures of the Ugandan Ministry of Water and Environment (MWE) (2016), 67% of the rural population has access to clean water, 86% of the rural water systems are functional and 77% of the WUCs are active. These figures are, however, contested. To illustrate, in 2011 the reported functionality rate was much lower and estimated at 53,3% (MWE, 2011). Subsequent annual reports of the MWE did not factor in the handpumps that were down for more than five years (MWE, 2015) and studies in Uganda have questioned the reliability of the monitoring data from the MWE (Koestler et al., 2010).

**To critically evaluate the challenges of the Community Based Management (CBM) model and alternative approaches for sustainable rural water management**, it is important to unravel and define the concept of ‘sustainability’. The meaning and application of the term sustainability in the rural water sector is complex, confusing and contested, as fully described in theoretical Chapter 2. This thesis explores whether the outcomes of the CBM model are consistent with its aims to achieve user payment and community control. Therefore, the thesis approaches sustainability in terms of finance and management (Wong, 2006) because they are two key elements in the CBM model to ensure a handpump “continues to work over time” (Abrams et al., 1998 p. 4). The financial sustainability of the handpumps is measured through investigating the available funds for Operation and Maintenance (O&M) at each water source. The study uses the WASHcost benchmarks (Burr and Fonseca, 2013) to verify whether communities have sufficient funds to undertake minor and major repairs. The level of management or, ‘water control’ from an organisational perspective (Mollinga, 2003), is related to the fulfilment of the management body to execute their formal CBM responsibilities, such as collecting water user fees, organising community meetings, carrying out O&M tasks, organising handpump repairs and maintaining proper hygiene and sanitation practices near the water source (Carter et al., 2010; Mugumya, 2013; Naiga et al., 2015; WaterAid, 2011). Hence, to unravel the overall research aim as stated above, this thesis includes the following **four research objectives**:

- 1. To examine the underlying ideologies and theoretical underpinnings of the CBM model;**

- 2. To evaluate the outcomes of 100 community based managed water sources in mid-west Uganda.**
- 3. To analyse the risk perceptions of community members and, local and national NGO staffs and government officials about the introduction of an alternative rural water management model – referred to as *CBM-lite*.**
- 4. To evaluate the outcomes of the *CBM-lite* model in four pilot villages in mid-west Uganda.**

## **1.4 Study Limitations**

The main focus of the doctoral research – to systematically and empirically evaluate how user payment and community control (the fundamentals of the CBM) play out in the case study area – restricted the scope of the study and accounts for a number of possible limitations in this work. First, the study (both theoretical and empirical) remains predominantly centred on the local resource level. Hence, valuable contributors on public service delivery and institutional change such as Booth (2012) within the political economy spectrum or, Andrews (2012) and Andrews et al (2013) taking a public policy angle, are not addressed in this study. Second, this body of work does not adopt a social justice lens, prevalent in critical realist and pragmatic studies that i.e. question the impact of enforcing user payment on a pro-poor agenda (Charmaz, 2016; Chowns, 2014; Denzin, 2015; Mertens, 2009; Morgan, 2014) or unravel gender relations or women’s rights in processes of accessing water resources (Agarwal, 1997; Boelens and Zwarteveen, 2003; Delgado and Zwarteveen, 2007).

Further, acknowledging the influence of the social context on thought and, thus, behaviour, as highlighted by critical institutionalists, the thesis aims to unravel people’s thought on what is deemed risky in changing contemporary modes of rural water management and why. Risk is a cross disciplinary research area and can be explored from a range of different domains such as psychology, economics, mathematics or anthropology. The thesis’s exploration on risk perceptions is limited to the anthropological discipline that has a longstanding research focus on risk. While insights from anthropology generate a profound understanding and analysis of

risk (Douglas 1966, 1970; Van Gennepe, 2010), this thesis only makes an initial step in showing the significance of risk perceptions for policy and decision-making in the rural water sector and is limited to a shallow immersion into the concept of risk and risk perceptions. For example, from the multi-faceted oeuvre of Mary Douglas, the thesis only touches upon Cultural Theory to show how groups of actors can have shared or competing interests, value systems and preferences and how people may choose "... to deal with their social problems in one way or another" (1982, p. 200).

From a methodological perspective, the data collection concerning actor's risk perceptions was limited to surveys, interviews and a public meeting. Due to practical research limitations (such as time and resources), a fuller picture on symbolic connections between the structural ordering in Cultural Theory and people's beliefs, worldviews, and corresponding cognitive biases could have emerged with ethnographic research that produces a rigorous understanding of people's background and actions. Other methodological shortcomings and limitations are discussed in Chapter 4.

Related to risk perceptions, is the subject of cosmology that aims to explain how misfortune could be explained (instead of avoided as prevalent in most Western societies). The study findings show the significance of cosmological worldviews on shaping rural water management outcomes, as is briefly outlined in Chapter 3.6, but because the study on cosmology was not taken as a starting point of this research, the study does not draw on the wealth of insights from authors such as Douglas (1967; 1970), Moore and Sanders (2001), Sanders (2003) and, Evans-Pritchard (1937) about its impact on social relations, processes and practices in the African context. Future enquiry about the impact of cosmological worldviews on rural water management practices may provide a significant contribution to both human geography and anthropology and the literature on water resources management.

## 1.5 Structure of the Thesis

This doctoral thesis encompasses a topic-based structure (Ketabi and Rahavard, 2013) wherein research objectives 2-4 are analysed and discussed in separate empirical chapters.

The foundation for addressing the first research objective is conceptual **Chapter 2** that reviews the underlying ideologies and conceptual underpinnings of the CBM model. The chapter thus

forms the backbone of the entire work. It attends to three fundamental areas for understanding contemporary rural water management arrangements. First, it describes the origins of the CBM model and it provides a critical review of its main concepts. Second, it reflects on the different meanings of ‘sustainability’ in the delivery of rural water services and, third, it discusses the main recommendations in the literature to improve reliable access to water in rural areas.

**Chapter 3**, describes the research context and the case study area of Masindi and Kiryandongo districts in mid-west Uganda. The chapter opens with a social, political and historical background on Uganda and describes the patterns of rural water services provision from pre-colonial times till date. It provides an overview of today’s rural water policies in Uganda and discusses the bottlenecks of effective rural water service delivery in the Ugandan context despite its strong sector policy and institutional framework.

In **Chapter 4**, a detailed overview is provided of the research methodology and methods. It describes that this study is the result of three separate research designs: action research, cross-sectional study and a critical case study. The chapter critically reflects on the author’s positionality and role during the research process and, the potential sources of error and bias. The chapter describes how the outcomes of the rural water management arrangements were evaluated in the thesis.

**Chapter 5**, addresses the second research objective and evaluates the outcomes of 100 community managed rural water sources in Masindi and Kiryandongo districts. The chapter describes the process of accessing water and in particular the processes of payment and the execution of formal Water User Committee (WUC) roles and responsibilities in the post-construction phase. In this chapter how user payment impacts on community dynamics and the overall maintenance of the rural water infrastructure is explored. The chapter shows that user payment corrupts voluntary collective action and is disruptive for social community relations. It discusses whether the recommendations in the literature, reviewed in Chapter 2, are sufficient to improve water user collections and the maintenance of rural water systems.

In **Chapter 6**, the main question is *why* the CBM model has proven so resilient to change, despite its proven poor performance across Sub-Saharan Africa (SSA). To put this proposition to the test, the chapter analyses the level of innovation of two contemporary alternative rural water management models: the Smart Handpump project by the University of Oxford and the Sub-county Water Supply and Sanitation Boards by IRC/triple-S and the Ugandan Ministry of Water and Environment. The chapter discusses their level of innovation on the basis of Karen

Bakker's (2007) resource management categories that divides water management arrangements into three levels: institutional, organisational and governance. A key focus of the chapter is the *CBM-lite* model that was developed while the author was the Programme Manager of The Water Trust. The analysis in the chapter demonstrates that the *CBM-lite* model reconfigures the organisational and governance arrangements of the CBM model, representing therefore a potential controversial model for actors in the rural water sector. The chapter unpacks the potential reasons for the lack of rural water management reform and places thereby special emphasis on the role of risk perceptions in the persistence to the status quo. It introduces the relational theory of risk developed by Boholm and Corvellec (2011) as a conceptual model to understand how and why something may be perceived as a risk.

**Chapter 7** describes the implementation process of the *CBM-lite* model and the initial observations of the *CBM-lite* model in the pilot villages. The chapter addresses the third research objective and analyses actors' risk perceptions about the introduction of the *CBM-lite* model through a relational reading of risk (Boholm and Corvellec, 2011) which provides a lens for understanding why there has been little effort at the rural water sector level to move away from the CBM model.

**Chapter 8** addresses the final research objective 4 and examines the outcomes of the *CBM-lite* model. The chapter provides a critical case study of the outcomes of the *CBM-lite* model derived from four separate field work periods between June 2014 and November 2015. The chapter evaluates whether the *CBM-lite* model is better equipped to enforce user payment and community control than the CBM model.

Concluding **Chapter 9** synthesises the outcomes of the research objectives and answers the overall aim of the thesis. It highlights two key findings: 1) the failure to successfully reconcile the user pays principle and community control and, 2) an inertia in the rural water sector and reluctance to move away from the CBM model amongst actors at all levels in the rural water sector. The chapter summarises the thesis' main contribution to academic and practitioner knowledge. It concludes that non-functionality of rural water infrastructure *is* related to the CBM model. That CBM assumptions may not agree with local realities and that recommendations that fall within the CBM model – including initiatives that promote processes of institutional bricolage – will struggle to incite community control and endorse sufficient funds for O&M. The thesis has contributed to academic and practitioner knowledge by demonstrating a rural water sector resistant to change due to aversion to risk, conflicting

diagnose of problems and solutions. Counterintuitively, the CBM model is used as a means to avoid the user pays principle. Because the institutional framework of the CBM model, promoting user payment and community control, runs counter to what community members and various WASH actors value, the thesis concludes that in a ‘user pays era’, community control will likely maintain the risk of handpump failure. The chapter discusses the policy implications of the study and stresses thereby the ‘wicked’ nature of handpump non-functionality and this implication on potential future approaches to improving reliable access to water in rural SSA. Finally, the chapter proposes a future research agenda.

Chapter 2 now starts with a background and critical review on the CBM model.

# Chapter 2

## The Entrenchment of the Community Based Management Model and the Quest for Sustainability

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### 2.1 Introduction

The preceding chapter explained the main problem addressed in this book: an estimated one third of the handpumps in Sub-Saharan Africa (SSA) are non-functional. Despite an increasing amount of research that relate handpump failure to the system of rules and incentives that guide the management of handpumps (Jones, 2011; Van Koppen et al., 2012; Barnes et al., 2014), the belief that rural water sources are best managed according to the CBM model is the dominant paradigm across sub-Saharan Africa. This chapter therefore addresses the first research objective and **aims to understand the underlying ideologies and theoretical underpinnings of the CBM model**<sup>3</sup>.

To examine the first research objective, this chapter introduces three interrelated themes that shape contemporary rural water management debate in SSA countries. First, Section 2.2 outlines the CBM framework and the processes that resulted in the widespread acceptance of the idea that local communities in developing countries are best fit to manage their own water sources. Section 2.3 highlights the key theoretical underpinnings of the CBM model and the chapter critically discusses the main concepts of the framework in Sections 2.4 and 2.5. By elaborating on the aspects of ‘community’, participatory processes, social capital and the ‘self-regulating community’, this thesis chooses a path that highlights the insights of critical institutional scholarship to understand the outcomes of community managed rural water sources.

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<sup>3</sup> This chapter is partly based upon: van den Broek, M.A., and Brown, J., 2015. Blueprint for breakdown? Community Based Management of rural groundwater in Uganda. *Geoforum* 67, 51-63. (**Published**)

Second, Section 2.6 critically analysis the meanings of ‘sustainable’ rural water services, how sustainability is framed and the (dis)array of explanations in academic and practitioner literature about the causes of handpump failure. This section defines the meaning of ‘sustainable rural water services’, how sustainability is approached in this thesis and in the rural water literature and then differentiates between multiple factors that influence the sustainability of rural water services. Following this analysis, the third debate in Section 2.7 distils three bundles of recommendations made in practitioner and academic literature that are assumed to increase handpump sustainability and solve handpump failure. The chapter closes with a set of concluding remarks in Section 2.8 that summarise the key problems addressed in this thesis: the entrenchment of the CBM model in rural water policy and practice and the disagreement about the root causes of handpump failure and consequent solutions towards sustainability.

## **Community Based Management of Rural Water Sources**

The Community Based Management (CBM) model consists of two stages. The first stage is the Demand Responsive Approach (DRA) (Sara & Katz, 1997). This approach encourages communities to demand a service, decide the technology, contribute towards the construction (generally five percent of the construction costs) and form an institution to manage the water source (Breslin, 2003; Franceys et al., 2016). The implementing bodies are expected to follow specific participatory steps to ensure the beneficiaries are actively involved in the water project. Table 2.1 from Kleemeier (2000), provides an overview of these steps in the implementation phase of rural water projects and describes their assumed effect on sustainability.

The second stage is the post-construction phase whereby a local water organisation – the Water User Committee (WUC) – is responsible for the Operation & Maintenance (O&M) of the water source. In this stage, WUC members are required to invest their time to keep the system running. Table 4.7 in the methodology Chapter 4.11, provides a detailed overview of the activities a WUC is expected to carry out (Lockwood, 2004). Policy wise, the water users are expected to pay for system upgrades, rehabilitation and expansion expenditures as well as for recurrent O&M costs (Burr and Fonseca, 2013). However, in reality these costs are rarely met (Harvey, 2008).

Together, these two stages (the DRA approach and the post-construction phase) are expected to lead to a sustainable rural water service. The participatory approaches endorsed by the implementer from the outset, whereby communities take decisions and are involved in the implementation process, are anticipated to result in ‘empowerment’. Alsop et al. (2006) define empowerment as: “[t]he process of enhancing an individual’s or group’s capacity to make purposive choices into desired actions and outcomes” (p. 1). The ‘empowered’ community is expected to elect a WUC who takes control over the water system. In this process, the combination of participation and empowerment is expected to have led to ‘feelings of ownership’ that ensure the community is willing to pay and prepared to volunteer their time to keep the water system running (Doe and Khan, 2004).

**Table 2.1**

Standard Features of Participatory Rural Water Supply Projects and Their Assumed Effects on Sustainability (From Kleemeier (2000 p. 932)).

<i>Project feature</i>	<i>Assumed effect on sustainability</i>
Meetings to explain project before it begins, community has right to refuse it	-Provide communities with adequate information on O&M costs and responsibilities → they will choose supplies which they are willing and able to maintain, or refuse project altogether
Contract signed specifying community’s and project’s responsibilities	-Communities will handle O&M responsibilities if clearly defined and understood from beginning
User committee formed with design and construction responsibilities	-Strengthen organisational skills needed to manage supplies through e.g., supervising self-help labour -Incorporate local preferences and knowledge in choice of technology, design, and construction → users maintain supplies because meet their felt needs and in line with their ability and willingness to pay for O&M. -Community acts as watchdog to control construction quality → well-constructed scheme requisite for sustainability. -Develop sense of community ownership → users maintain supplies because they are theirs. -Communities learn about technology and supplies → knowledge assists in performing O&M tasks

Same committee or new one assumes O&M responsibilities	-Local organisations have better potential to assess and collect user fees, and supervise routine O&M activities, than do central government or local institutions
Community upfront cash collection (to contribute to capital costs, establish O&M fund, or both)	<p>-Screen out communities which lack felt need, unwilling, or unable to maintain supplies/service level</p> <p>-Develop sense of community ownership → users maintain supplies because theirs</p> <p>-Strengthen organisational skills needed to manage supplies</p> <p>-Users will pay for O&amp;M if made clear from the beginning that improved water services cost money</p>
Community provides free labour and other materials	<p>-Screen out communities which lack felt need, unwilling, or unable to maintain supplies/service level</p> <p>-Develop sense of community ownership → users maintain supplies because theirs</p> <p>-Communities learn about technology and supplies → knowledge assists in performing O&amp;M tasks</p>
Management and book-keeping training provided to committee members; management procedures established	<p>-Strengthen organisational skills needed to manage supplies</p> <p>-Locally adapted tariffs, collection procedures, etc. work better than standardized procedures imposed from outside</p>
Technical training and tools provided to local repair persons	-Trained users will carry out maintenance and repairs quickly because live closest to problem, and because other users inform and pressure them
Hand-over ceremony	-Communities will handle O&M responsibilities if clearly defined and understood from beginning
A staff of community mobilisers to carry out above activities	-Realising community depends on having an agency and field staff responsive to the users as clients
Simple technologies (VLOM handpumps, gravity schemes, protected springs, etc.)	-Make it feasible for communities to participate in all phases of project, including performing and financing maintenance

### 2.2.1 The Origin of the Community Based Management Model

The Community Based Management (CBM) model was rolled out in Sub-Saharan African (SSA) countries *sans evidence* in the 1980s (Miller, 1980). The devotion of the international community to CBM can be explained in two different ways. The first explanation refers to the increasing evidence that the centralised state had failed to provide reliable social services to its citizenry (as I will outline more in-depth below). More gloomy is the second explanation that argues CBM is actually strongly connected to the neoliberal consensus (McCarthy, 2009) and the result of mutually reinforcing processes between global politics and a ‘positivistic’ science community headed by Elinor Ostrom and her associates (Forsyth, 2003). This scholarship, also referred to as “orthodox science”, assumed political neutrality and objectivity and aimed to generate universal rules or laws to endorse sustainable natural resource use (Forsyth, 2003). Elinor Ostrom (1990) and her colleagues demonstrated through carefully selected case studies in various contexts, “that *when certain conditions are met, groups of people are capable of sustainably managing their common resources*” (Wilson et al., 2013 p.22, original text in italics). These studies were situated in a context where governments in developing countries were tasked to steer their expenditures away from social services. The CBM model may therefore be seen as a “science-policy” due to the mutual enforcement of science and policy, instead of their neat separation and as a “coproduction” because of the simultaneous production of knowledge and the CBM policy (Forsyth, 2003 p. 135; Jasanoff et al., 1995; Hess, 1997).

### 2.2.2 Financial Crisis

The CBM model was introduced in the midst of a financial crisis that was prompted by the oil shocks in the 1970s<sup>4</sup> (Fritz and Menocal, 2006). Since independence in the 1950s-60s, African states had lent large sums of money from commercial banks in the global North, regardless of their capacity to account for the money received. Due to the oil crisis, interest rates soared and from 1975 to 1982 interest payments rose to 400 percent (Moyo, 2009). Governments in developing countries faced enormous fiscal constraints in repaying their debts. In 1990, the African continent was indebted with USD 230 billion, representing three times the continent’s export earnings (Danso, 1990 p.5). Pursuing a neo-liberal agenda, the World Bank (WB) and International Monetary Fund (IMF) required the governments to adopt the Structural

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<sup>4</sup> For more information about the background of the oil crisis, see: Darmstadter (2013).

Adjustment Programmes (SAPs) in return for financial support (Makoba, 2011). In the 1980s, the SAPs reduced the role of the state in the economy and service delivery. As part of the reforms, states were advised to decentralise their government structures and share their administrative and fiscal responsibilities with lower levels of government (Mizrahi, 2004; Grindle, 2007). Key to these reforms were the expectations of increased efficiency and effectiveness of service delivery to local populations (Ribot, 2002). Context Chapter 3 will provide a comprehensive description of the decentralisation processes in Uganda. Despite the intentions of the SAPs to improve service delivery and economic growth, Makoba (2011 p.10) notes that “the policies imposed by the World Bank and IMF contributed to a steep decline in Africa’s economy during the 1980s – to the extent that this era soon became known as ‘the lost decade’”.

### 2.2.3 Criticism of the State-Led Paradigm

In the 1980s, scholars and practitioners increasingly expressed their dissatisfaction with the ability of the state to deliver social services to rural populations (Chambers, 1983). After the colonial period, most newly created African states had copied the state-led development paradigm as enforced in Europe whereby societal issues were resolved through a technical solution by a state agency (Young, 2004). As Woolcock and Pritchett (2004 p. 193, italics in original text) write: “[t]hat is, “*need* as the problem, *supply* as the solution, *civil service* as the instrument” became the standard organizational algorithm for solving public services concerns.” Although some African countries experienced economic growth and successfully expanded their education and healthcare services (Fritz and Menocal, 2006; Nugent, 2004; van de Walle, 2001), the centralised development paradigm lost its legitimacy and was perceived to have failed in its endeavour to bring economic and social development (Mayntz, 1993; Bardhan, 2002).

Of particular note was the uneven public service delivery between urban and rural areas and underprovision in the latter. For example, in the 1980s, only 22% of the rural population in Africa had access to an improved water source in comparison with 66% of the urban population (WHO, 1992). The uneven service provision was related to the often-corrupt state apparatus and underlying ineffective rules and regulation (Woolcock and Pritchett, 2004). Historical studies by Burton and Jennings (2007), Hope (1997) and Mulinge and Lesetedi (1998) highlight

the inheritance of corrupt behaviour and state capture by the newly independent states from their colonial predecessors. Public services in the state-led era were often corrupt and a bribe prior to their delivery was not unusual (Mulinge and Lesetedi, 1998). State benefits usually ended up in the pockets of a few elites and policies implemented by the state often served the needs of particular groups (Hellman et al., 2000; Khan, 2005). The so called ‘state capture’ was the result of the personalisation of power through the presidency and the political elite (Mulinge and Lesetedi, 1998) and loyalty to the state was replaced with loyalty to an individual, tribe or well-connected people (Hope 1997). As Mulinge and Lesetedi (1998, p.23) write: “[t]his created and oiled the channels for peddling influence and authority and the abuse of public office for private and personal gain.” The drive to self-enrichment of small elite groups strengthened their resolve to maintain power and to engage in conflicts, both within their country (as in northern Uganda) and outside country borders (Fritz and Menocal, 2006).

In addition, many of the public services, like rural water services, were not well maintained during the state-led paradigm. Key factors for the poor performance of rural water systems were a result of the top-down implementation approach typical to the state-led era whereby community preferences were ignored, inappropriate technology was used and there was insufficient attention paid to financial management, operation and maintenance and cost recovery (MacRae and Whittington, 1988).

#### **2.2.4 International Drinking Water Supply and Sanitation Decade**

Community management and participatory approaches were propelled during the International Drinking Water Supply and Sanitation (IDWSS) decade (1980-1990) – launched at the World Water Conference in Mar del Plata, Argentina, in 1977 (Hodges and Curtis, 2001). The IDWSS decade was the first collaborative effort of politicians and decision makers from all over the world to increase global water and sanitation coverage (Institute of Medicine, 2009). The decade marked the ‘NGO revolution’ as the SAPs had put major emphasis on NGOs to deliver social services (Charlton and May, 1995; Makoba, 2011; Prince and Marsland, 2013; Rusca and Schwartz, 2012) and bilateral and multilateral aid was increasingly channelled to these organisations. As a consequence, the number of NGOs rose tremendously; from 1,600 in 1980 to between 3,000-5,000 in 1993 (Prince and Marsland, 2013).

During the IDWSS decade, the Village Level Operation and Maintenance (VLOM) system was developed, which was the forerunner of the CBM model. This model advocated the use of appropriate handpumps to enable simple maintenance and in-country manufacture and involved a community maintenance system to increase sustainability (Lockwood, 2004). Prolonged maintenance of the handpumps were based on three assumptions: 1) beneficiaries are able and willing to pay, 2) governments are able and willing to provide external support and, 3) communal handpumps serve community needs (Collin, 1999). However, in a literature review on the VLOM approach by Collin (1999), these assumptions are critically scrutinised (refer to Table 2.2). In this report, Collin concludes (p.16):

*“...there is little evidence that communities are able or willing, on their own, to support handpump programmes in the long-term. If handpumps are to be used, therefore, reliance on VLOM alone should be avoided. It may be more appropriate to develop the concept of shared responsibility for maintenance under a two or three-tier system with local caretakers responsible for simple tasks and more skilled district-based teams, supported by government institutions, dealing with the more complex problems.”*

Parry-Jones et al (2001, p.13), however, suggest that the CBM model of today overcomes the challenges of the VLOM model because “..., there is a much greater awareness of the need to consider roles and responsibilities and build institutional capacity at all levels.” In particular, they highlight the lessons learned about the crucial role of the local government to support communities in maintaining their social services. They argue that with ‘capacity building’ under-resourced local governments can be supported to progress in their new role as facilitator.

**Table 2.2**

Assumptions and Outcomes of the VLOM Model (From Collin (1999 p. 9-15))

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*1. The user community will be able and willing to maintain communal handpumps.*

Experience shows that this may not be the case for reasons such as the refusal of communities to take ownership of their pump, a lack of basic technical skills and poor project design and maintenance.

*2. Government will be able to provide an enabling environment to support VLOM.*

There is little evidence of governments facilitating VLOM effectively on their own once the external support agency hands over support of it to them.

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3. *Communal handpumps will be able to meet most rural water supply needs.*

As the VLOM concept gained currency, many projects opted for communal handpumps on the assumption that this was the best option for the community, although in practice, many communities have proved unable or unwilling to support communal handpumps. Other options preferred by the community may be more sustainable.

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### 2.2.5 Dublin Principles

In 1992, the call for bottom-up approaches in rural water delivery and neo-liberal reforms, both shaping the CBM model, were officially embodied in the Dublin principles, as outlined in Table 2.3. Most significant was the reference of water as an economic good rather than a public good (Bakker, 2007). In rural areas, payment (upfront contribution towards water source construction and recurrent user payments) was perceived to enable the long-term sustainability of the rural water system and limit inefficient resource use (Naiga, et al. 2015).

**Table 2.3**

Dublin Principles (ICWE, 1992)

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- 1) Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment;
  - 2) Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels;
  - 3) Women play a central part in the provision, management and safeguarding of water;
  - 4) Water has an economic value in all its competing uses and should be recognised as an economic good.
- 

Not all states agreed with the Dublin principles. Reasons for resistance were concerns that water has social, cultural and religious values (Hodges and Curtis, 2001) and governments expected political costs with introducing water pricing (Quin et al. 2011). In particular, the recognition of water as an economic good that legitimised privatisation of water systems in urban areas, has provoked fierce global debate. Opponents of water privatisation such as Bakker (2007; 2013b), Finger and Allouche (2002) Johnstone and Wood (2003), Laurie and Marvin (1999) and Swyngedouw (2005) point at the inability to view water as part of a market system (as i.e. land), the difficulty to identify the hydrological cycle and, the fact that water is a human right. These

scholars have passionately refuted the idea that profit-making by the private sector is essential to ensure sustainable and efficient resource use as claimed by the neo-liberal consensus. Instead, they view the state as responsible for fulfilling the development mantra of ‘water for all’. Equally, Woolcock and Pritchett (2004, p.192) observe that:

*“... most agree that the (perhaps very) long-run goal is to ensure that the provision of key services such as clean water, education, sanitation, policing, safety/sanitary regulation, roads, and public health is assured by effective, rules-based, meritocratic, and politically accountable public agencies — that is, something resembling Weberian bureaucracies.”*

So far, privatisation of rural water services in rural areas has not been a real option. Even if private companies would not pander to the habit of “cherry-picking” (Bakker, 2008 p.245) the wealthy areas and leaving the poorer areas unserved as observed in urban areas (Bakker, 2007; 2008; 2013b; Budds and McGranahan, 2003; Swyngedouw, 2006), privatisation of rural water services is difficult, due to poor road networks that make private investments more expensive and water prices more costly and potentially unaffordable to rural populations who are usually characterised with a low purchasing power (Koestler et al., 2010; Danert et al., 2009). Although the legacy of state failure and the detrimental effects of water privatisation on urban poor are still strong, contributing to the strong support for the CBM model, there is an increasing desire towards private sector involvement or Public Private Partnerships (PPP) in rural water management in some segments of the rural water sector as I will further outline in Chapter 6.2.

This chapter proceeds as follows: Section 2.3 discusses the underlying theories of the CBM model and Section 2.4 critically explores the concepts used within the CBM model through a close examination of the individual branches (grassroots and neo-liberal) that sum up the CBM model.

## **The Evolvement of the Collective Action Debate and the Theoretical Foundations of the CBM Model**

Ostrom (1990; 1998; 2000; 2005) and consortia as Agrawal (2003); Araral (2009); Ascher (1995); Bardhan (2002); Bromley (1992); Cox et al (2010); Dayton-Johnson (2000); Lam (1998); McCay and Acheson (1989); McKean (1982); Ostrom, Gardner and Walker (1994); Peters (1994); Schlager (1994); Tang (1992); and Wade (1994) known for their work on ‘Common Pool Resources’ (CPRs), have been influential in the acknowledgement of CBM as a developmental and conservation effort and in the acceptance that government regulation (the “Leviathan state”) is not the only way to solve commons problems. Ostrom (2005 p.23-24) describes CPRs as: “Common Pool Resources yield benefits where beneficiaries are hard to exclude but each person’s use of a resource system subtracts units of that resource from a finite total amount available for harvesting.”

Despite the rival nature and the difficulty to exclude outsiders from CPRs such as fisheries, irrigation systems, forests and water resources, the commons school provided numerous case studies demonstrating that communities were able to sustainably manage CPRs through collective action, commonly explained as: “the action taken by a group (either directly or on its behalf through an organisation) in pursuit of members’ perceived shared interests” (Marshall, 1998 p. 86-87). Grounded in game theory<sup>5</sup>, commons scholars demonstrated that collective action was a rational option that yields desirable results to all. If people know the ‘rules of the game’ (i.e. the number of players, the choices they have, the possible outcomes of their actions, how decisions are made), they argued that communities could overcome ‘collective action problems’ whereby people prioritise their individual interest above that of the group. The commons scholars opposed the ‘tragedy of the commons’ discourse of Hardin (1968) and others such as Gordon (1954); Demsetz (1967) and Mancur Olson’s (1965) theory of groups and the Prisoner’s Dilemma<sup>6</sup>.

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<sup>5</sup> Through lab experiments, commons scholars analysed people’s strategies for dealing with competitive situations, where the outcome of individual actions are dependent on the actions of the group (Amadae, 2015).

<sup>6</sup> The prisoner’s dilemma is situated in game theory, that shows why (in its simplest form) two rational individuals would not cooperate although cooperation may be in their best interest (Amadae, 2015).

### 2.2.6 Tragedy of the Commons

According to Hardin's (1968) 'tragedy of the commons' framework (and other closely related concepts as the logic of collective action by Olson and the prisoner's dilemma), Common Pool Resources (CPRs) are prone to over-harvesting and destruction. Hardin (1968) illustrated this thinking famously with a common ground open for animals. At this common ground, each rational individual is motivated to add more livestock to increase his personal wealth while compromising sustainable use of the pasture and the common good. Hardin (1968, p. 1244) writes:

*"[t]herein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit – in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all."*

Also Olson (1965) pointed at the free-riders problem in CPRs due to the difficulty with excluding users from the resource. His viewpoint entailed that: "[w]henver one person cannot be excluded from the benefits that others provide, each person is motivated not to contribute to the joint effort, but to free-ride on the efforts of others" (in Ostrom, 1990 p, 6). The first generation collective action theories argued that the outcomes of commons management were not per definition 'rational' when viewed from the perspective of the collective.

These first generation collective action scholars, viewed coercion, that was mutually agreed upon, through either state regulation or privatisation, as the only option to avoid a catastrophe (Wade, 1987). However, this strategy of coercion may cause two major problems as De Young and Kaplan (1988) describe. First, the elimination of choice may result in resistance and the desire to oppose dictated rules and choose conflicting alternatives, a phenomenon termed as 'psychological reactance' (Brehm, 1966; Wicklund, 1974). Second, democratic governments are simply unable to make quick decision and act without compromise. Although some scholars have argued for authoritarian states as the only solution to avoid the tragedy of the commons (Heilbroner, 1975; Ophuls, 1977), De Young and Kaplan (1988, p. 274) duly note that "the perception that "mutual coercion mutually agreed upon" leads to a grim future.

## **Grassroots Branch: Sustainable Resource Use Through Collective Action and the Design of the ‘Right’ Institutions**

More optimistic is the claim by Ostrom (1990) that collective self-destruction of CPRs is preventable through people’s rational behaviour (that is either learnt or strategic) to act collectively and by carefully designing institutions that govern appropriate behaviour. The combination of collective action and effectively developed institutions are expected to result in “productive outcomes in situations where temptations to free-ride and shirk are ever present” (Ostrom 1990, p.29). CPR theory draws therefore on New institutional Economics (NiE) by Douglas North (1981; 1990; 1992), that view institutions as the ‘rules of the game’, and claim they reduce uncertainty and propel collective action. As North (1981, p. 201-202) writes: “institutions are a set of rules, compliance procedures, and moral and ethical behavioural norms designed to constrain the behaviour of individuals”.

Institutions in CPR theory are formal and functional. The rules and the design of resource management can be crafted and factors such as transparency, accountability and monitoring are expected to result in collective action and believed to enhance productive, equitable and sustainable CPR management. Ostrom (1990) developed eight design principles that would allow the successful use of CPRs (refer to Table 2.4). The grassroots arm of the CBM model heavily draws upon these theories of collective action and CPR theory and is positive about the notions of community, participation, social capital and self-regulating water institutions, supported by empirical studies as Chitonge (2011) in Zambia, Fielmua (2011) in Ghana and, Madrigal et al. (2011) in Costa Rica.

**Table 2.4**

Ostrom's Design Principles (1990, p. 90).

**1. Clearly defined boundaries**

Individuals or households who have rights to withdraw resource units from the CPR must be clearly defined, as must the boundary of the CPR itself.

**2. Congruence between appropriation and provision rules and local conditions**

Appropriation rules restricting time, place, technology, and/or quantity of resource units are related to local conditions and to provision rules requiring labour, material, and/or money.

**3. Collective-choice arrangements**

Most individuals affected by the operational rules can participate in modifying the operational rules.

**4. Monitoring**

Monitors, who actively, audit CPR conditions and appropriator behaviour, are accountable to the appropriators or are the appropriators.

**5. Graduate sanctions**

Appropriators who violate operational rules are likely to be assessed graduated sanctions (depending on the seriousness and context of the offense) by other appropriators, by officials accountable to these appropriators, or by both.

**6. Conflict-resolution mechanisms**

Appropriators and their officials have rapid access to low-cost local arenas to resolve conflicts among appropriators or between appropriators and officials.

**7. Minimal recognition of rights to organise**

The rights of appropriators to devise their own institutions are not challenged by external governmental authorities.

*For CPRs that are parts of larger systems:*

**8. Nested enterprises**

Appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities, are organised in multiple layers of nested enterprises.

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### 2.2.7 Idealisation of Community

In development projects, the term 'community' is commonly defined by its administrative boundaries, common interests and distinct social structures (Blaikie, 2006). For example, a practitioner handbook on 'managing natural resources for development in Africa' writes:

*"[a] community is defined as a group of people bounded by geographical links, such as a village, settlement or district, politics or natural boundaries but also include those brought together by lifestyle, culture, religion, hobby and interest"* (Wasonga et al., 2010 p.167).

Such notions of a ‘community’, however, have been criticised as “simplistic” (Metha et al., 2001 p.4) while romanticizing the community, because they ignore the messy reality that no rural community is the same due to culture, religion, history and population and that differences also exist *within* communities caused by wealth, gender, ethnicity or religion (Lockwood, 2004). Communities are often far from being harmonious and the term conceals differences in power relations and “biases in interests and needs” (Guijt and Shah, 1998 cited in Cooke and Kothari, 2001 p.6). According to Cleaver (2012 p.9) these power inequalities must be acknowledged to understand “[w]hy designed institutions turn out in unexpected ways”. In addition, although rural areas are often typified by their disadvantageous and remote position from markets and services, poor transportations and road networks, rural areas are changing due to increased employment, communications, wealth and individualism (World Bank, 2010). Hence, Cleaver (1999 p. 603) declares ‘community’ a “myth”. Such ‘myths’ may be persistent because “...they are seen by many to be fair and accurate, and because they may uphold visions of how the world should be” (Forsyth, 2003 p.51). This explanation of ‘myths’ may also apply to the underlying theoretical foundations of the CBM framework wherein collective action through the development and application of a set of rules paint a rosy picture of people’s ability to cooperate for the common good.

### **2.2.8 The Imposition of Participation and the Optimism for Social Capital**

The use of participatory approaches throughout the project cycle is expected to strengthen the capacity of communities to manage their water source and to result in collective action (Mansuri and Rao, 2013). Mantzavinos (2001 p. 119) for example argues that “... *agents are able to learn* and thus to adopt an evolutionary perspective when accounting for the emergence of norms” (italics in original text). In a similar vein, Ostrom (2005 p.22) places hope in the capacity of people to learn certain kinds of social norms that may enable the reciprocation of good behaviour and the punishment of defection. Further, authors such as Barnes et al. (2014), Doe and Khan (2004) and Tigabu et al. (2013) all claim a positive relationship between participation during the planning and construction phase and the sustainability of rural water points.

A significant body of work, however, has shown that community members often lose interest to be voluntarily responsible for the management of the water system, even if involved in the design and implementation phase (Carter et al., 1999; Harvey, 2007; Lockwood and Smits, 2011; Quin et al., 2011). If we accept that communities are “the site of both solidarity and conflict, shifting alliances, power and social structures” (Cleaver, 1999 p. 604) and do not adhere to their homogenous and harmonious image set out in community development approaches, then their willingness to participate cannot be taken for granted (Golooba-Mutebi, 2005 p. 954). The decision to participate may be a rational choice or unconscious choice embedded in social norms (Cleaver, 2001) and willingness to participate is dependent on age, gender, class and individual choice (Holmes and Scoones, 2000). Furthermore, Cooke and Kothari (2001) challenge the belief that participation is an indisputable good, as participatory processes often tend to benefit the elite and the more powerful (Hildyard, 2001; van Koppen et al., 2012). Hence, it is probably unrealistic to expect a representation of all water users in the design, implementation and post-construction phases of water schemes.

Participatory processes in rural water projects are perceived to increase the level of social capital or social cohesion (both terms are often interchangeably used). Ostrom (1990) argues that face-to-face communication enables the development of shared norms, decreases transaction costs and enhances collective action. This view relates to the theory of communicative action of Habermas (1984) where it is argued that discussion and reason can lead to consensus (subject to certain conditions) and mutual commitment to enforce and uphold the locally agreed rules on resource use. Much of the literature on CBM relates a community’s “stock” of social capital (Putnam, 1993; 1995) to its ability to act collectively and as such, sustainably manage a water source (Bisung and Elliott, 2014; Bisung et al., 2014; Krishna and Uphoff, 2002). Putnam (1993 p.38) refers to social capital as “ features of social organisation, such as networks, norms and trust that facilitate co-ordination and co-operation for mutual benefit”. Attributes such as interpersonal trust, norms of reciprocity and mutual aid are expected to bind the group together and gauge the level of social capital (Coleman, 1988; Putnam, 1995; 2000). Social capital is invariably viewed as a positive community characteristic that facilitates sustainable rural water management. Yet, sceptics such as Harriss (2002) emphasise that the literature has overrated the positive side of social capital and has ignored issues of power and politics that are interwoven in this social phenomenon. Indeed, Field (2003), Portes and Landolt (1996), and Portes (2000; 1998) warn that social capital or social cohesion can also constrain, rather than enable developmental outcomes. Field (2003) notes that close social groups can

sustain and reproduce inequality and anti-social behaviour. Close social ties may serve as a safety net but may also command conformity, prevent innovation and exclude outsiders.

### **2.2.9 The Self-Regulating Institution**

The establishment of the ‘self-regulating’ institution is central to the CBM model (Mosse, 2006) and is strongly influenced by Ostrom’s (1990) design principles. The local water institution is a physical representation of a community’s collective action through the development and execution of formal rules (Ostrom, 1990). However, a significant research community has critiqued the effectiveness of crafting institutions (Blaikie, 2006; Mosse, 2006; Mehta et al., 1999; Chowns, 2014; Cleaver 1999; 2001; 2012; Sandström, 2008; Sehring, 2009; Merrey and Cook, 2012; de Koning, 2011; 2014).

Criticism is levelled towards the extensive lists of (pre)conditions drafted by mainstream institutionalists to secure sustainable local resource management (see for example Roe et al., 2000; Agrawal, 2001 and Barnes et al., 2014). Commons scholars have recognised that “[m]any attributes of a community are also likely to affect the success of a local resource governance unit, including the size of the group affected, the homogeneity or heterogeneity of interests, the patterns of migration into or out of a community, and the discount rate used by individuals in ongoing situations” (Nagendra and Ostrom, 2007 p.581). To illustrate, there are the design principles of Ostrom (1990) as shown in Table 2.4, the list of 50 attributes by Roe et al. (2000) and the 33 criteria by Agrawal (2001) based on a synthesis from empirical work by Baland and Platteau (1996), Ostrom (1990), Wade (1988) and other commons scholars. Refer to Appendix 2.1 for an overview of the criteria by Agrawal (2001).

Blaikie (2006 p.1949) wryly notes that these lists of criteria for sustainable resource use: “...[l]eaves policy makers with the task of finding a needle in a haystack, where the haystack itself has far from clear outlines. They will have to look for an existing community with its natural resources which fulfil an dauntingly large number of criteria.” While the design of the ‘right’ institutions and the enforcement of rules to enable cooperation lies at the heart of CPR theory, scholars have noted that such formal rules seldom agree with local practices that value harmony and disapprove confrontational behaviour (Cleaver, 2012; 1999; Jones, 2011).

Cleaver (2012 p. 13) argues that: “[i]nstitutions managing natural resources are only rarely explicitly designed for such purposes and that their multi-functionalism renders them

ambiguous, dynamic and only partially amenable to deliberate crafting”. She differentiates between two schools of thought: ‘mainstream institutionalism’ that argues institutions can be effectively designed as the commons school suggests and ‘critical institutionalism’ that draws attention to the (mis)perceptions within CPR theory. Refer to Table 2.5 from Cleaver (2012) for an overview of the key features shaping these two discourses.

Cleaver (2012, p.14) emphasises that multiple institutions may be involved in accessing natural resources (thereby extending the use of the term ‘institution’ from ‘rules and norms’ in CPR theory to, ‘rules, norms and arrangements, which can exist or be represented in the form of organisations’<sup>7</sup>). These institutional arrangements can be both formal (such as WUCs) and informal; established through kin and social networks and relationships, and norms and practices embedded in everyday life, influenced by historical and political processes (Cleaver, 2012; Mehta et al., 1999).

The process of institutional change is therefore not as straightforward and linear as in mainstream institutional theory. Cleaver (2012) asserts that institutional change is messy, unpredictable, context-specific and dynamic, shaped by the interrelationship between bricoleurs (change agents) and local history and politics. Building on the term ‘bricolage’ from Levi-Strauss (2004) and Mary Douglas (1987) she uses the term ‘institutional bricolage’ to explain the formation and functioning of institutions. For Cleaver (2012, p.45), institutional bricolage is “a process in which people consciously and non-consciously draw on existing social formulae (styles of thinking, models of cause and effect, social norms and sanctioned social roles and relationships) to patch or piece together institutions in response to changing situations”.

In this dynamic process, old arrangements are reworked and new ones invented. Such reworked institutional arrangements are often multi-purpose, such as a women savings group that also collects water user fees (Cleaver and de Koning, 2015; Cleaver, 2002). Everyone can be a ‘bricoleur’, yet adapted institutional arrangements need to be perceived as legitimate and imbued with authority to safeguard their endurance and are constrained by the limits of people’s resources and social circumstances (Cleaver and de Koning, 2015; Cleaver, 2012).

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<sup>7</sup> Douglass North (1990) deliberately differentiated between institutions and organisations to avoid confusion and complexity of measuring the concepts.

**Table 2.5**

Key Features of Institutional Thinking (from Cleaver, 2012 p. 16)

Features	School of thought	School of thought
	Mainstream Institutionalism	Critical Institutionalism
Nature of institutions	Formal/Public institutions in nested layers with horizontal and vertical linkages.	Blurring of boundaries and of scales, blending of institutional logics and forms (e.g. formal/informal).
Formation of institutions	Institutions formed through crafting; design principles characterise robust institutions	Institutions pieced together through practice, improvisation, adaptation of previous arrangements.
Nature of decision-making	Decision-making and negotiations mainly conducted in public fora.	Decision-making and negotiations embedded in everyday life, shaped by history and politics.
Models of agency	‘Bounded rationality’ models of agency as strategic and purposeful – individuals as resource appropriators.	Agency as relational, exercised consciously and non-consciously – individuals with complex social identities and emotions.
Factors shaping human behaviour in institutions	Information, incentives, rules, sanctions and repeated interactions.	Social structures and power dynamics, relationships, norms, individual creativity.
Outcomes	Institutions can be crafted to produce efficient resource management outcomes.	Institutions evolve to ‘social fit’: functioning may result in access to <i>or</i> exclusion from resources.

Hence, to understand institutional dynamics at either local or national levels described in the empirical Chapters 5, 7 and 8, I draw upon the understanding of critical institutionalism that recognises the role of power relations and the 'elite' in processes of institutional change or resistance. According to Welsh (1979 *in* Wegerich, 2001 p.1) "elites participate in, or influence the making of decisions that allocate resources within and among social units". Due to the influential role of elites in decision-making, their support is usually crucial when a new project or reform is introduced by external actors and according to Colvin et al. (2014) their involvement is a fundamental prerequisite for an innovation to endure. Feeny (1988) asserts that the support of powerful agents depends on the political and economic costs of the reform. In the case of negative effects, elites may become a powerful source of resistance to change and can delay or informally change an innovation process. Equally, Das Gupta (2001) observed that local elites may not accept changes that diminish their power position and tend to obstruct those that try to improve their social and economic situation.

Because people's behaviour is predominantly the result of 'unreflexive practice' whereby social norms, principles and knowledges are taken-for-granted, power imbalances may be sustained (Caine, 2013). This perception of 'path-dependency' and the notion that behaviour is "not simply a matter of individual choice" (Cleaver 2012 p.118), draws upon Bourdieu's (1989; 1990) concept of 'habitus'. In this view, individuals and groups hold deeply ingrained set of habits that guide attitudes, values, perceptions, and dispositions and behaviours. The habitus is a product of the external environment involving social and political structures and historical events (Bourdieu, 1986). The maintenance of power imbalances, or elite capture, is also evident in rural water projects (Adhikari and Goldey, 2010; Hapaala et al., 2016; van Koppen et al., 2012; Rusca et al., 2015; Rusca and Schwartz, 2014). Section 2.6 discusses the phenomenon of elite capture in the context of initiatives aiming to realise sustainable access to water.

Nevertheless, human beings are not solely subjected to the social structures in their environment, and just as powerful individuals, everyone may act purposively (Cleaver, 2012). Emotions such as anger, fear and disgust may thereby play a crucial role. For instance, people may comply to avoid the distress of conflict or may resist due to feelings of anger (Cleaver and De Koning, 2015). Page (2005) elegantly demonstrates the power of emotions in a study on water reforms in Cameroon. He describes a group of women that were furious about state interference in local water management arrangements. They organised protest marches and ultimately prevented the involvement of the state in local water affairs. In addition, Fehr and Gächter (2002 p.137) demonstrate the important role of emotions in rule enforcement and

conclude “that negative emotions towards defectors are the proximate mechanism behind altruistic punishment”.

### **2.2.10      The Pertinence of Blue-Print Thinking**

Although many scholars have levelled critique at the uniform solutions and ‘blueprint thinking’ characteristic to the CBM framework (Blaikie, 2006; Cleaver, 2012; Woolcock and Pritchett, 2003; Wong, 2006), many of the insights from CPR theory remain pertinent in current day development initiatives because actors as NGOs or state agencies operate “... within structures defined by environmental discourses or storylines” (Forsyth, 2003 p. 272, see also Hänninen, 2014; Irshad, 2013; Mehta et al., 1999). North (1992 p.6) asserts that when “... organisations owe their existence to the institutional matrix, they will be an ongoing interest group to assure the perpetuation of that institutional frame structure – thus assuring path dependence”. This may imply that development agencies feel threatened about criticism directed at mainstream institutionalism as bottom-up and community based approaches comprise their DNA.

Further, critical institutional scholarship does not offer ‘practical’ alternative approaches nor does it provide any handouts and clear-cut answers about how local water resources can be sustainably managed. Even though Cleaver (2012) advocates for a complete overhaul to address the shortcomings within mainstream institutionalism, she as of yet has not provided directions how development actors can arrange this. Moreover, she does not predict that outcomes of institutional bricolage and institutional change result in equal and productive outcomes for all beneficiaries, as assumed in mainstream institutionalism (Cleaver, 2012; Jones, 2015). Nevertheless, this has not stopped practitioners and scholars from trying to steer institutional processes. Haapela et al. (2016), Hassenforder et al. (2015) and Merrey and Cook (2012) use the body of thought of critical institutionalism to ‘facilitate institutional bricolage’ and to support the design of ‘organic’ institutions. Although they aim to consider power relations and context, it raises the question whether such initiatives parade old idea as new ones as the facilitation of institutional bricolage (if at all possible) appears a participatory process led by an ‘expert’ (Hassenforder et al., 2015). As such, these initiatives may bear the drawbacks inherent to participation as outlined in Section 2.4.2 and continue to control the process of institutional change. Institutional processes may, however, not play out at one point in time (also simply because the ‘bricoleurs’ may not be present at the meeting or workshop) but may evolve

gradually over time. It shows, however, that the design of appropriate local institutions, which are easy to control, amend and analyse, remains attractive within development initiatives; as also evident in the case studies of this thesis (Scott, 1998 *in* Cooke and Kothari, 2001).

Nevertheless, I agree with Hassenforder et al. (2015) that experimenting is needed to generate opportunities for improved outcomes. And as Douglas and Wildavsky (1982) argue, ‘real change’, that alters the institution, tends to occur only at the margins of society as the “...centre is too constricted in its casing of institutional habits” (Douglas and Wildavsky, 1982 p.189). Hence, Douglas and Wildavsky (1982) divide institutions within society between those that operate at the ‘centre’ (those closest to power and influence) and at ‘border’ level. So, while innovation may take place at the ‘margins’, in order for water management reforms to reach scale, Douglas and Wildavsky (1982) argue that transformation must emanate from the ‘centre’, simply because the implementation of an innovation is a top down process (Townsend, 2013). Thus, it is assumed that through the generation of evidence and knowledge about an innovation, benefits “will become evident to all” (Colvin et al., 2014 p.761), and adoption by the centre may follow. Literature Chapter 6 continues with innovations in the rural water sector and links processes of institutional change to risk perceptions.

## **Neo-Liberal Branch of the CBM Model**

The other arm of the CBM model, influenced by the neo-liberal agenda, is the establishment in the 1992 Dublin Principles that water is an economic good and should be paid for. Van den Broek and Brown (2015) clarify the meaning of commodification within the CBM model and make a distinction between the ‘goods’ and ‘services’. In the CBM model, the ‘good’ does not refer to the groundwater as in urban areas, but to the handpump. To secure long-term access to the water infrastructure, handpumps are subject to regular maintenance and repair cycles (implying spare parts and labour costs) and thus require payments. Besides maintenance costs, beneficiaries of rural water services are required to contribute towards the construction of the water source, which usually constitutes between 5-10% of the total capital costs of construction (Davis and Iyer, 2002; Narayan and Ebbe, 1997). The CBM model assumes that monetary contributions lead to a feeling of ownership over the resource, are affordable and willingly paid and together secure the long-term access to the handpump (Burr and Fonseca, 2013; Jones, 2011; Schouten, 2006). The ‘service’ within the CBM model refers to the daily operation and

management of the water source. This is not commodified and elected WUC members are expected to carry out their roles and responsibilities on a voluntary basis.

As van den Broek and Brown (2015) highlight, it is assumed that the two individual ideological arms of the CBM model complement each other, and that commodification does not threaten collective action and CPR theory. The majority of Ostrom's (1990) successful case studies, however, did not involve the need to pay for resource use. In addition, because water is a human right, the design principles of 'clearly defined boundaries' and the imposition of 'graduated sanctions' to exclude free-riders may be ethically and socially impossible to enforce and explain why Bakker (2003) refers to water as an 'uncooperative commodity'.

In sum, due to the mixture of left-wing and grassroots developmental notions and right-wing, neo-liberal ideas, the CBM model is a contradictory ideological fusion that meshes theories from opposite ends of the political spectrum (van den Broek and Brown, 2015). Both sides support the roll back of the state, local control and community self-reliance (Mohan and Hickey, 2000). The advocacy for 'collective action' comes from the absence of trust in African state agencies (Page, 2003) and the private sector by the former (Shiva, 2002) and, the opportunity to reduce state expenditures by the latter, through promoting the commodification of water and ensuring communities cover O&M costs. As a result of this mutual alliance, the CBM model has a strong support base.

## **Sustainable Rural Water Management**

Improving outcomes of community managed water sources starts with questions over what we aim to achieve and what is meant with sustainability. In the context of rural water service delivery, the application of 'sustainability' – its meaning and direction – is messy and complex and the lack of clarity is highly confusing. This study approaches sustainability in terms of finance and management (Wong, 2006) because they are two key elements to ensure a handpump "continues to work over time" (Abrams et al., 1998 p. 4). It draws on the increasing body of evidence that demonstrates the dearth of funds to pay for maintenance costs (Burr and Fonseca, 2013; Fonseca et al., 2013; Foster and Hope, 2016; Godfrey et al., 2009; Harvey, 2003; Jones, 2010, 2011, 2013; Kalulu et al., 2012; Nabunnya et al., 2012; Peter and Nkambule, 2012; WaterAid, 2009) and the inactivity of a management body (WUC) to organise community

meetings, collect user funds, carry out O&M tasks, organise handpump repairs and maintain proper hygiene and sanitation practices near the water source (Carter et al., 2010; Mugumya, 2013; Naiga et al., 2015; Water Aid, 2011).

The ambiguity of sustainability in the literature starts from the lack of a common problem analysis of handpump failure, see Table 2.6. Due to the disagreement about the problem, the rural water sector is confronted with a wide range of diverging frameworks that aim to monitor and guide the process of sustainable access to clean water in rural areas.

Le Gouais and Wach (2013) divide the sustainability frameworks in the rural water sector into two categories: those that measure or monitor the sustainability of a project and those that are conceptual principle based frameworks. The first set of sustainability frameworks have a project-based focus usually including institutional, financial, managerial and technical aspects of the water service (examples are: Kaliba and Norman, 2004; Sarah and Katz, 2005; Godfrey et al, 2009; Fogelberg and Betancourt, 2009; Adhikari and Bhattarai, 2010; Schweitzer and Mihelcic, 2012; USAID-Rotary, 2013; CWSA and IRC, 2012). The latter addresses components outside the immediate scope of a water project and includes wider sectoral issues as knowledge sharing and cooperation with governmental stakeholders (examples are: Water Aid sustainability framework, 2011 and Triple-S<sup>8</sup> building blocks for sustainability (Smits and Lockwood, 2015). Refer to Appendix 2.2 for the building blocks for sustainable rural water management by Triple-S.

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<sup>8</sup> The Triple-S (Sustainable Services at Scale) initiative is a six year programme that aims to improve access to rural water services in developing countries. The initiative is hosted by IRC WASH.

**Table 2.6****Reasons for Handpump Failure (adapted from van den Broek and Brown (2015 p. 54)).**


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Political factors	<ul style="list-style-type: none"> <li>• Interference of local politicians that advertise for free water in return for votes (Carter et al., 2010; Quin et al., 2011).</li> <li>• Lack of legal status and authority of WUC (Harvey, 2007; Lockwood and Smits, 2011).</li> </ul>
Historical factors	<ul style="list-style-type: none"> <li>• The general belief among people that water should be free of charge as practised during the state-led paradigm, and expectation of external financial support by government and NGOs (Jones, 2011; Quin et al., 2011; Whittington et al., 2009).</li> </ul>
Geographical factors	<ul style="list-style-type: none"> <li>• Alternative water sources reduce people's willingness to pay for water from protected sources (Parry-Jones et al., 2001).</li> </ul>
Social factors	<ul style="list-style-type: none"> <li>• Water users mistrust the WUC due to the fear of mismanagement of funds (Harvey et al., 2006; Jimenez and Perez-Foguet, 2010; Kamruzzaman et al., 2013; Kleemeier and Narkevic, 2010; Montgomery et al., 2009).</li> <li>• Preference of community members is to only pay user fees when the pumps breakdown. This actually makes the life of WUC simpler, and community members rather spend available money on other projects (Whittington et al., 2009).</li> <li>• WUC not able to efficiently collect water user fees from community members (Whittington et al., 2009; Quin et al., 2011).</li> <li>• Trained WUC members are not willing to work on a voluntary basis, lack access to skills upgrading, forget their initial training, or simply move away (Harvey, 2007; Lockwood and Smits, 2011; Quin et al., 2011).</li> <li>• The enforcement of graduated sanctions for non-payment causes internal conflict (Golooba-Mutebi, 2012).</li> </ul>
Implementation factors	<ul style="list-style-type: none"> <li>• Satisfaction and demand of the service (Barnes et al., 2014; Bhandari and Grant, 2007; Harvey, 2008; Jimenez and Perez-Foguet, 2010).</li> <li>• Community receives insufficient education about the costs of O&amp;M of the water source (Harvey, 2008).</li> <li>• Promises by implementing organisations that water is free of charge (Carter et al., 2010).</li> <li>• Different implementation approaches by service providers (WaterAid, 2011).</li> </ul>
Technical factors	<ul style="list-style-type: none"> <li>• Poor construction and lack of supervision (Upgro (no date); Furey, 2014).</li> </ul>

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Conceptual based frameworks, such as the 'building blocks for sustainability' by Triple-S, relate the lack of continued access to water to a 'water governance crisis' (Asingwire, 2008; Global Water Partnership, 2002; Moore, 2013; Mugumya, 2013; Naiga et al., 2015; Starkl et

al., 2013; UNDP Water Governance Facility/UNICEF, 2015). The concept of governance rests on the notion that the provision of water services is a joint effort of the public, private and voluntary sector in order to achieve ‘good water governance’. Rogers and Hall (2003 p.7) define water governance as: “... the range of political, social, economic and administrative systems that are in place to develop and manage water resources, and the delivery of water services, at different levels of society.” Franks and Cleaver (2007) critically observe that sustainability frameworks grounded in this perspective, are embedded in normative principles of ‘good governance’ that seek equity, legitimacy, efficiency, transparency and accountability. They stress that sustainability frameworks that build on this definition of water governance, fail to take into account the context-specific arrangements for organising access to water and the range of actors that shape the ways natural resources are governed. They observe that ‘good water governance’ does not necessarily lead to ‘good outcomes’ as generally assumed. As a result, they developed an analytical tool to understand water management arrangements and adapted the definition of water governance into: “... the system of actors, resources, mechanisms and processes which mediate society’s access to water” (Franks and Cleaver, 2007 p.293). Although this thesis does not specifically use their framework for analysing outcomes of rural water management arrangements, it does draw on their insights that mechanisms of water access are often not neutral as they are shaped by relationships, resulting in unpredictable outcomes (Cleaver, 2012 p.41). This insight helps us to understand that agency and the exercise of individual choices and preferences are dependent on social structures and relations of power and authority in a specific social field, as also highlighted in Section 2.4.3. This thinking is derived from Bourdieu (1989 p.21) who argues that: “... symbolic relations of power tend to reproduce and to reinforce the power relations that constitute the structure of social space”. He explains that people might not be consciously aware of such power relations and often accept their social world in a “taken for granted” (p.18) manner.

Further, the process of defining ‘sustainability’ is a value-driven exercise that enters into the philosophical question of what we value most and what purpose rural water services and management arrangements should serve. Mostly, sustainability definitions in the rural water sector prioritise one, or a combination of the following aspects (Franks and Cleaver, 2009): *technical features*, such as the efficiency and upkeep of the system (see for example Water Aid, 2011) *environmental conservation* (as presented in the Brundtland report of ‘Our Common Future’, 1987) or *social developmental factors* as livelihood, health and general wellbeing (reflected in the water governance framework of Franks and Cleaver, 2007; 2009). The way

sustainability is approached has a bearing in people's worldviews. The rural water sector involves a wide range of practitioners and academics from different disciplines (engineering, economics, social sciences) characterised by their own ontological and epistemological perspectives, affecting their values and beliefs (Dobbie and Brown, 2014). Evidently, the aspects that one values directs the strategies for improving rural water management arrangements.

That values may differ among actors may be illustrated with the observed phenomenon of elite capture in rural water projects. Elite capture is observed as a real risk "... when advantaged groups succeed in altering projects for their own benefit, usually at the expense of other people, particularly the poor" (Arnall et al., 2013 p. 306). A key concern is the reproduction of local inequalities (Adhikari and Goldey, 2010; Cleaver and Toner, 2006; Hapaala et al., 2016; van Koppen et al., 2012; Rusca et al., 2015; Rusca and Schwartz, 2014). Yet, Roe et al. (2009, p. 59) argue that elite capture should "... not always [be] considered as a bad thing".

How 'bad' elite capture is, depends not only on the individual case but may also link to our understanding of 'sustainability' and what element of sustainability one prioritises: the environment, finances or social well-being (Franks and Cleaver, 2009). The case study of Rusca et al. (2015) about a success story of WaterAid in Malawi illustrates this point. In this case, WaterAid supported the establishment of Water User Associations (WUAs) to manage the rundown and in-debt water utilities in a small town. After some period, the WUA's managed to achieve the desired full cost recovery and were even able to repay the former debts of the system. While the WUAs achieved the project goal of WaterAid, Rusca et al. (2015) observed that the successful cost recovery was at the expense of the poor who were required to pay more for water while already advantaged individuals, represented in the WUAs, were profiting from the water revenues.

This example shows the tensions between securing financial sustainability, in order to allow a continuous flow of water, and ensuring marginalised groups have access to water. The pursuit of "equitable systems" as suggested by Hapaala et al., 2016 may ignore the reality of institutional processes where context, identity, belief systems and positions are key for shaping such processes. Unequal power relations and the concentration of power in the hands of a few may, however, be necessary for ensuring reliable access to rural water services in the user pays era.

Literature Chapter 6 and empirical Chapter 7 explore how underlying values direct and influence rural water management arrangements and outcomes.

### 2.2.11 The Role of Resource Characteristics, Geography and Income Levels on Sustainable Rural Water Management

Resource characteristics as size, storage capacity, recharge, water quality, and the available information about the resource are found to shape human-environmental relationships (Ostrom, 2003). It is for example, not hard to imagine that water management arrangements at a large river basin differ from those at a single handpump where, in the latter, factors as exclusion, rule enforcement and monitoring are assumed to be more feasible according to CPR scholars (Dietz et al., 2003).

Further, Ostrom et al. (1994) and Cornes and Sandler (1994) acknowledge that besides the development and enforcement of CPR rules, "... physical exclusion devices such as barbed wire fences and electronic sensing devices..." aid the exclusion of outsiders and free-riders, affecting sustainable resource use (Ostrom, 2003 p.241). (Araral, 2013a p.224) demonstrates that "geography matters in the choice of governing the commons". Araral (2013b) notes that exclusion and monitoring is more complex at mobile resources in comparison to stationary resources like forests. He argues that when the resource enables exclusion this may impact on the definition and type of good; refer to Table 2.8 for an overview of the typology of goods.

**Table 2.8**  
Typology of Goods (Ostrom and Ostrom, 1977)

	<i>Excludability</i>	<i>Non-excludable</i>
Rivalrous	Private goods	Common Pool Resource
Non-rivalrous	Club goods	Public goods

Araral (2013b) observes that most of Ostrom's (1990) successful cases were not mobile resources but stationary resources as forests. He argues that these successful cases of forest management were not CPRs as claimed by Ostrom (1990) but rather private goods as people could be (easily) excluded from the resource. Araral (2013b p.19) writes: "[b]ecause exclusion

is feasible, access to the resource is limited and property rights are clear and enforceable, these resources no longer qualify as common pool resources. Rather, they take the form of private property owned by a collective (or partnership) in which exclusion is feasible and hence access is limited”.

Equally this line of thought may be applied to those areas where water resources are abundantly available. While water resources are treated as CPRs, when people have access to a variety of water sources, water becomes non-rivalrous and non-excludable: a public good. In such an instance, the resource may be prone to the free-riders problem as hypothesised by Mancur Olson (1965) because people’s access to water is not dependent on that particular resource. Indeed, a number of studies have showed that the availability of alternative water sources decrease people’s willingness to maintain a particular handpump (Jones, 2011; Madrigal et al., 2011; Parry-Jones et al., 2001; Schouten and Moriarty, 2003).

Water scarce populations on the other hand (i.e. due to climate change, geographical conditions or demography), have an increased incentive to make arrangements for sustainable resource use. Water scarce conditions may therefore induce collective action to secure reliable access to water. However, as Cleaver (1999 p. 607) observes, if the availability of water is limited, participation may be “...less a matter of choice (an expression of agency), and more a matter of necessity imposed by constraint”.

In addition, the economic conditions of local populations are found to influence continued access to rural water services. Several studies have demonstrated that the income levels of communities are an important factor for the success of cost recovery and the sustainability of the water infrastructure (Bain et al., 2013; Hutchings et al., 2015; WHO/UNICEF, 2015). In general, water contributions are perceived ‘affordable’ if they do not exceed 5% of the household’s total expenditure (Frankhouser and Tepic, 2005; McPahil, 1993). Nevertheless, this may vary per country, region and household. Therefore, Willingness to Pay (WtP) surveys are a popular method to assess price acceptability in a certain locality (Abramson et al., 2011; African Development Bank, 2011; Berry et al., 2015; Koehler et al., 2015; Merett, 2002; Wang et al, 2010).

## **Recommendations to Improve Reliable Access to Water in the Literature**

The literature predominantly provides three sets of recommendations to improve the outcomes of rural water management arrangements. These are: 1) improving the participatory process to build capacity and social cohesion, 2) offering a technological solution and, 3) providing external support. I will briefly go through these recommendations. First, much of the literature on community managed rural water points seeks the solution in improving the design and implementation of participatory processes (see Marks and Davis, 2012 p. 1575) arguing that participation enhances a community's stock of social capital and will cement social relations, and thus increase the willingness to volunteer and act for the common good (Kähkönen, 1999; Narayan, 1995). In addition, project implementers often place optimism and confidence in capacity building activities (Brown, 2011 p.274; see also Carter and Kidega, 2013 p. 21). For example, Mandara et al. (2013), claim that a comprehensive training for communities on maintenance, record-keeping and financial management will contribute towards the sustainability of a rural water service. They propose to expand the WUC training team from technicians only to: "... professionals, practitioners and policy makers as well as academics with varied disciplinary backgrounds and representatives of the public and private sectors" (p.96). Additionally, they recommend the facilitation of exchange trips between "...villages with successful and unsuccessful water services" (p.96). As well as raising doubts about the (financial) feasibility of such trainings at each water source, Brown (2013 p. 14) is cynical about approaches that focus on "[p]erfecting participatory processes" and argues attention should be geared towards achieving real sustainable outcomes that may actually "take us into uncomfortable and uncharted territory".

A second set of recommendations promotes technological solutions to improve the functionality of handpumps. They promote better construction procedures, proper drilling and full-time construction supervision (Casey et al., 2016; Furey, 2014). Also early information systems and technology are promoted to increase the sustainability of handpumps (refer for example to Thomson et al., 2012). Recent initiatives<sup>9</sup> as the 'smart handpump' by Oxford University, 'SweetSense' by Portland State University and 'MoMo' by the NGO Welldone, use the mobile phone network to remotely monitor the functionality of handpumps in developing countries. These innovations provide data about the functioning of the handpump. According to Thomson

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<sup>9</sup> Refer to the literature list for the websites of the initiatives.

et al (2012 p.837) “... analysis of recent historical usage data may provide some indication of the nature of the failure and thus speed up the repair cycle”.

A third set of recommendations to improve the sustainability of handpumps involves the call for external support. Increasingly, both academics and practitioners appeal for the need of post-construction support to communities to provide technical support and advice, administrative and financial support, auditing of accounts, and water quality monitoring (Baumann and Furey, 2013; Kleemeier, 2010; Carter et al., 2010; Barnes et al., 2014; Lockwood, 2004; Lockwood and Smits, 2011; Moriarty et al., 2013; Kamruzzaman et al., 2013; Whittington et al., 2009; Schouten and Moriarty, 2003; Harvey and Reed, 2006). In these discussions a slow retreat is noticeable from the merits of full citizen control over the water service. Whereas in the 1990s, the absence of post-construction support meant a sustainable rural water facility (Visscher, 1997; WSP, 2000; Webster et al., 1999; Parry-Jones et al., 2001), nowadays post-construction support is increasingly brought forward as a pre-condition for sustainability.

The local government is often thought of as the most logical provider of post-construction support (Koestler et al., 2010). Yet, the ability of the local government to provide such support is questioned as they often lack the resources and capacity-building of the local government itself is considered to be vital (Kleemeier, 2010; Day 2011; Quin et al., 2011). Furthermore, cases of corruption and elite capture by the local government may not be solved with capacity building as they are “part of a deeply rooted if adaptable practice of politics” (Bayart, 1993 *in* Blundo and Le-Meur, 2009, p. 74).

The call for external support by a vast body of academics and practitioners may indicate a loss of confidence in the ‘self-regulating’ local institution to sustainably govern rural handpumps. Golooba-mutebi (2005 p. 955) even argues the idea of community control should be abandoned and writes: “... in some circumstances, top-down approaches may well do a better job of bringing about positive change in deprived communities”. Nevertheless, despite increasing criticism about the functioning of the CBM model, the majority of the reviewed literature is optimistic about finding solutions *within* the theoretical foundations of the CBM model. Chapter 6 moves from the recommendations made in the literature to praxis, and analyses three present-day alternative rural water management models.

## Concluding Remarks

Despite critical reflections from a growing ‘critical institutional’ scholarship on the theoretical foundations and concepts used within the CBM framework, the CBM model is entrenched within ideas about ‘good’ development policy and practice. Due to the mutual alliance from left-wing and grassroots post-Marxist developmentalists and right-wing neo-liberals, the model enjoys a strong support base. As van den Broek and Brown (2015, p. 52) write:

*“Because support comes from both ends of the political spectrum, the CBM model has proved very dominant and to date the prevailing view of donor agencies, policy makers and academics in the rural water circle is “that communities can and should take full responsibility for their [water] systems (Whittington et al., 2009 p. 714).”*

Nevertheless, the rural water sector is divided into different opinions on how to achieve sustainable rural water services. It is characterised by disagreement on the root causes of handpump failure and consequently how to solve it, as will be further unpacked in literature Chapter 6 that examines three contemporary rural water management innovations. Moreover, this chapter has highlighted that the quest to realise sustainable rural water services is riddled by competing values, such as efficiency, equity and social justice and that solutions may be unable to balance the ‘sustainability’ components of functionality, social wellbeing and the environment (Franks and Cleaver, 2009).

The chapter discussed the concept of water governance to advance the understanding of rural water management outcomes beyond a particular water point. While critical institutionalism refrains from suggesting hands-on strategies to improve the outcomes of institutional processes, it calls for an in-depth analysis on the dynamics of natural resources management by examining the wider context, underlying social structures and the power of actors in shaping management outcomes (Cleaver, 2012; Franks and Cleaver, 2007; 2009). This study responds to this appeal and critically analyses the outcomes of the CBM model and alternatives to sustainable rural water management in Uganda.

# Chapter 3

## Setting the Scene: a Background to Uganda, Its Rural Water Policy and the Case Study Area

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### 3.1 Introduction

This present chapter proceeds with a background on the research area of the thesis. A comprehensive understanding of the study context is crucial for understanding people's behaviour: it paves the way for grasping the narrative analysis and is a determining factor for the selection of research methods (Fisher, 2008; Flick, 2006; Parker, 2005). The previous chapter positioned the thesis in the context of related work on the Community Based Management (CBM) model and the quest for sustainable access to rural water services. The chapter established that rigorous and systematic research on sources of handpump breakdown is of both academic and developmental interest.

This chapter provides a background of Uganda, its rural water policies and the case study area. Section 3.2 describes how the provision of rural water services in Uganda evolved on the basis of the country's socio-economic, political and historical background. Section 3.3 provides an overview of the present-day rural water supply policies and 3.4 describes the key institutions involved. In 3.5 the chapter proceeds with an overview of the challenges in rural water services provision in Uganda. The background on Uganda's rural water policy and institutional framework is concluded with an overview of Uganda's current rural water status and trends in rural water access over the years in Section 3.6. Hereafter, Section 3.7 introduces the case study area. The chapter closes with a set of concluding remarks in Section 3.8.



In rural Uganda, the prime source for drinking water is groundwater. An estimated 61% of the country's drinking water is accessed through protected springs, shallow wells and deep boreholes (ibid.). Uganda's groundwater resources are, however, under increasing pressure. It is estimated that the country will experience water stress<sup>10</sup> by 2025 due to its rapid population growth of 3.3%<sup>11</sup> (World Bank, 2016), climate change and the ongoing degradation of the country's wetlands that regulate the ecosystem (Wong et al., 2005).

Uganda has had a tumultuous political history. The country was under British rule from 1894 to 1962. During the colonial period, the British ruled through 'divide and conquer' principles. Uganda was traditionally run by several kingdoms: Buganda, Toro, Nkoro, Ankole and Bunyoro (of which the latter is the focus area of this study) (Pulford, 2014). As Section 3.6 will outline, none of the kingdoms in Uganda suffered as much as the Bunyoro region during British occupation (Doyle, 2006). The Buganda (closest to the capital Kampala in the south) were perceived as more 'civilised' than the other kingdoms and gained a privileged political position under the British administration (Mutibwa, 1992; Doyle, 2006). They received land, were awarded a great amount of internal autonomy and were usually appointed as local chiefs on district, county, sub-county, parish and sub-parish level to implement government policies and collect salaries. During British rule, investments in social services such as water supply mainly targeted Buganda region. While investments in rural water supply were low (at the end of British rule, only 18% of the rural population had access to an improved water source (Muhangi, 1996), the colonial period considerably changed the way how people gained access to water services. In the pre-colonial era, access to water was dependent on community self-help projects mobilised by clan leaders and elders (Asingwire, 2008). During British administration, water services started to be supplied through a bureaucratic top-down and supply-driven approach whereby services were supplied, governed and owned by the state (Ibrahima, 2012); a model that dominated the water sector until after independence (Asingwire, 2008).

While the British colonial office considered Ugandan independence should take place around 1975 as agreed during a 1959 conference in England, increasing rebellion in the East African region significantly accelerated the transfer of power. On October 9, 1962 and, just one week

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<sup>10</sup> When demand exceeds available supply or access is restricted due to poor quality. European Environment Agency ([www.eea.europa.eu](http://www.eea.europa.eu)).

<sup>11</sup> According to 2016 estimates of the CIA World Factbook, Uganda is ranked third on the list of countries with the highest birth rates in the world.

before the independence order was finalised by British officials, power was officially handed over (Mutibwa, 1992). From 1962 until 1986 when the current president, Yoweri Museveni, seized power, Uganda witnessed the often violent<sup>12</sup> succession of eight different presidents: a period when state control was characterised with state capture, violence and corruption. Public power and authority served the needs of particular groups (Mulinge and Lesetedi, 1998) and was misused "... for private benefit through bribery, extortion, influence peddling, nepotism, fraud, speed money or embezzlement" (UNDP, 1999 p.70) ignoring the voices of civil society (Mulinge and Lesetedi, 1998; van Wyk, 2007). The regimes of Milton Obote (as a prime minister from 1962-1966 and as a president from 1966-1971 and 1980-1985) and Idi Amin (1971-1979), in particular, deeply scarred the country (Pulford, 2014). For an in-depth overview of Uganda's political background I refer the reader to: Kanyeihamba, 2002.

The first few years of Obote's regime as a prime minister, with representatives of the Buganda Kingdom occupying the figurehead posts of vice-presidency and presidency, were relatively stable and boosted economic development. However, in 1966, Obote's fear of being overruled by opponents instigated a spiral of violence. He used the military, the police and a secret police organisation with members from his own Langi and Acholi tribe (in northern Uganda) to establish a one-party state and to kill and imprison alleged opponents, including the removal of the Buganda (vice-) presidency and the abolishment of the Buganda kingdom as a whole. When Obote attended a Commonwealth conference in Singapore in 1971, Idi Amin – the lieutenant-colonel of Obote's army – took over power (Evans, 1996). Although the self-declared rule of Amin was met with public optimism (i.e. he restored the Buganda kingdom and expelled the infamous Asian community from the country), Amin did not feel secure either. He recruited men from his home area, West Nile district (north-west Uganda), for positions in the army to eliminate opponents, starting with the mass killings of Obote's Langi and Acholi tribesmen. During Amin's reign, military suppression was a key priority. He showed no interest in governing the country, used most of the state revenue for the military, plundered the state treasury for personal use and 'solved' the resulting lack of capital by ordering the central bank to print new banknotes. His brutal and devastating tyranny, killing an estimated 250,000 people, came to an end in 1979 when a counter-attack by the president of Tanzania crippled Amin's army. Milton Obote regained power after disputed elections and continued to ravage the country

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<sup>12</sup> Six presidents have been deposed and two presidents resigned after two and ten days respectively.

with a civil war. In addition to the death toll caused by Amin, Obote's special 'northern' army killed another 300,000 people (Evans, 2006; Meredith, 2006; Kanyeihamba, 2002).

The decades of instability took a heavy toll on socio-economic development (Makoba, 2011), including the supply of rural water services. Access to safe water in rural areas had significantly reduced from 18% at independence in 1962 to only 5% in the 1980s (Mugumya, 2013). Following the state-led paradigm, the Ugandan Water Department had established Borehole Maintenance Units (BMUs) that operated in 15 different regions across the country to implement and maintain rural water services. However, as a result of the political turmoil, the BMUs became largely dysfunctional and more than 70% of the boreholes were non-functioning in the early 1970s (Muhangi, 1996).

When Museveni came to power on January 29 1986, after a five-year guerrilla war with his National Resistance Army (NRA), he found a bankrupt, indebted, lawless and devastated country (Meredith, 2006). The economic crisis pressurised the government to adopt the World Bank's and IMF's Structural Adjustment Programmes (SAPs) in order to balance the country's budget deficits by liberalising the economy and downsizing the role of the government in social services delivery. The SAPs in Uganda are considered to represent one of the few "success stories" in sub-Saharan Africa as the country managed to achieve an average annual economic growth rate of 6% by the end of the 1990s (Makokha, 2001 p. 10).

### **3.3 Rural Water Reforms**

Since 1987, efforts to increase water and sanitation supply have been embedded in overarching government planning programmes induced by the World Bank/IMF including the Structural Adjustment Programmes (SAPs), the Economic Recovery Programme (ERP) and the Poverty Eradication Action Plan (PEAP). These long-term programmes have aimed to propel socio-economic development by decentralising the delivery of social services to local government authorities and by involving the private sector in public service delivery (African Development Bank, 2011b).

In the first few years of the 'National Resistance Movement' (NRM) government, a prime goal was to enhance participatory democracy and social service delivery through decentralising government administration whereby citizens elect their own representatives – free from any

political or tribal denomination – at village, parish, sub-county and district level. By transferring the responsibility for planning, financing and monitoring to local government level, the government aimed to achieve quick and effective delivery of water in rural areas; a system that was later formalised in the 1995 constitution and 1997 local government Act. During this period, the Village Level Operation and Management (VLOM) model emerged whereby community members became responsible for the operation and management of their rural water sources (Asiimwe and Musisi, 2007; Mugumaya, 2013). Refer to Chapter 2.2.4 for a comprehensive description of the VLOM model.

The Poverty Eradication Action Plan (PEAP), that ran between 1997 until 2008, explicitly addressed the alleviation of poverty, including the provision of safe drinking water to reduce long walking distances and improve time for productive activities, increase school enrolment, and reduce the incidence of water borne diseases such as typhoid, malaria, bilharzia and cholera (Obitre-Gama, 1999; Water and Sanitation Programme, 2011). The PEAP aimed to achieve 77% rural water coverage and 80-90% functionality of facilities by 2015, thereby trumping the United Nations Millennium Development Goal (MDG) no. 7 that aimed to “[h]alve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation”. The commitment to improve access to safe water was supported with policy (3.3.1) and institutional reforms (3.4) for the delivery of water services and a shift from a project to a Sector Wide Approach (SWAp) (3.4.7) which included an increase in budget for the water sector by the government (O'Meally, 2011).

Below, the relevant policies and Acts of parliament on rural water supply are presented, including decentralisation of implementation, demand-driven approaches and community management of services.

### **3.3.1 Policy Framework Rural Water Supply**

*The constitution for the Republic of Uganda (1995)* declares access to clean water and sanitation as a fundamental right for all Ugandans. In rural areas – consisting of Rural Growth Centres (RGCs) with a population between 500 and 5000 and villages with a population under 500 (GoU, 2007) – each shallow well or borehole is anticipated to serve 300 people at a maximum distance of 1,000 metre per household with a minimal water consumption of 20 litre per day per person (MWE, 2014). *The Local Government Act (1997), revised in 2000*, devolves

responsibility for water provision, maintenance of facilities and follow-up support to local governments. The Act requires Non-Governmental Organisations (NGOs) to agree their work plans with districts and to integrate their plans in the District Three Year Development Plans. Refer to Table 3.1 for the structure of Local Councils (LC) at village (LC I), parish (LC II), sub-county (LC III), county (LC IV) and district (LC V) levels. Section 3.4 provides a detailed overview of the actors' roles and responsibilities involved in rural water services delivery.

**Table 3.1**

Decentralisation in Uganda: Key Features of the Institutional Structure (Adapted from: Francis and James (2003 p. 328))

<b>Local Council Level/Area</b>	<b>Political Head</b>	<b>Status of LC level and administrative Head</b>	<b>Technical staff</b>
LC 5/District	District Council Chairman	Local Government Chief Administrative Officer (CAO)	Full team
LC 4/County	LC 4 Chairman	Administrative Unit Assistant CAO	-
LC 3/Sub-county	Sub-county Council Chairman	Local Government Sub-county Chief	Subaccountant, extension and other technical staff
LC 2/Parish	Parish Council Chairman	Administrative Unit Parish Chief	-
LC I/Village	LC I Chairman	Administrative Unit	

*The National Water Policy (1999)* promotes Operation and Maintenance (O&M) of rural water infrastructure, capacity building at all levels and involvement of women at all stages in rural water services delivery. The policy prescribes a Demand-Responsive Approach (DRA) for supplying rural water infrastructure (see Chapter 2.2 for a detailed description of the DRA approach) and stipulates that communities need to manage their water resources via a Water User Committee (WUC), in line with the CBM model. The National Water Policy specifies an expected functionality rate at any one time of 80-90%, and promotes sustainability through collaboration between the community, sub-county and district. *The National Gender Policy*

(1999) aims to achieve gender equity and encourages women to play a major role in decision making. In relation to water, the Policy recognises women and children as the main carriers of water and encourages female participation in the WUCs (a total of 4 men and 3 women) (MWE, 2007).

### **3.3.2 Key Institutions in Rural Water Services Delivery**

This section describes the key stakeholders involved in rural water services delivery in Uganda, starting with the government actors on national, regional and local level. Figure 3.2 provides an abbreviated overview.

#### **National, Regional and Local Government**

On *national government level*, the Ministry of Water and Environment (MWE) is responsible for the development of policies, the management and regulation of the country's water resources, the mobilisation of funding, capacity building of local governments and the establishment of priorities within the sector. Further, the MWE monitors the performance and functionality of the water facilities in the country. The MWE has three directorates: the Directorate of Water Resources Management (DWRM), the Directorate of Water Development (DWD) and the Directorate of Environmental Affairs (DEA). The Directorate of Water Development (DWD) is responsible for the oversight and delivery of urban and rural water and sanitation. The DWD comprises three departments: Rural Water Supply and Sanitation; Urban Water Supply and Sanitation; and Water for Production. The Rural Water Supply and Sanitation department coordinates the district water and sanitation grant which involves the allocation of the grant per district, monitoring how funds are used and building the capacity of the district local governments. For this latter task and on *regional government level*, the DWD established eight regional Technical Support Units (TSUs) who provide support and build the capacity of districts on a demand-driven basis to improve planning, implementation and supervision of rural water services by the districts. Another key player at national level is the Ministry of Finance, Planning and Economic Development (MFPED) that mobilises and allocates funds

and coordinates development partner inputs (MWE, 2011; Quin et al., 2011; Ssozi and Danert, 2012).

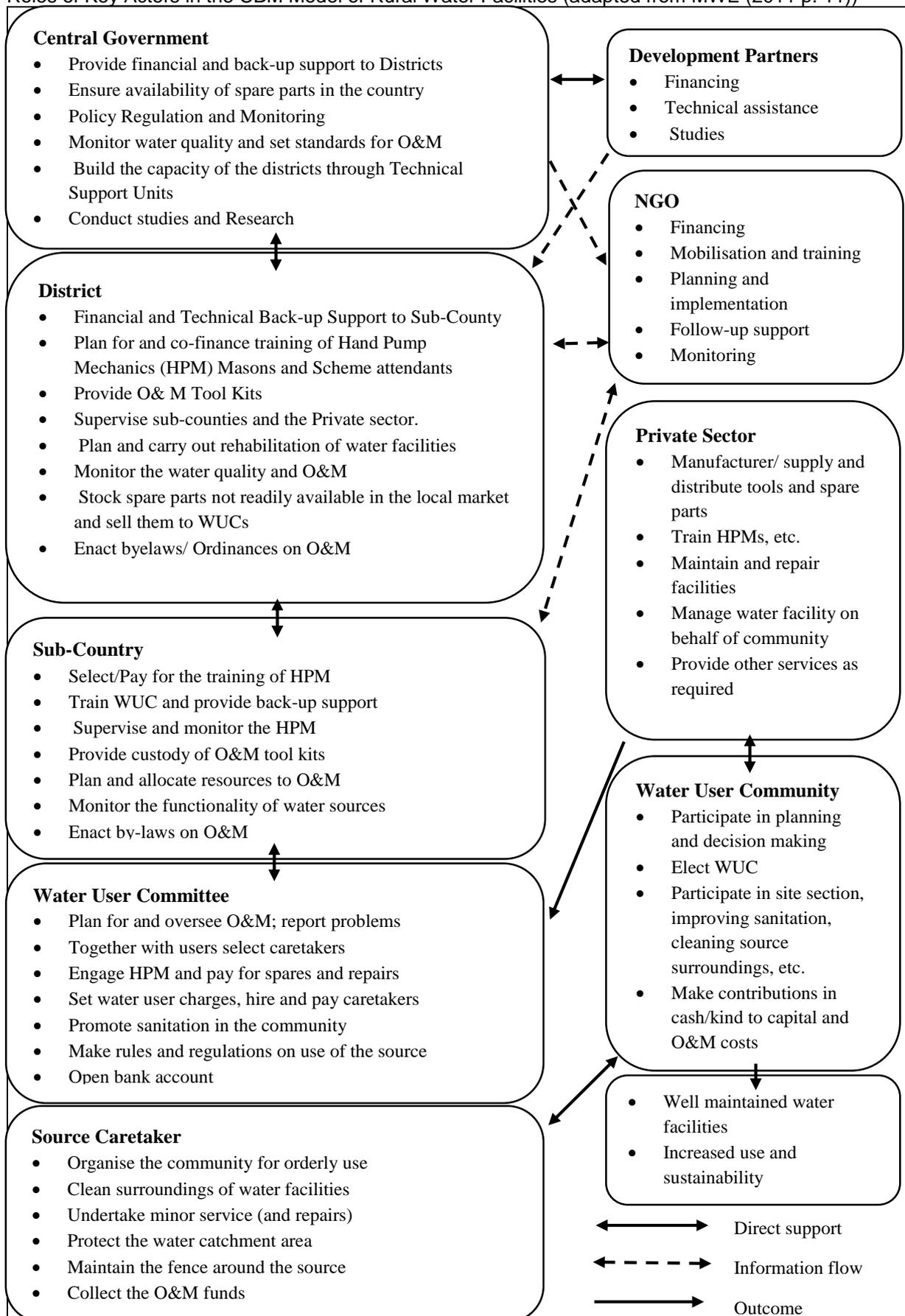
*At local government level*, the overall responsibility for rural water services provision lies with the District Council who are required to oversee the allocation of water sources, coordinating and monitoring activities in their area. The district is the highest local government level in Uganda (GoU, 2013).

District Local Councils (elected council with LCV as the chairman) in liaison with the Ministry of Water and Environment (MWE) are responsible for the provision and maintenance of water facilities. Upon approval of the higher Council or Attorney General, Local Councils can make by-laws regarding the management and maintenance of communal water services. The Local Government Act enables planning and implementation of activities by the local government according to local needs (GoU, 2013).

The District Water Office (DWO) takes the lead in providing back-up support and technical guidance to sub-counties in planning and budgeting, implementation and monitoring their work plans. It is responsible for monitoring water quality and the Operation and Maintenance (O&M) of rural water infrastructure. The district is expected to budget for repairs that go beyond the community's financial capacity. In addition, the district is responsible for training Hand Pump Mechanics (HPMs), providing tool kits for O&M and stock spare parts that are not readily available in the local markets (MWE, 2007). The DWO is required to establish a District Water Supply and Sanitation Coordination Committee (DWSCC) where district officials, NGOs and private sector organisations meet on a quarterly basis to align work plans in the District. The DWO transfers financial resources from the District Water and Sanitation Development Conditional Grant (DWSDCG), allocated by the Ministry of Finance Planning and Economic Development, to the sub-counties (GoU, 1997; GoU; 2013).

The sub-county is responsible for overseeing and implementing water and sanitation programmes. Sub-county extension staffs (Community Development Officers and Health Assistants) are to take the lead in the provision of follow-up support to the Water User Committees (WUCs), supervise Hand Pump Mechanics (HPMs) and enact village laws on Operation and Maintenance (O&M) (GoU, 2013). Refer to Figure 3.1 for an overview of the key roles of the central government, district and sub-county in the provisioning of rural water services.

**Figure 3.2**  
Roles of Key Actors in the CBM Model of Rural Water Facilities (adapted from MWE (2011 p. 11))



### **Local Community**

In line with the Community Based Management (CBM) model, the *community* is responsible for the management and maintenance of their water facilities. Communities demand a water source, participate in planning towards the construction of the water source and to contribute Operation and Maintenance (O&M) funds for preventive maintenance, repairs and payment to the caretakers. See Table 3.2 for an overview of typical maintenance activities, minor and major repairs of boreholes. Each community elects a Water User Committee (WUC) that consists of 6-9 members (with at least 3 women) involving a chairperson, treasurer, caretaker, committee member and secretary. The WUC serves for two years, after which they need to be replaced by a new WUC with the support of the sub-county and village leaders. The community is expected to design rules and regulations regarding payment and the use of the water source (MWE, 2011; GoU, 2013).

**Table 3.2**

Typical Repairs of a Borehole (adapted from: MWE, 2011 p. 28)

<b>Maintenance</b>	<b>Minor repairs</b>	<b>Major repairs</b>
Clearing drains and surroundings	Repair of damaged parts outside routine service	Fishing of dropped pipes and rods
Maintaining fence	Replacement of damaged slow wearing parts (handle, chain, few pipes, rods, cylinders)	Desilting of borehole
Periodical checking and service of handpump	Repair of cracks to platform or drain	Repairs to borehole casing and screens
Periodical replacement of fast wearing parts (buckets, valves, etc.)		Replacement of platform and drain
		Replacement of rising mains

### **Private Sector**

The private sector in rural water supply is involved during construction and post-construction maintenance. Each financial year, private sector firms are contracted by the District Local

Government to carry out hydrological surveys and construction work. Private Hand Pump Mechanics (HPMs) are trained by the District to carry out routine maintenance and repairs and are paid by the community (GoU, 2013). Since 2011, the MWE of Uganda aims to increase the availability of technical support for major maintenance and repair by formalising the role of the private sector in a Public Private Partnership (PPP) framework through the implementation of Hand Pump Mechanic Associations (HPMAs). The HPMA regulates and coordinates HPMs in the district (Magara, 2013) and strengthens the position of the HPM through training sessions and improved access to the market (Triple-S, 2012). In 2014, the government decided to allow District Local Governments (DLGs) to contract the HPMAs as the first priority for maintenance and rehabilitation of water services. This development is expected to enhance the financial sustainability of the associations as it will not be solely dependent on payments by the community (Mirembe and Magara, 2014).

### **Sub-County Water Supply and Sanitation Boards**

Since 2014, the Ministry of Water and Environment (MWE) of Uganda has been piloting the inclusion of rural water points in the ‘Sub-county Water Supply and Sanitation Boards’ (SWSSB) (IRC/Triple-S, 2014b). The SWSSB was originally developed for piped water schemes in rural growth centres and due to its success (Mirembe, 2014), the government is looking to expand its function (MWE, 2014). The volunteer SWSSB, as piloted in two districts, consists of technical sub-county staff, Water User Committee (WUC) members and opinion leaders from the communities. They provide management support to WUCs and pool funds for Operation and Maintenance (O&M) at sub-county level. The WUC collects and remits water user fees to the SWSSB (in future they may send the funds through mobile money) and in the event of breakdown, the SWSSB informs the Handpump Mechanic Association (HPMA) and pays the association for the repair from the stored community fund. If the community lacks the funds for the repair, the board provides a loan. If successful, the District Water And Sanitation Conditional Grant (DWSCG) will be directly transferred to the sub-county to supplement funds for Operation and Maintenance (O&M) (Watsisi, 2013). Chapter 6.3 further elaborates on the SWSSBs.

### **Non-Governmental Organisations**

Non-Governmental Organisations (NGOs) or Civil Society Organisations (CSOs) mostly operate at grassroots level to implement rural water and sanitation programmes. Uganda hosts an estimated 200 NGOs that are active in service delivery and the Uganda Water and Sanitation NGO Network (UWASNET) registers 121 NGOs (MWE, 2012). The Local Governments Act (1997) requires NGOs to integrate their work plans in the District Three Year Development Plans.

### **Key Coordinating Bodies**

*The Water Policy Committee* assists and advises the Ministry of Water and Environment (MWE) to promote inter-ministerial and inter-sectoral coordination (GoU, 2008). *The Water and Sanitation Sector Working Group* (WSSWG) coordinates the policy and technical developments in the sector. The group consists of representatives from the MWE and other relevant ministries, development partners and representatives of UWASNET. The WSSWG plays an important role in the country's annual Joint Sector Reviews (JSR), which is an annual forum where stakeholders come together to discuss and plan sector developments. The WSSWG decides which plans will be formally endorsed (UWASNET, 2011 p. 5). *The District Water and Sanitation Coordination Committee* (DWSCC) operates at District Level. This committee, consisting of political leaders, relevant district departments and NGOs, coordinates and oversees the water and sanitation activities in the district (GoU, 2008; UWASNET, 2011).

### **The Sector Wide Approach**

Lastly, an important element in Uganda's water sector is the shift in 2002 from a project approach to a Sector Wide Approach (SWAp) to harmonise aid and strengthen the allocation of funds (O'Meally, 2011). The water reform processes in the 1990s increased the importance of the sector and attracted donor funding from agencies such as the World Bank, European Union, DANIDA, SIDA, UNICEF, Austria, DFID, France and Japan. While water coverage rapidly increased from 18% in the 1990s to 51% in 2001 (refer to Figure 3.3) (NWDR, 2005;

MWE, 2007), the aid provided in the water sector was fragmented, ignored local government systems and was insufficiently coordinated (O'Meally, 2011). Therefore the SWAp framework was initiated in 2002 and involved 1) leadership by the host country; 2) a single comprehensive programme and budget framework; 3) a formalised process for donor coordination, harmonisation and alignment of procedures for reporting, budgeting, financial management and procurement; and 4) efforts to increase the use of national/local systems with long-term capacity building for administration, programme design and implementation, financial management, monitoring and evaluation (Handley, 2009).

### **3.4 Challenges of Decentralised Service Provision in Uganda**

Although the Ugandan water sector is characterised by a strong sector policy and institutional framework (O'Meally, 2011), a number of authors (Francis and James, 2003; Green, 2010; Muriisa, 2008; Ojambo, 2010; Stein and Bickers, 1994; Quin et al., 2011) have raised concerns with the processes of decentralised service delivery, most notably the politicisation of the decentralisation process and insufficient fiscal decentralisation, the lack of competent staff and the lack of accountability and transparency within the local government.

First, the country has seen a rapid increase in district creation: from 34 in 1991 (Green, 2008) to 112 in 2016 (MWE, 2016). The formation of new districts has been subject to criticism as district creation further constrain already tight local government budgets and tend to strengthen the position and support for the president Museveni and ruling NRM party. With every new district new political and technical staff are hired and end up on the payroll of the government, potentially silencing and paralysing the opposition (Stein and Bickers, 1994; Green, 2010). Quin et al. (2011) describe how politics also influence rural water services delivery at district level. Their study in Uganda reveals that politicians at the district level tend to favour sub-counties that voted for them, leaving other sub-counties behind.

Second is the inadequate devolution of finances from the ministry to the district and from the district to the sub-county. Financial resources from the national government are often transferred through late with the result operations are delayed and sub-counties are often under-

resourced as districts tend to be reluctant to transfer money to the sub-counties (Quin et al., 2011).

A third concern is the lack of competent staff and sufficient human resources (Lockwood, 2004; MWE, 2008; Perry Jones et al., 2001; Quin et al., 2011). Quin et al. (2011) note that District Water Offices (DWO) are understaffed and do not meet the desired staff quota set by the MWE. Ojambo (2012) attributes the lack of competent government staff to the ongoing creation of new districts through which there are not enough trained and skilled people available who understand their roles in a decentralised system. In addition, local governments often lack the funds to pay allowances to extension staff – a prerequisite for government staff to travel to the field. As a result, extension staff tend to be unmotivated or resign (Quin et al., 2011).

A fourth challenge is the lack of accountability and transparency and corruption within local governments in Uganda. Ojambo (2012) argues that corruption at district level is partly related to delayed transfers of government funding. “By the time the money is received [at the district], the time for some of the planned activities would have passed” (p.86). Sending money back to the central government could affect future funding and therefore local governments make up project results to justify expenditures. Accounts of local government staff in the study of Quin et al. (2011), reveal a practice of reporting shallow wells as deep boreholes and counting NGO constructed water sources as district work. According to Muriisa (2008), low salaries of government officials - the salary of a graduate civil servant is around 210,000 UGX per month (USD 60) – are a reason for officials to misappropriate government funds.

Another vulnerable element of the decentralisation framework in Uganda is the powerful position of local politicians in comparison to district staff (Francis and James, 2003; Quin et al., 2011; Muriisa, 2008). Local politicians appoint the people within the District Tender Board (body that awards contracts) and the District Service Commission (body that appoints district staff). The members of these boards are not elected and Francis and James (2003, p.333) emphasise that “... successful tenderers are friends, relatives or protégés of the political class, or proxy companies operating on their behalf”. This is illustrated in the study of Quin et al. (2011), who write about a District Water Officer (DWO) that was forced to award a contract to the company of a local politician. Muriisa (2008 p. 93) reaches a grim conclusion: “[i]n the decentralised framework, I can rightly assert that there is decentralisation of corruption”.

### **3.5 Uganda's Rural Water Status: Access and Sustainability**

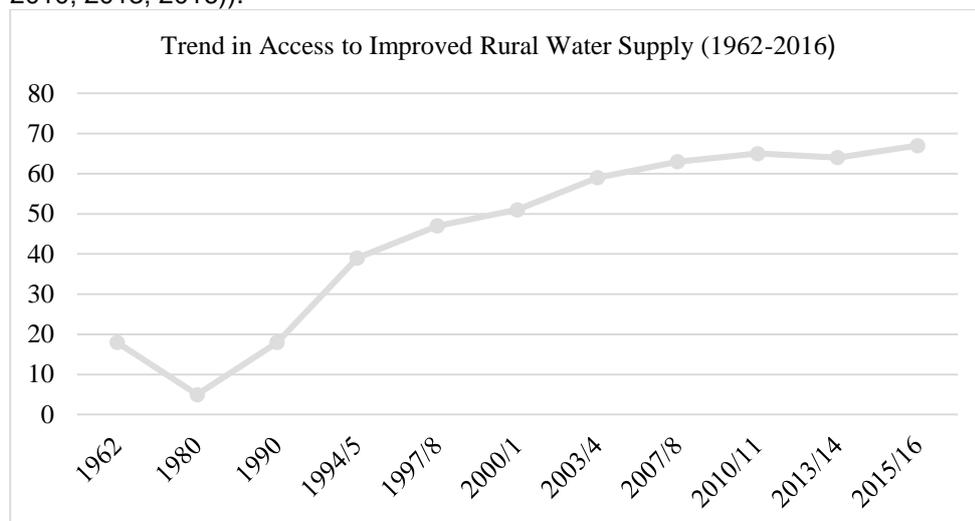
Accompanying the arrangement of the Sector Wide Approach (SWAp) framework in 2002, the government of Uganda considerably supplemented its funding for the water sector. Due to the government's political motivation to alleviate poverty (as set out in the Poverty Eradication Action Plan (PEAP)) by providing access to water, the government increased its budget to the water sector from 0.5% in 1997 to 2.8% in 2002 and 4.9% in 2004 (O'Meally, 2011). The increase in government support for the water sector was made possible due to the debt relief in 1998 that was granted by the Highly Indebted Poor Countries (HIPC) initiative. As a result, the government of Uganda decided to channel a large share of the previous debt payments to the water sector (O'Meally, 2011). During these years, access to water services in rural areas steadily increased, as Figure 3.3 demonstrates, and increased from 18% in 1990 to 67% in 2016 (MWE, 2016).

Despite the many years of commitment to improve access to water in rural areas, the political priorities of the government have shifted away from water provisioning (O'Meally, 2011). The latest versions of the PEAP – the National Development Plan (NDP) I and II for the periods 2010-2015 and 2015-2020 – underwent a radical change and prioritise an export-oriented strategy to increase economic growth and employment by investing in roads, energy, schools and water for production. Critics, such as Hickey (2005), Shinyekwa and Hickey (2007) and Williamson and Kizilbash Agha (2008) argue that the NDP is at the expense of the poor that have no access to basic social services and are now excluded from development programmes.

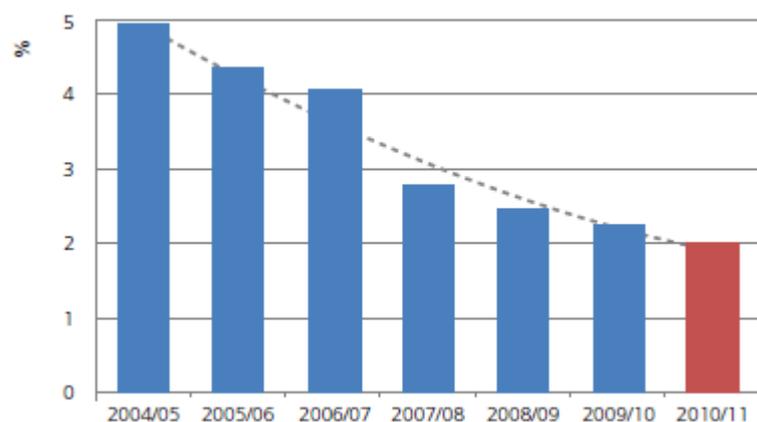
The consequences of the renewed focus in the NDP on economic growth are dwindling resources in the water sector (MWE, 2009, MWE, 2016) and a stagnation in rural water access. Figure 3.3 depicts the trend of access to improved rural water services in Uganda in the period between 1962-2016 and Figure 3.4 provides an overview of Uganda's national budget for the water sector (Danert, 2010 p. 28-30; O'Meally, 2011). In the end, Uganda did not reach its own national target of the Poverty Eradication Action Programme (PEAP), that aimed to achieve 77% water coverage by 2015. However, the Millennium Development Goal (MDG) no. 7 on water was realised five years before the deadline (UNDP, 2015b).

**Figure 3.3**

Trend in Access to Improved Rural Water Supply in Uganda, 1962-2016 (Sources: MWE (2007; 2008; 2010; 2013; 2016)).

**Figure 3.4**

Water Sector Share of Uganda's National Budget 2004/5 – 2010/11 (From MWE (2010 p.17))



\*After 2010/2011 the share for the Water Sector remained stable

The renewed focus on sustainability in the Sustainable Development Goals (SDGs), remind us that the effectiveness of rural water supply programmes should not only be judged in terms of improved access rates but also in terms of long-term and reliable access to rural water services. According to the Ugandan Ministry of Water and Environment (MWE, 2016), 14% of the rural water infrastructure is non-functional; considerably lower than the estimated one third non-functionality rate of rural water infrastructure in sub-Saharan Africa (Oxford/RFL, 2014). However, it is argued official figures over-report functionality (Burr and Fonseca, 2013) as

illustrated by the example of Kanungu District in south-west Uganda, where the ministry reported a functionality rate of 78% and the study of Koestler et al. (2010) revealed a functionality rate of 40%.

Due to questionable non-functionality rates, it is rather difficult to calculate the financial costs of handpump breakdown in Uganda. However, the estimated handpump non-functionality rate of one out of three in the sub-Saharan African region (Baumann, 2006; Oxford/RFL, 2014; RWSN, 2010), may serve as a basis to produce a general picture about the costs of handpump breakdown in Uganda. According to 2016 figures of the MWE, the country totals 46,158<sup>13</sup> handpumps. Thus, for the purpose of a general picture, I assume a non-functionality rate of one third. Further, I use the average implementation costs<sup>14</sup> of rural handpumps in Uganda (Harvey, 2003; Parry-Jones et al., 2001): \$5,000 for deep boreholes and \$2,500 for shallow wells fitted with an India Mark II or III handpump (the most common handpumps in Uganda). The calculation is:

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Capital costs deep boreholes:  $30,174 \times \$5,000 = \$150,870,000$

Capital costs shallow wells:  $15,985 \times \$2,500 = \$39,962,500$

Total capital costs:  $\$15,870,000 + \$39,962,500 = \$190,832,500$

Costs of 1/3 breakdown:  $\$190,832,500 / 3 = \mathbf{\$63,610,833}$

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From the educated guess above, the financial loss in terms of capital expenditures would total: \$63,610,833; equivalent to almost 4 times the annual rural water grant to the 112 districts in Uganda (MWE, 2016, Annex 7, p. 27). This figure excludes the usually unknown ‘software’ costs such as mobilising communities and community meetings (Harvey, 2003). So, the actual financial losses are likely to be higher.

It is against this background that the thesis critically evaluates the challenges of the CBM model and alternative approaches for sustainable rural water management. The next section introduces the case study area: Masindi and Kiryandongo districts.

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<sup>13</sup> This figure includes 30,174 deep boreholes and 15,985 shallow wells.

<sup>14</sup> excluding ‘software’ costs such as mobilising communities and community meetings

### 3.6 The Rationality of Witchcraft Beliefs

Up to this point in the context chapter, social and economic processes in Uganda were related to formal government reforms. The previous sections discussed the political turmoil in the country, the decentralisation efforts by the sitting NRM president, and the delivery and status of rural water services from the post-colonial era until today. This section turns its attention to the informal processes, rules, norms and beliefs that influence people's everyday lives in rural Uganda and African rural life more broadly.

While Uganda is internationally recognised for introducing macro-economic and public sector reforms and has made considerable economic progress, a range of authors such as, Jones (2009); Knighton (2005); Leopold (2005) and, Whyte (1997) point out that these achievements are poorly visible in the countryside and have, just like the erratic interventions of development agencies, a limited impact on the everyday lives of rural citizens (Booth, 2012; Ferguson, 2015). The state, Jones (2009) argues, operates outside the rural economy and does "... not reach much beyond the district capital" (p.2) as it functions on the basis of external financial resources and donor relations. In Uganda, taxes rarely exceed 10% of the district budget. Various scholars, such as the renowned Dambisa Moyo (2009), have warned against the effects of such enormous tax gaps, as it tends to limit accountability mechanisms of the government to its constituency, may silence the population and open the door to corruption.

To better understand accountability mechanisms at government level and to avoid a simplistic suggestion that African politicians and civil servants are a pack of knaves without any sense of morality, Chabal (2009) sheds light on the coexistence of formal and informal codes of accountability in African politics. Whereas formal codes of accountability are informed by western values, promoting democratic elections and the overall public wellbeing, informal accountability mechanisms are based on "... the morality of a tradition of reciprocal obligation" (p. 69). The existence, and the urgency to meet obligations of reciprocity is tied to the value that is attached to community membership. Chabal (2009) notes that without a community and a kin network (creating *a sense of belonging*), an individual loses its 'humanity' and a meaningful existence. The inextricable tie between an individual and a community is well illustrated with the African term 'ubuntu': *I am what I am because of who we all are*. In this context, accountability is understood in the way how one is able to meet the expectations of those who are represented. Chabal (2009): "what matters to people is how people in power discharge their obligations under existing systems of reciprocity" (p.51-52). Informal modes of

accountability have, therefore, often more grip on political processes than formal mechanisms. Equally within New institutional Economics, Douglass North (1992a) highlights that “[f]ormal rules may change overnight but the informal constraints cannot” (p. 13). In the event such informal obligations are ignored, people in powerful positions may lose their legitimacy and may be forced to account through accusations or extortions of witchcraft (Chabal, 2009).

The veil of witchcraft often greatly influences behaviour – from a local farmer to a national politician – due to fear of ‘bewitchment’ or the anxiety of witchcraft accusations (Golooba-Mutebi, 2005). The definition of witchcraft (what it means and entails), varies across the African continent and may even take different forms within a single locality (Sanders, 2003; Quarmyne, 2011). What witchcraft beliefs do share is the powerful influence of the ‘community’ and locality on people’s everyday lives and the ‘dark side’ of kinship wherein the ‘community’ in which an individual finds solace, trust and fellowship, might also be the one that inflicts harm and even death (Chabal, 2009; Dolan, 2002; Golobaa-Mutebi, 2005).

Witchcraft is forbidden by law in Uganda (Witchcraft Act 1957) and most African countries (Quarmyne, 2011). Nevertheless, witchcraft beliefs are omnipresent in African societies and permeate through social, economic and political domains. Although witchcraft is “part of the fabric of everyday village life” (Abrahams, 1994, p. 13), the meaning and impact of witchcraft is challenging to comprehend for ‘outsiders’ as the subject is often avoided in public debates and interpersonal conversations. Witchcraft is, however, a long standing topic of enquiry amongst cultural anthropologists (i.e. Douglas, 1967; 1970; Marwick, 1965; Mitchell, 1956; Moore and Sanders, 2001; Evans-Pritchard, 1937; Sanders, 2003, Turner, 1957) that have aimed to grasp its function, meaning and impact and have studied the roles, circumstances and motives of those involved through extended periods of ethnographic research.

From this wealth of research, I touch upon a number of insights from the reviewed literature, being the seedbed for witchcraft and its possible functions. Witchcraft appears to thrive in poor communities and, ironically, often thwarts economic prosperity as a result of it (Geschiere, 1988; Golooba-Mutebi, 2005). Witchcraft is often associated with dispute and jealousy about economic disparities (Baptista, 2010; Derman and Hellum, 2007; Dolan, 2002; Golooba-Mutebi, 2005; Katsi et al., 2007; Pieterse, 2014). Economic differences within a locality tend to feed the expectation that affluent individuals must take care of the less well-off households (Golooba-Mutebi, 2005). This notion is also observed by Chabal (2009) who highlights the dominant public virtue to recirculate, and not to accumulate, wealth. He explains that business

people may, therefore, struggle to achieve economic efficiency as they are expected to generously redistribute their wealth for the good of the locality in which they take part. Although witchcraft is generally used to close the path to affluence, wealthy people are often suspected to have used the same powers to prosper (Golooba-Mutebi, 2005).

In South Africa, Niehaus (1993) observed an increase of witchcraft in those communities with high migration patterns. The case study areas Masindi and Kiryandongo districts also experience a high influx of migrants and host a multi-ethnic population with 56 different languages, as further detailed in Section 3.7. Niehaus (1993) found that whereas previously witchcraft was used *between* communities and not among kin to avoid the disruption of close social relations, nowadays, witchcraft was taking place *within* communities as the risk of damage to interpersonal relationships was lessened due to trends of extended family breakdown. Niehaus findings, showing the heyday of witchcraft in crumbled communities, are similar to the insights of early anthropologists (Evans-Pritchard, 1937; Turner, 1957; Mitchell, 1956; Marwick, 1965) who also showed that witchcraft may rise in societies with weak and abrasive social relations. Chabal (2009) relates the migration patterns also to the recent upsurge of the Pentecostal church in Africa. Equally, Jones (2009) observes the rising influence and significance of the Pentecostal church in rural Uganda. Chabal (2009) argues that the collapse of the community results into "... congeries of individuals who do not belong [...], and who must find other groupings in order to regain their 'humanity'" (p.47). Membership of the Pentecostal church and the related move away from the norms and codes of conduct prescribed by the community, is expected to protect people against the dangers of witchcraft (Chabal, 2009; Jones, 2009).

Witchcraft serves a number of functions<sup>15</sup>. It is meant to explain the inexplicable, such as misfortune and illness (Pritchard, 1937). It is thereby also used to treat "illness, trauma, death or simply bad luck" (Chabal, 2009 p.76). As described earlier, witchcraft is used for accountability purposes – to force politicians to comply with their obligations of reciprocity – and is used as a social leveller to impose the distribution of resources from the wealthy to the poor (Chabal, 2009) and to eliminate potential rivals in the run for economic gain (Dolan, 2002). On the one hand, witchcraft is used to keep social control and to prevent change (Moore and Sanders, 2001) and on the other hand, witchcraft is employed as a vehicle to propel change and

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<sup>15</sup> Two separate discourses may be discerned. One that views witchcraft as a response and a critique to the project of modernity and the second that views witchcraft as part of modernity related to traditions of the locality (Sandors) .

to correct social imbalance. The latter may well be illustrated by feminist studies, such as that of Catherine Dolan (2002). In her study in Kenya, she describes how horticulture practices for a French bean production company improved the economic position of women, but as men own the land and dominate in the economic sphere, they risked to losing their economic gains in favour of their respective husbands. Women resorted to the powerful weapon of witchcraft to challenge the legitimacy of prevailing gendered roles. Although some argue that men and women are just as much involved in witchcraft (Pieterse, 2014), women are often more associated with witchcraft due to their marginalized position (Dolan, 2002 p. 664).

Returning to the subject of this thesis – water is also a highly gendered subject. Women in Uganda are responsible for most of the water related tasks in the household (Baguma et al., 2013). As the collection of water from a borehole is a time consuming (and heavy) task it tends to negatively affect the economic productivity of women. Meanwhile, women are often expected to budget for the water user fee as they dominate within the water domain (Naiga et al., 2015). Due to the relevance of ongoing access to water for women, the donor community has advocated their increased participation in water related matters since the 1990s (as embodied in the 1992 Dublin principles). Although men traditionally fill in public positions and dominate in decision-making processes, women acquired permanent seats in the Water User Committees, often as the treasurer, due to the efforts of the donor community and local water project implementers. Nevertheless, as Chabal (2009) notes, the representation of women in these formal committees may not change their actual level of participation.

Given the emphasis of rural water programmes to draw on local knowledge and practice (as described in literature Chapter 2), the highly gendered norms related to accessing and managing water resources and the fact that water control is subject to struggles over power, it is remarkable that the role of witchcraft on shaping rural water management outcomes has not been given much attention in the literature. Only a few studies mention how the fear over witchcraft accusations and extortions of witchcraft, respectively disable or enable individual agency to influence the course of rural water management arrangements. The study of Schwieger (2015) in Namibia, describes that disgruntled poorer households are unable to enforce cross-subsidisation arrangements for accessing water with their wealthier neighbours due to fear of receiving accusations of practising witchcraft. Derrman and Hellum (2007) in Zimbabwe write that witchcraft was used against people that tried to prevent free-riding and stopped them from accessing water. Katsi et al., (2007) found the reverse in a case study in Zimbabwe, and demonstrate that people used witchcraft against those whose refused to pay for

accessing water. In Mozambique, Baptista (2010) observed cases of witchcraft (by women) to obstruct an outside intervention for a higher level of water service in the village.

This thesis points at the significance of witchcraft and the role of women in shaping rural water management outcomes in the case study area. Because the examination of cosmological worldviews was not part of this study, future in-depth ethnographic study is warranted in order to develop a comprehensive understanding on the role of witchcraft beliefs in rural water programmes and how witchcraft and super natural beliefs guide rules on resource use, structure human interaction processes and rural water management outcomes.

### **3.7 Case Study Area**

This research took place in Masindi and Kiryandongo districts in mid-west Uganda. The districts are located at a distance of about 250 kilometres from the capital city Kampala. Refer to Figure 1.1 for the study area and the location of the researched villages. In 2010, the two districts were carved out of Masindi. Both districts are endowed with surface water, wetlands and rainforests and border Murchison National Park. They host a multi-ethnic population with 56 different languages scattered over rural villages, rural growth centres, towns and a refugee camp in Kiryandongo (Kiryandongo District Local Government, 2013). Masindi consists of 7 sub-counties and 201 villages and Kiryandongo entails 4 sub-counties and 228 villages. The districts are at an altitude of 1,000-2,000 m above sea level and receive an estimated annual precipitation of 1200 mm. Rainfall is bi-annual and allows the region to have two planting seasons. Despite the high average rainfall in the area, two sub-counties bordering the east of Masindi and the south-east of Kiryandongo district experience water shortages, especially during the dry season (Masindi District Local Government, 2009). The main economic activity in rural mid-west Uganda is subsistence farming, depending on family labour. Common crops are potatoes, maize, cassava, peanuts and greens and the largest cash crops in the area are maize and sunflower. Households in the area are commonly large, hosting an average of 6-9 individuals (UBOS, 2014b). The average monthly household income in the area is 185,000 UGX (USD 36) and an estimated 21.4 percent of the population lives below the poverty line of USD 1 per person per day (UBOS 2010).

Access to the study area was generated through close partnership with The Water Trust (TWT) that operates in Masindi and Kiryandongo districts. Refer to methodology Chapter 4.3 for a comprehensive description of TWT and my roles in the research process. From 2012-2014, when I was the Programme Manager of TWT, I initiated the development of the *CBM-lite* model (see Chapter 6.3.2 for a detailed description of the *CBM-lite* model and Chapter 7 for the development and implementation process of the alternative rural water management model). During this period, public support for trialling *CBM-lite* was gauged in six villages with Shallow Hand Dug Wells (SHDWs) in Kigumba sub-county of Kiryandongo district. Refer to Figure 3.5 for the location of the *CBM-lite* villages and the villages that were initially included in the feasibility study of the pilot project.

The *CBM-lite* model has been piloted in four villages in Kiryandongo district. Mpumwe, a relatively large village of 297 households covering three sub-villages with six<sup>16</sup> handpumps. Nyakatugo; located close to the town of Kigumba with 132 households and three handpumps. Most of the households in this village were engaged in business activities and relatively more affluent than the households dependent on subsistence farming in the other more remotely located pilot villages. A few households in Nyakatugo were connected to piped water from the Ugandan National Water and Sewerage Company (NWSC). Yet, due to regular power cuts in the area these households still used water from the village handpumps on a regular basis. Mboira II; a poor immigrant village of 147 households with two handpumps and a protected spring. Lastly, Nyakabette II; a large village of 264 households with three handpumps.

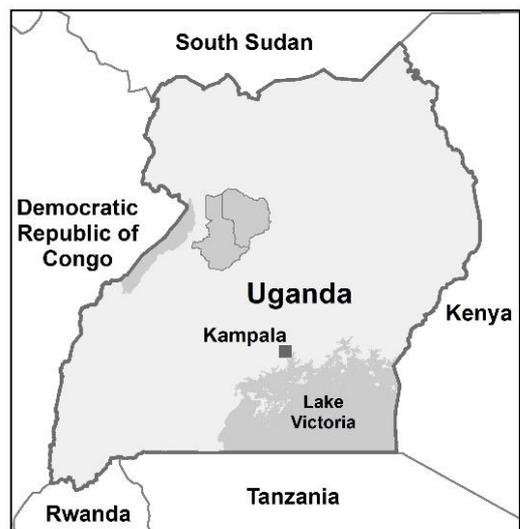
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<sup>16</sup> In Mpumwe village, two water sources (constructed by the local government) were not included in the pilot project. They were non-functional and vulnerable to poor water quality due to their location in a swamp area.

**Figure 3.5**  
Case Study Area: CBM-*lite* Pilot Villages



- Pilot village
- Other village
- District Capital
- District boundary
- Kigumba Sub-county
- Major roads



### 3.6.1 Colonial History of Masindi and Kiryandongo Districts

Masindi and Kiryandongo lie at the heart of the Bunyoro region which was once the biggest and most important kingdom of East Africa before Great Britain occupied the country in 1894. Pre-colonial Bunyoro covered an estimated 13,000 square miles and included extensive lands to the west of Lake Albert and the Semliki river and Tooro and Busongora region as depicted in Figure 3.6. The region was endowed with rich natural resources and controlled lucrative ivory trade routes. The Bunyoro had a centralised government system, run by the king of Bunyoro – the Kabaleega (Doyle, 2006).

It is argued “... that nowhere else in east Africa was the introduction of colonialism so painful as in Bunyoro” (Doyle, 2006 p.91). The British conquest started with the war against the Kabaleega who refused to submit to British rule and ended with the dismemberment of the Bunyoro region. In 1893, the British colonisers gave large parts of their conquered southern Bunyoro territory to the Buganda kingdom (refer to Map 3.6) – which had been a long-time enemy of the Bunyoro kingdom. In response, from 1894 until 1899, the Bunyoro fought a fierce guerrilla war against British occupation and the British allies. The war resulted in high Bunyoro casualties due to unequally matched sides. The fields and the plantations of the Bunyoro were destroyed and, where once the kingdom was enriched with cattle, during the war most of it was killed or confiscated by the British. In these years, the region was hit with drought and epidemics such as the tsetse fly (sleeping sickness), killing more cattle and causing people to flee their homes. In 1899, the Kabaleega was captured, mutilated and expelled to the Seychelles (Doyle, 2006; 2006b).

After the forced surrender to British rule, one third of the Bunyoro region was given to the Buganda and although figures are lacking, many more Bunyoro were killed in these regions. In the remaining Bunyoro region, representatives of the Buganda kingdom were stationed by British officials as chiefs. Because the Buganda chiefs looked down on the Bunyoro and had no interest in serving the needs of the population, the area failed to recover. Bunyoro was in a crisis and faced famine but was heavily taxed and farmers were forced to grow cash crops. Even in the late colonial period, Bunyoro was one of the most backward districts of the protectorate and for a long time, the attitude of the Bunyoro towards the Buganda and the British has been extremely hostile (Doyle, 2006; 2006b).

**Figure 3.6**

Areas Transferred from Bunyoro Region to Buganda in 1893 (Source: Bunyoro Kitara Kingdom, date unknown)



### 3.6.2 Rural Water Context of the Case Study Area

Safe water in rural villages in Masindi and Kiryandongo districts is extracted from protected springs, shallow wells and deep boreholes. Refer to Table 3.3 for an overview of the water resources in the case study area. At the time of the study, five Non-Governmental Organisations (NGOs) in Kiryandongo and two NGOs in Masindi were involved in rural water and sanitation projects.

The handpumps in Masindi and Kiryandongo districts installed by the local government are primarily India Mark II or III (also referred to as U2 and U3), whereas those installed by the case study NGO The Water Trust (TWT) are Consallen handpumps. Although the Consallen handpump was vigorously promoted by UNICEF in 1983, the pump is nowadays only installed

by TWT and the Busoga Trust<sup>17</sup> (a local NGO in western Uganda) who use the pumps due to its high quality<sup>18</sup>. The Consallen pump is corrosion resistant as it uses polyethylene rising mains and stainless steel rods; qualities that make Consallen more robust than its India Mark II and III counterparts.

Because there are relatively few Consallen handpumps in Uganda, the spare parts of the Consallen pump are sold directly from the NGOs offices. Refer to Appendix 3.1 for a graphical image of the Consallen and India Mark II handpumps.

**Table 3.3**

Overview Water Resources in Masindi and Kiryandongo district (from MWE, 2016; UBOS, 2014)

	<b>Masindi</b>	<b>Kiryandongo</b>
No. of protected springs	384	15
No. of deep boreholes	214	301
No. of shallow wells	487	250
*% Rural population access to water	94%	74%
*% Functionality of rural water sources	90%	85%
*% Active Water User Committees	77%	87%
District Grant 2015/6	467,502,642 UGX (132,027 USD)	628,396,962 UGX (177,465 USD)

\*Similar to the comment made in Section 3.6 about ‘Uganda’s Rural Water Status’, the official figures may be lower in reality.

### 3.7 Concluding Remarks

Much of the literature praises the water reforms in Uganda: Robinson (2002 p. 1) notes they are seen “by independent observers” as “the most dynamic and successful sector reform processes in sub-Saharan Africa” and O’Meally (2011 p.1) asserts that Uganda has made, “major strides in sector coordination and performance”. While Uganda has indeed greatly improved access to rural water services over the last 2,5 decades, nowadays the declining funding levels are “only sufficient to match the annual population growth in the rural areas” (MWE 2013, p. 64).

<sup>17</sup> Before TWT gained an independent NGO status in 2012, it was part of the Busoga Trust.

<sup>18</sup> Despite the good reputation of the Consallen handpump, politics and finances played a role in the decision of the Ugandan government and UNICEF headquarters to pursue with the India Mark handpumps (Parry-Jones et al., 2001)

The increasing pressure on existing rural water facilities increases the concern for ‘sustainability’ and the assurance that rural communities have long-term and reliable access to water services. This chapter has shown the good intentions of the Ugandan government to ensure the sustainability of rural water services. However, it remains to be seen whether the ‘good’ intentions equal ‘good’ outcomes, i.e. long-term and reliable access to rural water services. Against the backdrop sketched out in this chapter and literature Chapter 2, the thesis investigates the outcomes of CBM and the *CBM-lite* model in the case study area, Masindi and Kiryandongo districts, in mid-west Uganda.

The next chapter describes *how* the research was undertaken.

# Chapter 4

## Methodology and Methods

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### 4.1 Introduction

This chapter describes the methodology used in this study. The previous chapter reported on the research context and provided an historical, political and socio-economic background of Uganda, the relevant policies related to rural water management and an overview of the research area Masindi and Kiryandongo districts. As I highlighted in the previous chapter, it is important to report the research methods in their context (Fisher, 2008; Flick, 2006).

In literature Chapter 2, I identified a controversy in the literature, namely disagreement on the root causes of handpump breakdown and the end-goal of sustainable rural water services and diverging solutions for addressing the downtime of rural water infrastructure. This thesis examines the handpump non-functionality problem from the angle of the Community Based Management (CBM) model that promotes user payment and community control and guides the Operation and Management (O&M) of rural water facilities in developing countries. Refer to the introductory Chapter 1.3 for the research aim and objectives of the thesis.

This chapter describes the research strategy, design and methods used for the empirical research objectives 2 – 4. The structure of this chapter is as follows:

- Section 4.2 describes the overall research strategy of the study and provides an overview of the major themes discussed in this chapter.
- Section 4.3 reflects on my role in the research process and the origin of the research project.
- Section 4.4 reports on the research design used in the study and explains how the study designs are connected to the proceeding empirical chapters and research objectives.
- Section 4.5 sets out the sampling method.
- Section 4.6 explains how access to the study area was gained.
- Section 4.7 provides a detailed overview of the research methods

- Section 4.8 proceeds with the research ethics;
- Section 4.9 outlines the study analysis;
- Section 4.10 draws attention to the sources of error and bias in the research and,
- Section 4.11 set out how the thesis evaluated ‘sustainable’ rural water management.
- The chapter closes with a set of concluding remarks in 4.12.

## 4.2 Qualitative Research Strategy: an Overview

The discussion on the merits and demerits of qualitative and quantitative research represent a long-standing debate in science (Bryman, 1988; Denzin and Lincoln, 1994; 2000; Hammersley, 1992; Hindess, 1973; Patton, 1990; Marsh, 1982; Wilkinson and Kitzinger, 2000). For the purpose of this chapter, I explain my philosophical views about the nature of reality and my positionality on the qualitative-quantitative spectrum.

This study is an evaluative inquiry of the Community Based Management (CBM) approach for rural water sources in Uganda. The thesis uses a predominantly qualitative research design because it aims to gain a holistic and in-depth understanding how the CBM model impacts on the maintenance of rural water sources and ultimately their long-term access. Within this research field, I position myself as a “‘weakly constructivist’” (Brown, 2008 p. 115) that, similar to constructivists, approaches social reality as being unconsciously and consciously co-constructed by individuals that interact and give meaning to their world (Byrne-Armstrong et al., 2001) but argues that policy arrangements can be modified to improve the outcomes of natural resources management practices. I am therefore interested in the daily practices, norms, worldviews and social interrelationships of local communities and how they impact on the way rural water sources are managed and, how and why actors in the rural water sector may influence the way rural water management policies are (re)shaped. Yet, and along with a positivistic worldview, I believe that rules and policies can influence and direct human behaviour (Lindenberg, 2012). While the study has an emphasis on qualitative research methods, I have used a mixed method approach to complement the qualitative and in-depth data with multiple surveys (Mason, 1996). In turn, the qualitative data was used to interpret the outcomes of the surveys.

This thesis heavily draws on insights from critical institutionalism and the notions of the role of power, history, context and identity (Cleaver, 2012; Cleaver and de Koning, 2015). Nevertheless, its prime focus is to systematically and empirically evaluate the CBM approach by investigating how its key fundamentals – user payment and community control – play out in Masindi and Kiryandongo districts. To this end, the study predominantly adheres to the policy prescription in developing countries that requires users to pay for their own water services (how much and for what aspects will be described in Section 4.11). This body of work does therefore not adopt the social justice lens prevalent in critical realist and pragmatic studies that i.e. may question the impact of enforcing user payment on a pro-poor agenda (Charmaz, 2016; Chowns, 2014; Denzin, 2015; Mertens, 2009; Morgan, 2014) but aims to unravel how reliable access to rural water systems can be safeguarded in a user pays era.

The study has been the result of an iterative research strategy where data collection was alternated with theory (Bryman, 2001; Patton, 2002). This approach advanced my understanding about the research population and the wider context. Moreover, the longitudinal element in the research process enabled the assessment of differences over time and allowed the generation of a ‘richer’ case study description. The various fieldwork periods permitted me to critically reflect on multiple concepts and their consequences on rural water management outcomes, to verify the data and obtain saturation of data collection (Miles and Huberman, 1994), to establish a trusted relationship with my respondents and to keep track of the developments in the in-depth studied villages, the rural water sector in Uganda and the (practitioner) literature.

To study rural water management practices in Masindi and Kiryandongo districts in mid-west Uganda, the thesis adopted three research designs: the cross-sectional research design, action research and the critical case study design with a longitudinal element. Refer to Table 4.1 for an overview of the timetable of these research strategies and my professional roles during the research process. The combination of these three research designs have, I believe, enabled this study to go beyond a descriptive account of ‘what happened’. By translating and investigating the ‘what’ to the ‘how’ and ‘why’ (Rowley, 2002), this thesis hopes to advance the water sustainability debate in both academic and practitioner circles.

For securing methodological rigour, two key concepts – validity and reliability – were given due consideration during data collection, management and analysis. View Table 4.2 for their definitions. The following sections of this chapter explicitly describe the steps undertaken in

this study and refer to the concepts of reliability and validity to demonstrate how rigour in this study was aimed for.

**Table 4.1**

Timetable of Action Research, Cross-Sectional Research and Critical Case Study (Author's Construct)

	Key Dates	Purpose	Role
Action Research	July 2012 – January 2013	Development CBM- <i>lite</i> model	Programme Manager TWT
	January – July 2013	Feasibility study CBM- <i>lite</i> model	Programme Manager TWT
	August 2013	Start implementation CBM- <i>lite</i> model in 3 villages	Programme Manager TWT
Cross-sectional research	October 2013 - January 2014	Data collection CBM and CBM- <i>lite</i>	Programme Manager TWT and PhD researcher
	11 – 25 June, 2014	Data collection CBM and CBM- <i>lite</i>	PhD researcher
	19 October – 20 November, 2014	Data collection CBM and CBM- <i>lite</i>	PhD researcher
Critical case study	12 March – 5 April, 2015	Data collection CBM- <i>lite</i>	PhD researcher
	19 October – 20 November, 2015	Data collection CBM- <i>lite</i>	PhD researcher

**Table 4.2**

Validity and Reliability (From: Silverman, 2005 p. 210)

#### *Validity*

“By validity I mean truth: interpreted as the extent to which an account accurately represents the social phenomena to which it refers” (Hammersley 1990, 57).

#### *Reliability*

“Reliability refers to the degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions” (Hammersley 1992, 67).

### 4.3 The Role of the Researcher

This thesis is rooted in my working experiences in northern and mid-west Uganda from 2011-2014. In northern Uganda, I managed the Water, Sanitation and Hygiene (WASH) programme for ZOA (an international relief and rehabilitation organisation). From June 2012 until January 2014, I was the Programme Manager for The Water Trust (TWT) – a small Ugandan WASH Non-Governmental Organisation (NGO) with an expertise in the construction of Shallow Hand Dug Wells (SHDWs). TWT comprised of fifteen field staff, an Executive Director based in the United States (US) and a six headed Board. The organisation was founded by American philanthropists, with a background in the finance sector. The organisation's funding stream was largely secured through private donations derived from the social network of the board members in the US.

By the time I started working at TWT, I was intrigued by the way communities managed their water resources: how the principles of CBM were adopted and enforced and the differences of water management processes between communities. In both northern and mid-west Uganda, I observed communities struggling to maintain their water sources (such as minor repairs, maintaining the fence and clean surroundings), let alone carry out preventative maintenance, and contribute or enforce user payments. In the cases where the handpump had broken down, communities often lacked the cash on hand to pay for the repair. As a result, the Community Development Officers (CDOs) of TWT (and those of ZOA in northern Uganda) were mainly tasked to mobilise community meetings to facilitate new Water User Committees (WUC) elections, re-train the WUCs and remind the communities about the use of paying upfront water user fees.

From August 2012, I started to use the weekly staff meetings to discuss the difficulties communities were facing in maintaining their water sources. Gradually, these staff meetings became a platform to collectively brainstorm how the raised challenges could be addressed and what TWT could do to facilitate improved maintenance of rural water facilities. Meanwhile, I engaged with local government staff, other NGO staffs and community members during field visits to understand their problem analyses and proposed ways forward. In this period, that almost lasted 12 months, I spearheaded the development of an alternative rural water management model; known as *CBM-lite*. Prior to a feasibility study in six villages, the *CBM-lite* model was piloted by TWT in three (and later four) villages in August 2013. Three months

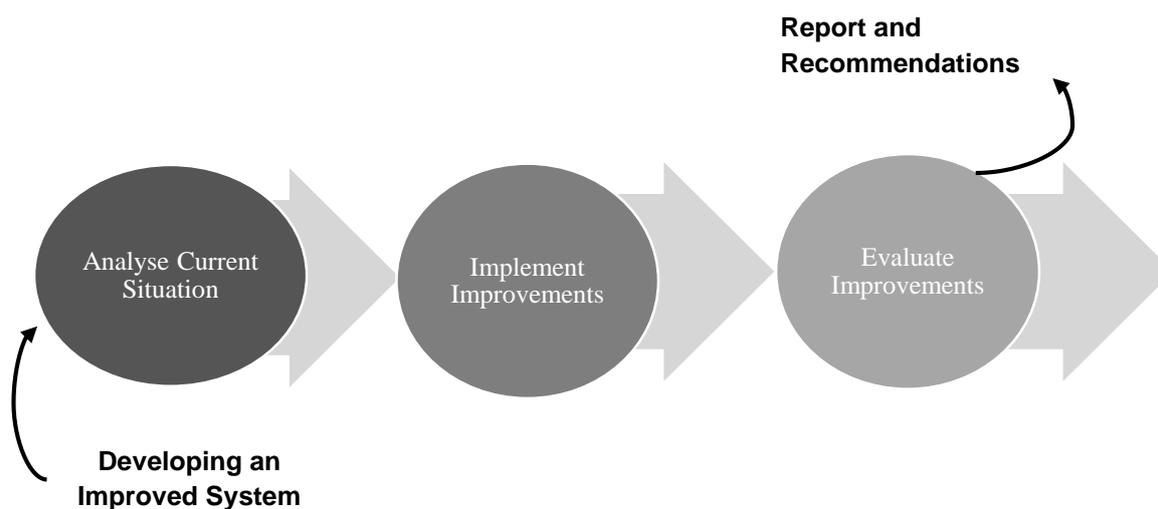
later, in October 2014, I started as a PhD researcher at the University of Portsmouth that allowed me to study the CBM approach and the CBM-*lite* innovation in-depth.

#### 4.4 The Research Design and the Structure of the Thesis

This thesis involves three stages that are critical for developing an improved system, refer to Figure 4.1 (Piggot-Irvine, 2006). The study's research objectives are closely aligned to these three stages. Table 4.3 shows the structure of the thesis and indicates the research designs used per research objective.

**Figure 4.1**

Three stages for continued improvement (adapted from Piggot-Irvine (2006 p. 488))



Following the literature review in Chapter 2, the first empirical Chapter 5 analyses the outcomes of the current CBM model through a cross-sectional study. The second empirical Chapter 7 reflects on the implementation process of the CBM-*lite* model; an alternative rural water management model that was the result of action research undertaken during my service for the NGO TWT. The third empirical Chapter 8 critically reviews the outcomes of the CBM-*lite* model in four case study villages. The concluding Chapter 9, brings the findings and

interpretations of the different chapters together and provides relevant policy and academic recommendations.

**Table 4.3**

Structure Thesis: Overview of the Research Objectives and Employed Study Designs

Research objective	Research design	Chapter
1. Examine the underlying ideologies and theoretical underpinnings of the CBM model.	Literature review	Chapter 2
2. Evaluate the outcomes of community based managed water sources in mid-west Uganda.	Cross-sectional research design	Chapter 5
3. Analyse the risk perceptions of community members, NGO staffs, and local and national government officials about the introduction of an alternative rural water management model – referred to as <i>CBM-lite</i> .	Action research	Chapter 7
4. Evaluate the outcomes of the <i>CBM-lite</i> model in four pilot villages in mid-west Uganda.	Critical case study	Chapter 8

The **cross-sectional research design** was adopted to address research objective 2 that aims to evaluate the outcomes of the CBM model. The purpose of a cross-sectional research design is to estimate a certain prevalence within a given population at one point in time (Levin, 2006; Mann, 2003; Olsen and George, 2004). This thesis selected the cross-sectional research design to compare and contrast the outcomes of the CBM model and rural water management practices across 100 communal water sources in Masindi and Kiryandongo Districts. These water sources were examined to learn about community practices and attitudes towards Operation and Maintenance (O&M). Cross-sectional studies are descriptive in nature, and while most cross-sectional research designs use surveying techniques only (Merriam, 2009; Silverman, 2005), this study employed a mixed-method approach to understand the outcomes of the surveys and to establish cause and effect relationships. One of the criticisms levelled at the cross-sectional research approach is that it is only a snapshot at one point in time (Levin, 2006; Olsen and George, 2004). To prevent a narrowed perspective, the study adopted a longitudinal element by drawing on previous observations and past events of the research participants and by conducting the study through intervals over a period of two years from October 2013 – October 2015.

The third research objective – an analysis of actors’ risk perceptions on the CBM-*lite* model – has been addressed by **action research**. Action research aims to address ‘real life problems’ and aspires to bring about change in a participatory manner (Sagor, 1992). It includes a cycle of data collection, analysis, reflection and action and involves the people that implement and investigate the change (Laws et al., 2003 p. 339). Action research is perceived as a way to bridge the gap between theory and practice (Ferrance, 2000; Masters, 1995). While the approach gained popularity in the 1970s, especially in education and health, it is also subject to criticism and downplayed as “unscientific and the work of amateurs” (McFarland and Stansell, 1993 in Hansen and Borden, 2006 p. 48). This thesis voices the PhD researcher wherein I *reflect* on the steps undertaken during the action research process and the resultant findings. Section 4.10 reflects on the disadvantages of my dual role as practitioner and PhD researcher.

The fourth and last research objective, that aims to understand the implementation process and the outcomes of the CBM-*lite* pilot in four villages in Masindi and Kiryandongo districts, has been studied through **the case study research design**. The case study design is “... useful in providing answers to ‘How?’ and ‘Why?’ questions” (Rowley, 2002 p. 16) that may remain unanswered in *a priori* theory and sweeping statistical surveys. I agree with Flyvbjerg (2001; 2006) that in order to gain an understanding of complex issues such as every day social practices and i.e. the role of power relations, an intensive and detailed case study allows the researcher to immerse in, and, better grasp the study context. As the famous anthropologist Clifford Geertz (1973 p.5) formulated: “Man is an animal suspended in webs of significance he himself has spun, I take culture to be those webs, and the analysis of it to be therefore not an experimental science in search of law but an interpretive one in search of meaning”.

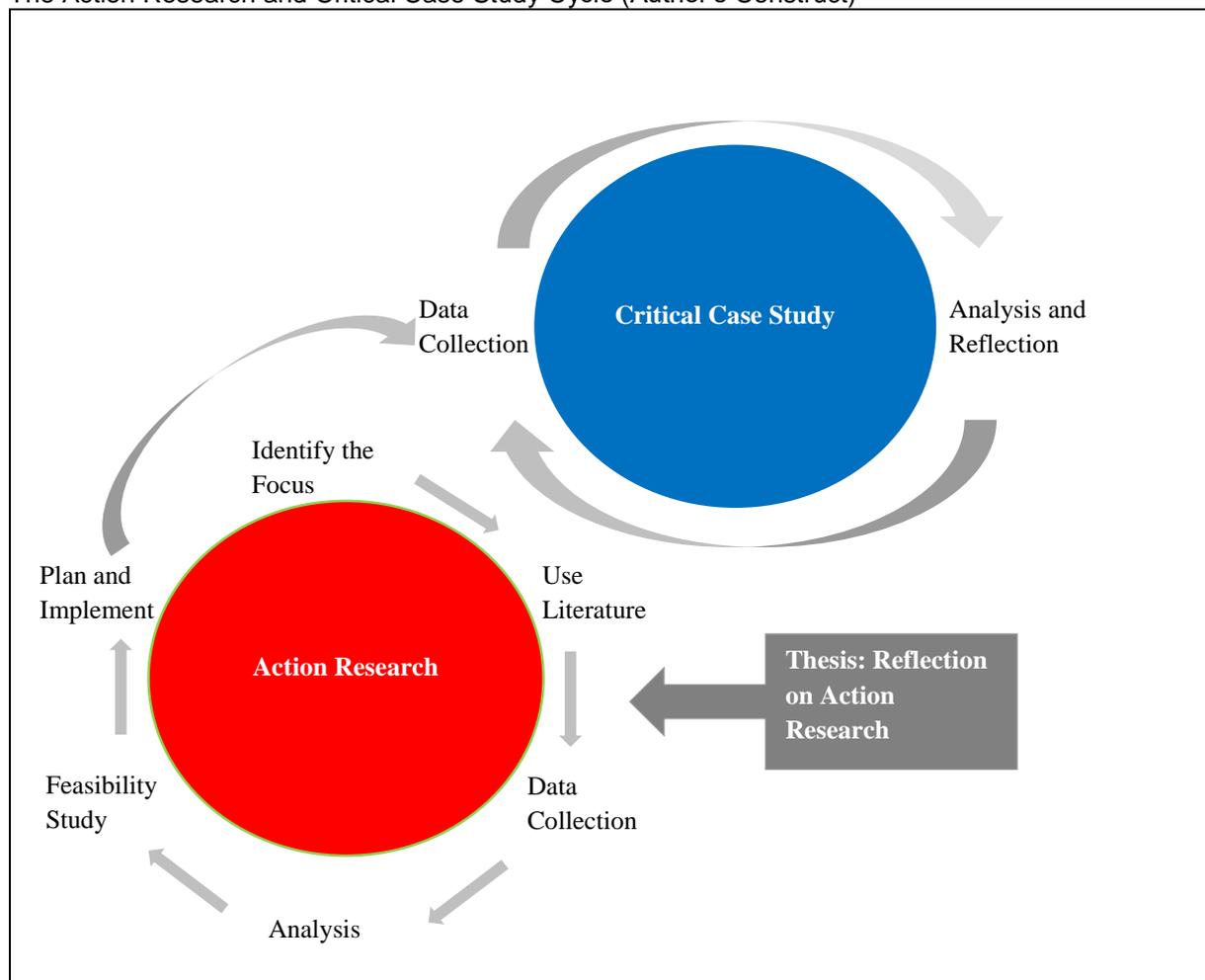
As with every research strategy, there are limitations with the case study design. An important criticism about the case study design has been directed at its limited focus and its incapability to make generalisations to a wider population (Bryman, 2001; Yin 1984). Flyvbjerg (2001) and Ostrom (2005) argue, however, that it is possible to generalise on the basis of a case study by strategically selecting ‘critical cases’. Section 4.10 will elaborate on another important criticism about the case study design which is the risk of researcher bias. The critical cases in this study are the villages where TWT implemented the CBM-*lite* pilot. The pilot villages are typical rural communities in Kiryandongo district where both TWT and the local government constructed water sources. The selection of four villages allowed me to compare and contrast the outcomes of the CBM-*lite* pilot in the same periods of time and identical geographical contexts (Bryman, 2001) and to avoid the risk of ending up with an ‘extreme case’ (Flyvbjerg, 2001). Yet, it is

argued that various case studies may limit the extensiveness of the data collection (Bryman, 2001; Dyer and Wilkens, 1991). To ensure sufficient and in-depth material, the critical case studies were studied at multiple intervals in time (refer to Table 4.1).

The longitudinal element to the case study was critical to this research and enabled me to keep track of the developments of the CBM-*lite* pilot and processes of institutional change. I believed that shorter field visits were more valuable than one extended fieldwork period as, in the words of North (1995 p. 25), community dynamics and institutional processes “... change only gradually” and may therefore rather be understood over a longer period of time.

Figure 4.2 depicts the steps undertaken during the action research and shows the relationships between the action research and case study phase.

**Figure 4.2**  
The Action Research and Critical Case Study Cycle (Author's Construct)



## 4.5 Sampling

Because Uganda and Masindi and Kiryandongo districts were already predetermined (as described in Section 4.2), sampling took place at three levels: villages, water sources and respondents. There are a range of sampling strategies, including random and purposive sampling that are either non-stratified or stratified and in the case of the latter, are proportional or non-proportional (Cox, 2015). It is often argued that random sampling is a more reliable and valid sampling technique and therefore the best way to generalise research findings over larger subsets of the population (Bryman, 2001; Cox, 2015; Patton, 1990 Silverman, 2005). Yet, random sampling was not feasible in this study as: 1) the villages and water sources were accessed through either TWT or the local government, 2) it was impossible to randomly select respondents at village level (household registers were not always available and random selection would consume time and therefore embody a costly undertaking), 3) the research involved a case study analysis, including observations that cannot be randomly selected and, 4) key informant interviews (Cox, 2015).

This thesis includes a total of 117 water sources in 103 villages. The sampling method that has been adopted in this study has been purposeful, in particular purposeful random sampling and purposive sampling. The strategy of purposeful random sampling is a type of random sampling but using small sample sizes (Flick, 2006; Merriam, 2009; Silverman, 2005). In the cross-sectional research design, purposeful random sampling was used for the selection of TWT water sources for the Water User Committee (WUC) survey (Section 4.6.5 provides an overview of the surveys in the research and Appendix 4.1 provides a detailed description of the WUC survey). From the TWT database, consisting of 165 water sources in October 2013, a total of 84 water sources in 84 different villages were randomly selected to take part in the WUC survey. The other water sources in this thesis have been purposively selected. The cross-sectional design included, next to the 84 TWT water sources in the WUC survey, 13 water sources in the 'Water User' survey (refer to Section 4.6.5 and Appendix 4.1) and 18 water sources in 15 villages where I undertook semi-structured interviews (Refer to Section 4.7.1). These three data sets overlapped each other: two of the 18 in-depth studied water sources, and the 13 purposively selected water sources by TWT staff in the 'Water User' survey also featured in the WUC survey.

Of the sample of 18 water sources in 15 villages where I undertook semi-structured interviews with community members, 7 water sources in 4 villages were constructed by the local

government. These water sources were purposively selected by the District Engineer of Masindi local government. The criteria for selection of the government water sources were their geographical location. Because TWT only operates in five of the seven sub-counties in Masindi District, the selected government water sources were based in the other two sub-counties to compare the research results across geographical area and type of implementer (government versus NGO). Refer to Table 4.4 for a comprehensive overview of the sample in the cross-sectional research design.

**Table 4.4**  
Sample Cross-sectional Research Design (Author's Construct)

No. water sources	No. villages	Dataset	Sample	Actor	Overlap
84 Water source	84 villages	Water User Committee survey	Randomly selected	Author	
13 water sources	13 villages	Water User survey	Purposively selected	TWT staff	13 water sources overlap with WUC survey
18 water sources	15 villages	Indepth studied water sources	Purposively selected	TWT staff and District Engineer of Masindi local government	2 water sources overlap with WUC survey
<b>Total sample in Cross-sectional study: 100 water sources (99 villages)</b>					

Further, this thesis includes a critical case study consisting of four villages with in total 17 water sources. These four villages were also purposively selected. The villages were identified by TWT staff to take part in the *CBM-lite* pilot on the basis that the WUCs in these communities had struggled to fulfil their roles and responsibilities in the past. Of the six initial selected villages, four villages participated in the *CBM-lite* pilot. Chapter 7 provides a detailed description of the feasibility study, selection and implementation of the *CBM-lite* model.

This study entails multiple layers of respondents at the micro, meso and macro level who were non-randomly selected. At the micro level, and at each studied water source, members of the WUC were targeted to take part in a survey or semi-structured interview, as further described below. Respondents for the interviews and surveys were selected through convenience

sampling by random walks in the village. During these walks, a representation of respondents as wide as possible was pursued. A constraining factor, yet inherent to convenience sampling, was the restricted nature of interactions to those at home during the time of data collection. This was especially the case during the rainy seasons when farmers predominantly work in their fields (March till May and September till November). Furthermore, at the meso and macro level, key informant interviews were undertaken with TWT staff, employees of other local and (inter)national NGOs and local and national government officials.

## **4.6 Access to the Study Area**

Access to the majority of the villages in this thesis was granted through my close collaboration with The Water Trust (TWT). The organisation was well-known in Masindi and Kiryandongo districts. TWT ran bi-monthly radio shows and most of the studied villages cooperated with the organisation in the construction of Shallow Hand Dug Wells (SHDWs) and had been involved in hygiene and sanitation programmes. In addition, my role as (former) TWT Programme Manager greatly influenced the way how access to the villages was gained. I was familiar with the region and many of its people: I knew most of the studied villages, had built good relationships with the relevant Water, Sanitation and Hygiene (WASH) actors in the research area and due to my understanding of the study context, I did not need to undertake a scoping study (Silverman, 2005). Especially in the pilot villages, my frequent interactions with village leaders and community members before I embarked on the PhD research project led to increased levels of openness during formal and informal interviews. After some time, the closest to an unattainable ‘insider status’ was the referral of ‘sister’ by some community members and local government officials.

The prior working relationships with the local government greatly advantaged me in this study. The local government officials at district and sub-county level were supportive about the study and our prior engagements led to frank conversations about rural water supply, CBM and their own experiences with community life. Although the established social relationships in the study area were beneficial for the quality of the data and the entire data collection process, my previous role and strong involvement in the *CBM-lite* pilot also involved a number of disadvantages, which are discussed in 4.10.

A typical day to the field started with an early wake-up call and ride on the back of a motorbike to the village consuming a travel time between 30 to 60 minutes. Usually, I visited one or two villages per day, depending on the weather, the condition of the dirt roads and satisfaction with the data collected. In TWT villages, I was accompanied with a TWT staff member. In the cross-sectional research design, I moved to the field with the senior Community Development Officer (CDO) of TWT who had worked for the organisation since 2008. During this study, I stayed in Masindi town which was near the main office of TWT and therefore the departure location to the villages. The in-depth interviews in the cross-sectional research design were conducted over two separate field trips: June-July 2014 and October-November 2014.

For the follow-up of the pilot villages, I stayed in Kiryandongo district, either in Kigumba or in Bweyale town near the TWT field office and the pilot villages (refer to Figure 3.5). The four pilot villages had been assigned to three CDOs of TWT who regularly visited the pilot villages and who accompanied me to ‘their’ pilot community. After I left TWT in January 2014, I visited the pilot villages over four different research periods: June-July 2014; October-November 2014; March-April 2015 and; October-November 2015 (refer to Table 4.1).

The government water sources were studied with the Masindi District Engineer who was keen to assist me in the research due to our previous working relationship. With the Masindi District Engineer, I visited 7 government constructed water sources in 4 villages (as noted in Section 4.5) over a period of two days in June 2014. At all the water sources, the District Engineer had mobilised the WUCs. To these water sources, I travelled on the district motorbike and covered the fuel expenses.

During data collection in the villages, TWT staff and the Masindi District Engineer translated community meetings, interviews and focus group discussions. People in Masindi and Kiryandongo districts speak a multitude of local languages, such as Runyoro, Rutoro, Rukiga, Alur and Rugungu or Kiswahili. Refer to context Chapter 3.6 for a detailed background about the case study area. The translators mastered the local languages and were well-versed in translating the answers of the respondents back to English. The disadvantages of relying on translators are discussed in Section 4.10.

## 4.7 The Research Methods

This research employed a mixed method approach to triangulate research results and strengthen the validity of the findings (Denzin, 1978; Silverman, 2001; 2005). The study involved a range of qualitative research methods: interviews, focus group discussions and participant observations that were supplemented with surveys and the review of documents and records.

This section provides an overall summary of the methods used. I refer the reader to Appendix 4.1 for a detailed overview of the methods used (including the sample size, purpose and rationale) per research design.

### 4.7.1 Semi-Structured Interviews: Micro-Level

The semi-structured interviews with community members have been an important method for gaining a deep understanding about the influence of people's geographical and sociocultural context on water management processes (Bryman, 2001; Patton, 1990; Robson, 2002; Silverman, 2001; 2005). In these interviews I reflected on people's personal and family backgrounds and their perceptions on community relations, structures and processes. I asked people about their usage of water, participation in water related matters, how the water source was managed, maintained and repaired in the past and today, challenges and suggestions for improvement.

In total, I conducted 66 in-depth interviews with community members: 30 interviews about CBM and 36 interviews about the CBM-*lite* model. The people I interviewed in the villages were not younger than 16 years old and of the 66 interviewees, 18 (27% of the interviewees) were female. Because women are usually in charge for the collection of water in the household I was conscious to interview them. The difficulties to sufficiently include women in the study are discussed in Section 4.10.

### **4.7.2 Semi-Structured Interviews with Key Informants: Meso- and Macro-level**

Overall, I conducted 38 semi-structured interviews involving TWT staff (12), local (10) and national (1) government officials, NGO representatives (4), the Manager of the Savings and Credit Cooperative (SACCO) in Kigumba (2) and a representative of an insurance company (LEADS) with a branch in Masindi (1). These semi-structured interviews were helpful in gaining insights in people's understanding about the challenges of rural water supply and allowed me to compare the research findings in the villages with the interviewees personal and professional experiences.

In addition to these interviews, I conducted 8 semi-structured interviews with actors engaged in developing or piloting alternative rural water management models. These interviews were part of a mapping exercise with PRACTICA Foundation (a Dutch organisation) where multiple organisations were interviewed, of which I approached eight:

- 1) Sector lead for the WASH sector at SNV (Kampala)
- 2) Programme Officer WASH Inter Aide (Sierra Leone)
- 3) Water and Sanitation Consultant at Bushproof (Madagascar)
- 4) PhD candidate University of Oxford (engaged in the smart handpump project of the University of Oxford)
- 5) Programme Manager at Water for People (Kampala)
- 6) National Learning Facilitator for IRC (Kampala)
- 7) WASH regional coordinator GOAL (Uganda)
- 8) WASH advisor International Lifeline Fund (Uganda)

Although I do not explicitly refer to these interviews in the text, they have been insightful in gaining a deeper understanding about the debates on community management and innovation in the rural water sector. The interviews have been an inspiration for writing Chapter 6 that explores the depth of rural water management innovations in the sector and compares the CBM-*lite* innovation with two other handpump management innovations.

### **4.7.3 Focus Group Discussions**

Another important data collection method were Focus Group Discussions (FGDs) or group interviews (Bryman, 2001; Patton, 1990; Robson, 2002; Silverman, 2001; 2005). Altogether, I conducted twelve FGDs with in total 72 community members of which 15 were female and 57 were male. Seven FGDs were conducted in the cross-sectional research design: six with WUC members and one with female community users. Five FGDs were conducted with community members and Water Operators in the *CBM-lite* case study villages.

### **4.7.4 Participant Observations**

The ethnographic method of participant observation was applied at micro- and meso-level. In the villages, participant observations were used to develop a familiarity with people's social environments (Kawulich, 2005). This included observing people's daily activities, engaging in informal conversations and attending community meetings. Furthermore, a meeting with Masindi district and a gathering with national and international NGOs in Kampala have been an important source of data, as indicated in Appendix 4.1.

### **4.7.5 Surveys**

This thesis includes four distinct surveys. The surveys concerned the water sources constructed by TWT and were undertaken by TWT staff under my supervision. Appendix 4.1 provides a detailed description of the different surveys. Refer to Appendix 4.2 for the two surveys undertaken in the cross-sectional research design (the Water User Committee survey and the Water User Survey) and Appendix 4.3 for the two surveys in the action research (the Willingness to Pay Survey and the Willingness to Participate Survey).

### **4.7.6 Documents and Records**

A review of written records was an important source of evidence to verify anecdotal information (Bryman, 2001; Patton, 1990; Robson, 2002; Silverman, 2001; 2005). Where possible, I tried to supplement the anecdotal accounts of the WUCs and Water Operators by examining the

accounting and receipt books in the villages. In the pilot villages, I was able to review the administration books of the Water Operator and the accounts of the Savings and Credit Cooperative (SACCO) where the Water Operators stored the funds for the O&M of the water sources.

#### **4.7.7 Dissemination of the Study Findings**

To compare my research findings with the experiences of research participants and rural water practitioners, I presented my findings at three occasions in March 2015 (during my third research trip as a PhD candidate). This involved a presentation to the staff of TWT in Masindi and a workshop at two learning forums in Lira (northern Uganda) and Kampala, hosted by the Dutch development organisation SNV that invited local and (inter) national NGOs and government officials. The meetings were organised as a result of the repeated interactions and interviews with one of the key research informants employed at SNV. Next to verification and further discussions, these meetings generated new and unique data at a meta-level since participants expressed their views and provided feedback about the research findings. Although respondent validation is perceived as crucial element for testing the validity of the research, I agree with Fielding and Fielding (1986, p.43) that respondent validation exercises, as those described above, do not fully meet validation purposes but "... should be treated as yet another source of data and insight".

### **4.8 The Research Ethics**

Ethics – ‘the study of morality’ – is at the heart of any research project that concerns primary research. The Greek term ‘ethos’ refers to *principles* of proper behaviour and is therefore at a more abstract level than ‘morality’ which judges behaviour as either right or wrong (Iphofen, 2009). The ethics principles of the Economic and Social Research Council (ESRC) represent good conduct in social science research. These principles were given due consideration in my ethical review by the ethics commission of the University of Portsmouth. View Appendix 4.4 for the favourable opinion of the research plans. For the purpose of the methodology in this thesis, I turn to Bryman (2001) who emphasises four ethical principles when conducting research in the context of a developing country. Refer to Table 4.5 for an overview.

**Table 4.5**

Ethical Considerations (Source: Bryman, 2001).

**Ethical Considerations**

1. Harm to research participants
  2. Gaining informed consent of participants
  3. Invasion of privacy
  4. Deception
- 

### ***1. Harm to Participants***

This research has protected the identity of the participants to avoid any harm with the publication of the research results (Bryman, 2001; Mason, 1996). As such, I refers to peoples' position and official role, not names and only with their full consent. During the research process, care was given to avoid inflaming sensitive situations and souring community relations as payment, and in particular collections and storage of funds, were sensitive topics. Therefore, I paid careful attention to changing the course of the conversation when it turned to pointing fingers at 'the guilty' of, for example, those households not contributing. Yet, despite the endeavour to avoid conflicts as a result of the research, I could not always prevent tensions because payment, inherent to CBM, simply constituted a key undermining factor for community harmony (as this thesis will fully demonstrate) and in some instances community members brought in prior events and old sores into the discussion. Lastly, as Uganda is a patriarchal society, I was careful when trying to include women in the study. Next to asking women's consent for participating in the study, I aimed to establish non-threatening interview conditions by asking how and where they preferred the conversation to take place.

### ***2. Informed Consent***

Language was a key barrier in this study and enclosed an ethical concern with gaining informed consent. The use of translators were therefore key to ensure participants were fully aware what they were signing up for. Prior to every interview I explained the reason of the interview, the type of questions I would ask, the possibility to opt out and the expected duration (Bryman, 2001). Because none of the respondents in this study were given any monetary compensation for their participation, I emphasised non-cooperation would be without any consequences. In

one to one interviews with community members, I asked people's consent to record the interview. With key informants ensuring informed consent was less challenging: the interviews were conducted in English without the use of translators and most of the informants had been exposed to research before.

### ***3. Invasion of privacy***

The privacy of respondents must be protected (Bryman, 2001; Robson, 2002). I safeguarded people were happy with recording and I respected the reluctance of households to discuss sensitive issues (Bryman, 2001; Robson, 2002). Further, I was aware that people are often busy. In some instances, I helped the respondents with household chores such as stringing beans while talking.

### ***4. Deception***

A real threat in this study was ambiguity about my role. Many research participants knew me due to my role with the NGO The Water Trust (TWT). As a result, I was aware that research participants could bear the hope that I could arrange the construction of a new water facility or the repair costs of a village handpump. Because I was mostly escorted by TWT staff, I was even more conscious to explicitly explain my positionality as a researcher. The disadvantages of the accompaniment of TWT during data collection are described in Section 4.10. In many ways I rubbed against the status of an insider given my previous role in Uganda, which facilitated the research and access to the study area. However, I was always mindful to realise the potential impact of my presence on participants. After all, I remained a cultural outsider; a European fair-skinned female. In some instances, this position did raise the expectation that I could intervene and solve the community's financial deficiencies and in other occasions my position did provide me with more 'open-doors' and information than presumably my male counterparts. Hence, my positionality as a researcher needed constant re-emphasis.

## 4.9 The Analysis of the Research Findings

This study involves a comprehensive and holistic dataset. The qualitative content analysis included texts derived from the interviews and observations that were carefully noted and extended after each field day or interview (Bauer, 2000; Boeije, 2005; DeCuir-Gunby et al., 2010; Kohlbacher, 2008; Silverman; 2001; 2005; Wester and Peters, 2004). The semi-structured interviews with village members were recorded and later transcribed. During the entire research process, I kept a journal to record problems and ideas that arose during the fieldwork and a book to note interpretations and analyses (Spradley, 1979). The raw data of the surveys was entered into the statistical software 'SPSS' for statistical analysis. Yet, due to the relatively small surveys sizes and to avoid specious statistics, the data has been used as a way to tabulate research findings (Silverman, 2001; 2005).

A core element of this study has been its iterative research cycle that allowed repeated inductive examination of the data and a rigorous revisiting of the theory (Burnard et al., 2008). Two sets of data-driven coding were developed to compare the data; open and axial coding (Corbin and Strauss, 2008). Open coding included the noting of ideas, concepts and themes in the transcripts. Hereafter, in the axial coding stage, topics were compared and contrasted between the respondents, villages and sub-groups (community – local government and NGOs). In this stage, I established linkages and their frequency by using labels and assigning each topic with a colour (Burnard et al., 2008; Kohlbacher, 2006). Due to the iterative research process and the re-reading of transcripts, coding followed a circular process through which the themes were redefined with the generation of more data and insights in the literature (DeCuir-Gunby et al., 2010).

An important component for the analysis of the data has been the process of writing academic papers with my PhD supervisor Dr. Julia Brown. On the basis of draft manuscripts we arranged writing and brainstorm sessions to discuss the data and enrich the analysis in relation to the literature. These sessions took place in January 2015 for our first paper in *Geoforum* on the outcomes of the CBM model and in June 2015 for our second paper in the *Geographical Journal* on actors' risk perceptions, currently under revision, and third paper on the outcomes of the *CBM-lite* innovation.

## 4.10 Sources of Error and Bias

Qualitative research is subject to problems related to generalisability, subjectivity and transparency. Sources of error and bias affect the quality of the research (Patton, 1990; Bryman, 2001). Masindi and Kiryandongo districts were not randomly selected, but were selected due to my familiarity and history with the region. The lack of random selection may give rise to suspicion about the generalisability of the research findings (Silverman, 2005). Gobo (2004 p. 435) highlights, however, two kinds of generalisations: “a generalisation about a specific group or population (which aims at estimating the distribution in a population) and a generalisation about the nature of a process.” This thesis attempts to understand people’s relations and processes and aims therefore *to generalise about structural aspects and patterns*. This aim is clarified by Mason (1996 *in* Gobo 2004 p.452 ) who writes: “you may have sampled people but what you really want to compare are their experiences.” Although I recognise that a small study sample, often intrinsic to qualitative research, may thwart the prospect of making generalisations about structural social practices over a wider population, this study combines scale and depth. ‘Scale’ was targeted through a mixed method approach which enabled a comparison of rural water management outcomes across multiple villages. ‘Depth’, on the other hand, was achieved by thorough study of respondents and villages by means of interviews and observations over prolonged periods of time.

Due to my working history in the study area and the relationship with the NGO The Water Trust (TWT), the research was prone to the problem of reactivity and researcher bias. The fact that I fulfilled a key role in the development process of the CBM-*lite* model, may have created a so called “halo effect” whereby research participants may want to perform better (Patton, 1990 p.473). To prevent this distorted reality in the analysis on the CBM-*lite* pilot villages, I conducted long-term and repeated observations to permit the research participants to get familiar with the new situation and to return to usual habitual patterns.

The threat of researcher bias or “the tendency to confirm the researcher’s preconceived notions” (Flyvbjerg 2001, p. 81) may come in when the observer is intimately involved with the subject studied (Mc Taggart, 1994; Francis, 1991; Kock et al., 1997). When the observer is “over-involved” (Etherington, 2004 p. 166), the risk of “subjective and arbitrary judgement” (Flyvbjerg, 2001 p.81) may arise. Indeed, my involvement in the development of the CBM-*lite* model caused me to be keen to see the pilot to succeed. Due to these personal sentiments with the evolvement of the pilot project, I was sensitive to reflect about my position and recognised

that the interpretations of the respondents were filtered through my own perceptions, prejudices and worldview. It required a reflexive attitude about my role (Bergold and Thomas, 2012 p.52), and as Flyjvberg (2001 p. 81) notes, it “sensitised” me even more to collect and analyse the data in a rigorous and transparent manner.

The fact that most of my interviewees are male has been an unintentional gender bias. All of the government officials were male and interviewing women in the villages was at times challenging. Some of the women claimed they were busy with household tasks and tended to be short of answers. The women on the Water User Committees (WUCs), on the other hand, were more vocal and most of the in-depth interviews with the female WUC members were very insightful and informative. The diffidence of the female community members may have been influenced by the use of male translators; a factor that may have been less intimidating to female WUC members who were generally more educated with larger social networks outside the village.

The use of translators can be another source of bias. I asked TWT staff and the Masindi District engineer to translate during fieldwork in the villages as most of the community members were not well-conversant in English. I recognise that there are issues with using translators in general and with using translators representing an NGO or the local government in specific. First, I could not be sure that informed consent, despite my instructions, was rightly conveyed and, second, that responses were accurately rephrased. Third, research participants may have been less straightforward and may have geared their answers to what they thought was socially and politically desirable. To avoid such distortions, I triangulated different research methods as described in Section 4.7 and aimed for heterogeneity in the selection of respondents by approaching people with different livelihood strategies, roles in the community, gender and age categories.

An important area of bias concerns myself as researcher and background as practitioner. Just as I made concerted effort to collect and analyse the data in an objective and neutral manner, I agree with Hammersley (1990; 1992) that reality is perceived through particular lenses, and not only by the subjects studied but also by the researcher itself. Hence, whereas a research account can represent reality it does not reproduce it, and while there is confidence about the validity of the research it does not imply certainty of its truth (Hammersley, 1992, 50-51). To ensure a transparent presentation of the research findings, I decided to separate descriptive empirical accounts with my interpretations in the discussions and the final concluding Chapter 9.

My academic education, as an anthropologist and human geographer, in combination with my practitioner background influenced the way how I approached the evaluation of the CBM and CBM-*lite* model. Due to my anthropological training, I was inspired to deeply understand social practices and to extricate social patterns. Other than the transcripts of development handbooks that tend to emphasise the processes of delivering social services in rural communities, my practical experience made me to prioritise actual outcomes over processes (see also Brown, 2008; 2014). Because the thesis approaches the problem of handpump breakdown by evaluating the CBM model, the study investigates its key pillars – user payment and community control – as described in detail in the following section.

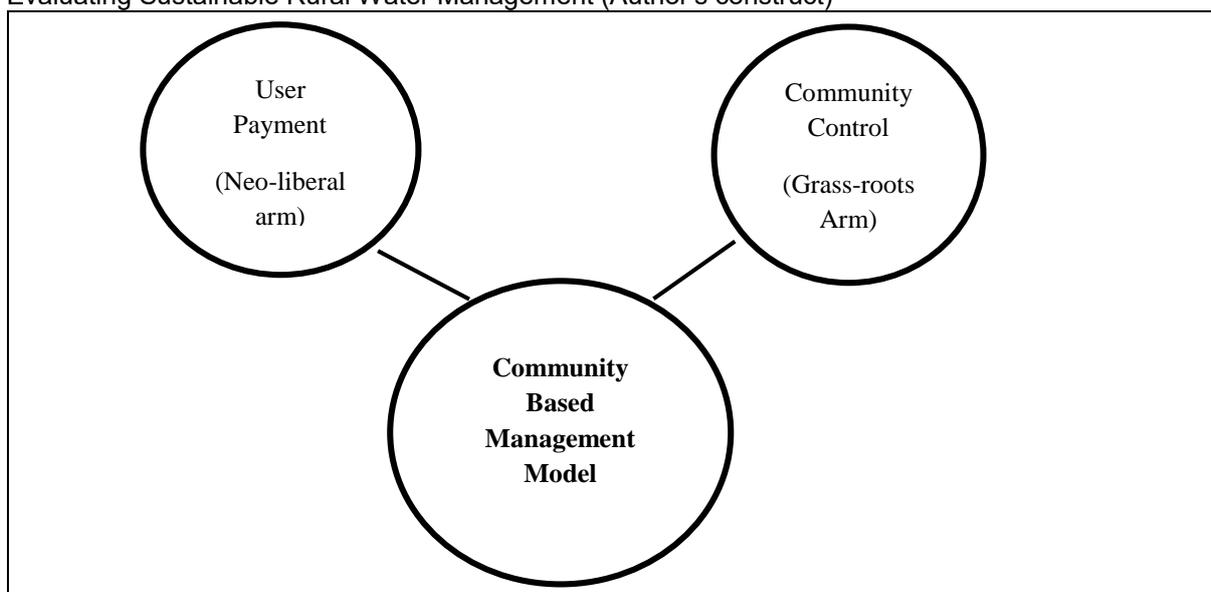
### **4.11 Evaluating Sustainable Rural Water Management**

This thesis refers to the term ‘evaluation’ in the broad sense of the term. In the words of Patton (1990 p. 11): “[w]hen one examines and judges accomplishments and effectiveness, one is engaged in evaluation”. As literature Chapter 2.6 highlighted, there are numerous frameworks that evaluate the sustainability of rural water sources on the basis of assumed financial, managerial, institutional and technical preconditions or wider issues involving levels of capacity, external support and an enabling environment. Brown (2014) discusses the inherent normative aspect of all evaluations – what is key is to be honest about the desired goals and ones background.

This study, evaluates sustainable rural water management on the basis of the two key principles of the Community Based Management (CBM) policy: user payment and community control over the management of the rural water infrastructure. Refer to literature Chapter 2.4 and 2.5 about these individual branches of the CBM model; referred to as the neo-liberal and grassroots arms. View Figure 4.3 for a graphical presentation of the evaluation framework of ‘sustainability’ in the thesis. For the operationalisation of user payment, I used the WASH cost benchmarks (Burr and Fonseca, 2013) to calculate whether user payments and stored funds were sufficient to cover the maintenance and repair costs of the water source. Refer to Table 4.6 for the estimated annual costs of minor and major repairs per technology. Because this study took place in Uganda, I operationalised the term ‘community control’ on the basis of the community management activities set out in the Ugandan rural water policy; view Table 4.7 for an overview (GoU, 2013).

**Figure 4.3**

Evaluating Sustainable Rural Water Management (Author's construct)

**Table 4.6**

User Payment: Breakdown of Maintenance Expenditures (Adapted from Burr and Fonseca (2013, p. 63))

Cost components of maintenance	Estimated costs per SHDW per annum	Estimated costs per deep BH per annum
<ul style="list-style-type: none"> <li>Minor maintenance and repairs <i>Expenditure on labour and materials needed for routine maintenance</i></li> </ul>	85,500 UGX (USD 30)	171,000 UGX (USD 60)
<ul style="list-style-type: none"> <li>Major maintenance <i>Renewal, replacement and rehabilitation costs</i></li> </ul>	256,500 UGX (USD 90)	342,000 UGX (USD 120)
<ul style="list-style-type: none"> <li>Total estimated costs per annum</li> </ul>	342,000 (USD 120)	513,000 UGX (USD 180)

\*USD 1 = 2850 UGX

**Table 4.7**

Community Control: Breakdown of Community Management Tasks (Government of Uganda (2013 p. 16))

- Appoint water source caretakers (WSCs) to manage the day today O&M of water facilities; including cleaning the surroundings, carrying out preventive maintenance and minor repairs of the water facilities.
- Ensure proper use and maintenance of their water facilities.
- Collect cash or contributions in-kind from water users for the purpose of maintaining the water facilities.
- Open a bank account and ensure safe custody of money collected.
- Pay for the services of the technicians.
- Report repair requirements beyond the financial capacity of the water user communities and technical capacity of the technicians (e.g. replacing pipes and de-silting) to the Sub-County.
- Pay for the cost of the spare-parts for repairing their water facilities.

## 4.12 Concluding Remarks

This chapter described *how* the research was undertaken and what philosophical perspectives and personal experiences and perceptions laid the basis for this present research. Departing from the evaluation framework presented in the last section (4.11), the next empirical Chapter addresses the *second research objective* which aims **to evaluate the outcomes of the CBM model across 100 water sources in Masindi and Kiryandongo districts in mid-west Uganda**. To understand the outcomes of the CBM model, Chapter 5 provides an in-depth analysis on programmatic, participatory, and community processes

# Chapter 5:

## Blueprint for Breakdown? Community Based Management of Rural Groundwater in Mid-West Uganda.

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### 5.1 Introduction

This chapter<sup>19</sup> describes the implementation and post-construction stages of the constructed water sources by the Non Governmental Organisation (NGO) ‘The Water Trust’ (TWT) and the Masindi and Kiryandongo local government. The chapter is structured into three main sections: the process of accessing clean water (5.2), the construction (5.3) and post-construction phase (5.4). The chapter focusses in particular on the post-construction phase and deconstructs the outcomes of 100 community managed water sources under the Community Based Management (CBM) model. Section 5.5 discusses the outcomes of the cross-sectional study in relation to the literature presented in Chapter 2. I refer the reader to the methodology Chapter 4 for a detailed overview of the cross-sectional study design (4.4), data collection methods (Appendix 4.1 and Section 4.7) and analysis (Section 4.9) and the background of the case study NGO TWT (Section 4.3).

### 5.1 Accessing Clean water

In line with the Demand Responsive Approach (DRA) and Uganda’s rural water policy, each village is required to demand a water source by writing an application letter, either to the local government authorities or to TWT. This letter is signed by the Local Councillor (LC) I<sup>20</sup> of the village and delivered at TWT, sub-county or district office.

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<sup>19</sup> This chapter is an elaborated account of the case study presented in the paper ‘Blueprint for breakdown? Community Based Management of rural groundwater in Uganda’ by van den Broek and Brown (2015).

<sup>20</sup> The lowest of the five levels of elected government officials in the district.

NGO staff members regularly visit the local offices to update local government officials about the construction progress in the villages and to pick the community letters.

Most villages in the operation area of TWT already have a protected water source. Each village can receive multiple protected water sources by TWT or the government dependent on the number of households. The minimum number of households eligible for a Shallow Hand Dug Well (SHDW) from TWT is 30 households. As such, large villages can receive multiple water sources.

Twice a month TWT runs a radio show to inform the public about hygiene, health and the application process for a SHDW. Despite the repeated efforts to inform the public about the possibility to receive a communal SHDW, some areas only produce few application letters. However, field staff are under pressure to reach annual construction targets that are determined by TWT (in dialogue with the Programme Manager, Chief Executive Officer and the Board). Every year the Board (as at the time of this study) expects the NGO to construct more sources.

Most funding is derived from affluent individuals and families (often acquainted to members of the board) that pay for the construction of a water source (USD 7,500 per source) with the promise of ‘flowing water’ within a year. Each water source is assigned to a particular donor and through the website of TWT, donors can follow the construction of ‘their’ water source. Once construction is finished, they are immortalised through a plaque stating their names and sometimes a personal message (often used to remember a deceased relative or friend).

Under pressure to meet the annual targets, TWT staff approach villages that appear to lack clean water. During these visits, staff ask the village leadership whether the village needs clean water and if so, if they want to apply for a SHDW. After receipt of an application letter, the NGO conducts a needs assessment and a baseline survey amongst all households in the area and arranges a general village meeting.

Through the village leadership, households are mobilised to attend to the first village meeting. According to TWT staff, the attendance at the meeting is dependent on the need of water in the projected catchment area. As a result, the turn up varies from village to village. A staff member said: “[s]ometimes you are forced to do spot mobilisation, otherwise there will not be enough people.” (30 October 2014)

During the first village meeting, a TWT staff member explains the requirements of the project. The NGO aims to ‘create a sense of ownership’ through requiring contributions of local

materials (sand, bricks, and stones) for the construction of the SHDW (all together around USD 100), community participation in the construction of the well and, community hospitality by accommodating and feeding the technician for approximately a one month period. In addition, TWT requires all the households in the catchment area (approximately the households within a 1,5 km radius from the water source) to have a pit latrine before it installs the handpump.

The local government requires community members to pay 100,000 UGX (USD 35) for a shallow well and 200.000 UGX (USD 75) for a deep borehole. According to the government, payment is sufficient to show the community's willingness to maintain the handpump.

During the first village meeting, TWT staff facilitate the election of a Water User Committee (WUC). Each water source is required to have six members of which at least one member is stipulated to be a woman for 'gender equality'. If possible, TWT encourages a woman to take the role of the treasurer, as women are perceived to be better financial managers than men. WUC members are selected through the raise of hands. Usually the staff members explain the WUC roles and asks the community members who best fits what role. As a result, people propose numerous names and the person with the most number of votes is offered a position. Occasionally, selected community members refuse to be part of the WUC. A TWT staff member explains that: "[s]ometimes people argue they are too busy" (10 November 2014). However, during a focus group discussion in Kihonda village, community members disclose that: "[p]eople fear to be elected for the Water User Committee. Being on the Water User Committee creates hatred. For example, if you confiscate a jerry can" (23 October 2015).

After the first village meeting, the NGO keeps in touch with a representative of the village. The selected WUC, village leader or focal person in the village, mobilises the materials for the construction of the SHDW. The follow-up of the materials by TWT is important as otherwise "[p]eople forget about the application" (TWT staff member, 12 November 2014). Moreover, as another TWT staff member said: "[m]aybe one out of the 20 villages would call you back and tell you that they are ready" (5 November 2014).

The process of material collection for the construction of the SHDW varies from village to village. In most villages, the households that will benefit from the water source contribute a portion of the required materials, either in kind or monetary. Occasionally, an affluent person in the village donates the materials.

Once the materials are collected, the technical personnel of TWT site the location of the SHDW through identifying the presence of water by observing features as valleys, trees, anthills and

dry rivers. In most cases, this method is successful. However, occasionally TWT has to re-site the well due to hard strata or shallow water exposing the well to contamination.

Before construction can take place, the landowner of the proposed site needs to donate the land to the community and ratifies the construction of the SHDW by signing an agreement. In some instances, the owner is not willing to give the land away and another site needs to be selected.

## 5.2 Construction phase

TWT expects the households in the catchment area to participate in the construction of the well (a minimum of 5 people each day). Predominantly the men help the NGO technician with digging, brick lining, finishing the apron slab, drainage channel and fencing. Women usually prepare the lunch for the workers. Without the participation of the community members, the construction is on a stand still. Often the participation of community members does not happen automatically. A technician said: “[y]ou have to speak soft words to community members. You will have to become one of them or otherwise people will not show up and help you” (8 October 2013).

Twice a week, technical TWT staff members monitor the work of the technician to ensure best SHDW construction practices. The social staff members of TWT, also referred to as the ‘Community Development Officers’ (CDOs) monitor the construction of the household pit latrines and the participation of the community members in the construction.

In the period between January and October 2014, nine of the twenty-two sites needed re-mobilisation, which often implied individual household visits by the CDOs and the convening of a community meeting through the LC I. A staff member said: “In most villages we need to push the community members to participate” (10 November 2014).

However, even at sites with no delays in construction, problems of collective action may have occurred. During a visit to a site under construction, a WUC member revealed that only half of the household representatives in the catchment area participated in the construction. Twenty-two of the forty households were not willing to help in the construction. He said: “[i]f they want to work they come. If they don’t, there is nothing I can do” (Kinyara I Kamugiri, 29 October 2014). In this village, a few members of the WUC were not engaged in the SHDW project and as a result a TWT staff member scheduled a re-election for the WUC.

Condoned by TWT (2013/2014) community members in two villages decided not to contribute their labour but hired local labourers at a cost of approximately USD 215. Yet, to instil the image of local participation, a TWT staff member said this fact should be concealed from the donors and therefore not communicated on the online reports (29 October 2014).

Nevertheless, the varying levels of collective action during construction were not predictive of the level of participation in other activities as attendance at meetings and construction of pit latrines. For example, in two villages in the period between January-October 2014, community members were actively engaged in the construction but their turnout in meetings was low and pace of latrine construction slow.

After construction, TWT trains each WUC for half a day in their roles, bookkeeping, finance and key services they need to provide. Each WUC receives the phone number of the Hand Pump Mechanic (HPM) and a price list of the spare parts. Similarly, the local government is expected to train WUCs upon completion of construction. However, not every water source fitted with a handpump constructed by the local government has a trained WUC due to financial constraints. A local government official in the district water office of Masindi explains:

“Officially, the training for the water point needs to be two days. However, facilitation is expensive. We only have a budget of 24,000 UGX per training. This includes fuel but the trainers will also need food. Although three people preferably conduct such a training, only one or two people can do this for 24,000 UGX. Furthermore, the trainers will not stay long because the community members will ask for food. If you are there from 10 am in the morning until 4 pm in the afternoon people will ask for food and maybe even for facilitation<sup>21</sup>. People will not understand the concept” (15 June, 2014).

The local government official reached out to the Technical Support Unit (TSU) to increase the budget and cover a two day training and meals for the participants per constructed government source. So far, the budget only includes the fuel to reach the village (23 October 2015).

TWT installs the handpump after construction but unlike the local government, postpones the assembly of the handle until all households in the catchment area have constructed a latrine. Although this method uses peer pressure to improve sanitation and hygiene, the rate of latrine

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<sup>21</sup> The term ‘facilitation’ is used to refer to a per diem that covers travel and subsistence that is paid to government officials from government budget to carry out field visits. This payment has encouraged community members to similarly request for money while attending meetings to compensate their time (Jangeyanga, 2013; GoU, 2010).

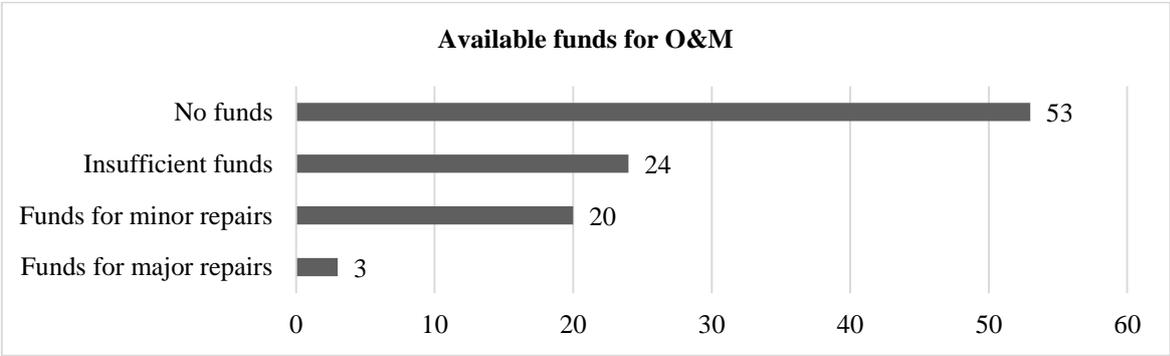
construction varies from 2 to 12+ months after construction is finished. When all households have access to a latrine, the local government officially commissions the NGO installed handpump.

After a warranty period of six months, TWT expects the water users to cover the Operation and Maintenance (O&M) costs by themselves. At this stage, the NGO expects the WUC to convene a community meeting with the LCI to agree on the payment schedule of the water user fees, rules of resource use and sanctions. Although TWT advises communities to pay a water user fee of 1,000 UGX per month, the water user fee is not standardised by the government. The District Water Officer (DWO) of Kiryandongo explained: “[i]t is upon the community to decide how much they can afford to pay” (20 August 2013). As a result, amounts and timing of payment varied considerable across the studied water sources, as shown in Table 5.3 below. At the majority of the studied water sources, community members agreed to pay to the caretakers, in others to the chairman or treasurer.

### 5.3 Post-construction

Data from the WUC survey and in-depth studied villages with in total 100<sup>22</sup> studied WUCs, revealed that only 3 water points had sufficient fees to pay for major repairs and only 20 had sufficient funds to pay for minor repairs. Of the remaining 77 WUCs, 24 had insufficient funds for even minor repairs and 53 did not had any funds. View Table 5.1.

**Table 5.1**  
Available Funds for O&M at 100 Water Points



<sup>22</sup> Two water sources featured in both the WUC survey (N=84) and the 15 studied villages that covered 18 water sources.

The collection of the water user fees was seen as a crucial condition for the long-term sustainability of the handpump by the interviewed local government officials from both Masindi and Kiryandongo district. In their experience, the lack of sufficient upfront water user fee payments could put water users at risk if they were not able to quickly cover the costs of repair after handpump breakdown. In such cases people could be forced to either travel longer distances to fetch water, or would opt for the abundant nearer but open and contaminated water sources. For numerous water sources, the inability of the community to cover the repair costs have resulted in long down-time periods.

Below I will explore the reasons behind the lack of funding for O&M. These are grouped into collective action (5.4.1) and enforcement of graduated sanctions (5.4.2).

### **5.3.1 Collective Action**

In the CBM model, collective action ought to take place in three distinctive activities: (1) payment of water user fees, (2) participation in public meetings about the water source, and (3) voluntary participation of the WUC members. Below I will explore the challenges community members face in meeting these expectations of collective action.

#### **5.3.1.1 Payment of Water User Fees**

The water user survey provides an insight into the water user payments in a sub-set of the studied villages. The water user survey includes a sample of 13 water sources and 195 respondents and was conducted by staff of TWT under my guidance in October 2013, refer to the methodology Chapter 4 and Appendix 4.2a for detailed information about the water user survey.

From this survey, depicted in Table 5.2, water users argued to pay regular water fees at only one water source and indicated non-payment at two water sources. At four water sources respondents argued they contributed water user fees in an irregular fashion, which meant that both the water users and the WUCs did not strictly and continuously adhere to agreed payment schedules. At the remaining six water sources a mixed picture emerged as respondents claimed

different user payment habits (from regular, irregular to non-payment) while using the same water source. The interview data, however, deviated from the results of the water user survey. For example, in the survey, water users appear to pay in Kyakamese village. Yet, from the interviews with the WUC members and after seeing the WUC administration books that showed the household contributions, only 26 of the 56 households paid the agreed water user fees, whereas the majority of the households were not paying or paid irregularly.

**Table 5.2**  
Water User Fee Payments per Village (Water User Survey, N=195)

<b>Village</b>	<b>Regular</b>	<b>Irregular</b>	<b>Non-payment</b>	<b>Total</b>
Pucheng	0	1	14	15
Nyakabale Ansonzi	9	3	4	16
Iranda-Wateso	3	9	3	15
Kyamugenyi	0	14	1	15
Kyaganywa-Masaba	0	0	15	15
Kigengere	0	0	15	15
Kijogoro	14	1	0	15
Kiruli-Nyandima	0	15	0	15
Kyakamese	15	0	0	15
Kitengule	3	12	0	15
Kyababyara	0	14	0	14
Katikara A	0	15	0	15
Kapila	0	15	0	15
<i>Total</i>	<i>44</i>	<i>99</i>	<i>52</i>	<i>195</i>

From the 18 in-depth studied water sources, people paid regular water user fees at five water sources, did not contribute water user fees at eight water sources, and paid irregular at five water sources. View Table 5.3 for an overview of the payments and the collection approaches at each of the in-depth studied water source locations.

The majority of the interviewed community members argued that affordability of water user fees was not a problem nor a reason for free-riding. Even community members that admitted they were not paying argued that: “[o]ne cannot fail to pay 1,000 shillings” (community member Kyakamese, 13 June, 2014). Some community members did reason that payment before the harvest could be a problem as most small scale farmers run out of cash in that period. A former WUC member said: “[w]hen the season comes people are looking for money.”

(Nyakasakazi, 12 June, 2014). Vulnerable groups, such as widows, female-headed households, people with a disability and elderly people were in the studied water points exempted from payments. For example, the list of households that defaulted on payments in Kyakamese village did not include vulnerable households. So these ‘defaulters’ were perceived as being capable to pay the agreed water user fee. So, why do some people decide not to contribute and to collaborate?

The study identifies six reasons from 18 in-depth studied water sources across 15 villages in Masindi and Kiryandongo districts why people were not willing to pay upfront water user fees. Refer to Chapter 4 and Appendix 4.1 for a detailed overview on the methodology. A first reason for non-payment was that community members felt they already contributed at the construction stage. The Monitoring and Evaluation (M&E) officer of TWT explained:

“When I ask community members about their water user fee contribution they often tell me they already paid. However, when you ask further they mean they have paid for the materials to construct the water source” (16 June 2014).

Second, (potential) misuse of funds was a frequently cited reason for community members to avoid payments, as they feared the misappropriation of funds by the WUC members. A community member explained:

“It is not all about education and other issues but sometimes people feel that if they are going to give that money, the committee will misuse the money. They feel that they are cheated especially if the water source takes long to break down. People ask themselves: ‘where does this money we collect go?’ If money is not spent they feel that money is used by the water user committee members. That is what most of the people think” (Kihaguzi 25 June 2014).

**Table 5.3**

Water User Fee Payments and Collection Approach at 18 Water Sources (source: semi-structured interviews and review of WUC documents by the author).

No	Water point	Collection approach	Payments
<i>Water points with sufficient funds for major repairs</i>			
1	Kihonda-Nykachaki – TWT SHDW	WUC moves to households.	Regular: 1,000 UGX per month. 37 households use the water source. <b>WUC funds: 370,000 UGX (November 2014).</b>
2	Abira – TWT SHDW	Households bring the money to the WUC chairperson.	Regular: 1,000 UGX per month. 56 households use the water source. <b>WUC funds: 470,000 UGX (August 2013)</b>
3	Kidwera I – TWT SHDW	WUC introduced alternative scheme to pay for O&M of the water source.	No collection: <b>WUC funds: 405,000 UGX (November 2014)</b>
<i>Water points with sufficient funds for minor repairs</i>			
4	Bisenye I – government BH	Caretakers in Bisenye cluster collection and collect annually.	Regular: 5,000 UGX (regular queue) – 8,000 UGX (fast queue) per year. Caretakers received a monthly incentive of 8,000 UGX. An estimated 270 households lived in the village. <b>WUCs funds: 450,000 UGX per borehole (November 2014).</b>
5	Bisenye II – government BH: needed major repair	Similar as above	Regular: Similar as above
6	Bisenye III – government BH	Similar as above	Regular: Similar as above
7	Kyakamese – TWT SHDW	Households bring the money to the caretaker	Irregular payment: Households pay 3,000 UGX per quarter. 30 of the 56 households contributed in 2014. <b>WUC funds: 280,000 UGX (August 2013)</b>

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8	Nyakasakazi – TWT SHDW	Households bring the money to the caretaker	Irregular: 3,000 UGX per semester (USD 1.06). An estimated 26 households used the water source.  <b>WUC funds: 90,000 UGX (June 2014)</b>
9	Nyakabale-Ausonzi – TWT SHDW	Funds collected by caretaker at water point.	Irregular: Community agreed on 500 UGX per month. An estimated 60 households used the water source. The caretaker received 5,000 UGX per month but varied due to irregular payments water user fee.  <b>WUC funds: 200,000 UGX (August 2013)</b>
10	Kyakayaga II – TWT SHDW: need minor repair	No collection prior July 2014, the water source was locked and money collected at water point.	Regular: Every season a household pays 3,300 UGX. The secretary received 300 UGX per household in the month of money collection. An estimated 34 households used the water.  <b>WUC funds: 102,000 UGX (November 2014)</b>
<i>Water points with insufficient funds for minor repairs</i>			
11	Kyababyara	No collection	
12	Kalunja – government BH	No collection	Irregular: Collected 1,000 UGX per household during a meeting in July 2014.  <b>WUC funds: 20,000 UGX (November 2014)</b>
13	Kidwera II – TWT SHDW	No collection	
14	Kyarutanga I – government BH: <i>needs major repair</i>	No collection	
15	Kyarutanga II –government BH: <i>needs major repair</i>	No collection	

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16	Nyakabette – TWT SHDW	WUC members collect at random from water users	Irregular: Secretary reported 40,000 UGX (August 2013), Treasurer reported 85,000 UGX (who kept funds in his house)
17	Kihonda – TWT SHDW	No collection	
18	Mboira I – government BH: <i>needs major repair</i>	No collection	

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Community members frequently raised the lack of ‘accountability’ as a problem and a reason for non-payment. A WUC member in Kihonda explains: “People don’t want to pay if there was no accountability from last month” (23 October 2015). Suspicion of misuse amongst the water users increases when multiple WUC members collect the water user fees. For example in Nyakabette village, the LC I collected water user fees as well. He was accused of ‘eating the money’ by interviewed community members. The expression of ‘eating the money’ was a frequently used idiom in the locality to explain someone had taken the money. This problem was frequently raised, also when I was the Programme Manager at TWT. For example, during this period there was a case where a treasurer had taken 250,000 UGX to repair his motorbike (a ‘boda boda’ used as a motor taxi in Uganda). Although he planned to quickly recover the funds through his earnings as a boda boda rider, the handpump broke down soon after he had taken the money, meaning that the handpump could not be repaired immediately. Hence, to avoid such incidences, most community members would rather pay when the water source is broken.

The third reason was the availability of other water sources nearby; either protected water sources or open and contaminated sources. Payment rules differed amongst various water points, and therefore people would opt to fetch water at nearby locations where payment was not enforced. Nevertheless, the requirement to pay at a protected water source was not always the reason why people collected from an open water source. Distance played an important role in the decision to collect from an open water source and some community members preferred the taste of the swamp water. Often this water was not boiled before consumption. Despite the health warnings of TWT and health workers, community members argued: “[w]e have fetched water from these sources for generations and we have never experienced any problems (15 June 2014).” Frequently, the community members in the studied villages linked sickness to witchcraft and mentioned that the costs or collection of firewood was not a reason to neglect the boiling of water. During a focus group discussion in Mboira I, a community member said: “if we go the clinic, they tell us to boil the water. We do this for two or three weeks, and then we stop. We are used to take water just like that” (22 March 2015).

The households that were willing to pay for the upkeep of a protected source were usually educated.

“Out of the 70 households, you may find 20 that are willing to pay. Those 20 are literate. They have moved. They are educated. They know the importance of clean water (LC I, Kyarutanga, 10 November 2014).

The fourth reason for non-payment were tensions in the village which pre-dated a water project. For example, in Kidwera I village, tensions existed about land borders and income disparities between households. The WUC chairperson (a successful businessperson) of the village said: “[p]eople don’t want to work together. People cannot sit on the same table and discuss issues about water” (10 November 2014).

Similarly, a community member in Kyakayaga village said:

“The wealthy households have educated their children, they have nice jobs. In this village, people hate them for nothing. Most of the poor people don’t even want to relate with them” (11 November 2014).

The WUC members usually represent the more affluent and higher educated members in the village. In Kidwera I for example, the poorer households expected the wealthier households to cover their water user fees. However, the affluent households refused to satisfy this request. The WUC chairperson was in a difficult situation as he belonged to the affluent families in the villages. Due to his status as a ‘rich man’ he was not able to collect any money from the water users. Similar was the position of a WUC secretary in Kyakamese village: “People assume that I have more money as I am a teacher, and they expect me to pay for them. It is a big challenge. Therefore I could not chair this committee” (13 June 2014).

At several water points tensions between households occurred due to money collection. In these villages WUC members (mostly the caretaker) said that community members harassed or threatened them at times of fee collection. Harassments were a reason for the caretakers to step down or not to ask money from every household. For example:

“I don't want to push community members. Those who are willing to pay will pay” (Caretaker Kyababyara 5 June 2014).

“I stopped to be part of the WUC. There were some people who threatened me to beat me up when I asked for money” (Former caretaker Kyarutanga II 13 November 2014).

In seven villages, the requirement to pay for water caused people to vandalise the locks and chains that regulate the opening hours of the water source. Vandalism of handpump was also a great concern to the DWO in both Masindi and Kiryandongo district<sup>23</sup>. A caretaker explained:

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<sup>23</sup> Handpumps were also a target for thieves. At numerous water sources the head of the handpump had been stolen and allegedly sold to a junkyard.

“Some people don’t want to pay. They just go and break the padlock” (Bisenye 13 November 2014).

Ironically, the lack of a lock was also a reason not to pay. In Kyakayaga, the WUC stopped the collection of water user fees after an unknown community member had stolen the chain and lock of the water source in February 2014. The community members did not want to pay the water user fee, as everyone was able to access the water free of charge.

The fifth reason for non-payment was the expectation of external support by the local government or the NGO. Most of the interviewed WUC members felt that they needed financial support to maintain the water source and in some villages community members argued they were not required to pay for the upkeep of the handpump, saying: “The Water Trust gave it for free” (community member Kihonda, 23 October 2015).

Sixth, community members were aware that WUC members were not able to enforce sanctions upon free-riding. Even the households that contributed, realised that defaulters were not penalised. This resulted in an incentive to stop payment, causing a snow-ball effect of free-riding. For example, a community in Kihonda explained: “If my neighbour doesn’t pay while I am paying, I don’t pay next time” (23 October 2015).

### ***5.3.1.2 Community Participation in Public Meetings and Public Works***

In most of the studied villages community engagement was weak; in both public meetings about the water source and in public works to keep the source clean. Most WUCs did not organise regular meetings to discuss issues about the water source. In cases the WUCs and the LC I did organise a meeting, most community members did not attend. Typical comments about such meetings were:

“If you ask people to come to a meeting about the water point they are not coming. So, it becomes your thing. While it is not even your thing. And you are earning nothing by doing all this” (Kyakemese June 2014).

“Very few people come to meetings. There is no lunch and people prefer meetings where they are facilitated” (Bisenye 12 November 2014).

“Few people come to meetings. Maybe around ten people will come. They feel they are wasting their time” (Kyarutanga I 13 November 2014).

Community meetings were usually organised at a time the WUC wanted to collect water user fees and most community members prioritised their own livelihood needs above public matter, arguing they were “too busy to attend a meeting” (TWT staff member 10 November 2014). As a result, community members rather apologised and preferred to work in their field. A community member said: “During these WUC meetings, they only talk about paying water user fee. So, why should I go to a meeting that is only costing me money?” (Interview Kidwera II, 10 November 2014)

Similar to these community meetings, calls from the WUC to the water users to clean at the water source often resulted in a low turn up. “People ... don’t want to clean and respond,” said the Chairman in Nyakabale-Ausonzi (12 August, 2013). The treasurer in Kyakamese complained:

“As people are paying they also feel that they should not work at the water source. But now the problem is that so many people don’t pay at all (13 June, 2014).

Nevertheless, at four water points (Nyakasakazi, Kihonda-Nyakachaki, Abira, Kidwere I), the WUC organised regular community meetings to show accountability. The majority of the people attended these WUC meetings and village gatherings in general. A WUC member in Kihonda-Nyakachaki: “The majority comes to our meeting. Only when someone is sick the person will not come” (10 November 2014).

### ***5.3.1.3      The Voluntary Participation of the Water User Committee***

The WUC members experienced a range of challenges in fulfilling their tasks. First, the collection of water user fees was often time-consuming and a frustrating process. A WUC member in Kidwera I said:

“[...] there was an old man and whenever we started to collect water user fees he would tell us: “why do you come to me first? You go to others and then to me. Why always me” (10 November 2014)?

“It is very difficult to get money from people. I am tired of it” (Treasurer Kyakemese June 2014).

“I am not happy, because we always need to chase people to pay water user fees” (Caretaker Kyarutanga October 2014).

Often WUCs members were required to visit households several times to collect the water contribution. A WUC member in Kyarutanga I explained: “If a person does not want to pay, he will not tell you direct. He will say: ‘my child is sick’. We can go back many times... until there are many times” (13 November, 2014).

Second, a number of WUC members (especially the caretakers) were threatened or harassed by fellow community members. Requests to pay water user fees had in some instances infuriated the indebted. The WUC members were non-confrontational and did not collect fees from those households that persistently refused to contribute. In a number of villages former WUC members told me about some vicious experiences: “I stopped being part of the WUC. There were some people who threatened me to beat me up when I asked for money” (Former caretaker Kyarutanga II, 13 November 2014).

Third, the voluntary nature of the work was provided as a reason to limit the commitment in the WUC. A government extension worker of Masindi district said on several occasions:

“Nobody wants to volunteer, they [WUCs] want to be paid” (14 June 2014).

“They lose morale because they work for free” (23 October 2015).

None of the WUCs were complete due to migration or resignation and the members that remained and were labelled as ‘active’, did often not spend much time on their responsibilities. The voluntary work was sometimes used as an excuse to access the public funds for personal consumption. In one of the villages, the former Chairman of the WUC recounted:

“[t]he retired WUC members heard 1,000 shillings [is to be collected]. They thought there was some eating, but then they found no money, so no eating. They retreated from the committee” (5 August, 2013).

Although volunteering in the WUC was not a gratifying job, at most locations one or two people remained engaged in water source affairs. The DWO of Kiryandongo observed: “often one person becomes a committee”. Nevertheless, the lack of a complete WUC was seen as an obstacle to long-term sustainability by TWT. As part of their post-construction monitoring, M&E staff counted the number of ‘active’ members in the WUC (following government monitoring guidelines). During these field visits, WUCs were reinvigorated and inactive members were replaced, often during ad hoc arranged community meetings under the auspices of TWT staff. A M&E staff member recounts his day:

“[t]oday I organised a community meeting in Kiruli I. The water source was in a bad condition. There was no fence and there are several spare parts that need to be replaced. We re-elected the WUC and we agreed that everyone had to pay 5,000 shillings to pay for the repair. After collection they will collect 1.000 UGX on a monthly basis.”

The WUC survey showed that 35 of the total 84 surveyed WUCs, (over a third) had been re-elected through the facilitation of TWT.

### **5.3.2 Enforcement of Graduated Sanctions**

WUCs were not able to enforce the mutually agreed sanctions to wrongdoers, such as public shaming and confiscation of jerry cans. Four factors contributed to the difficulty to enforce sanctions. First, most WUCs (apart from Abira and Kihonda-Nyakachaki) did not exactly know how many households were using the water point. Households in the case study crossed village borders dependent on distance and convenience, and often used multiple protected and open water sources. Furthermore, most villages inhabited a number of temporary settlers and regularly welcomed newcomers. As a result, the number of households that paid for the use of water fluctuated per year. For example, in Kyababyara village (where funds are only collected after breakdown), 46 households paid in April 2013 while only 32 households paid in January 2014.

Second, the reputation of the WUC member(s) was at risk upon enforcing the by-law. A WUC member in Kidwera observed that: “this could only bring hatred in the village” (10 November 2014). A community member in Mboira I explained:

“In our country there are people who usually break the law. After setting the by-laws, people have a negative attitude against the person that enforces the by-law. You become a public enemy” (30 October 2014).

The threats WUC members received substantially weakened their preparedness to enforce the by-laws. Nevertheless, emotions of “hatred” were not only felt against the WUC. In Kihonda people were discontent with free-riders, for example:

“[s]ome time back, the WUC decided to punish the community members by locking the pump. Everyone was now affected by not taking water. Twenty households would raise the money [the catchment area counted around 40 households] but then again the following month the others were not paying again. This created hatred in the village” (23 October 2015).

Third, the enforcement of sanctions could destabilise relations with friends and (extended) relatives in the community. For example, in one community, community members accused the caretaker of not collecting money from his friends. Other frequently mentioned problems with enforcing a by-law were:

“It becomes hard to enforce a by-law on your relative” (Kyarutanga October 2014).

“What do you do if someone pleads with you and tells you he has no money?” (Mboira I June 2014)

A fourth reason was that WUCs lacked authority to enforce a by-law and were dependent on the LC I for rule compliance. Yet, in none of the villages a local leader had punished a household for non-payment of water user fees. Community members accused some village leaders of being “lazy” (Bisenye village 12 November 2014) while others observed their need for popular support to stay in power:

“The Local Councillors are afraid as people might look bad at him” (WUC members Bisenyi October 2014).

“The Local Councillor I fears to be voted out of power and that is why he does nothing” (Community member Kyakayga October 2014).

The need for support (presence at meetings, follow-up or financial) from the local government or TWT was regularly raised. The presence of an external body at a community meeting to explain O&M requirements was often perceived as invaluable:

“Since the government is above us and if the community hears they are coming they will attend in good numbers and they will fear” (13 June 2014)

“Staff members of The Water Trust should come to ensure people get convinced, pay the money and accept the whole process” (13 June 2014)

Follow-up of defaulters by the sub-county was commonly raised as a way to avoid free-riding and develop collective action because: “it helps to threaten people” (Kyakayaga, 30 October 2014). However, the problem was that government officials usually needed to be paid to carry out such duties. A WUC member in Kyakamese explained:

“Maybe I should say the system has really defeated us. If you get an officer from the sub-county, you need to give them something to move. Yet, our money is not enough. We did it once, but we realised the very people who were helping us were instead dwindling our account (13 June, 2014).

The only recourse communities could attend to, was TWT. However, the NGO was not in a position to police the villages. A TWT staff member said: “we don’t want to be the dictator in the village” (6 August, 2013).

Although water source by-laws were not enforced, the majority of the villages did enforce by-laws on road works. On a number of Saturdays in a year, the LC I calls community members to maintain the road and slash surrounding grass. These roadworks are a longstanding and unquestioned tradition.

“Maintaining the road is done from time immemorial. That is why everyone comes and if not, people will and make you pay or confiscate a goat (TWT staff member, 5 November 2014).”

The by-law for non-participation of road maintenance varied per village but in general, the money or goods were collected from the free-riding household by the executive committee of LCI. The earnings were shared to buy drinks and food for the community members that did work on the road. Road maintenance was done in most of the studied villages. In those

communities where this tradition was lost, people ascribed this to the incapacity and weakness of their LC I.

Although the above account paints a discouraging picture, six water points in four villages were able to successfully raise funds for the O&M of their handpumps.

### **5.3.3 Alternative Water User Fee Collection Approaches**

This section reviews the cases where people were able to successfully raise funds for the O&M of the water source.

Abira, is an isolated village with one protected water source and the next source 3 km away. Fees are stored on a mobile money account and the households are cooperative as, according to the LC I, they belong to the same clan (11 November 2014). By the anecdotal village legend, the clan migrated from Nebbi to Masindi District in the 1920s. Their king was imprisoned by British soldiers after he commanded the massacre of another clan that was keen to overthrow the clan's power in Nebbi. Saddened by the loss of their king, the people of the clan desired to visit their king in Masindi prison. But unable to walk the long distance back and forth from their home to Masindi, they decided to settle near the final station of their beloved king. The village 'Abira' is named after the sub-village of the king in Nebbi District.

The current LCI of the village is simultaneously the WUC chairperson living next to the water source. He is seen as a strong leader because he is the grandson of the late imprisoned king who strictly follows-up the by-laws in the village. "People know the by-laws and they fear to be arrested" (LCI/ WUC chairperson Abira village, 11 November 2014).

The LCI charged a fine of 1,000 UGX for non-participation and denied access to the water source if a household refused to pay. As such, households paid the monthly water user fees, attended meetings about the water source and helped in cleaning and slashing if called upon.

Similar to Abira, Kihonda-Nyakachaki has one protected water sources with the nearest source 1.5 km away. Households in this village contribute water user fees, attend meetings about the water source and participate in public works such as cleaning and slashing water source surroundings when called upon. The water point in Kihonda-Nyakachaki has a respected WUC chairperson. A community member says: "[h]e was born in this area. We know him and he has been very social with the people around him. Therefore we trust him." (10 November 2014).

Together with the treasurer and the secretary, the WUC chairperson moves to the 37 households in the catchment area to collect the water user fees. In the period between January-October 2014, every household contributed the monthly water user fee and the WUC stored the money in a bank account. Despite their success, the WUC members did experience harassments during collection:

“There are many challenges. People abuse us. Some people think we use this money to develop ourselves and others keep on promising. But at the end we get the money” (WUC chairperson, 10 November 2014).

Bisenye is a rural growth centre with three water sources. The village is densely populated and the demand on the water sources is high which results in repeated maintenance costs. The sources are managed by committed and paid caretakers that live near the water source. They open and lock the handpump, collect user payments, and mobilise community members to clean the surroundings and maintain the fence. Repairs are handled by the chairperson of the WUC and the water fees are kept by the treasurer. The caretakers efficiently cluster the collection of the water user fees by collectively demanding an annual fee from the households at the beginning of the year. At the busiest water source (with a female caretaker) a two-tier annual payment system is developed with an ordinary line (5,000 UGX) and a priority line (10,000 UGX): “the VIP line” (caretaker, 12 November 2014). At this water point regular fights take place as a result of women jumping the long queue. “Two weeks ago a women bit another lady in the breast!” (caretaker 12 November 2014).

The caretaker enforces graduated sanctions for misconduct. She locks the borehole “if people are exchanging bad words” and “canes” the women and children that are fighting. The three caretakers are reasonably successful in collecting the O&M funds but not all households pay. A prime cause are the temporary labourers (around 100 households) that came to the village two years ago after a rich foreign individual offered land for free to cultivate in return for opening the land. “They can be chased away any moment, but we don’t know when” (caretaker, 12 November 2014). In addition to the labourers, there are a few households that that “don’t want to pay” (caretaker, 12 November 2014).

“Some of the people are not working. They just stay in the centre. They don’t dig. They just go and steal when the caretaker is not there. These are the youth” (WUC chairperson, 12 November 2014)

In 2014, the lock and chain were broken twice from the ‘busy’ handpump and the female caretaker had been robbed of cassava because “someone must have disagreed with the handpump being locked. It rained that evening and the footmarks from my kitchen led to the handpump” (12 November, 2014).

Similar to other villages, people fear the WUC is misusing the funds. “People say that the WUC is eating the money, not knowing that the borehole needs a lot of money (treasurer, 12 November 2014). The former WUC used to store the funds at a bank account. But they stopped using the bank account because 70,000 shillings was “lost” due to bank charges. “Taking the water user fees to the bank is too expensive” (WUC chairperson, 12 November 2014). The WUC keeps detailed payment records and regularly checks the available funds. Every year the WUC organises a community meeting to show accountability. But few people tend to turn up. “The people who talk are the very people that don’t come. In total 5 to 10 percent of the community may come” (WUC chairperson, 12 November 2014).

In Kidwera I, the WUC developed an alternative scheme to raise funds for the O&M of the water source. In the village, the WUC did not collect any funds for two years after its construction in 2009. In 2011, a TWT staff member visited the water point and told the community to collect a monthly water user fee. During a meeting, the community agreed to pay 500 shilling per month. Although more than 100 households used the water source, it took six months until the WUC had collected 90,000 UGX. The mobiliser of the WUC (active as a youth mobiliser at the sub-county and the son of the late father that donated the land for the water source) was frustrated with the slow collection process. As a result, he introduced the idea to invest the 90,000 UGX in seeds and to plant maize on one acre of his family land. The community agreed and collectively they cleared, weeded, planted and harvested the maize. The profits of the harvest (405,000 shillings) were stored in the WUC moneybox.

Although the WUC members told the neighbouring villages about their successful approach the model has not been replicated elsewhere.

## 5.4 Discussion

Unlike the local government, TWT strictly followed the CBM guidelines. Yet, outcomes of NGO and local government constructed sources did not diverge. In this discussion I explain why the two wings of the CBM model both individually and collectively endorse the management failings narrated in the case study.

### 5.4.1 Problems Arising from Neo-Liberal Inspired Commodification

The commodification of the CBM model includes a monetary user contribution towards the construction of the source and regular user payments to cover Operation and Maintenance (O&M) costs of the handpump to ensure ongoing access to ‘the good’. Initial contributions (in the case study both monetary and in kind) are assumed to lead to ‘a sense of ownership’ that result into an enduring willingness and commitment to pay a small amount for the upkeep of the system. A requirement that does not seem unreasonable. Marks and Davis (2012) show that households who invested in individual water access (such as piped water) have a commitment to continually pay the monthly water charges. Despite the individual contribution, this willingness to regularly pay water user fees was absent in the collectively managed sources. Only 3 percent of the surveyed water sources had sufficient funds for major repairs and only 47 percent of these water sources had made an attempt to collect funds for O&M (refer to Table 5.1). The lack of funds for O&M poses a serious threat to the long-term functionality of the water source as also highlighted by Burr and Fonseca (2013) and Jones (2011).

Participants in the study expressed that the refusal to pay water user fees was related to the (potential) misuse of funds by the WUC and their lack of ‘accountability’ on collected water user fees. Increasing transparency, introducing checks and balances and banking the funds appear therefore a logical solution to increase user willingness to pay (Foster, 2012; Oxford/RFL, 2014; Foster and Hope, 2016). Also, participants did not always understand what the water user fees were for; they already contributed towards construction and groundwater is for free. People did not fully grasp that a handpump requires regular maintenance and that without upfront funds, repair costs may be too high for water users to cover, potentially leading to lengthy interruption of supply.

The collection of funds – inherent to commodification – was damaging to social relationships. Remarkably, in most cases the free-rider was not questioned and subject to abuse but rather the collector while carrying out voluntary duties. Most WUC members were reluctant to chase debtors and destabilise friend and family relations. To understand the local resistance to pay water user fees, it may be helpful to look at the wider social-political context in Uganda. In a 2015 report by Transparency International, Uganda is ranked among the most corrupt countries in Sub-Saharan Africa (SSA), showing that powerful government officials often abuse their power to access public funds. Cleaver (2012 p. 48) observes that WUCs (with roles as chairperson, secretary, etc.) draw on state-like bureaucracies. This symbolic similarity between state institutions and the WUC may legitimise non-payment by the water users due to the general awareness and the informal norm that those in power may ‘eat the money’.

Indeed, the WUC members that do not resign, feel they need and deserve to be compensated for their challenging and voluntary tasks. It is at this stage, that commodification begins to extend from the ‘goods’ to the ‘service’ of water provision. In a number of case study villages, the commodification of the service was a mutual agreement while in others some WUCs informally abused funds for personal expenditures. The trend towards the commodification of the service was also reflected by a higher layer of political power. WUCs that relinquished attempts to discipline debtors and viewed the local government as their only remaining option to enforce locally agreed water source rules, were required to pay for the ‘service’ of the official. The payment of a per diem to an already salaried official is not unusual and is often taken for granted, however it illustrates how a voluntary undertaking on both village and local government level, have become commodified. This ‘movement’ of commodification seriously undermines the CBM model.

#### **5.4.2 CPR theory, Grass-Roots Romanticism and the Messy Reality**

The CBM model departs from an understanding that communities are harmonious (Mohan and Stokke, 2000; Brown, 2013). The case study however, reconfirms the ‘myth’ of community as raised by Critical Institutional scholarship and supports Cleaver’s (2001 p. 45) nuanced understanding of the term *community* as “the site of both solidarity and conflict, and shifting alliances”.

According to Common Pool Resource (CPR) theory, crafted WUCs are able to build trust, norms of reciprocity, enforce mutually agreed rules and graduated sanctions to ensure the sustainability of the water source. However, all the in-depth studied WUCs had fallen apart and in most cases only one or two individuals remained engaged. At only a few water sources individual ‘bricoleurs’ were able to positively influence the functioning of the institution as a result of their social identity, as Cleaver (2012) highlights. The bricoleur in Kidwera I came from a wealthy family with ample land and fulfilled a respectable role at the local government. The combination of the bricoleur’s authoritative status and resources, and creative ability to avoid repetitive confrontational rule enforcement and capability to manoeuvre within the CBM model realised public support and cooperation. However, the majority of the studied water sources lacked such a resourceful bricoleur. Because community members eschewed confrontational collection approaches and were not organically organised around water (while most of Ostrom’s (1990) cases were created organically) people often let the maintenance of the handpump run its course. In contrast was road maintenance which is a long-standing tradition that saw most people cooperate, accept and enforce the mutually agreed sanctions.

Although participatory strategies are fundamental to the CBM model, community meetings were not well attended and volunteering for the upkeep of the handpump proved problematic as also demonstrated by Harvey (2007), Lockwood and Smits (2011) and Quin et al. (2011). Community meetings are a traditional way of organising collective action and mutual agreement but changes in rural areas as increased wealth, transport and communication (World Bank, 2010) may interrupt communal gatherings and even the traditional respect for the LC I (responsible for calling community meetings) whose authoritative role was contested in the majority of the 15 villages where I conducted semi-structured interviews. The presence of TWT became necessary to reinvigorate the WUC and remind the water users of their duties. However, ironically, their persistent follow-ups may have weakened people’s feelings of responsibility for the handpump.

The CBM model is based on the assumption that water is a common pool resource; rivalrous in nature and difficult to exclude (hence, Ostrom’s (1990) first design principle of ‘clearly defined boundaries’). However, water was often non-rivalrous in the case study area as it was characterised by abundant open, yet contaminated, water sources and community members were able to avail themselves of alternative protected water sources. In these cases, water from a handpump rather resembled the characteristics of a public good, non-rivalrous and non-excludable. The lack of motivation to collect or pay upfront (contributing limited available

resources) and actively maintain the water source may therefore not be surprising. Similar to the results of Jones (2011), Madrigal et al. (2011) and Schouten and Moriarty (2003) WUCs in water stressed villages, were more successful in collecting user funds for future repairs and maintaining their water sources than in villages with abundant available water. Furthermore, the need for clear boundaries of the resource as prescribed by CPR theory proved difficult in reality. First, people bounded in the same geographical location are not static (Guijt and Shah, 1998) and most WUCs did not know which households were using the water source due to migration, short-term residency and the habit of using multiple water sources. Second, water is a human right and exclusion upon non-payment would be morally wrong. The lack of clarity who is accessing the resource and the inability to deny access contravene the 'rule' of exclusion in CPR theory. In addition, the fact that by-laws are verbal and differ for each point is also unhelpful.

The need to pay water user fees requires the WUC to enforce discipline upon free-riders. Here, the commodification of water encapsulated in the neo-liberal paradigm damages the potential for collective action by disrupting social relations and often exacerbating pre-existing tensions. The potential to access the funds tempted some WUC members to use the funds for personal use and created mistrust among water users, both undermining collective action.

In reality, the WUCs had no authority and were not able to enforce sanctions and the local councillors similarly lacked authority or were not willing to intervene. Their incapacity to support the WUC to carry out their work was illustrated by the calls of the WUC to involve the local government in the management of the handpump. WUCs were often unwilling to carry out their duties and the constant reinvigoration of TWT had little long-term impact. In addition, water users were well aware that they could not be punished for free-riding. Instead, non-payment was the norm and a rational choice (and was also the cause of the reluctance of the WUC to collect water user fees).

In sum, the two wings of the CBM model are conflicting and ideas about human agency and factors shaping human behaviour in CPR theory were not identifiable in the case study area.

### **5.4.3 Evaluating the Recommendations in the Existing Literature**

The problems with the CBM model as presented above are increasingly acknowledged in academic and practitioner literature. The reviewed literature mainly focuses on three sets of

recommendations to improve handpump sustainability: increasing social capital, technological innovations and external support. The question is, do they increase involvement and willingness to pay?

Increasing the 'stock' of social capital is envisioned through participation and capacity building (Cooke and Kothari, 2001; Mansuri and Rao, 2013). However, it is difficult to see how any more could realistically have been done by the NGO in motivating and guiding the application arrangements, in getting the participatory design and implementation process right and in reinvigorating the failing WUCs. There was little evidence that these efforts resulted in social cohesion and underlying divisions based on wealth and education are not easily resolved through tweaking participatory processes. The efforts of TWT may unintentionally reduce community engagement and the findings suggest that close social relations frequently inhibit the collection of fees and the enforcement of rules. Ironically, increasing the stock of social capital in these villages, as frequently suggested (Bisung and Elliot, 2014; Kähkönen, 1999; Pretty, 2003; Sun et al., 2010), may only exacerbate these problems. Equally, Field (2003), Portes (1998) and Portes and Landolt (1996) question whether social capital is always such a positive attribute, and demonstrate it may actually constrain collective action outcomes (they refer to the 'dark side' of social capital). In addition, the fear for witchcraft may have exacerbated the reluctance to sanction community members (Chabal, 2009; Golooba-Mutebi, 2005). There is value in practical capacity building – skills such as recordkeeping, financial management and knowledge about waterborne diseases, but workshops are costly and attendance not guaranteed and above all improvements in these areas would not address problems stemming from the voluntary status of WUCs, the availability of alternative water sources, and the reluctance to enforce sanctions on family and friends, nor encourage payment. The rare cases of success were down to unique characteristics, which may prove difficult to engineer and recreate.

Technological innovations such as smart sensors that monitor usage and downtime are another set of recommendations that are believed to improve the smooth functioning of handpumps (Hutchings et al., 2012; Hope et al., 2011; Thomson et al., 2012). While such innovations generate a wealth of information about the use and status of handpumps, they are unlikely to solve the low levels of user payments, fee collection issues or enforcement of sanctions. It is further unclear who will pay for the sensors and the installation costs.

Lastly, in both the literature (Barnes et al., 2014; Baumann and Furey, 2013; Carter et al., 2010; Harvey and Reed, 2006; Kamruzzaman et al., 2013; Kleemeier, 2010; Lockwood, 2004; Moriarty et al., 2013; Schouten and Moriarty, 2003) and in the communities studied there are calls for external support to enhance sustainability. Although post-construction support is a fundamental part of rural water planning, local governments often lack the resources (Day, 2011; Kleemeier, 2010) struggle with corruption (Blundo and Le Meur, 2009) and capacity building of the local government itself is considered vital (Quin et al., 2011). Blundo and Le Meur (2009 p.47) therefore argue that corruption by the (local) government is not so much the result of a lack of knowledge that can be resolved with capacity building, but part of deeply rooted political practices. Nevertheless, in the event external support by the local government was provided free of charge and on a regular basis, this would be an option to investigate. But at this point, the call for external support is a strong indication that the model is not working.

# Chapter 6

## Better The Devil You Know? Understanding Rural Water Management Innovations by Analysing Actors' Risk Perceptions

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### 6.1 Introduction

The purpose of this chapter<sup>24</sup> is to understand why the Community Based Management (CBM) paradigm has proven so resilient to change, despite its widely acknowledged poor performance across Sub-Saharan Africa (SSA). While alternatives to CBM have been developed, this chapter will show that they remain within the existing CBM framework, because innovations that deviate too far from CBM represent a possible risk to strongly held values. Relational risk theory of Boholm and Corvellec (2011) provides a conceptual framework and lens to explore the development (Chapter 7) of an innovation (*CBM-lite*) devised by the author when employed as the Programme Manager for The Water Trust (TWT) in Uganda. Because risk perceptions influence behaviour and human action (Eiser et al., 2012) and are part of social practices (risk perceptions are influenced by social practices and have a stake in creating and sustaining them (Boholm and Corvellec, 2011)) an analysis of actors risk perceptions may provide new insights in the handpump sustainability debate and enhance the geography of water literature. To date, the role of risk perceptions in rural water management policy and innovation in a developing context is under recognised and unacknowledged<sup>25</sup>. Moreover, there has been little examination of risk perceptions in advancing rural water supply arrangements. Thus, the thesis makes an important contribution to knowledge in the rural water sector.

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<sup>24</sup> Some of the arguments presented in this chapter draw upon the paper 'Better the devil you know? A relational reading of risk and innovation in the rural water sector' by Brown and van den Broek (**under review** with The Geographical Journal).

<sup>25</sup> Dobbie and Brown (2014) and Brown et al. (2009) write about risk perceptions in the urban water sector in Australia.

This chapter builds upon the case study findings of Chapter 5 that demonstrated the failure of CBM to enable community members to realise the key principles of the model: voluntary collective action and regular (upfront) user payment for the upkeep of the water system. The case study illustrated that the three sets of recommendations frequently raised in the rural water literature (refer to literature Chapter 2.7) – improving participatory processes, offering technological solutions and providing external support – are unlikely to increase community involvement and willingness to pay as they are confined *within* the theoretical foundations of the CBM model. Given the increasing body of work that criticises the outcomes of community based managed rural water sources in combination with the evidence that breakdown rates of rural water infrastructure are not substantially different from the state-led paradigm (Baumann, 2006; Evans, 1992; Oxford/RFL, 2014; RWSN, 2010), this chapter aims to understand why there is still strong sector support for the CBM model.

This chapter draws upon insights from the literature review of Chapter 2 that may help explain the strong support for CBM. First, institutional theory indicates that even dysfunctional institutions, such as CBM, can remain if there is necessary support (North, 1990). Indeed, the perseverance of the CBM model might be the result of its endorsement from left-wing grassroots developmentalists and right-wing neo-liberals that both promote a reduced role of the state, local control and community self-reliance (Mohan and Hickey, 2000). Second, CBM may persist due to disagreement on the causes of handpump failure, and the lack of consensus over what values (such as financial, environmental or social developmental factors) should reflect the end goal of ‘sustainable rural water services’ (Franks and Cleaver, 2009). Amongst such different opinions there is little common ground over a way forward.

This chapter further unravels the strong support for CBM by providing a theoretical literature review on the themes of innovation and risk. The chapter looks at how sustainable rural water management may be realised and goes beyond ‘simply’ critiquing the CBM model. It introduces an alternative rural water management model – *CBM-lite* – which was designed during my period as the Programme Manager for The Water Trust (a local Ugandan NGO) and has been grounded in action research, to improve the parlous funding situation of rural handpumps and the inactivity of the Water User Committees (WUCs) in mid-west Uganda. Refer to methodology Chapter 4.4 for a detailed overview of the action research and to 4.3 for a detailed description of my role in the development of the *CBM-lite* model. This present chapter introduces the *CBM-lite* innovation and its rationale, and serves as the theoretical foundation

for the analysis of research objective three: to analyse actors' risk perceptions about the CBM-lite innovation, which will be attended to in the next empirical Chapter 7.

Section 6.2 proceeds with a discussion about the alternatives that represent a move away from CBM. It argues that without a radical change in government, donor and NGO policy concerning post-construction support, the financing of handpump Operation and Maintenance (O&M) must come from communities themselves: hence the **user pays principle** remains fundamental. Section 6.3 moves to the importance of testing innovations because it may bring meaningful information on how communities can be enticed to pay for the maintenance of their rural water sources and what strategies may improve the management of rural handpumps. It presents therefore two current innovations: the 'Smart Handpump' project by the University of Oxford and the 'Sub-county Water Supply and Sanitation Boards' by IRC/triple-S and the Ugandan Ministry of Water and Environment. The section builds upon the three resource management categories of Karen Bakker (2007) to provide a nuanced and useful analysis on what level innovation is taking place. The analysis shows that these new endeavours only marginally deviate from the CBM model. It demonstrates the tendency towards the *status quo* in the rural water sector which features in both the literature (as argued in literature Chapter 2) and in praxis.

Section 6.3 proceeds with the introduction of the *CBM-lite* model – the central focus of the following chapters in this thesis – which is potentially an inexpensive and practical solution for achieving sustainable rural water management practices but may prove controversial as it refines the organisational and governance arrangements of the CBM model. Because the *CBM-lite* model deviates from mainstream CBM, insights into actors' risk perceptions on *CBM-lite* may prove helpful for understanding the lack of reform in the sector and for developing appropriate future rural water management arrangements.

To this end, Section 6.4 introduces the relational theory of risk of Boholm and Corvellec (2011) that may go some way to explain the inertia to change in the rural water sector and why innovations do not tend to deviate too far away from CBM. A relational reading of risk provides insight into varying interpretations of a risk posing object. The theory shows the fluidity of risk; how risk perceptions relate to a certain context, give way to new interpretations on related matters of risk and how they may be subject reassessment. The chapter closes with a set of concluding remarks in Section 6.5.

## 6.2 Room for Alternatives to Community Based Management in the User Pays Era

How much ‘room for manoeuvre’<sup>26</sup> is there to deviate from community based rural water management and to move away from user payment and community control? Here, ‘control’ refers to the day-to-day management of rural water facilities, involving management processes and mechanisms of access, such as organisational, financial, technical and legal arrangements, that mediate access to the resource (Cleaver, 2012). While in general, social services are delivered through the state, the market or the community, in reality there is no simplistic dichotomy between these three players. Social service delivery models often overlap (Bakker, 2007) and involve a range of other actors (i.e. networks of agencies, organisations, stakeholder groups and individuals) that may play a role in the day-to-day management of rural water facilities (Franks and Cleaver, 2009). Refer to Table 6.1 for an overview of the actors that could potentially take responsibility for a) paying the Operation and Maintenance (O&M) of the handpump and b) controlling the management of the rural water service.

**Table 6.1**

Potential Actors in the Management of Rural Water Services (Author’s construct)

	State	CBM plus (Baumann, 2006)	Community	Market
<i>Payment Operation and Maintenance</i>	State	State/Donors & Community	Community	Community or State
<i>Control over the day-to-day management of the water source</i>	State/Community	Community	Community	Market/NGO

The notion that rural communities in low-income countries should not be solely responsible for the often expensive and recurrent Operation and Maintenance (O&M) costs of rural water infrastructure is gaining ground in the literature. Baumann (2006) developed the ‘CBM-plus’ model which advocates that states in developing countries should cover 70% of the major repair costs of rural water sources. Similarly, Franceys et al. (2016) argue that subsidies from the international donor community are needed to finance the recurrent capital maintenance of rural

<sup>26</sup> Cleaver and de Koning (2015) state “[i]t is common for critical institutional accounts to consider how much room for manoeuvre different actors have to shape institutions and to promote change” (p.8).

water infrastructure and to invest in strengthening the capacity of the (local) government for improving the overall management of rural water services. Swyngedouw (2006 p.75) anticipated that: “without massively enhanced national and international public support, the MDGs will remain an empty promise”. Indeed, while globally the MDG target of progressing universal access to water has been met, in low-income Sub-Saharan Africa (SSA), coverage declined due to the high level of ‘slippage’ of rural water infrastructure (Sadoff et al., 2015).

In these suggestions, communities remain responsible for mediating access to the water source. Yet, to date, there is little evidence that support is forthcoming from sub-Saharan African (SSA) governments or donors. Political agreement to cover repair costs from government budgets may be difficult to obtain and it remains uncertain whether state agencies and local governments, often charged with corrupt behaviour and ‘lack of capacity’ (Polzer, 2001; Kleemeier, 2010), are a most realistic player to operationalise a subsidy programme for funding the capital maintenance costs of rural water infrastructure.

Even with a preparedness of governments and donors to fund or subsidize capital repair expenditures in low-income countries or communities and given the fact that communities in the suggested CBM-plus model are still required to pay for maintenance and minor repairs, an engagement with the ‘user pays’ principle persists. The ‘room for manoeuvre’ in the field of handpump control – a proposition that is reflected in the calls to ‘professionalise’ rural water services – may therefore warrant thorough investigation (Lockwood and Smits, 2011; Moriarty et al., 2013; Smits et al., 2010). A number of authors have studied the possibility of extending the role of the private sector into the daily operation and management of the water source, impacting on the mechanisms of access to water (Koestler, 2009; Moriarty et al., 2013; Kleemeier and Narkevic, 2010; Lockwood and Smits, 2011; Econ One Research 2003; Kariuki and Schwartz 2005; Requena and Triche 2006; Triche, Requena and Kariuki 2006; Valfrey-Visser et al 2006; Vezina 2002). These literature reviews report that markets for high quality and reliable water services (such as piped water schemes but also handpumps) in rural areas exist.

Generally, there are two different propositions for involving the private sector in the Operation and Management (O&M) of rural water sources. The first, represents the use of Private Operators (also sometimes referred to as social entrepreneurs) in the management of the handpump (Lockwood and Le Gouais, 2011; Kleemeier, 2010). Here, the ‘service’ of delivering water and maintaining access to the handpump is being commodified or in other

words, paid for. In these arrangements, the commodification of the ‘good’ usually remains the cost recovery of handpump spare parts and Hand Pump Mechanic (HPM) labour expenditures as common in the CBM model. The second proposition, involves a (local) company in the delivery of the water service that supports community groups and, or, Private Operators in the maintenance and management of the water infrastructure. Such initiatives represent Public Private Partnerships (PPPs) whereby the company or private operator is contracted in a particular geographical area (which may include both town and rural settings) and regulated by a dedicated regulatory body, or the local government in conjunction with the community (Kleemeier and Narkevic, 2010). In these (suggested) models, users tend to pay for both the water (the ‘good’) and the service as in urban water management arrangements. The involvement of the private sector in the management of rural water services is believed to increase efficiency and longevity of the water infrastructure, if there is ‘political will’ (GWP, 2000; Kleemeier and Narkevic, 2010; Valfrey-Visser et al., 2006) or ‘political capacity’ (van Steenberg et al., 2015) to adopt and support such strategies. In particular because the establishment of PPPs in rural areas “surely” requires financial support for capital investments in the short to medium term (Kleemeier and Narkevic, 2010, p. 2; Tremolet, 2002; Tremolet et al., 2002). Nevertheless, the same arguments about rolling back the state in favour of a more ‘efficient’ private sector were used to justify private sector involvement in the urban water sector; arguments that have been greatly discredited by urban human rights scholars as also highlighted in Chapter 2.5 (Bakker, 2007; Finger and Allouche, 2002; Johnstone and Wood, 2003; Laurie and Marvin, 1999; Swyngedouw, 2005).

Although not much has been written about private sector involvement in the management of rural handpumps, some authors raise concerns about market mechanisms in rural water service delivery (Adams and Halvorsen, 2014; Cleaver and Toner, 2006; Roe et al., 2009; Uno, 2005). They question the use of financial arrangements and the ability of rural communities to pay for accessing the water, and the capacity and commitment of the private sector to delivery these services. Further, it remains uncertain whether the private sector can be enticed to take on the rural water challenge, given their poor track record in urban water supply where they have tended to focus on “low hanging fruits” (Mason, 2013) – ‘cherry picking’ affluent districts, and have faced considerable backlash and contract cessation (Bakker 2013 p.94).

Nevertheless, the call to ‘professionalise’ rural water management arrangements by removing voluntary collective action, may indicate a shift towards political ‘right’ measures. The

economist and philosopher Friedrich Hayek (1944) predicted that market-based approaches inevitably succeed community management, i.e. the ‘Middle Way’. He wrote:

“... most people still believe that it must be possible to find some Middle Way between ‘atomistic competition’ and central direction. [...] Yet mere common sense proves a treacherous guide. [...] Planning and competition can be combined only by planning for competition, but not by planning against competition” (p. 31).

The calls for professionalisation may ultimately set in motion a splintering of support for CBM of those who remain hopeful of improved outcomes by strengthening CBM and those that aim to remove management responsibility from the community by introducing the private sector in the management of rural water sources.

### **6.3 Rural Water Management Innovations**

Until donors and governments are committed to fund recurrent capital repair expenditures of rural water services, the sector needs to engage with the user pays principle. The key question therefore is how communities can be enticed to pay for Operation and Maintenance (O&M) (including capital repair costs) when affordability is not an issue (Bey et al. 2015 p.97; Chowns, 2014; 2015; Fonseca, 2014; Harvey, 2008). It is only through testing innovations that meaningful information can be accumulated about what strategies may improve handpump maintenance and how “a policy that ‘works’” (Parsons, 2006 p. 6) can be realised.

Islands of rural water management innovations do exist within the SSA water sector; of which three will be presented below. These are 1) the Smart Handpump project by the University of Oxford, 2) the Sub-county Water Supply and Sanitation Boards (SWSSB) by IRC-Triple-S and the Ugandan Ministry of Water and Environment, and, 3) *CBM-lite* by The Water Trust (TWT), which is the central focus of this chapter and onwards. Both the Oxford Smart Handpump project and the SWSSB project have been put forward in the media and at various forums as promising models to address handpump failure in rural areas (View Appendix 6.1). While these initiatives are labelled as ‘innovative’, the aim of this section is to reinforce the argument in literature Chapter 2.7 and to demonstrate how the initiatives only minimally deviate from CBM and rather introduce elements on top of the CBM model.

To understand at what level innovation is taking place in comparison to the CBM model, it is helpful here to use Bakker's (2007) three resource management categories, developed to promote a more nuanced analysis of neo-liberal reforms in the urban water sector. It has a relevance to innovations within the rural water sector where there has been a similar tendency towards sweeping generalisations such as 'professionalising rural water services' (Lockwood and Le Gouais, 2011; Moriarty et al. 2013). Table 6.2 provides an overview of the different aspects within each resource management category as identified by Bakker (2007).

**Table 6.2**

Resource Management Categories (adapted from Bakker (2007 p. 443))

<b>Resource management categories</b>	<b>Aspects of resource management</b>
<i>Resource management institutions</i>	Primary goals Regulatory framework Property rights
<i>Resource management organisations</i>	Primary decision-makers Organisational structure Business models
<i>Resource governance</i>	Accountability mechanism Key incentives Key sanctions Consumer role Participation of consumers

Because the three innovations presented below have been designed to operate within the existing CBM institutional framework and pursue both user payment and community control, Bakker's (2007) first category, institutions, remains unchanged. The rural water management innovations will therefore be described according to Bakker's (2007) management and governance categories. These two resource management categories not only sophisticate the analysis of rural water management innovations but also provide insight about the individual elements encapsulated within the objective of community control. Refer to Table 6.3 for a summary of the problem analyses underlying the three innovations and their proposed solutions to improve handpump functionality.

**Table 6.3**

Summary Problem Analysis Handpump Non-Functionality and Proposed Solutions (Author's Construct)

<b>Initiative</b>	<b>Problem analysis</b>	<b>Solution</b>
Smart handpump project (University of Oxford)	Weak payment systems and slow repair process (Koehler et al., 2015).	Handpump fitted with monitoring technology to speed up information about breakdown to technician and pooling of funds.
Sub-County Water Supply and Sanitation Boards (IRC-Triple-S and MWE of Uganda)	Ineffective WUCs and inadequate external support (IRC/Triple-S, 2014; Bey et al., 2015).	Additional bureaucratic layer to supervise WUCs.
CBM- <i>lite</i> (The Water Trust)	Dearth of funds to pay for repairs and inactivity of the WUCs.	(1) Incentivised user paid Water Operator, (2) clustering village water sources to pool funds for O&M (3) banking user funds and (4) insurance style product to ensure sufficient funds for handpump repairs.

### ***Innovation 1: The Smart Handpump Project***

Funded by the UK Government, DFID, NERC and ESRC<sup>27</sup>, the University of Oxford established the ‘Smart Handpump’ project in Kenya. In this pilot project, mobile phone technology is fitted in a handpump to generate automated data about the water system: how much it is used and when, allowing predictions about the depth of the water in the wells. This data is then stored electronically in the ‘cloud’ to monitor usage and alarm a local company acting as the maintenance service provider in case of a breakdown (Katuva et al., 2016). The project aims to move towards an insurance style product whereby water user fees from multiple villages are pooled in an account, allowing the funding of costly repairs. In this model, water users pay the water user committee treasurer in cash, after which the treasurer deposits the funds through mobile payment (M-Pesa) on an account. Automated text messages about the deposits

<sup>27</sup> DFID, Natural Environment Research Council (NERC) and Economic and Social Research Council (ESRC)

are expected to increase accountability and transparency and willingness to pay (Koehler et al., 2015). The Smart Handpump project claims that: “[b]y monitoring the heartbeat of thousands of handpumps across Sub-Saharan Africa and South Asia, it is possible to give millions of people access to a reliable and secure water network” (Greeff, 2016 p. 1). Through the data generated by the sensors fitted in the handpump, they expect to speed up the repair process (Koehler et al., 2015).

On organisational level, the Smart Handpump project remains loyal to the Water User Committee (WUC) as within the CBM model. On governance level, the project introduces a ‘club good model’<sup>28</sup> to address the lack of user payment (Koehler et al., 2015). In the club good model users can be excluded from the resource. The number of users are expected to be regulated through the use of tariffs, i.e. community members can decide to charge a higher monthly water tariff to reduce the number of water users. It remains, however, unclear how user payments will be collected and temporarily stored before funds are transmitted to the maintenance service provider and, importantly, how free-riding can be prevented.

The outcomes of the Willingness to Pay survey supports their assumption that water users engaged in club good arrangements are more willing to pay for the Operation and Maintenance (O&M) of the handpump (43% more) than people engaged in common pool resource arrangements (Koehler et al., 2015). In addition, an improved service is assumed to translate into a willingness to pay (Foster and Hope, 2016). Hence, the project financed the rehabilitation of all handpumps in the research area and covered the O&M expenses of the water sources and thus exempting users from water user fee payments in the first year of the project. After this year, people are expected to value the improved and reliable water service, and are expected to pay willingly for the upkeep of the handpumps (Koehler et al., 2015).

### **Innovation 2: Sub-county Water Supply and Sanitation Boards**

The ‘Sub-county Water Supply and Sanitation Board’ (SWSSB) is an initiative of the NGO IRC under the Triple-S/IRC project and the Ministry of Water and Environment of Uganda, and has been piloted in two districts in Uganda since July 2013. The volunteer SWSSBs constitute an external body at the sub-county level that provide management support to the

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<sup>28</sup> Refer to literature Chapter 2.6.1 to read about the different typologies of common goods.

Water User Committees (WUCs) in the villages, cluster water facilities and pool funds for Operation and Maintenance (O&M) at sub-county level. The members of the SWSSB consist of technical sub-county staff, WUC members and opinion leaders from the communities (Bey et al., 2014; Mirembe, 2014; IRC/Triple-S, 2014; 2014b; 2015; MWE, 2014; Watsisi, 2013). On the organisational and village level, the WUC caretaker collects and remits the water user fees to the SWSSB (or in the future they may send the funds through mobile money). On the governance level, funds are stored at the sub-county. The costs for handpump repair are paid directly by the SWSSB. In the event of breakdown, the SWSSB informs the Hand Pump Mechanic Association – a public private partnership whereby the government of Uganda encourages handpump mechanics to form an association to improve supervision and timely supply of spare parts – and pays the association for the repair from the stored community fund. If the community lacks the funds for the repair, the board provides a loan to cover the repair costs. To this end, the district is expected to transfer additional funds to the sub-county to pay for the O&M costs of rural water infrastructure (Bey et al., 2015; Mirembe, 2014; IRC/Triple-S, 2014b).

According to the originators of the model, the SWSSB pilot is legitimised as a viable model to overcome handpump non-functionality as it is expected to overcome the ineffective WUCs and inadequate external support by the sub-county. WUCs are perceived to be ineffective as they “... are not able to collect sufficient funds at the community level to cover operations and maintenance (O&M) of water facilities. Weak administrative capacity, distrust on the part of water users, and unwillingness of users to pay for water are all contributing factors” (IRC, 2014 p. 1). Improved technical support by the district and the sub-county is expected to improve the management of the water sources as they will offer more clarity on roles and responsibilities, such as “... guidance on how to raise and manage the user fees” (Mirembe, 2014 p.1). In particular the storage and the pooling of funds at the sub-county is expected to improve collections as it increases accountability and transparency, and may remove feelings of distrust among water users (IRC/Triple-S, 2014b).

A progress report by Triple-S/IRC (2015 p. 5) reveals that “... the actual application of the model on the ground still faces several challenges”. Of the six sub-counties in the pilot project, only one sub-county managed to effectively roll out the SWSBB as intended. This success is attributed to the leadership quality of the Sub-County Chief and his Health Assistant, and their commitment to visit communities and to invest in accountability mechanisms as receipt books

and income and expenditure books. According to the 2015 report: “the decision to procure and share the accountability tools showed a change from the way WUCs were conducting business and inspired WUCs to subscribe to the board” (p.4). In the other sub-counties, failure is attributed to lack of political and technical will and leadership and a lack of capacity of the SWSSB to fulfil their roles. In addition, WUCs are reported to resist the handover of their money to the SWSSB, because: “the WUCs were sceptical of having user fees managed by government staff” (p.5). The report concludes with the recommendation to organise more meetings to create leadership buy-in and to build the capacity of the boards.

### **6.3.1 Analysing the Level of Innovation of the Smart Handpump Project and the Sub-County Water Supply and Sanitation Boards**

So, how do the Smart Handpump project and the SWSSB innovations deviate from the CBM model? From the perspective of Bakker’s (2007) resource management categories, the innovations are within the institutional framework of the CBM model; promoting community control and user payment. On organisational and governance level the innovations do not deviate from the CBM model, except from seeking greater transparency and accountability. They remain loyal to the CBM framework and introduce additional elements on top of the CBM model. This is interesting as both initiatives observe the weak functioning of the CBM model. In an academic paper on the Smart Handpump project, Koehler et al. (2015 p.397) legitimise the pilot project with: “[c]ommunity management of water services has been widely identified as a dominant but failing model in rural water service delivery in Africa (Bannerjee and Morella, 2011; Hope, 2014).” Similarly, in a blog about the SWSSB, IRC/Triple-S writes: “[i]n Uganda, as in many places, community water management has not worked very well (Watsisi, 2013 p.1).”

The Smart Handpump project by the University of Oxford combines the CBM model with a new monitoring product. Although seemingly radical, the Smart Handpump project does not alter the elements of the CBM model. Instead, it improves the current condition of the handpump infrastructure to accustom users to improved service levels and to incite continuous user payments for maintaining the same level of service. Remote automated monitoring and mobile money may struggle to improve water user collections and community control as these technologies do not address the complex social dynamics that arise at water user fee collections

as described in Chapter 5. Furthermore, the Smart Handpump project may be difficult to scale up. Even if the costs of monitoring technology and retrofitting the pumps are inexpensive (Greeff, 2016), improving the service levels of handpumps and bearing the costs of O&M for a certain amount of time may prove unmanageable to other implementing actors that have less available funds at their disposal.

The SWSSB initiative aims to improve the O&M of rural handpumps through introducing an additional bureaucratic layer on top of the CBM model that is responsible for external support services to communities. Although the progress report by Triple-S/IRC provides compelling evidence that the successes of the SWSSB are not convincing, hope is placed in capacity building (ironically of those that are expected to ‘build capacity’ themselves) and mending implementation processes. Remedies that may not be sufficient to improve the day-to-day management of rural handpumps and willingness to pay, as also highlighted in the discussion of case study Chapter 5.5.

The chapter proceeds with an overview of the *CBM-lite* innovation that, unlike the Smart Handpump project and the SWSSB initiative, reconfigures the organisational and governance arrangements of the CBM model.

### **6.3.2 The *CBM-lite* Model**

The *CBM-lite* model aims to improve the management and current parlous funding situation for O&M of the handpumps, so communities have access to a sustainably managed rural water point. The next empirical Chapter 7 will describe the development and implementation process of the *CBM-lite* model in detail. Table 6.4 compares the CBM and *CBM-lite* model, based on Bakker’s (2007) resource management categories and outlines the problem analysis of TWT on the CBM model.

On an organisational level, the *CBM-lite* model replaces the voluntary WUC with a single Water Operator, contracted through a competitive application process, and responsible for the O&M of a cluster of village water points for a period of three years. The Water Operator fulfils an entrepreneurial and leadership role which may improve execution of O&M tasks: the presence of a local leader is found to be more important than the number of people managing a water point (Cleaver, 1999) and although van Koppen et al. (2012) warn against elite capture,

they demonstrate that most successful rural water schemes are usually operated by the better educated and business minded people. According to Foster et al (2015); Oxford/RFL (2014) and (Zeug 2011) clustering of water points aids the involvement of entrepreneurs and reduces financial risks as it enables economies of scale. As a result of pooling of funds, a water user fee of 1,000 UGX per household per month was maintained, out of which the Water Operator and caretakers would receive their remuneration. In addition, clustering may increase village-wide clarity on payment rules, a challenge found in the case study Chapter 5, and improve efficiency and achievability of post-construction support by the local government. Under *CBM-lite* the decisions concerning the rules of operation and sanctions for non-payment are to remain locally determined by the community, as under CBM.

On an governance level, the *CBM-lite* model looks at incentives, accountability and sanctions. The *CBM-lite* model incentivises the Water Operator with financial remuneration drawn from the water user fees to promote a lasting motivation to carry out O&M duties, in other words the ‘service’ has been formally commodified (see also Harvey, 2008). It is expected that a single Water Operator increases lines of accountability and motivation to deliver a reliable service, supported by Cooke (2001).

The *CBM-lite* model tries to regain trust after the real or perceived previous misuse of collected water user fees (Golooba-Mutebi, 2005; Kamruzzaman et al. 2013; Naiga et al. 2015; Quin et al. 2011; van den Broek and Brown, 2015; Whittington et al., 2009) by storing the funds in a Savings and Credit Cooperative<sup>29</sup>(SACCO). This is anticipated, as Foster et al (2015) argue, to induce willingness to pay as a result of increased accountability and transparency. Funds for repairing handpumps can be accessed by the Water Operator through a form stating the costs of repair signed by the Hand Pump Mechanic (HPM) and the local leader of the village (referred to as LC I).

The *CBM-lite* model extends the function of the SACCO through the incorporation of an insurance-style product to allow (major) repairs in the event that funds stored in the SACCO are not enough to cover such maintenance. The advantage of an insurance for handpumps is that breakdown costs can be calculated and projected by using existing data from the WASH cost benchmarks (Foster et al., 2015; Burr and Fonseca, 2013). Refer to methodology Chapter

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<sup>29</sup> In 2006, the government of Uganda capitalised SACCOs in each sub-county to increase access to finance in rural areas (Makoba, 2011).

4.11 and Table 4.6 for a detailed overview of the calculated repair costs for shallow wells and deep boreholes by the Washcost benchmarks (Burr and Fonseca, 2013).

The Water Trust (TWT) created a contract that stipulated the roles and responsibilities of each actor (refer to Appendix 6.2). For the Water Operator, penalties for negligence were included (i.e. a fine of 10,000 shillings for a delay of SACCO payment) and space was provided for the locally agreed community by-laws dealing with matters as user payment, collection process and opening hours.

The following study in Chapter 7 will describe the development and implementation process of the *CBM-lite* model based on original and rigorous action research, surveys and interviews over the course of two years. The case study chapter reflects upon the risk perceptions of key stakeholders regarding the *CBM-lite* innovation that may represent a more controversial model than initiatives as the Smart Handpump and SWSSB project because it alters the organisational and governance arrangements of the CBM model. An analysis of actors' risk perception on *CBM-lite* is an opportunity to better understand what people consider to be of value and may help explain why innovations in the rural water sector tend to repeat the CBM formula. In order to do this, Section 6.4 introduces the relational risk theory (Boholm and Corvellec, 2011), that will be used in the discussion of case study Chapter 7 to frame the analysis.

**Table 6.4**

Comparison Between the CBM and CBM-*lite* Model on Organisational and Governance Level and Identified Challenges Related to CBM According to The Water Trust (Table adapted from Bakker (2007 p. 443))

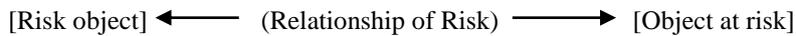
<u>Category</u>		<u>CBM</u>	<u>Challenges CBM</u>	<u>CBM-<i>lite</i> solutions</u>
<u>Resource management organisations</u>	Primary decision-makers	Leaders and members of community organisations		Leaders and members of the community
	Organisational structure	Water User Committee	Unclear leadership/Different rules per water source/Difficult to monitor and address handpump management with a WUC at each water source	Water Operator is responsible for a cluster of water points with a caretaker at each point (salaried)
<u>Resource Governance</u>	Accountability mechanism	Community norms (money kept within community by WUC)	Fear of misuse of funds and lack of trust by community members	Periodic fixed payments to a micro-credit organisation, payment slips and access to the account is granted through approval of various signature holders.
	Key incentives	Community opinion (i.e. non-financial)	Lack of motivation and voluntarism	Water Operator applies for the position (through a letter to the local government) and receives, with the caretakers, a financial compensation from the water user fees resulting from the clustering of water points.
	Key sanctions	Social pressure and communally agreed bye-laws	Sanctions are not enforced.	Social pressure and communally agreed by-laws enforced by Water Operator with LC I. Contract stipulate responsibilities and sanctions signed by key actors.
	‘Consumer’ role	User and community member		Customer
	Participation of ‘consumer’	Collective, bottom-up (voluntary attendance meetings & labour/works)	Poor community participation in voluntary works	Collective, bottom-up Attendance of meetings, but not public works

## 6.4 A paralysed Sector and The Relational Theory of Risk

The observed perseverance to the CBM model may be sustained due to the very nature of innovation that involves risk-taking and unknown outcomes (Vasvári, 2015). Townsend (2013 p. 24) writes that the public sector often becomes “paralytic” as a result of increased uncertainty and attributes its risk averse nature to the associated personal and organisational costs in case of failure (see also Stewart and Mackie, 2011). Prospect theory of Kahneman and Tversky (1979) argues that decision-makers often focus on relative gains and losses and not on absolute values. As a result, people often tend to commit to objects they already possess or are inclined to overestimate the positive impact of the status quo (Vasvári, 2015). As Hámori (2003, p789 in Vasvári, 2015 p. 37) writes: “*deviation from the status quo is definitely judged by individuals to be of risk*” (original text in italics). Similarly, and as also identified in Chapter 2.4.4, Douglas and Wildavsky (1982 p.93) warn that changes and ideas suggested by the centre are “... those best known and closest to existing programmes...”. They suggest that ‘real’ change may only come from boundary organisations “as the outsider sees more clearly and renewal comes from the margins of society” (p.189).

Furthermore, diverging risk perceptions of different actors and individuals may influence the varying range of (cosmetic) innovations in the rural water sector. For interpreting how and why individuals and social groups have different risk perceptions of the same event, this thesis uses relational risk theory, developed by Boholm and Corvellec (2011) building on work by Hilgartner (1992). The relational theory of risk comprises three elements as depicted in Figure 6.1. The first component, *risk object*, is something that is identified as a danger or harm. Examples include natural phenomena, manufactured products, behaviour, and in this thesis a new innovation in the rural water sector. The risk object is considered in some way and under certain circumstances to threaten the second component, the *object at risk*. The object at risk has human value and is linked to loss, vulnerability and the need for protection. This potential harm may or may not happen. Central is “the fact that there is no risk unless something of value is considered to be at stake” (Corvellec, 2010 p. 145). A *relationship* of risk (third component) must establish that it is the risk object that threatens the object at risk, and explain how and possibly why.

**Figure 6.1**  
A relational theory of risk (From Boholm and Corvellec (2011 p. 179))



Interpretation is a key feature of the relational risk theory. Aspects of risk are constructed phenomena involving subjective connections made by an observer: “imagined, crafted, and established” (Boholm and Corvellec, 2011 p.180). Once identified, the risk object takes on a certain independence: it is fluid according to context. The risk object stands open to new interpretations and to related matters of risk. This viewpoint corroborates with the observation of Cleaver (2012) that Water User Committees (WUCs) (with roles as chairperson, secretary, etc.) draw on state-like bureaucracies as noted in the discussion of Chapter 5.5.1. Because government officials in Uganda are often perceived as highly corrupt (Transparency International, 2015), community members may transpose this perception to the WUC members. Nevertheless, as Latour (1996) highlights, risk objects and objects at risk are not fixed, but subject to reassessment that may change over time.

Brown and van den Broek (under review) notice that “[t]he terms used in the theory are both clever and confusing: clever because risk and object are transposed underscoring the fluidity of risk; confusing because of their close similarity” (p. 6). As with Brown and van den Broek, this thesis replaces the terms with *risk posing object* and *threatened object at risk* to aid clarity.

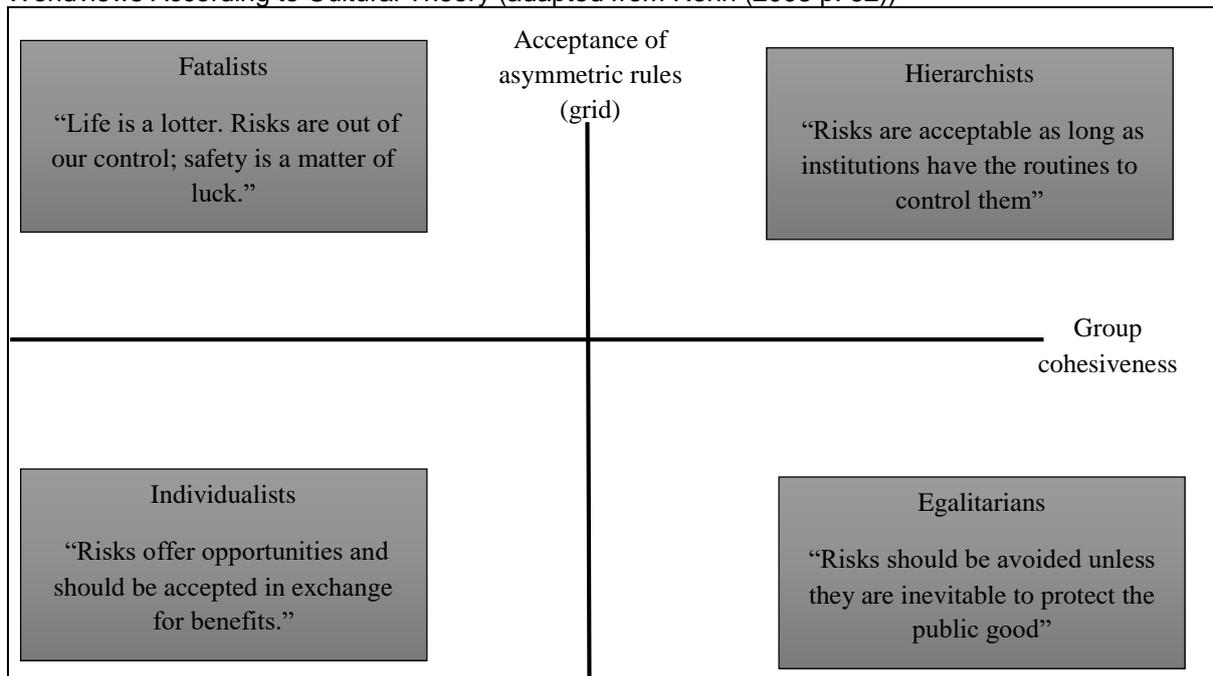
How and why value is manifested in a risk relationship is shaped by a person’s social and cultural identity (Boholm and Corvellec, 2011; Dobbie and Brown, 2014; Hilgartner, 1992; Slovic, 2001). Social identity is related to social structure, formal and informal institutions (broadly defined as the “rules of the game” (North, 1990 p.3), values and knowledge and belief systems (Boholm and Corvellec, 2011 p. 178; Dobbie and Brown, 2014). Cultural identity is associated with subjective norms; an insight that was explored by Douglas (1985; 1992) who developed cultural theory as a framework to typify social relations to cultural subjective norms or worldviews: hierarchists, egalitarians, fatalists and individualists (refer to Figure 6.2). Useful within cultural theory is the recognition that in all societies the nature and strength of group ties vary: from those with stronger group ties, which may originate from a strongly held belief in order, stability, continuity and responsibility or, ties which stem from ideologically driven altruism. At the other end of the scale are those with weaker group ties, from those only

minimally committed to their community who ‘muddle through’ while burdened with unavoidable external forces, through to those who turn risks to business opportunities for themselves. There is a danger in rigidly applying such a ‘simplistic’ framework that tends to box people in four different categories and simply links risk with cultural processes alone, as critics as Boholm (1996; 2003), Sjöberg (1996) and Forsyth (2003) have noted. Cultural theory should therefore be seen as a fluid model whereby people may have a different cultural worldview depending on their social context and where neither category is immune to the opinion of others (Tansey and O’Riordan, 1999). Boholm (2003) observes that the same external phenomenon (*risk posing object*) can result in widely varying interpretations (*threatened object at risk*) according to the strength and nature of group ties. Thus the same *risk posing object*, e.g. CBM-lite innovation, may be seen to destabilise order, harm a valued ideology, present a hurdle to free-riding or as a business opportunity which may possibly rebound and impose damage on the entrepreneur, exemplifying the fluidity of the risk posing object and threatened object at risk. These differences in members of a community are intrinsic to the notion of fluidity of risk, which simply does not come about without different perceptions of harm to different valued concepts. The key is in identifying *what* is held to be of value, and *how* it may be harmed.

Dobbie and Brown (2014) argue that risk perceptions – being socially and culturally shaped – are influenced by attitudes relating to sense of fairness, trust and perceived control. From a psychological perspective which highlights the expression of attitude in interactions (Prihodkine and Preston, 2015), an attitude refers to “a favourable or unfavourable evaluative reaction toward something or someone, exhibited in one’s beliefs, feelings, or intended behaviour” (Myers, 1993 p. 36). Within this viewpoint, attitudes have three different components: cognitive (thoughts, beliefs and ideas), affective (feelings of emotions that can evoke behaviour) and behavioural (intention to act in a certain way). Equally, Jung (1971 p. 415) argues that an attitude represents the “readiness of the psyche to act or react in a certain way”. As described above, Dobbie and Brown (2014) stress that attitudes are the result of an individual’s or group’s social and cultural identity and influence the evaluation of the relationship between a *risk posing object* and a *threatened object at risk*.

**Figure 6.2**

Worldviews According to Cultural Theory (adapted from Renn (2008 p. 62))



Attitudes related to sense of fairness can be either procedural (i.e. the decision-making process) or distributive (i.e. distribution of resources and burdens). Definitions of fairness may differ between actors as i.e. water practitioners and water users, and both may have a different relationship with perceived risk. For an adaptation to succeed it is important that people feel confident they can reap the fruits of the new water management arrangements (Forsyth, 2001). However, not all people will benefit the same way from an adaptation due to inequitable social relations shaped by class, gender, age and ethnicity (Cleaver, 2012). Further, Fischhoff et al. (1978) demonstrate the linkage between perceived control of a hazard to risk perception whereby an individual is likely to perceive lower risks with a familiar external phenomenon (see also Slovic, 1992; Gould et al., 1988; Vlek 1996; Boholm 1998; Renn and Rohrman 2000). Lastly, trust is key in the formation of a risk perception (Renn, 2008). For example, people may prefer ‘the devil they know’ such as CBM where risks and outcomes are known. Trust can relate to individuals and institutions (such as transparency of governance and accountability measures) or can relate to the service that requires trust (i.e. water quality). Furthermore, knowledge and trust are closely interlinked in relation to risk perception whereby knowledge about the risk *posing object* may result in increased trust and a reduction in perceived risk (Dake and Wildavsky, 1990).

## 6.5 Concluding Remarks

This chapter introduced an innovation in the sector – *CBM-lite* - designed by The Water Trust (TWT), under my direction as the TWT Programme Manager, to remedy the dearth of collected operation and inactivity of the Water User Committees (WUCs). *CBM-lite* aims to reduce handpump downtime by replacing the voluntary WUCs with an incentivised Water Operator to instigate the user pays principle, and through an insurance style micro-finance product that ensures funds are available for handpump repairs. Unlike contemporary new endeavours to improve handpump functionality such as the Smart Handpump project in Kenya and the ‘Sub-county Water Supply and Sanitation Boards’ (SWSSB) in Uganda, the *CBM-lite* innovation refines organisation and governance arrangements of CBM, but as the rules of operation and enforcement of sanctions are communally arranged, remains within the existing institutional framework of CBM. Potentially it is an inexpensive and practical but controversial solution for rural water sustainability as it deviates from mainstream CBM. Noteworthy, the *CBM-lite* model demonstrates how ideas from mainstream institutionalism were intuitively incorporated in the design of the model, such as incentives, formal decision-making processes and rules, contractual agreements, drawing on local leaders and building local capacities to perform Operation and Maintenance (O&M) duties.

The next chapter describes and reflects upon the development and implementation process of the *CBM-lite* model. The relational theory of risk will frame the discussion in this chapter. Here, the *CBM-lite* innovation is used as a lens to understand the intransigence in the sector. For this purpose, the proceeding Chapter 7 addresses research objective 3: to analyse the risk perceptions of community members, and local and national NGOs and government actors about the *CBM-lite* innovation.

# Chapter 7

## The Rise of the *CBM-lite* Model

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### 7.1 Introduction

This chapter<sup>30</sup> describes and reflects upon the development and implementation process of the *CBM-lite* model; an alternative rural water management model. The *CBM-lite* model has been piloted by The Water Trust (TWT), a local NGO in mid-West Uganda and was the result of action research undertaken during my role as the TWT Programme Manager from June 2012 to January 2014. This chapter draws upon the findings of the action research during this period. For a detailed description about the action research and my individual role, data collection and analysis, I refer the reader to methodology Chapter 4.

This present chapter links back to Chapter 6 that introduced the *CBM-lite* model. The analysis in the previous chapter, based on Karen Bakker's (2007) three resource management categories (institutional, organisational and governance), showed that the *CBM-lite* model, unlike other contemporary initiatives in the rural water sector, deviates from mainstream CBM on both organisational and governance level. As a result, the chapter concluded the *CBM-lite* model may represent a controversial initiative to actors in the rural water sector.

Therefore, this chapter addresses the third research objective of this thesis and aims **to understand the risk perceptions of community members, and local and national NGOs and government actors about the *CBM-lite* innovation.** The chapter examines the value judgements of these various actors on the *CBM-lite* model and analyses actors' risk perceptions according to the relational theory of risk by Boholm and Corvellec (2011) presented in Chapter 6 to understand *how* and *why* something is considered a risk. This chapter uses the *CBM-lite*

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<sup>30</sup> This chapter partly draws on the arguments of the paper 'Better the devil you know? A relational reading of risk and innovation in the rural water sector' by Brown and van den Broek (**under review**)

model as a lens to understand the risk perceptions of local and national actors in the rural water sector on innovating rural water management arrangements.

The chapter is organised as follows: Section 7.2 describes the motives of TWT to develop an alternative rural water management model. Section 7.3 reports on the feasibility study of the CBM-*lite* innovation that included: a financial study (7.3.1), exploring the feasibility of an insurance scheme for rural water sources (7.3.2) and, engaging with local stakeholders to elicit social acceptance for piloting the CBM-*lite* model (7.3.3). Section 7.4 describes the implementation process of the CBM-*lite* model in the pilot villages and Section 7.5 proceeds with a reflection on community members' risk perceptions and attitudes at the time the village by-laws on resource use were created. Hereafter, Section 7.6 describes the proceedings in the CBM-*lite* pilot villages in the first six months after implementation. The chapter brings the empirical reflections of the action research and the relational risk theory (Boholm and Corvellec, 2011) together in Section 7.7. Here, the risks perceptions of the various actors about the CBM-*lite* model are discussed in-depth.

The chapter shows a myriad of conflicting risk perceptions across community members, NGOs and local and national government actors with different underlying value judgments. Notably, it reveals a discomfort with the 'user pays' principle despite being a core element of CBM and a preference for the status quo – i.e. mainstream CBM. The chapter demonstrates changing risk perceptions among community members nearing the commencement of the CBM-*lite* model. It thereby questions the use of surveys, such as a 'Willingness to Pay' (WtP) survey, as a basis for rolling out rural water management innovations.

## **7.2 Motives for Developing an Alternative Rural Water Management Model**

The CBM-*lite* model emerged as a response to the consensus between staff of The Water Trust (TWT) (a local Water, Sanitation and Hygiene (WASH) organisation) and Kiryandongo Local Government about the nature of handpump failing, largely due to a dearth of funds to pay for repairs and inactivity of the Water User Committees (WUCs). The development of an alternative water management model started with the observation by staff of the TWT and myself (having worked in northern Uganda prior to my station in Masindi) that handpump non-

functionality and disrepair was a common occurrence, irrespective of location, type of handpump, implementer (NGO or government) and, ethnic, cultural and religious diversity. According to TWT staff, the rationale for non-payment often circulated around lack of accountability and mistrust of the WUC. As a community member in Nyakatugo said: “[t]he challenge of the WUC is that they don’t give accountability. That is why we lost trust in them” (13 September, 2013).

The inactivity of the WUCs was often connected to the voluntary nature of their role and the hardship upon water user fees collections as community members often appeared unwilling to contribute funds to the WUC. As a participant said during a quarterly district meeting: “[t]here is no incentive to be part of the WUC” (27 November, 2013). The people that were willing to take responsibility for the Operation and Maintenance (O&M) of the communal handpump were therefore scarce. A local government official in Masindi explained: “[t]hese people need to be harsh people, they should not mind if people don't like them” (14 June, 2014).

Because TWT was small in size (one director and a Board of five members in New York and, one Programme Manager heading the field operations with fifteen local staff members) it was possible to explore alternatives that deviate from the CBM framework as it lacked the bureaucracy often characteristic to international NGOs. The search for an alternative rural water management model was supported by the view of other local actors who were of the opinion that “... CBM is just a concept” (Programme Manager HEWASA<sup>31</sup>, 5 November 2013) and stated that “[t]he Water User Committees are useless. It is just a matter of policy” (Engineer District Water Office Masindi, 14 June 2014). Despite, the support from local actors to explore an alternative rural water management structure, concern was raised by a WASH advisor based at an international NGO in Kampala who argued that: “... we have to follow the government guidelines” (24 November 2013).

On a weekly basis, the TWT team and I discussed operational progress and brainstormed about possible ways to improve the Operation and Maintenance (O&M) of water points. One avenue proposed was to privatise the ownership of water points to an individual in the community through a tendering process to induce the incentive to maintain the infrastructure. It was suggested that the individual owning the water point would have a self-interest to collect the water user fees as the individual made a financial contribution (to i.e. the local community to fund a local project) to manage the water source. Yet, privatising the management of communal

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<sup>31</sup> A local WASH NGO in Masindi

handpumps was found too controversial for a number of reasons. First, to siphon ownership of a communal water source to an individual would collide with the Local Government Act (1997) that states communal water points are legally owned by the Ugandan local government. Second, conflict could arise about ownership over land and the water infrastructure as communal water sources are usually constructed on land owned by an individual from the community. Third, local consensus from community members, (local) government and politicians would be difficult to gain as a result on the emphasis on user payment and the potential exclusion of community members from the water source in case of non-payment by the ‘owner’ of the water source.

The final development of the CBM-*lite* model was the outcome of the weekly staff meetings and numerous interactions and discussions with individual staff members, staff of other NGOs, community members, Hand Pump Mechanics (HPMs), local government officials in Masindi and Kiryandongo districts and Savings and Credit Cooperative (SACCO) representatives over a period of twelve months. Chapter 6.3.2 provides a detailed description of the CBM-*lite* model. The exploration of the feasibility of the CBM-*lite* model and the engagement of the stakeholders happened concurrently before the CBM-*lite* model was rolled out.

### **7.3 Exploring the Feasibility of CBM-*lite***

This section describes the feasibility study of the CBM-*lite* model by The Water Trust (TWT) under my direction as the TWT Programme Manager. In total six villages were selected by TWT staff to explore the possibility for implementing a pilot study of the CBM-*lite* model. The villages were selected on the basis of non-operational or absent Water User Committees (WUCs). With approval of the district, sub-county and village Local Councillors<sup>32</sup> (LC), each of these villages were mapped by TWT staff to locate the protected water points, open water sources, roads and main features of the village. Table 7.1 provides an overview of the implementation process of the CBM-*lite* model. The following sections will discuss each of these implementation steps in-depth.

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<sup>32</sup> The lowest of the five locally elected government representatives in the district.

**Table 7.1**Summary of the CBM-*lite* Implementation Steps (Author's construct)***Financial Feasibility***

Identify water usage of the households and their willingness to pay water user fees.

Calculate estimated minor and major repair costs through: (1) Identifying type and status village handpumps (2) using the WASHcost benchmarks (Burr and Fonseca, 2013) and, (3) the sales of spare parts by TWT in the period 2009-2012.

Calculate financial compensation for the Water Operators.

***Feasibility Insurance Scheme***

Explore financial status of the SACCO.

Reach an understanding with the SACCO to function as an insurance scheme.

Set the interest rate for the credit service.

***Engaging Local Stakeholders***

Gain government support to pilot the CBM-*lite* model.

Conduct 'Willingness to Participate' survey amongst targeted pilot communities.

Share CBM-*lite* model with other water practitioners.

***Implementation of the CBM-*lite* model***

Organise consultation meetings in each targeted pilot community.

Conduct interviews with applications for the role of Water Operator and facilitate selection process.

Carry out training for the selected Water Operators on the CBM-*lite* model.

Ensure knowledge of roles and responsibilities through the signing of a contract by each actor involved in the CBM-*lite* model.

Encourage the establishment of village by-laws on resource use.

**7.3.1 Financial Feasibility**

To determine the financial viability of the CBM-*lite* model, the following three issues were worked out: (1) expected monthly water user fee collections, (2) estimated water system repair costs and, (3) payments to the Water Operators. To calculate the user fee collections, TWT staff conducted, under my direction, a Willingness to Pay (WtP) survey among all the households in the six villages. Refer to Appendix 4.3a for an outline of the WtP survey. The WtP survey was

considered important because water user payment would determine the feasibility of CBM-*lite*. In total 1138 households were surveyed of which 98.8 percent (1125 households), said they were willing to pay 1,000 UGX on a monthly basis “[a]s long as it is accounted for” (Nyakabette II) and “[b]ecause no one in this village cannot afford 1,000 shillings per month” (Kifuruta III). Only 13 households indicated they were not willing to pay any funds “[b]ecause there is another water source where they charge 5,000 per year” (Nyakatugo), or: “[a]t least on a seasonal basis, because there is a time when we do not have money” (Nyakabette II) and, “[i]t is too much for me because I am old” (Mpumwe).

The maintenance and repair costs of the water sources in the villages were calculated through various methods to triangulate the findings and increase the reliability of the financial projections. First, the WASHcost benchmarks (Burr and Fonseca, 2013) (as presented in methodology Chapter 4.11, Table 4.6) were used as a basis to estimate the average minor and major repair costs of the Shallow Hand Dug Wells (SHDWs) and deep boreholes. Further, three Hand Pump Mechanics (HPMs) visited each village with a TWT staff member to check the status and the age of the water infrastructure in the villages. In addition, the repair costs were calculated on the basis of the sales of spare parts to the communities by TWT in the period between 2009-2012.

Table 7.2 depicts the outcomes of the financial feasibility study for the three villages initially included in the pilot study. The first row shows the expected revenue in each village and includes the number of households and the total expected water user collection based on a monthly water user fee of 1,000 UGX. The second row in the table demonstrates the estimated expenditures. It shows the Operation and Maintenance (O&M) costs of the water sources over a period of three years and indicates the number of water sources in the particular village and their expected total minor and major repair costs. The sum of the O&M expenditures is covered in the insurance package of the Savings and Credit Cooperative (SACCO) that remits the funds in case of a breakdown or maintenance service by the Hand Pump Mechanic (HPM). Based on this amount, the community pays an interest rate of 0,5 % per month to the SACCO. The total O&M costs include therefore the minor and major repair costs and the interest rate to the SACCO. The monthly payment to the SACCO covers 40% of the total monthly water user fee collection that enables the reimbursement of the projected O&M costs within a period of three years. The remaining 60% of the monthly water user fee collections is destined for the village Water Operator and the caretakers.

**Table 7.2**Financial Overview of CBM-*lite* Model in Mpumwe/ Mboira II/ Nyakatugo in Ugandan Shillings (UGX) (Author's construct)

<b>Mpumwe</b>		<b>Mboira II</b>		<b>Nyakatugo</b>	
<b><u>Revenue</u></b>					
Demand (no. of households)	297	Demand (no. of households)	147	Demand (no. of households)	132
Tariff	1,000	Tariff	1,000	Tariff	1,000
Total revenue p/m	297,000	Total revenue p/m	147,000	Total revenue p/m	132,000
<b><u>Estimated O&amp;M costs over a period of 3 years</u></b>					
O&M minor repairs (6 <sup>33</sup> water points)	1,539,000	O&M minor repairs (3 water points)	513,000	O&M minor repairs (3 water points)	769,500
O&M major repairs (6 water points)	2,052,000	O&M major repairs (3 water points)	769,500	O&M major repairs (3 water points)	769,500
Interest rate SACCO (0,5% per month)	646,380	Interest rate SACCO (0,5% per month)	230,850	Interest rate SACCO (0,5% per month)	277,000
Total costs O&M	4,237,380	Total costs O&M	1,513,350	Total costs O&M	1,816,000
Monthly payment SACCO (40%)	118,000	Monthly payment SACCO (40%)	43,000	Monthly payment SACCO (40%)	50,500
<b><u>Surplus</u></b>					
Monthly remuneration Water Operator	197,000	Monthly remuneration Water Operator	104,000	Monthly remuneration Water Operator	81,500

<sup>33</sup> Mpumwe village counted eight Shallow Hand Dug Wells (SHDWs). Yet, two non-functional local government SHDWs were constructed in a swamp and yielded unsafe drinking water. These SHDWs were therefore not included in the CBM-*lite* pilot project.

A water user fee of 1,000 UGX per household per month (the amount advised by the local government) did not prove viable in one of the six studied villages due to low population density and high number of handpumps. Because TWT staff foresaw that an increase in water user fee would lead to discontent among community members, the village was excluded from the pilot programme. In the other studied villages, the fee for the Water Operator considerably supplemented the average local income of 185,000 UGX (UBOS, 2012) allowing the Water Operator to pay a stipend to the caretakers. Further, people unable to pay would not threaten the financial feasibility of the model as a non-payment rate of 11.5%<sup>34</sup> would still make the earnings worthwhile for the Water Operator to conduct the tasks.

### 7.3.2 Feasibility Insurance Scheme

The approval of the Savings and Credit Cooperative (SACCO) to function as an insurance scheme was key to the feasibility of the CBM-*lite* model. Through the ‘Uganda Savings and Credit Union Limited<sup>35</sup>’ (UCSCU) the SACCO in Kigumba town was approached, due to their reliable track record, good management and steady financial position. The SACCO manager considered the CBM-*lite* model as a potential business opportunity: “[i]f this model works, other villages and Water Operators will follow” (17 April, 2013). In my role as the TWT Programme Manager, I presented the CBM-*lite* model to the board of the SACCO, the sub-county and a representative of the district. The SACCO manager and the board agreed to be part of a pilot study and felt the risks were low as funds would only be released in case of a service and breakdown and it was believed that “[i]t is very unlikely that all handpumps break down at once” (SACCO manager, 16 June 2013). It was agreed to charge a monthly interest rate of 0,5 percent over the money borrowed for Operation and Maintenance (O&M). Each Water Operator was expected to invest in the project by opening a SACCO customer account costing 75,000 UGX (USD 26).

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<sup>34</sup> According to the Ugandan population census of 2013, seven percent of the people in Uganda are classified as elderly people (60 years and above) and 4,5 percent of the people in Uganda have a disability. Both are often poverty stricken.

<sup>35</sup> UCSCU is a national umbrella organisation to supervise and regulate SACCOs in a geographical area.

A major concern with storing community funds at a SACCO was however the possibility of bankruptcy as multiple SACCOs had collapsed in the past (Friends Consult, 2008). In addition, SACCOs operate on a small scale and differ in their quality of services. Due to these concerns, I explored the possibility to involve an insurance company rather than a SACCO as insurance companies operate at a larger scale and may have sufficient liquid assets and better internal accountability mechanisms. The Kigumba Sub-County Chief agreed and argued: “I have seen SACCOs closing and people losing their money. With an insurance company you are sure you will be compensated” (29 November 2013).

I approached an insurance company with a branch in Masindi and that was planning to open a branch in Kigumba town, Kiryandongo district. The Masindi branch Manager was interested to explore the possibility to develop an insurance scheme for handpumps in rural areas as it could potentially lead to a substantial increase in clientele. Hence, we drafted a possible insurance policy that could enable the insurance of handpumps on a large(r) scale. Refer to Appendix 7.1 for the outline of the draft handpump insurance policy.

To gauge political support to insure handpumps through an insurance company, we presented the idea to the Board of Masindi local government. The response was clear-cut: “we like the idea, but without the insurance.” Insurance companies were “...not trust-worthy” (District Chairman, 27 November 2013). The District Chairman continued: “I would never ensure my property, if something happened they already would have eaten my money! And, what would happen if the handpumps don’t breakdown?” Similarly, the District Water Officer (DWO) of Masindi felt that the involvement of an insurance company would be too risky. “In the event the Water Operator defaults, what will the insurance company take from him?” (15 November 2013).

The Board of the insurance company was at first interested to look at the possibility to insure handpumps. However, after eight months of internal consultation the conclusion of the management Board was that the company could never insure handpumps as they were not willing to ensure against wear and tear and the replacement of spare parts. Moreover, in January 2015, the Uganda Insurance Regulatory Authority withdrew the license of the company due to mismanagement. As such, besides the general prejudices against insurance companies, the insurance scheme proved indeed a risky business for the O&M of rural water points.

### 7.3.3 Engaging Local Stakeholders

The Water Trust (TWT) verified the appetite to pilot the CBM-*lite* model with a range of local and national actors to elicit social acceptance of the proposed innovation. The actors included the local government of Masindi and Kiryandongo district, community members in the targeted pilot villages, a range of NGOs and a representative of the Ministry of Water and Environment (MWE) at national government level.

#### **Local Government:**

Despite a shared problem analysis about handpump failure, officials from Masindi and Kiryandongo district had different opinions about a possible way forward for addressing handpump non-functionality. Refer to context Chapter 3.3.1 and Table 3.1 for a detailed overview of the local government structure in Uganda. In Kiryandongo, the District Water Officer (DWO) and the Sub-County Chief of Kigumba welcomed a pilot study of the CBM-*lite* model. “This pilot is good as people will feel their money is secure” (Sub-County Chief Kigumba, 13 June 2013). The DWO of Kiryandongo expected the CBM-*lite* model to increase handpump functionality as “...this is unlikely to happen with the current [CBM] system” (20 August 2013).” Nevertheless, the DWO was worried that politicians could interfere in the pilot: “[I]et us hope politicians don’t come in to pay for the community. When something becomes political the idea can die out. People always look for ways for avoiding something” (ibid.).

The DWO of Masindi did not support a pilot of the CBM-*lite* model. Risk of poor services and misuse of funds by the Water Operator were felt too high. “We need guarantees that the Water Operator performs and does not eat the money” (DWO Masindi, 12 June, 2013). In response, TWT tried to minimise the risk of misuse of funds through: (1) the use of signatures (of the Hand Pump Mechanic, Water Operator and LC I) to access the SACCO account, (2) the use of a contract (refer to Appendix 6.2) that stipulates the sanctions of misconduct and (3) close supervision of the Water Operators by the sub-county and TWT staff. Despite these measures, the DWO of Masindi was not convinced misuse of funds could be prevented.

**Community Members:**

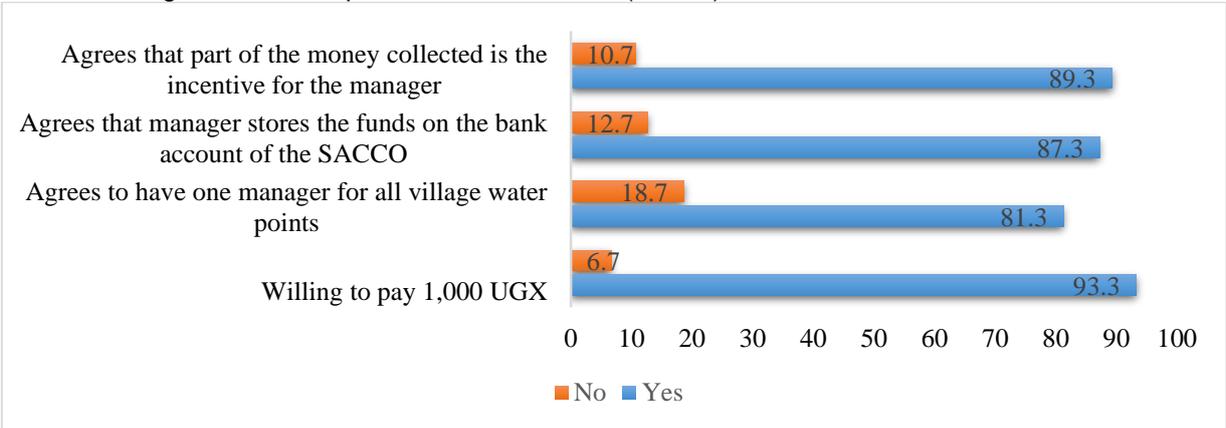
To measure public support for a pilot study of the CBM-lite model, a survey was carried out in six villages to explore the willingness of individuals to support the roll out of the CBM-lite model in their village. This ‘Willingness to Participate’ survey, presented in Appendix 4.3b, involved a total of 150 community members of which the majority were female. The six potential pilot villages were identified by TWT staff and shared inactive Water User Committees (WUCs) and handpumps in disrepair. The ‘Willingness to Participate’ survey was designed by the author and carried out by staff of TWT. Refer to methodology Chapter 4 and Appendix 4.1 for a detailed description about the selection of respondents and the administration and analysis of the surveys.

TWT staff explained the CBM-lite model to the respondents of the ‘Willingness to Participate’ survey and asked participants if they would support:

- 1) a single Water Operator from and living in the community to manage all the water sources in the village for a period of three years;
- 2) the Water Operator to store community funds in a SACCO bank account and to be involved in an insurance scheme;
- 3) to recompense time of the Water Operator in keeping the water systems running and,
- 4) to pay a monthly water user fee of 1,000 UGX.

Figure 7.1 summarises the responses as percentage of the total respondents agreeing or disagreeing with the statements listed.

**Figure 7.1**  
Results Willingness to Participate in CBM-lite Model (N=150)



To interpret people's answers, TWT staff asked respondents *why* they agreed or disagreed with the individual component of the CBM-*lite* model. What follows is a brief summary of respondent's answers.

### **Water User Payments:**

As shown in Figure 7.1, the vast majority of the respondents were positive to implement a pilot study of the CBM-*lite* model in their village. Water user fee payment was considered tolerable due to improved transparency and accountability mechanisms and the prospect of well-maintained community sources as a result of the CBM-*lite* model.

### **A Single Water Operator:**

The use of a single Water Operator for a cluster of water sources raised most of the concern. Respondents that agreed to have one Water Operator to manage all the water points in the village (81,3%) predominantly reasoned that clear responsibilities, could enhance the maintenance of the handpumps and the payments of the water user fees. These respondents said: “[h]e will be directly questionable to us” (Mboira II), [i]n case of a problem we know who to attack” (Nyakatugo) and, “[i]t's easier by one person” (Mpumwe). According to these respondents, a responsible operator could bring about [...] “a change from WUCs which are always inactive” (Nykabette).

Motives to not support one Water Operator responsible for all the water points in the village (18,7 %) were expressed as lack of trust, and the fear of misuse of funds and power. For example: “[y]ou cannot trust an individual” (Nyakatugo); “[h]e comes with new laws and stop us from accessing water” (Mpumwe) and, “[w]e are not sure if he will give services without eating the money” (Mpumwe). Others felt that an individual, in contrast to a group like the WUC, would “... take away our powers as water users” (Mpumwe). “Because the person managing can be dishonest and exploit people for all those three years” (Kifuruta III). And, “[h]e might mismanage the water sources by overcharging” (Mboira II). Another reason to not support one Water Operator, despite the use of water source caretakers, was the conviction that

one individual could simply not handle the community but needed more people to fulfil the tasks of collections and maintenance.

### **Involvement SACCO and Handpump Insurance:**

Respondents that agreed with the involvement of the SACCO in storing funds and enabling an insurance scheme (87,3%), felt that securing the funds through the SACCO could increase willingness to pay because “[m]oney will be kept well” (Mboira II) and “[e]ven if this person has a sick person he/she cannot access the money” (Nyakatugo). Further, most respondents liked the insurance package: “[i]n most cases the water source breaks down and the WUC does not have money to repair but here the community is assured” (Nyakabette II). Participants that questioned the use of the SACCO (12,7%) did not trust the Water Operator to bring the funds to the SACCO: “[h]e will misuse the money” (Nyakatugo). Or, did not trust the SACCO: “[i]t is not easy to monitor money which is in a bank” (Nyakabette II).

### **Financial Incentive Water Operator:**

Respondents in favour of an incentive for the Water Operator from the funds collected (89,3%) supported a *quid pro quo* mode: “[h]e will work hard because he needs a profit as well” (Nyakatugo) and “[h]e will be able to move and monitor all shallow wells and maintain them” (Mpumwe). Respondents that did not want to incentivise the Water Operator (10,7%) mistrusted a single Water Operator and felt that “[h]e might look at maximising profits and not at people getting clean water” (Nyakatugo) or, averse of private interests said: “[t]he chairperson WUC can also do that” (Mpumwe).

The outcomes of the ‘Willingness to Participate’ and the ‘Willingness to Pay’ survey provided the justification and the feasibility to roll out a pilot study. Financially, the CBM-*lite* model proved feasible in four pilot villages. The clustering of the village water sources generated sufficient funds to cover projected handpump maintenance and repair costs, SACCO interest rates and a stipend to the Water Operator and caretakers.

### **5.4.3.1 NGOs at National Level:**

At the conceptual stage in August 2013, I shared the rationale and principles of the CBM-*lite* model at a meeting with local and international NGO representatives based in the capital Kampala. The problem analysis of CBM-*lite* was not well received. “I have just visited a village last week and the Water User Committee was doing fine,” while another participant stressed that “our organisation believes in the strengths of the Water User Committee.” Although the organisations recognised problems with payments of water user fees, they saw the solution in “strengthening” the CBM model by “full involvement of the community”, “encouraging”, “sensitising” and “building capacity” of people to pay and “changing their mind sets”. A prime concern was the emphasis on user payment, potentially harmful to the health of community members as they were anticipated to use open and contaminated water points to shun payment. Participants could not see “... how the community benefits from this kind of operation” and raised concerns about the attitude of the Water Operators to community members in cases of non-payment. Another objection was the use of the SACCO as an insurance company because “... they are not an insurance company”. The NGO representatives were worried that innovations as CBM-*lite* could harm the sector due to lack of policy coherence and consistency. In sum, scepticism about the model dominated the discussion and responses on the model were discouraging. The Director of the Uganda Water and Sanitation Network (UWASNET) concluded with the advice: “come back when you have evidence that the model is working.”

### ***National Government:***

In addition to the NGO meeting, I met with the Director of the Directorate of Water and Development (DWD) of the Ministry of Water and Environment (MWE) to receive feedback about the CBM-*lite* model. Similar to the concern expressed by the NGO representatives, the Director viewed the CBM-*lite* innovation as a potential threat to the CBM framework. He stressed: “[w]e have the O&M framework. We are happy about this. I request the NGOs to support the Water User Committees. To me it doesn’t matter if you leave. As long as you don’t disorganise the framework. The government does not have the flexibility to try out. For us we have to get it right the first time” (25 November 2013).

## 7.4 Implementation of the CBM-*lite* Model

Despite the criticism of the NGOs in Kampala and the Director of DWD about the CBM-*lite* model, four of the six surveyed villages were selected by the District Water Officer (DWO) of Kiryandongo and The Water Trust (TWT) to take part in the pilot study. Three villages (Mpumwe, Mboira II and Nyakatugo) participated in the CBM-*lite* pilot from August 2013 and one village (Nyakabette II) was enrolled in the programme in October 2014. Refer to context Chapter 3.6 for a background description of the pilot villages.

The pattern of implementation was similar in each village. A consultation meeting was organised to discuss the status of village water sources and to present the CBM-*lite* model. Actors that facilitated these meetings were: TWT staff members, the Sub-County Chief, a Community Development Officer (CDO) of the sub-county and the SACCO Manager. I attended the information meetings about the CBM-*lite* model in three villages; Mpumwe, Mboira II and Nyakatugo. For the sub-county staff and SACCO Manager to attend, TWT arranged transport and paid an allowance<sup>36</sup>. The people were mobilised by the Local Councillor (LC) I of the village. On average, a small proportion of the population attended these meetings (usually between 50-80 people) out of 279 households<sup>37</sup> in Mpumwe, 147 households in Nyakatugo and 132 households in Mboira II. During the meeting, the option to apply for the position of Water Operator was brought forward, including the day and time for the selection.

In every village people applied for the position of Water Operator: three in Mpumwe, eight in Mboira II, seven in Nyakatugo and five in Nyakabette II. Each applicant was interviewed by the Sub-County Chief, Sub-County CDO, SACCO Manager and a TWT staff member. I attended the interview and selection process in three villages (Mpumwe, Nyakatugo and Nyakabette II). After the interviews the Water Operator was selected by the community.

In Mpumwe and Nyakabette II, a group of around fifty community members requested the three candidates to pitch why they would be the best Water Operator. After the pitch, the candidates were asked to turn their backs to allow people to vote their favourite candidate anonymously. Unlike the other villages, people in Nyakabette II selected a lady because "... she ha[d] "proved to be trustworthy in her tasks as a caretaker." Refer to Appendix 7.2 for a short video about the selection procedure in Nyakabette II.

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<sup>36</sup> The Government of Uganda set standard allowance rates for officials.

<sup>37</sup> The average household in Uganda consists of 6-9 members (UBOS, 2014)

In Mboira II, only one person stood out from the interviews to become the Water Operator. “People were drunk and had no idea what the position involved” (TWT staff member, 1 July 2013). As a result, the Water Operator was selected by the interviewers with the approval of the LC I. In Nyakatugo, none of the community members turned up to select the Water Operator. As a result, the LC I selected the “most trust-worthy” community member for the role of Water Operator (4 July 2013).

In sum, the candidates that were selected were relatively affluent in comparison to other village members, successful in business, educated and considered to be reliable and responsible individuals. Refer to Appendix 7.3 for a background of the selected Water Operators.

After the selection in July 2013, TWT and the SACCO organised a two day training event to train the Water Operators in finances, the relationship with the SACCO and to clarify roles and responsibilities of the different actors involved in the CBM-*lite* model. Challenges that could arise from the management model were discussed and portrayed via role play activities. The Water Operators, the Sub-County Chief and the SACCO Manager signed a contract that stipulated the mutually agreed services and obligations of each party. Space was left for the by-laws (locally agreed rules for resource use) to be made in each village (refer to Appendix 6.2 for a copy of the contract).

## **7.5 Setting the By-Laws and Changing Risk Perceptions**

At the time of implementation and the establishment of the village by-laws on resource use, a considerable change took place in the risk perceptions of community members. During these community meetings facilitated by the Water Operators and, mostly attended by men, the foremost concern was payment. The surveys had shown a large support base for the pilot, yet in all villages community members argued that: “1,000 UGX is too much for us to pay!” (Nyakabette II, 13 June 2014). Although some community members responded that “...a bottle of beer costs 3,000 shillings, why not spend 1,000 shilling for water per month? (Nyakabette II, 13 June, 2014)” the announcement of monthly water user payments by the Water Operator caused commotion, despite agreement to exempt those unable to pay. In Mpumwe, a community member stressed: “[y]ou cannot touch where your height cannot reach” (9 August, 2013). Equally, others argued: “[l]et people pay what they can, either annual, seasonal or monthly” (9 August, 2013). Additionally, the need to pay water user fees for a functional

handpump was difficult to grasp and led to a dissatisfaction with paying 1,000 shillings: “can we not pay 500 shillings per month” (9 August, 2013)?

Additional risk was perceived by the Water Operators in relation to their social standing as a direct result of water user payment and being salaried from user payments. *First*, the Water Operators worried that people would elude payments through i.e. harassing the collectors, claiming to be part of another household<sup>38</sup> or informally requesting to pay at a later time. Resistance to payment, would require strong action from the Water Operator to keep the work load within bounds and to ensure the financial viability of CBM-*lite*. Yet, strong action could harm personal wellbeing, reputation and social standing in the community. The female Water Operator in Nyakabette II said in her inauguration speech to the community: “I am going to be in full support of this project. I don’t want you to charm me because I am hard” (13 June, 2014). *Second*, the Water Operators feared to communicate their earnings to community members, although the financial incentive was made clear at the start of the pilot study. In Mpumwe, the Water Operator claimed he was volunteering, reasoning afterwards that: “it is very bad to hear for community members that I will earn money” (9 August, 2013).

The Water Operators also feared the former WUC members to disrupt the CBM-*lite* model. The Water Operator in Nyakatugo said: “[t]he Water User Committees are resisting now. They don’t want to talk about the money they thought I would dig... so they dodge. They did not come to the meetings. They want free access to water” (7 August, 2013). Although, the LC I of Nyakatugo claimed that the WUCs could not disrupt the model, the community by-laws were the only recourse to defy unwanted behaviour and deter water users from free-riding, see Table 7.3 for an example of by-laws made in Mpumwe. In Nyakabette II, a community member raised a precarious risk: “[a]re there people that can arrest those people that are not willing to pay<sup>39</sup>?” (13 June, 2014).

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<sup>38</sup> Polygamy is common in this area and adult children frequently live on the same compound as their parents.

<sup>39</sup> The Public Health Act requires every household to have access to a sanitary facility. In case households do not have a latrine, they can be arrested by the sub-county. Paying for water is not an official by-law in Uganda.

**Table 7.3**  
Community By-laws Mpumwe

- 
- Confiscate jerry cans after three warnings in one month and in case the owner fails to pay within three days, the jerry can will be sold.
  - If anyone is got breaking the padlock a tougher action to the LCI court and then to the police must be taken.
  - The water source must open at 7.00 am, close at 1.00 pm, open at 2.00 pm and close at 7.00 pm in the evening.
- 

## 7.6 Initial Observations of the CBM-*lite* Model

After the by-laws for resource use were created during a community meeting in each pilot village, *CBM-lite* commenced in August 2013. The village by-laws were documented in the contract that stipulated the responsibilities of each actor (sub-county, SACCO, Water Operator, water users) and a copy of the contract was handed over to all parties. To aid water user fee collection from the households in the village, TWT provided a copy of the output of the Willingness to Pay (WtP) survey to the Water Operators, as it included a comprehensive overview of the households in the village stating they were willing to contribute 1,000 UGX.

During the first months of the pilot study, the Water Operators maintained and repaired non-functional handpumps in the village. In this period, the Water Operators collected sufficient funds to pay the monthly fee to the SACCO (view Appendix 7.4 for a deposit slip of Mpumwe at the SACCO). While not every household contributed, a number of households paid for several months at once. Although, some community members had reservations about the pilot, most people argued they no longer had trust in the Water User Committee (WUC). For example, a community member in Nyakatugo said: “The community lost trust in the WUC. The new system will cause some change. People were doubting the pilot sometimes but now people are seeing a benefit of having a manager. And at the moment there is a sure way of getting the pumps repaired (13 September 2013)”.

At the start of the pilot, repairs were carried out quickly by using the collected funds. “One of the handpumps broke down in the morning and in the evening it was repaired (Water Operator Nyakatugo, 10 December 2013). In Mpumwe, two previously and long-term broken handpumps were repaired after two months of the start of the pilot study. These repairs in Mpumwe were possible due to the option of taking a loan at the SACCO (referred to as the

handpump insurance scheme). In both Mboira II and Nyakabette II, one handpump was repaired soon after the start of the pilot in the village. Refer to Appendix 7.5 and 7.6 for a video of the Nyakatugo Water Operator and the Mpumwe Water Operator about their experiences with the CBM-*lite* pilot at the initial phase of the project.

Optimism about the pilot prevailed among staff of the local NGO and local government officials at the sub-county, due to the water user fee payments, the monthly deposits in the SACCO account and the ability of the Water Operators to maintain the handpumps and repair previously broken handpumps. The sub-county internal security officer (GISO) who was involved in a number of community meetings prior to the start of the pilot study, assured at the start of the pilot: “The pilot is good as people will feel the money is secure. They have been sensitised, were interested and many partners have been involved in this process” (12 August, 2013).

The Sub-County Chief of Kigumba numerously requested TWT to increase the number of pilot villages to ensure more communities would pay for the Operation and Maintenance (O&M) of their handpumps. He pointed out: “[p]eople are complaining why other community members are not paying for water. We want this pilot project also in other villages. Roll this project out in other communities and everybody shall pay” (5 November, 2013). Similarly, during a quarterly budget meeting at the Kigumba sub-county, the Area Councillors promoted the enrolment of the CBM-*lite* model in all villages within the sub-county (NGO staff member, 10 December 2013).

## 7.7 Discussing Actors' Risk Perceptions

The above account described the development and implementation process of the CBM-*lite* model. The chapter ended the narrative after six months the CBM-*lite* model was implemented. Before I continue with the developments in the pilot villages in the proceeding Chapter 8, I now turn to research objective three that aims **to apprehend actors' risk perceptions about the CBM-*lite* innovation** to gain a deeper understanding why rural water management innovations tend to only marginally deviate from the CBM model. This discussion reflects on the case study and operationalises the relational theory of risk (Boholm and Corvellec, 2011) presented in Chapter 6.

Although the CBM-*lite* model endeavours to improve reliable access to water by addressing non-payment and inactivity of the Water User Committee (WUC) in the CBM model, the model contains multiple risk objects. The most prominent risk object was a single and paid Water Operator, which will be reflected upon in more detail below. This risk object endorses multiple threatened objects at risk and allows an explanation *how* and *why* innovations in the rural water sector pose risks to local and national actors, view Table 7.4 for an overview. The analysis on CBM-*lite* below, simultaneously illustrates the consequences of innovation for the sector as a whole. Whereas conceptions of risk are socially and culturally biased it is important to bear in mind that the interpretation of risk is equally coloured by the worldview of the analyst.

Bakker's (2007) resource management categories are helpful to unravel at what level innovation is taking place. CBM-*lite* reconfigures the organisational and governance arrangements of the CBM model but does not alter the institutional level. While a single paid Water Operator for a cluster of water sources with ready access to Operation and Maintenance (O&M) funds at the SACCO replaces the voluntary WUCs, community members remain responsible for the development of locally agreed rules for resource use, carry out the sanctions and the handpumps are still owned by the community. The CBM-*lite* model aims to strengthen the water user pays principle but fundamentally changes one of the key pillars of CBM by removing voluntary collective action.

Central NGOs in Kampala felt uncomfortable with replacing the WUC with a single Water Operator because it threatens the ideology of community management and the strong belief in people's willingness to volunteer for the common good. In their view, management problems are the result of weak implementation processes or lack of capacity building. Therefore, the problem of non-payment was not a reason to remove the WUC.

Another threatened object at risk was a deeply held sense of fairness on behalf of the community, that the use of a single Water Operator concentrates power into the hands of a single person, a risk also shared by Masindi District. Such views are in conflict with the emerging interest to 'professionalise' rural water management arrangements as discussed in Chapter 6.2. Profiting from water however, remains highly contentious (as also highlighted in Chapter 2.4.3) as the responses from NGO on a salaried Water Operator in the case study demonstrates because the participants feared the Water Operators could deny community members access to water. Interventions that consider to commodify the 'good' as well the 'service' may therefore meet considerable resistance.

**Table 7.4**

Summary Effect Single Paid Water Operator (Risk Posing Object) on Threatened Objects at Risk to Local and National Actors in the Rural Water Sector (Author's construct)

<b>Threatened Object at Risk</b>	<b>Effect of a single paid Water Operator on Threatened Object at Risk</b>	<b>Effect of Threatened Object at Risk on Handpump Functionality</b>	<b>Actors</b>
Health	Water user payment may lead to the use of unprotected and contaminated water sources	No direct effect	Central NGOs
Ideology	Removes voluntary collective action; a main pillar of CBM	No direct effect	Central NGOs
Policy coherence	CBM- <i>lite</i> deviates from the CBM model	No direct effect	Central NGOs and central government
Organisational reputation	Uncertainty about the outcomes. Failure may cause reputational damage.	No direct effect	Central NGOs/ central government/ Masindi local government
Concentration of power	A single Water Operator removes collective decision-making and responsibility	No direct effect	Central NGOs/ Masindi local government
Money	Loss of (scarce) household funds	Unwillingness to pay may lead to a deficit of O&M funds	Community members
Uneven distribution of wealth	Economic disparity could disrupt social relations	If payment to the Water Operator is perceived to be unfair, people may resist to pay, leading to a deficit of O&M funds.	Community members/ Masindi local government
Elected status and benefits	WUC members removed from their position and expected to contribute water user fees	WUC members may resist the Water Operator and implementation of the CBM- <i>lite</i> model	Former WUC members

Although the CBM-*lite* model did not raise the water user fee, the enforcement of payment due to an incentivised Water Operator was perceived to put community members at risk because it could push people to use open and contaminated water. This motive of health may shield an underlying object at risk: a strongly held belief that water should be for free. As demonstrated in the first case study Chapter 5, free-riding appeared the norm under the CBM model. It is often communicated by NGOs that communities need to get used to paying for water. Jones (2011 p.67) writes for example: “[t]he attitude of [organisation X] is based on a belief that traditional rural views on water being ‘free’ can gradually be changed by education until users accept the need to contribute to cost recovery”. Yet, the view that water should not be paid for, might be sustained by NGOs who themselves object to user payment as also observed by Carter et al. (2010) and Quin et al. (2011). The implication is that NGOs may not really agree with the user pays principle; ironically a fundamental principle of the CBM model they vividly seem to protect.

Central government and NGOs fear CBM-*lite* might threaten policy coherence. Innovations could create confusion and weaken government policy and control. It is therefore argued that experiments cannot be at the cost of CBM. Further, donors have funded CBM for a long period and an openly displayed dissatisfaction with CBM could threaten funding streams. This sentiment was clearly reflected in a personal email conversation with the Coordinator of an international NGO network about the study of ‘van den Broek and Brown’ (2016), on the outcomes of the CBM model: “[w]e all know that CBM has limitations, but instead of continually beating ourselves up about it, we need to look for positive solutions, otherwise the level of investment in rural water supply will continue to be low because donors and government will not see it as an area to invest in, and instead focus their efforts on transport, energy and health....” (23 December 2015). Criticism directed at the CBM model appears not appreciated and the focus on maintaining funding streams may constrain innovation in the rural water sector.

In addition, central government and central NGOs felt little room for experimentation as failure, and unexpected consequences may severely damage the actor’s reputation. The fear of taking risk, however, has a negative impact on the quality of public policy (Towsend, 2013 p. 24). Parsons (2006 p. 6) writes: “[w]hen fear of failure replaces a capacity to experiment and create trial and error learning, the result is unlikely to be an artefact that actually works”. The findings support thereby also the proposition of Douglas and Wildavsky (1982 p. 189), that the “...centre is too constricted in its casing of institutional habits” and that “no change ever comes from the

centre, all innovation comes from without". This explains the commitment to the *status quo* as the most reliable option to avoid negative consequences.

Both actors, NGOs and central government, have strong group ties and are committed to the CBM model. This may explain why it is unlikely to see radical change from these actors and why ideas from the 'centre' are "those best known and closest to existing programs" (Douglas and Wildavsky, 1982 p.93). As sector wide change is a top down process (Townsend, 2013), the sustenance of the *status quo* is causing an inertia in the sector which implicates the silent acceptance of a one third breakdown rate of rural handpumps.

At the local level, group ties appeared to be looser. Among community members, money was the biggest threatened object at risk. Affordability of water user fees is often claimed to be no issue (Bey et al., 2015; Chowns, 2014; Fonseca, 2014; Harvey, 2008) and water user fees (1,000 UGX) were often compared to the costs of a bottle beer (3,000 UGX), representing three times the value of a monthly water contribution. However, in rural areas, money remains scarce and paying for an open-access handpump may encourage the decision to prioritise other needs. In addition, the risk of payment may have been influenced by an underlying risk perception: household money being used to pay the Water Operator. A paid Water Operator appeared to threaten community's sense of fairness (Dobbie and Brown, 2014), an attitude shared by Masindi District. Community payments to the Water Operator threatens an informal code of conduct of even distribution of wealth; a deeply underlying threatened object at risk. Allowing a Water Operator to profit in a resource poor context appeared to propel a sense of distributional unfairness that could incur jealousy and destabilise community relations, potentially leading to a resistance to pay water user fees. This shows the messy web of community relations involving informal and formal social norms, with loose group ties at the one hand exemplified by mistrust, the lack of willingness to volunteer and strong collective codes of conduct people might fear to break at the other hand. Ironically, this may point at an inertia to change at community level where any initiative to generate community funds may be resisted and where the risk of lack of funds to repair a handpump may be taken for granted.

Previous WUC members often represent the elite within a community (van Koppen et al., 2012). Their threatened object at risk was their position and benefits as access to water user funds and free access to water were now lost as a result of the CBM-*lite* model. They expressed their dissatisfaction by withholding the community funds from the Water Operators. These powerful actors may not automatically accept the new water management arrangements induced by TWT and might disrupt the implementation of the model.

A central feature of a relational reading of risk, is that a risk object (such as a single paid Water Operator in this discussion) can simultaneously be a threatened object at risk and vice versa. The community member's objects at risk, such as money, even distribution of wealth and elected status and benefits of the WUC, may become a risk posing object to the Water Operators and TWT. The Water Operators viewed their role and the business opportunity at risk. The selected Water Operators were successful local entrepreneurs that saw an opportunity in the *CBM-lite* model to supplement their income. Although they shared traits of an individualistic worldview, they were not indifferent to public opinion. They recognised the potential difficulty of collecting funds and the weak potency of the community by-laws to deter free-riding. The failure to collect water user fees would threaten their valued business opportunity. Concurrently, their generated financial incentive would come at a price. Social and economic disparity is a known source of tension in rural areas and affluent community members are expected to support their kin and poorer community members (Ferguson, 1999; Golooba-Mutebi, 2005; Niehaus, 2001; Pottier, 1988). The Water Operators were already higher educated and financially better-off than other community members. Collecting funds from less wealthy households and earning a remuneration of the collected funds may therefore be a source of conflict that could threaten the social standing of the Water Operator. Equally the anthropologist David Maranz (2001 p. 111) observes that people in rural settings are "... afraid to accumulate more goods or property than their neighbours and kin, for fear of creating jealousy which may lead to reprisals being carried out against them on an occult level". This may explain why the Water Operators pretended there was no remuneration involved.

The SACCO was viewed as a risk posing object by a number of community members and local government officials. There was a lack of understanding how insurance works and that continued insurance is required to enable speedy repairs. Paying for something that is not broken appeared difficult to grasp and could pose another risk object to *CBM-lite*. The SACCO might also become a threatened object at risk if the Water Operators are not able to pay the monthly fee and the SACCO cannot fulfil its services.

The case study showed a remarkable shift in risk perceptions through the pilot development. While the surveys showed almost unanimous support to pilot the model and pay water user fees, at implementation stage a different picture emerged. In the meetings there was a growing dissatisfaction about payment, which may threaten the viability of *CBM-lite*. A possible explanation for the different results in the surveys might be that all pilot villages had problems with their handpumps and the picture of a well-managed handpump may have inflated

enthusiasm. Second, a gender element might explain the difference in results. Most of the survey respondents were women, who take responsibility for the household and spend their day mostly near the home. They might attach value to clean water as they nurse the children and are responsible for fetching water, cooking, washing and cleaning. The men on the other hand dominated the meetings and may have less experience with the discomfort of a broken handpump and collecting water from open or farther away protected sources and may controlled family expenditures.

In sum, at the central level decision makers appeared satisfied with the *status quo* – CBM – in order to protect the human right to water and local community's health, thereby thwarting innovation that may disorganise policy coherence, affect funding streams and threaten organisational turf. The interest to protect the CBM model may illustrate their potential powerful resistance to initiatives and actors that aim to deviate from the parameters of the CBM framework. At the local level, risk perceptions increased during the implementation of the model. The perceived risk of payment – to the O&M of the water source and the Water Operator – may jeopardise the effectiveness of the CBM-*lite* model on improving reliable access to water. Or the nearer to implementation, the more risk averse one becomes?

# Chapter 8

## The Fall of the CBM-*lite* Model

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### 8.1 Introduction

This chapter describes and reflects upon the outcomes of the CBM-*lite* model and enters thereby into the fourth and last research objective which is **to evaluate the outcomes of the CBM-*lite* model in four pilot villages in mid-west Uganda.**

The insights in this present chapter were the result of a critical case study on the four CBM-*lite* pilot villages. In the period between October 2013 and November 2015, I visited the pilot communities at five different points in time (refer to Table 4.1) to observe the developments in the pilot villages and to conduct (repeat) interviews with community members and key players involved in the implementation of the CBM-*lite* model. Methodology Chapter 4 and Appendix 4.1 provide a comprehensive overview of the research approach and data collection and analysis methods.

This chapter evaluates the outcomes of the CBM-*lite* model against its intended outcomes: water user payment, safe storage of water user funds, access to insurance scheme to repair and maintain rural water infrastructure, enforcement of locally agreed rules on resource use and commitment to operate and maintain the village water sources by the Water Operator and caretakers. Section 8.2 evaluates the degree of water user payments and collections in the pilot villages. Section 8.3 examines the storage of water user funds at the Savings and Credit Cooperative (SACCO) and the use of the SACCO insurance scheme for repairing and maintaining the village water sources. Hereafter, Section 8.4 evaluates how the rules on resource use were maintained and enforced in the pilot villages. Section 8.5 considers the influence of the financial incentive for the water operators and caretakers on their commitment to carry out operation and maintenance (O&M) tasks. Section 8.6 recognises that local adaptations to the CBM-*lite* model were made and evaluates their outcome on the level of user

payment and the fulfilment of water management tasks. The chapter closes with a discussion in Section 8.7 that reflects on the empirical findings and critically evaluates the CBM-*lite* model.

## 8.2 Payment of Water User Fees

This section describes the process of water user payments in the CBM-*lite* pilot villages. Water user payment represented a key element for achieving successful outcomes of the pilot. The following account shows, however, that user payments proved problematic and illustrates how the difficulty in collecting user funds threatened the viability of the CBM-*lite* model. Water user payments decreased 3-5 months after the pilot commenced. At first, the Water Operators wondered: “[f]ew people are paying. People are dodging to pay that money. Why can someone not pay 1,000 shilling? (Water Operator Nyakatugo, 10 December, 2013).

Community members, supported by the Local Councillor (LC) I, asked the Water Operators to wait after harvest time before commencing collection of the water user fees as people were often short of money prior harvesting. The Water Operators were equally keen to collect funds each season (twice a year) because the collections were a time consuming process. “People will tell you ‘come tomorrow’, but tomorrow never comes. They will use polite language and say, ‘please, I don’t have the money, can you come back tomorrow?’ So, what can I do?” (Water Operator Mpumwe, 5 November, 2014).

During a community meeting in Mpumwe, participants agreed to pay after the harvest. A number of community members expressed they felt uncomfortable with water user fee collections at home. To avoid collections at home, community members agreed to bring the funds to the house of the Water Operator or the caretakers. The Savings and Credit Cooperative (SACCO) Manager agreed with seasonal payments and argued that as long as people pay the time frame of collections would not disrupt the insurance scheme. The District Water Officer (DWO) of Kiryandongo however, was very sceptical about the promises of the households: “[i]t is a big excuse that people want to wait for the end of the season before they can pay” (20 June 2013). Also staff of The Water Trust (TWT) doubted whether people were unable to pay. “Even someone who drinks five beers a day [each 3,000 UGX] will say he has no money. Sometimes people don’t tell the truth” (TWT staff member, 23 March 2015). Indeed, despite the promises to pay after the harvest, the majority of the community members did not fulfil their

promise: “In August [2014], during the harvest, there was only one person that came to me and brought 10,000 shillings. I waited for the others... but nothing happened” (Mpumwe Water Operator, 5 November 2014).

Apart from the start of the scheme where some households did pay for several months at once, the Water Operators were not able to endorse seasonal collections nor regular monthly user payments. Because the Water Operators needed to build a history of regular payment with the SACCO to build a relationship of trust for credit, the SACCO withdrew the insurance scheme after a few months the pilot commenced. When affordability was not an issue as shown in the outcomes of Willingness to Pay (WtP) survey in the previous chapter, why did people refuse to pay water user fees?

First, the Water Operators and caretakers were subject to suspicion by fellow community members who raised concerns about misuse of funds. During one of my follow-up visits in Mboira II in June 2014, the LC I of Mboira II argued that the non-trusting attitude was a “... continuation of wounds of the Water User Committees that used to eat the money” (11 June 2014). However, the incidents in Mpumwe and Mboira II, described in detail in the following sections, illustrate a more complex picture of people’s non-contribution. They show how the specific elements of the CBM-*lite* model (selection process, emphasis on upfront payments, clustering of water sources, the incentive for the Water Operator and the use of the SACCO) contributed to ambiguity surrounding water source management arrangements including perceptions of unfairness, feelings of dissatisfaction and resentment by water users. As the following account will show, these emotions shaped people’s attitudes against the CBM-*lite* model.

The Water Operator in Mboira II was passionate about improving the maintenance of the village water sources and zealous to enhance people’s hygiene and sanitation practices. Unlike the other Water Operators, he was selected by the LC I of the village and TWT because the other applicants for the position were drunk during the interview and did not seem suitable for the job (refer to Chapter 7.4). However, during one of my Focus Group Discussions (FGDs) in the village, community members drew attention to his suitability: “[w]hy is he [the Water Operator] always selected for village projects? If the person is elected by the people themselves, then we can pay” (community member 5 November 2014).

Because the Mboira II Water Operator was one of the few educated village members well-conversant in English, he was often approached by NGOs, local government or private actors

about village and developmental matters. His privileged position may have instigated feelings of jealousy and resistance. The Water Operator claimed: “[p]eople don’t want others to develop in this village. They are jealous because I have a job and because I am often the point of contact in the village for outsiders” (4 November 2014).

Soon after the Mboira II Water Operator started in his newly acquired position, several rumours were spread in the village: he paid his recent wedding from the water user fees and he profited from the water sources as he profited his part-time job as tax collector for a local market. The rumours of misuse were instigated by a number of primary school teachers in the village that often gathered at the local drinking bar in the afternoons. The Water Operator speculated: “[i]f one person is affected [by the rumour] he could affect the people he is drinking with and his relatives” (5 November 2015).

A key underlying reason for the opposition directed to the Water Operator was the lack of public support for their remuneration, despite the survey results prior to implementation (refer to Chapter 7.3 and Figure 7.1). Yet, the financial incentive for the Water Operator was expected to induce a continuous commitment to collect funds and maintain the village water sources, representing a central component of the CBM-*lite* model. Although the financial incentive was communicated by the staff of TWT at various community meetings, the Water Operator and the LC I did not openly disclose the earnings to the water users (as with Mpumwe Water Operator, described in Chapter 7.5), resulting in a cloud of ambiguity over the collected revenue and deposited funds in the SACCO.

Further, the type of water source influenced people’s willingness to contribute. Irrespective which water source households were using, protected springs or a shallow well fitted with a handpump<sup>40</sup>, households were expected to contribute a monthly water user fee of 1,000 UGX. However, people did not understand why they would pay for a spring because “... that water is coming by itself” (FGD Mboira II village 31 March 2015). A community member declared: “I can pay money, if there is importance for it. Like you go to the market. You should see what you are buying and why you are paying” (FGD 31 March 2015).

Moreover, most community members that used the spring in Mboira II, did not want to pay for the repairs of a handpump they were not using. The feeling of unjust treatment was strengthened when the Mboira II Water Operator requested women living near the spring, to clean the

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<sup>40</sup> Mboira II had one protected spring and two shallow wells fitted with a handpump, of which one was constructed by the case study NGO and the other was constructed by the district.

surroundings of the water source. A woman narrated indignantly: “[h]e collected funds but still asked the women to clean the spring. That was when we all stopped paying” (community member, 5 November 2014).

The collective non-payment of the people that used the spring caused a village-wide snow-ball effect. The households that collected water from the handpumps claimed they were unwilling to pay as long the people who used the spring refused to pay.

In Mpumwe village, people were similarly dissatisfied about the accountability of the Water Operator. As the following account from Mpumwe village shows, the clustering of the water sources and the financial compensation for the Water Operator obscured transparency and increased suspicion. Although the Mpumwe Water Operator was a respected man, (refer to Appendix 7.3 for a background about the Water Operators) his popularity did not encompass the entire village. In one of the three sub-villages (Kabaranga) his authority was publicly contested by the Vice-Chairperson of the Executive Committee of the LC I, who also applied for the position of Water Operator, and argued that the Water Operator had “... failed completely” (31 June, 2014). He requested that the Mpumwe Water Operator provided ‘accountability’, and although the Water Operator agreed to organise a community meeting, he did not do so.

In addition, the village Vice-Chairperson was disappointed in the Mpumwe Water Operator because he did not repair two non-functional handpumps in the sub-village Kabaranga from the first rounds of collections. Most people in Kabaranga paid the water user fees in the first few month of the pilot in the hope their two poorly sited and managed handpumps (constructed by the local government and non-functional for more than two years) would be repaired. The water sources were sited in a swamp and the water was likely to be polluted (confirmed by the anecdotal stories of badly smelling water and seasonal flooding of the handpumps). Due to the poor water quality of these sources, the Mpumwe Water Operator did not repair these handpumps. Instead, he arranged the repair of two other handpumps in the village (but in another sub-village) by the initial funds collected. Cross-subsidisation was however not popular. The leaders in Kabaranga were indignant about the use of ‘their’ money for these repairs and demanded the repair of their two broken handpumps before they would pay again. Another option they considered was the construction of a new water source by TWT. However, they were determined that the people in Kabaranga could not cover these costs as they had already paid. The leaders of Kabaranga were not receptive to the idea that continuous payments could cover the maintenance of the village water sources, including the construction costs of

their desired new water source. They wanted their money back and requested TWT whether they could go back to a Water User Committee (WUC) at every source. They argued: “[c]ommittees that collect money is the best” (31 June, 2014)

A few months later (March 2015), the financial incentive for the Mpumwe Water Operator was causing a scandal. The Water Operator had been showing his ‘accountability’ and records from the SACCO during a community meeting, and a former WUC member recorded the reported collections and expenditures. The Water Operator had not openly disclosed he was earning from the collections and the former WUC member ‘found out’ that the Water Operator earned money for the work done. Despite the positive responses about paying the Water Operator in the initial survey prior implementation (Chapter 7.3, Figure 7.1), the former WUC member openly accused the Water Operator of misusing the funds and pledged he wanted to re-establish the WUCs.

Although the lack of transparency and the fear of misuse of funds by the Water Operator appeared a major reason for non-payment, the case in Nyakabette II may challenge this proposition. In this village, the compensation for the efforts of the Water Operator (a women) was openly discussed during a community meeting at the start of the pilot and was set at 20,000 UGX per month. Despite the clear records of the revenue collected and the money deposited, the SACCO Manager disclosed that: “[e]ven in Nyakabette II people think the Manager is eating the money” (2 April 2015).

Other factors that influenced the refusal to contribute water user fees were: lack of attendance at community meetings, monitoring, and sanctions, available alternative water sources and, unfamiliarity with paying (upfront) water user fees. The following sections elaborate on each of these contributing factors for non-payment. The lack of attendance at community meetings was a common occurrence in the pilot villages. The LC I of Mboira II claimed he had invited everyone for the meetings “[b]ut not everyone comes to the meeting” (31 March, 2015). Because not everyone attended community meetings, people were not aware of the developments in their village. Some people argued therefore that the pilot project was introduced abruptly. “We did not know why the model was introduced” (Mboira II FGD, 31 March 2015). A lady at the outskirts of the village declared she was not aware of the project: “I have never attended any meeting. I am always busy in the garden and preparing food (5 November 2014).

The low attendance at community meetings resulted in confusion and misinformation about CBM-*lite*. The use of the SACCO was not known to everyone, leading to rumours in Mboira II, that the money was deposited at the sub-county. The idea money was kept by the local government increased the fear of money being misused.

In Mboira II, several community members opposed the model from the start. One argument against the introduction of the pilot was the low maintenance of a spring and "... the fact a spring cannot break down" (community member, 18 June 2014). In addition, a few (former) WUC members of a non-functional handpump resisted the pilot soon after its introduction. According to a TWT staff member, they were not happy to be replaced by a Water Operator: "[t]hey [the WUC members] don't like the project because they are not benefitting anymore" (18 June, 2014). Prior to the start of the pilot, a WUC in Mboira II collected water user fees to repair the handpump but did not pay the Hand Pump Mechanic (HPM). As a result, they infuriated the HPM who dismantled the head of the handpump. At the time the Mboira II Water Operator started, the head of the pump was still removed. The WUC did not handover the money to the Water Operator: they either did not have the funds or were disinclined to give it to the Water Operator. Because funds from the first round of collections were not sufficient to repay the HPM, the Mboira II Water Operator partly used his own money to restore the handpump. However, his gesture did not increase public support for his position as a Water Operator nor did it affect people's willingness to pay.

Further, neither the caretakers nor the Water Operators were constantly at the water point to monitor usage and payments. This made it relatively easy for people to surreptitiously collect water without paying. A TWT staff member pointed at the difficulty to ensure payments or enforce sanctions: "This is water that is open. For him to deny you water he has to be there 24/7. He has to be there by himself to make sure you don't get the water" (18 June, 2014). In Nyakatugo the absence of the Water Operator (he was imprisoned for an alleged murder in January 2014) interrupted the payment of water user fees. This period lasted till July 2014, when the LC I of the village initiated the election of a new Water Operator.

The lack of sanctions or consequences upon non-payment influenced the collective non-contribution. As a result, the households that did pay, stopped when they noticed others were not paying without repercussions as in the CBM model (refer to Chapter 5.4.1.1). A community member in Mboira II explained: "[m]ost people refused to pay, so I don't want to be the only one paying" (18 June, 2014). Occasionally the uneven payments caused conflicts between

community members “...especially between women as their income is just low” (community member Nyakatugo, 20 June 2014).

Alternative water sources also hampered the willingness to pay. Despite the clustering of the water sources in the village, people could easily access the water sources in neighbouring villages or use open ponds (which was not a problem to some households). In Mboira II and Mpumwe some households resorted to use water sources in neighbouring villages that did not collect water user fees. In Mpumwe for example, 40 households started to fetch water from a neighbouring water source to avoid payments. This affected the revenue and the financial incentive for the Water Operator. In Nyakatugo, a number of households had access to piped water but due to power cuts they were forced to regularly use the handpumps in the village. Although they paid a minimum of 10,000 UGX per month for their water bills, they were often disinclined to pay 1,000 UGX for the communal water source.

Despite the multiple reasons for non-payment, overall, community members were not used to paying water user fees. A community member muttered: “[p]eople were questioning themselves, since they came to Mboira, people had not been paying” (5 November, 2014). The lack of payment resulted in a lack of funds to pay for maintenance and in turn increased the criticism to the Water Operators. For example, in Mpumwe, a number of community members complained the Water Operator did not maintain their handpump. Likewise, a former WUC member was dissatisfied with the work of the Water Operator because he did not repair the handpump in his area. During a FGD he said: “[h]is response was: there is no money. We sat down and decided we cannot wait for him, we are going to repair the borehole and pay for it. I don’t see his importance, because primarily he has failed” (1 April, 2015).

### **8.3 Safe Storage of Funds and Handpump Insurance Scheme**

The Savings and Credit Cooperative (SACCO) was introduced with the assumption that people are willing to pay water user fees if funds are safely stored by the Water Operator. Every month the Water Operators were required to deposit a fixed amount in the SACCO account. The amount was based on the projected annual maintenance and repair costs of the water sources in the village (calculated by The Water Trust (TWT)) and recorded in the contract. In addition, the SACCO served as an insurance scheme to guarantee handpump repairs could be carried out

quickly in case savings for Operation and Maintenance (O&M) would be inadequate to cover the repair costs.

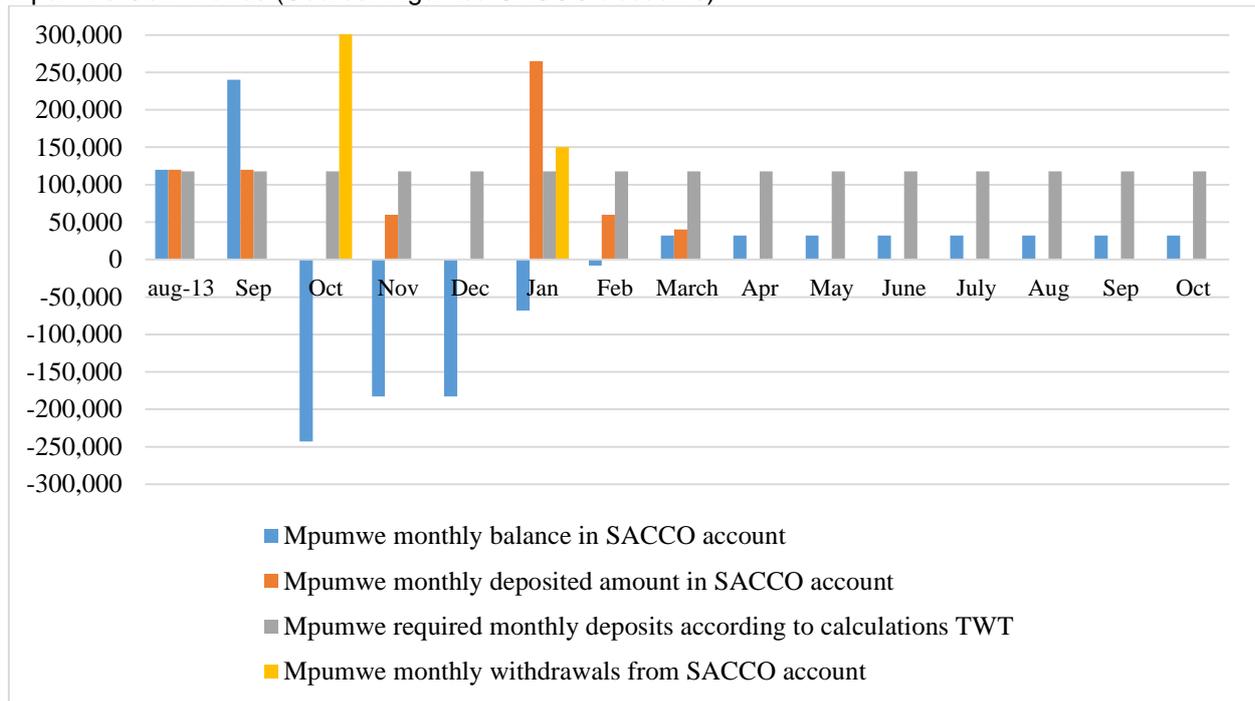
Despite the strict follow-up on monthly payments of the Water Operators by the SACCO Manager, payments drastically reduced after a few months the pilot started and decreased or (temporarily) stopped in December 2013 or January 2014<sup>41</sup>. Figures 8.1, 8.2, 8.3 and 8.4 depict the deposits at the SACCO for handpump O&M in each pilot village.

Figure 8.1 shows that only Mpumwe village used the SACCO insurance scheme. This money was used to repair two non-functional handpumps (of which one had been non-functional for several months). The SACCO did not sanction further lines of credit to the Water Operators because they no longer had a track record of making deposits. In other words, it was too risky for the SACCO to continue with the insurance scheme service. In Nyakatugo (Figure 8.2), payment stopped between January – July 2014 because the Water Operator was imprisoned. In July 2014 a new Water Operator was elected. Even though Mpumwe, for example, managed to deposit the required amount at the beginning of the pilot programme, these deposits proved not an indication that all households were paying; rather some households preferred to pay several months at once (see Appendix 8.1 for a picture of the Mpumwe accounts).

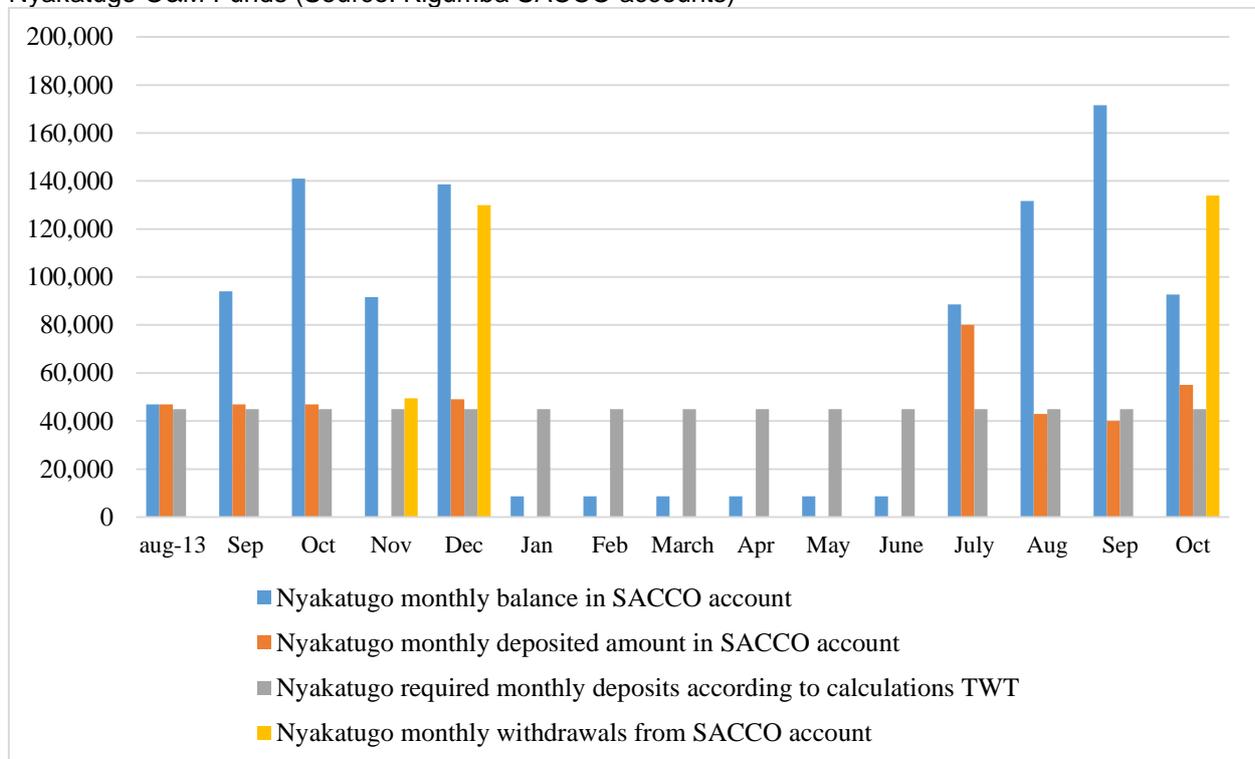
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<sup>41</sup> With the exception of Nyakabette II because this village was included in the pilot study in July 2014.

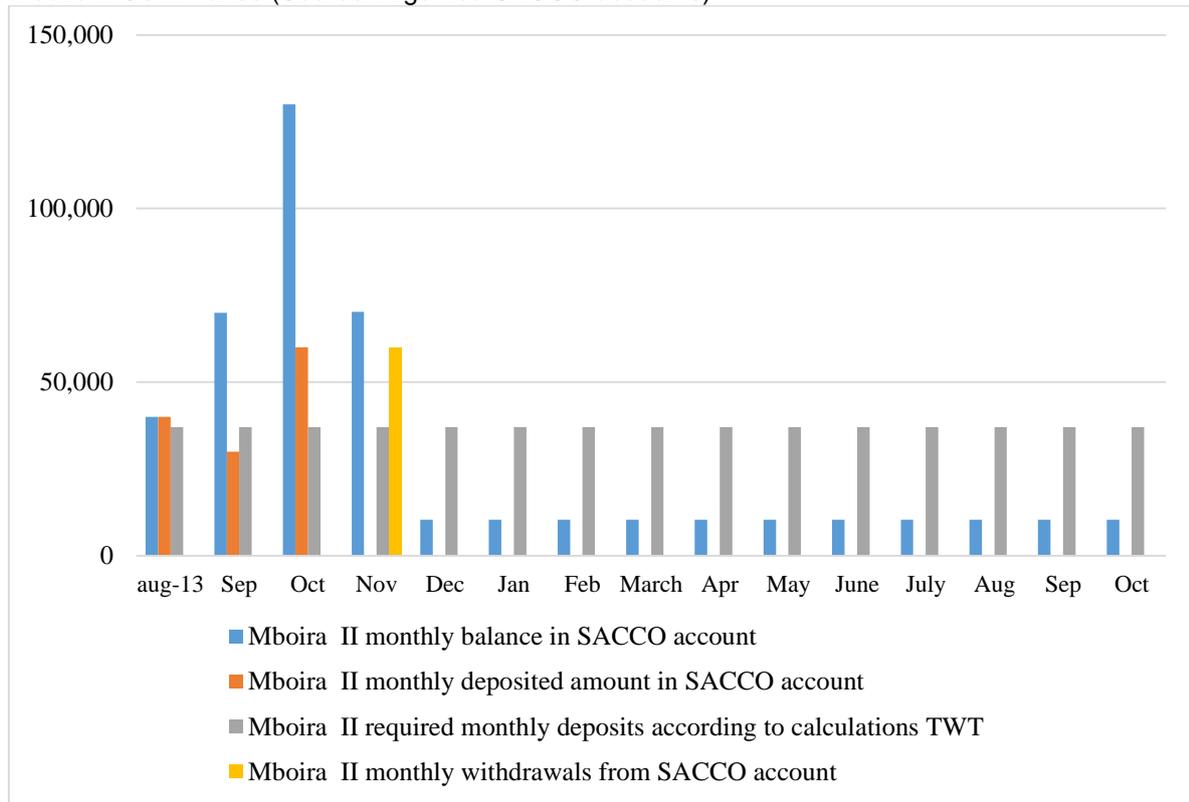
**Figure 8.1**  
Mpumwe O&M Funds (Source: Kigumba SACCO accounts)



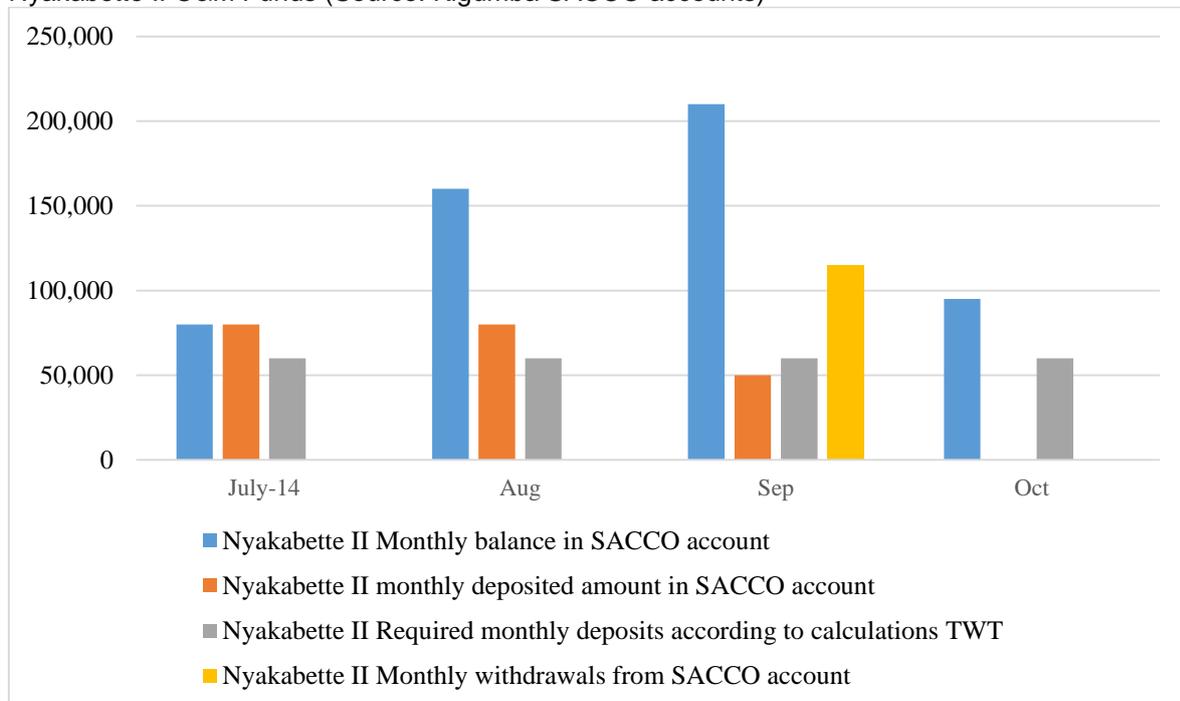
**Figure 8.2**  
Nyakatugo O&M Funds (Source: Kigumba SACCO accounts)



**Figure 8.3**  
Mboira II O&M Funds (Source: Kigumba SACCO accounts)



**Figure 8.4**  
Nyakabette II O&M Funds (Source: Kigumba SACCO accounts)



### 8.3.1 Safe Storage of Funds

Attention now turns towards another key element of the CBM-*lite* model: the assumption that safe storage of funds would lead to increased willingness to pay and ready funds for handpump maintenance and repair. The Savings and Credit Cooperative (SACCO) was involved to ensure funds were safely stored and to prevent misuse of water user fees for personal gain. Despite the efforts of TWT to improve checks and balances in the storage of funds and the procedure of multiple signatures for withdrawing funds, the use of the SACCO did not guarantee transparency with the collection of funds.

At the level of money collection – a responsibility shared by the Water Operator and the caretakers – the use of receipts upon paying the water user fee, did not remove cases and suspicion of embezzlement. All the Water Operators reported cases of misuse of funds by the caretakers. The Nyakatugo Water Operator said: “[s]ome of them, when they collect small money, like 3,000 UGX, they use it and don’t pay back. [...] There is no solution. Changing is not good because you might bring in someone who is worse (7 November 2014).

In Nyakabette II, the female Water Operator organised a community meeting to discuss the misappropriation of water user fees by one of the caretakers. In the village, a handpump broke down and needed to be repaired. The caretaker collected 73,000 UGX (USD 20) but refused to give the funds to the Water Operator to repair the handpump. The caretaker was angry about his received compensation of 10,000 UGX (USD 2,70) for his services because he had expected a well-paid remuneration from the Water Operator. He claimed he had worked full-time to collect the funds and to keep the water sources in the village clean. He harboured strong feelings of resentment to the Water Operator as: “[s]he told me I would get good money” and felt his compensation was “... too low” (3 April 2015).

In the meeting, the community members and a representative of the sub-county (invited by the Water Operator) proposed to give each caretaker ten percent of the collected water user fees as the pilot study did not prescribe how much the caretakers would earn. Nevertheless, this proposal did not satisfy the caretaker: “[f]or ten percent I cannot work!” Despite the caretaker’s complaints and threats towards the Water Operator (“I will beat you up”), the community members resolved he had to give back the remaining balance to the Water Operator. Ultimately, the caretaker confessed he could not return the funds as he had already used the money. He, changed his fierce attitude and proposed to work for free for the coming months. Not all community members were receptive to this idea as they rather wanted him to resign. However,

the meeting concluded with the verdict that he could stay as after all, "... previous Water User Committee members have misused money in the past and even you, mister Chairman [LC I]!" (community member, 3 April 2015).

## 8.4 Enforcement of Formal Rules

This section reflects on the process of rule enforcement in the CBM-*lite* pilot villages. In each pilot village, by-laws had been created and documented. Enforcement of the by-laws proved difficult in each village. Just as it was difficult to keep track of who had paid and had not paid, it was a challenge to keep track on who needed to be 'sanctioned' for non-payment and what level of sanction was required. Clearly, when the majority free-rides it becomes impossible to sanction everyone. Nevertheless, the enforcement of the by-laws was precarious in the first place because confrontational behaviour was generally perceived as inappropriate. The Water Operator in Mpumwe explained: "[m]e and the caretaker we will talk politely to the person. I always advise them [the caretakers] not to exchange words" (6 November 2014). A community member in Nyakatugo pragmatically remarked the by-laws were merely used to intimidate the water users. "[t]here has only been a threat: you cannot access the water. But Mzee<sup>42</sup> [caretaker] is old and weak and cannot stop someone from fetching water" (30 October 2014).

The request to pay water user fees, let alone to enforce sanctions upon non-payment, could threaten the social standing and reputation of the Water Operators and the caretakers. For example, the Mboira II Water Operator decided to draft a letter to non-paying community members to request them to pay the arrears of the last months. However, people misunderstood his communication: "[w]e thought he had hiked the price to access the water source from 1,000 to 5,000 shillings" (community member Mboira II, 5 November 2014). In combination with the grievances described in Section 8.2, the letter caused considerable tension towards the Water Operator and his family: "[p]arents had sent their children to my home. They threw stones at me and bullied my children at school. They threatened me that they would beat me up" (Mboira II Water Operator, 5 November 2014).

When I visited Mboira II in November 2014, the Water Operator was disheartened about the responses of the people in the village. He assured me that: "[i]f I implement the by-laws, people

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<sup>42</sup> Swahili for 'old person or elder'.

would hate me and you cannot ask for favours anymore. Once you do this, you create enmity. My children can be at risk. My son has already been beaten by fellow class mates (5 November 2014).” The LC I of the village said he wanted to resolve the problems and said he would organise a meeting with the elders “... to rectify the situation” (5 November 2014).

A few months later, TWT closed the pilot in in Mboira II. Without the knowledge or consent of the LC I, community members (of which primary school teachers and former Water User Committee (WUC) members) wrote a letter to the Resident District Commissioner (RDC)<sup>43</sup> requesting him to stop the pilot project in the village In January 2015. The RDC – who was aware of the pilot and frequently interacted with the staff of TWT– contacted TWT about the letter and organised a community meeting in Mboira II. Due to the lack of public support for the pilot and the criticism expressed to the Water Operator, the RDC requested TWT to stop the pilot and revert to CBM. The withdrawal of the pilot removed the tensions and the abuse to the Mboira II Water Operator but no alternative management structure was proposed or implemented. Yet, the Water Operator was relieved and recalled: “[d]uring that time people’s attitude completely changed towards me and the children. They saw me as someone who wanted money from them” (31 March 2015).

The maltreatment of the rule enforcer (the Water Operators and caretakers) also occurred in other villages. The Mpumwe Water Operator pointed out: “[p]eople forget they are the defaulter. If the caretaker confiscates a jerry can people will start planning at this caretaker (6 November 2015)”. In particular, the enforcement of payment (let alone sanctions) on friends and relatives appeared difficult and tended to be avoided. “One of the caretakers is an Alur, and most people in this part of the village are Alur. Therefore if people plead [not to pay] it is hard for him to stop them from fetching water (Water Operator Nyakatugo 28 October 2014)”.

The Sub-County Chief of Kigumba advised the Mpumwe Water Operator to report the defaulters to the local government. However, this was not a viable option for the Water Operator:

“That person has his family and friends behind him. But now, me and the relatives will remain a problem. The sub-county will come and go away, the police will come and go away, but I am the one who remains in the community” (6 November 2014).

The Water Operators did not have the power to enforce the locally agreed rules, but neither did the LC I or the sub-county really assist the Water Operators in enforcing rules on resource use.

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<sup>43</sup> The RDC represents the president and the government in the District (Local Government Act, 1997)

According to the Water Operators and TWT staff, reasons for the lack of support by the LC I was either simply due to their regular absence, fear of losing popular support, or indifference. Support from the sub-county was equally absent, despite the contractual agreements. The sub-county lacked the funds, manpower and transport to visit the villages and, to respond to the challenges raised by TWT or the Water Operators. As described in the first case study Chapter 5 on the outcomes of the CBM model, the Sub-County Chief and the Sub-County Community Development Officer (CDO) did visit the pilot villages if TWT arranged transport and paid their daily allowance. The Water Operators frequently expressed their dissatisfaction with the lack of external support, as well as the negative impact of politicians on sustainable rural water management. The Mboira II Water Operator recalled: “[w]e have a politician from the district living in our village but he only paid water user fees once. Instead of supporting they [politicians] say: people have refused” (5 November 2014).

Furthermore, the number of follow-up visits by TWT in the pilot villages decreased after a few months of implementation. After my departure as the Programme Manager in January 2014, little priority was given by the organisation to follow-up and to oversee elements of the pilot project, reflecting a change in priorities of the new Programme Manager and head office agendas. The Savings and Credit Cooperative (SACCO) Manager exclaimed “After you left, nothing happened.” (14 June, 2014). Staff members of TWT pointed at competing agendas within the organisation:

“A pilot is like an egg. You can move it anywhere and you can break it. You can even decide to make it hard and to make it better. Unfortunately, management priorities have not been with the pilot” (TWT staff member, 7 November 2014).

The reason for the lack of monitoring was the heavy work load and the focus on the construction of new water sources. The pressure to find new villages to construct water sources was high. But despite the recognition that: “... we cannot keep on constructing new water sources if the old ones are not sustained” (TWT staff member, 12 November 2015) the pilot ceased to be a priority.

In sum, due to the challenges to enforce sanctions “[p]eople don’t expect the Water Operator to enforce the bye-laws (Community member Mpumwe November 2014).” Treating bye-laws as “...just paper” was common practice as “[e]ven on sub-county level they are not enforced (TWT staff member, 30 October 2014).”

## 8.5 Commitment of the Water Operators and Caretakers

The engagement of the caretakers and the Water Operators drastically reduced during the course of the pilot. Their waning interest was related to the lack of user payment as described above, and harassments upon collection and, as a result, the limited earnings to compensate their efforts. Most of the caretakers and the Water Operators received threats from water users and emotions as dissatisfaction and fear influenced their level of engagement. For example, threats of witchcraft, usually expressed by women, were perceived as frightening and menacing. “These women are dangerous and if they want, they can seriously harm you” (community member Nyakatugo, 23 March, 2014). The abuse, resulted in a lack of resolve to enforce payments and the financial stipend (dependent on the amount collected) was not a reason to persist. The following caretakers in Nyakatugo and Mpumwe said:

“People are quarrelling when they pay. Somebody can injure you and will say it is a wizard. I fear, that is why we take things slowly” (Nyakatugo, 6 November 2014).

“I report to [the Water Operator] if people are not paying and then it is up to him because I have told him: ‘people have not paid’. Let him go to the LC I and they see the way forward” (Mpumwe, 20 June 2014).

The female Water Operator in Nyakabette II was discouraged because of the reluctance of households to pay, accusations of embezzlement and, the aggressive behaviour of the caretaker who demanded more financial compensation (refer to Section 8.3.1). She commented that “the work is bad” (3 April 2015).

As water user fee payments dramatically decreased after a few months and as there was only a 11,5% non-payment allowance factored into the CBM-*lite* model (refer to Chapter 7.3.1), the financial incentive for both the Water Operators and the caretakers decreased. None of the Water Operators received the stipend that was calculated by TWT based on the WtP survey. The Water Operator in Mpumwe sighed: The whole week they [the caretakers] just got 1,000 shillings. I tell them to keep it” (5 November 2014). During the course of the pilot, TWT staff observed the Water Operators started to reduce their efforts in fulfilling their duties. A TWT staff member commented: “[t]he fact that people are not paying has frustrated them. It has demoralised the Water Operators and the caretakers. Now they put little time in it (23 March 2015)”.

Furthermore, the earnings generated from the pilot were little in comparison to their other income streams. The additional income from the pilot did not impact on the livelihoods of the Water Operators and hence the purpose of the incentive (to generate a continuous engagement) was lost.

## 8.6 Evolution of the *CBM-lite* Model

In Nyakatugo, the management model changed after the Water Operator was imprisoned. During a community meeting about the future management of the village water sources, community members elected a new Water Operator. In the meeting, it was decided that every water source would have a Water User Committee (WUC) with a lean composition of three members per water source. These were the former WUC chairperson, the landowner and the caretaker. The caretaker collected the funds and the chairperson called the meetings and was responsible for the mobilisation of the community members. “The landowner doesn’t do any work. It is just to make him feel good” (Water Operator Nyakatugo, 6 November 2014). According to the newly elected Water Operator, water users are more confident to pay water user fees to a WUC. He argued: “[p]eople did not trust the previous Manager. I thought bringing in some of the former WUC members would create more trust” (6 November 2014).

Furthermore, the Water Operator told the community and me that neither he, nor the caretakers were compensated for their efforts. However, his accounts showed a deficit between the generated revenue and the deposits in the Savings and Credit Cooperative (SACCO). When I asked him how this was possible he said: “[p]eople don’t like to hear that you earn something from their contributions” (2 April, 2015).

During my last visit in Nyakatugo (April 2015) I held a Focus Group Discussion (FGD) with the LC I of the village, the Water Operators, the caretakers and other WUC members. They told me a handpump recently broke down and that the funds at the SACCO were insufficient to cover the repair costs. The LC I of the village decided therefore to subsidise the repair costs. “If there is no money in the SACCO, what are we going to do? When you are a father, you top up to make that pump continue” (2 April 2015).

Despite the community’s adaptation of the *CBM-lite* model to local structures and familiar arrangements, problems with the management of the water sources persisted and were

vigorously discussed: difficulties with collections of water user fees (from water users, friends and relatives), people using open water sources, low attendance at meetings, misuse of funds, unclear accountability, and limited engagement and compensation for Water Operator and caretakers. One of the caretakers gave it a last try and asked: “[i]f possible, when there is a breakdown, can the government or The Water Trust come and repair it for us?” Before I could reply, he was firmly corrected by the LC I of the village who said: “[i]t is rubbish that we cannot pay 1,000 shillings. Even God did not create us for free.”

## 8.7 Evaluating the Outcomes of CBM-*lite*

The fourth and last objective of this thesis was **to evaluate the outcomes of the CBM-*lite* model in four pilot villages**. This discussion considers the literature review material from Chapters 2 and 6 and the original observations from the case studies presented in Chapter 5 and 7 and this present Chapter 8.

Although the CBM-*lite* model attempted to serve as a local solution to overcome non-payment of water user fees and inactivity of the Water User Committees (WUCs) by designing an improved water resources management model and institutions geared towards the local context, the adaptive management regime and resultant crafted institutions did not lead to improved management practices and reliable access to water. This study lends therefore support to critical institutional scholarship about the difficulty of designing ‘the right formula’. Despite the efforts of The Water Trust (TWT) to adopt local practices into appropriate management arrangements, the CBM-*lite* model did not encompass the “acceptable ways of doing things” (Cleaver, 2012 p. 34) such as paying upfront water user fees and endorsing a financial incentive to the Water Operator. The expectation that the CBM-*lite* model would be able to overcome practices of non-payment, misappropriation of public funds and non-enforcement of rules through a combination of safe storage of funds at a Savings and Credit Cooperative (SACCO), improved checks and balances and intrinsically motivated and financially incentivised Water Operators and caretakers, was perhaps overly optimistic. As signalled in the analysis of actor’s risk perceptions in the previous chapter, the mutually agreed formal rules about resource use could not reverse the familiarity with paying for repair costs after handpump breakdown, the informal understanding that people supplement inadequate pay and the high transaction costs upon rule enforcement. The relational reading of risk (Boholm and Corvellec, 2011) actually showed that

the CBM-*lite* model was already dead in the water before implementation, predicting the “tenacious survival ability” (North, 1990 p.45) of informal norms and collective codes of conduct. Hence, the relational theory of risk can be used as a powerful tool to predict and understand the underlying forces that guide processes of institutional bricolage and shape rural water management practices.

The discussion proceeds as follows: Section 8.7.1 discusses the failure of mainstream institutional approaches to improve user payments and water management practices within the CBM framework. Section 8.7.2 explains the failure of the CBM-*lite* model to endorse user payment and effective management on the basis of three key concepts: (1) habitus, (2) authoritative power, and (3) worldviews. The last section of this chapter, 8.7.3, discusses the outcomes of processes of institutional bricolage in the pilot villages and its potential policy implications.

### **8.7.1 Remedies for Effective Rural Water Management Arrangements**

Mainstream institutional approaches and recommendations from practitioner literature to improve collections of user funds and handpump Operation and Maintenance (O&M) practices did not bring about the desired effects in the pilot study. Here, I will present nine explanations. First, capacity building and sensitisation efforts by The Water Trust (TWT) and the local government, as hypothesised by Ostrom (2005) and Mantzavinos (2001) in Chapter 2.4.2, did not lead to the adoption of new norms to enhance the sustainability of the village water sources.

Second, efforts to adjust elements of the CBM-*lite* model during the course of the pilot such as reducing the time path of collections (per month to every season) and increasing transparency (amount of payment to Water Operator and caretakers) did equally not improve the sustainability status of the handpumps.

Third, while the use of incentives to manage the water source is expected to increase sustainable rural water services (Harvey, 2008), the provision of a financial incentive for the Water Operators upon collections – of whom most were selected because of their trustworthy reputation – was not sufficient to incur a long-term commitment to execute O&M responsibilities.

Fourth, the idea that banking the funds in a SACCO account would prevent misuse of funds, improve feelings of trust and willingness to pay as hypothesised for example by Carter and Kidega (2013) did not materialise. Misuse of funds was still possible at collections (even with the use of receipts) and multiple cases of (suspected) embezzlement by the caretakers were reported by the Water Operators and community members. Equally the promise of a handpump insurance scheme upon steady payments and the prospect of reliable water services did not improve people's willingness to contribute and did not prove viable if dependent on people's willingness to pay. As Fonseca et al (2013 p.24) write: "[e]ven if it is rational and more cost-efficient to save money to prevent future breakdowns, both users and service providers would rather use existing funds for immediate needs and deal with breakdown expenses in the future when they occur."

Fifth, the clustering of village water points to enable economies of scale as explored by Foster et al. (2015); Oxford/RFL (2014) and Zeug (2011) proved complicated due to different feelings and attitudes towards 'place' and 'space' among community members and the 'outsider' NGO TWT. Whereas TWT demarcated the pilot along geographical borders and the span of control of the Local Councillor (LC) I, people identified their sense of belonging to their home sub-village controlled by local elites, either locally elected councillors or clan or tribal authorities. Hence, subsidising the repair costs of a handpump in another sub-village instigated feelings of unfairness and prompted vocal resistance by powerful agents. A possible implication could be to lower the scale of clustering from village level to sub-village level. However, different types of village water infrastructure also thwarted the clustering of village water sources and user payment. The protected spring in Mboira II consumed less expenses on maintenance and repair than the handpumps in the village. As a result, they were disinclined to contribute user funds or subsidise the more expensive water systems in the village.

Sixth, community meetings and the mutual creation of formal rules did not lead to the Habermasian ideal of consensus and cooperation. Close social relations engendered the 'dark side' of social capital (Portes and Landolt, 1996) as also observed in Chapter 5.4.3 on the outcomes of the CBM model; they sustained free-riding and impeded the enforcement of formal rules. Hence the use of contractual agreements that stipulated rules on resource use proved worthless. Non-compliance to formal rules was received with a certain level of equanimity and excuses for non-payment and misappropriation of funds became 'normalised', comparable with nonpayer behaviour for company water bills in South Africa as demonstrated by Brown (2008).

Seventh, while monitoring is deemed important for sustainable resource use (Agrawal and Goyal, 2001; Ostrom, 1990; Lejano and de Castro, 2014), full-time monitoring proved unfeasible in reality due to the need to cultivate one's lands and the simple impracticality to monitor a water point 24 hours a day. The District Water Officer (DWO) of Masindi proved right when he suggested the workload for the water operators would be too great as described in Chapter 7.3.3. Hence, people could collect water unseen. Further (and eighth), the geographical locations of the water sources and the availability of multiple water sources around village borders as also observed in the first empirical study (Chapter 5) influenced non-payment. While the reviewed literature assumes water resources to reflect Common Pool Resources (CPRs) – rivalrous in nature and involving the difficulty to exclude outsiders – water resources in the case study area were rather non-rivalrous and non-excludable: representing the characteristics of a public good. As noted in Chapter 5, community members did not eschew from using open and contaminated water sources and in the pilot villages, a number of households collected water from protected sources outside the village to avoid user payment. Hence, the lack of loyalty and assumed sense of ownership to maintain a particular handpump in an area with alternative water sources may not be surprising as also observed by Jones (2011), Madrigal et al. (2011), Parry-Jones et al. (2001), Schouten and Moriarty (2003) and, Parry-Jones et al. (2001). Recognising the type of 'good' one deals with is vital to understand processes of institutional bricolage and is important for devising effective boundary conditions and remedies for improving sustainable resource management. When we consider that the CBM framework departs from the view that water resources reflect CPRs, it may actually not be surprising that these remedies do not effectively address collective action problems within public goods. When we treat public goods according to CPR theory they may in reality be wearing 'the wrong trousers' to paraphrase Wallace and Gromit<sup>44</sup> when managed according to principles of the CBM model.

Lastly, the CPR rule to exclude upon non-payment remains a morally impossible option due to the human right to water and, as Olson (1971) predicts, the inability to exclude households from collecting water following non-payment resulted in a snowball effect and the reluctance by others to contribute. Yet, while the human right to water seems essential to ascertain that people meet (at least) their basic access to water, it is equally important to draft the right conditions for sustainable rural water management on which the human right to water rests.

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<sup>44</sup> 'The Wrong Trousers' is a 1993 animated movie by Nick Park featuring the characters Wallace and Gromit who are well-known British icons.

### 8.7.2 Habitus, Authoritative Power and Worldviews

#### **Habitus**

Non-payment, (suspected) misappropriation of funds and the lack of rule enforcement may be explained through the concept of ‘habitus’ of Bourdieu (1989; 1990). Collective financial contributions for the upkeep of the water infrastructure were not accustomed, despite the shift in the 1990s from state-led service provision to Community Based Management (CBM), demanding user payments and community control, as also Chapter 5 on the outcomes of CBM and van den Broek and Brown (2015) illustrate. The preference to pay the water user fees *after* breakdown may serve a logical function due to widespread commandeering of public funds for personal gain, both on village level and in other social fields such as at government agencies (Persson et al., 2012). The deposits of water user fees in the SACCO and the use of receipts upon payment could therefore not prevent and remove the suspicion of misuse of funds by the collectors.

#### **Authoritative Power**

The request to pay water user fees by the Water Operators, let alone the enforcement of sanctions upon non-payment, proved difficult for three key reasons. First, a number of former Water User Committee (WUC) members significantly influenced the course of the pilot project. The former WUC members were often part of the local elite and represented powerful agents. The implementation of the CBM-*lite* model, embodied by the Water Operator, implicated a loss of status and (access to) finances. As the risk perceptions in Chapter 7 predicted, the WUC members were unsatisfied with the CBM-*lite* model. In Mboira II village, the former WUC members networked with respected and influential school teachers to maintain their self-interest and enhance their powerful position. Together they deliberately subverted the pilots by disseminating false information about the Water Operator to sabotage the pilot project. This finding supports Feeny’s (1988 p. 186) notion that “... political and economic costs and benefits to the ruling elites are a key to explaining the nature and scope of change”. Logical agents of change such as the politicians (i.e. in Mboira II) and local leaders (Adams, 2001; Feeny, 1988; Wegerich, 2001) were not actively engaged in altering deeply ingrained informal rules of non-

contributions and misappropriation of funds, and may potentially have feared high transaction costs, such as loss of public support, with supporting the pilot. Other authors such as (Quin et al., 2011) have related lack of user payments within the CBM to the role of Ugandan politicians who tend to advise against user payments. The emphasis on user payments within the CBM-*lite* model may have strengthened this sentiment.

The lack of rule adherence was also observed at local government level. Despite the contractual agreements at the start of the pilot project, the critical case study demonstrated the lack of rule enforcement and post-construction support at the local government level, as also documented by Barnes et al. (2014), Baumann and Furey (2013), Carter et al. (1999; 2010), Harvey and Reed (2006), Lockwood (2004), Moriarty et al. (2013), Schouten and Moriarty (2003). Besides, the erratic execution of policy regulations by the local government may have influenced public opinion that formal rules are an analogy for Putnam's (1993 p. 17) "writing on water". The fact local rules are rarely enforced, may shed more light on community member's risk perception of paying the water user fees, described in Chapter 7. As long the enforcement of rules is dependent on by-laws (i.e. formal rules) and the actions of local individuals, payment may remain a risk as misconduct (both misuse of funds and free-riding by others) cannot be effectively prevented and punished.

A second reason for the difficulty to enforce discipline upon non-payment was because the enforcement of by-laws was seen as confrontational and socially unacceptable behaviour; similar to the findings of Cleaver (2002) in Zimbabwe. Authoritative power and respect was obtained by those who could politely convince community members to contribute. However, these methods did not guarantee compliance with payment rules as explained above. Furthermore (and third), the financial incentive to the already well-to-do Water Operators hampered the collection process. In his study in South Africa, Golooba-Mutebi (2005) writes that community members expect affluent community members to support poorer households and family members. Yet, when well-off community members fail to meet such expectations, feelings of jealousy and resentment may become a threat to individuals and family members (Ferguson, 1999; Niehaus, 2001; 2013; Pottier, 1988). In the pilot villages, these emotions were expressed in extortions of witchcraft; a cosmological understanding that influenced every day practices.

## **Worldviews**

Research on witchcraft in Africa by Niehaus (2001: 2001b; 2013), shows that the accusations of witchcraft thrives in villages that experience labour migration and the break-up of the extended family; a similar trend was observed in the pilot area. Niehaus argues that in such contexts, threats of witchcraft are less risky as they do not damage close family relationships. The Water Operators in Mpumwe and Mboira II were not born in the village. Their outsider status may therefore have allowed the expression of threats and harassments.

A fundamental notion within the cosmological worldview is that aspects as health and wealth are limited goods. A successful person is assumed to have profited at someone else's expense (Clever, 2012). The fact that the well-to-do Water Operators profited from collecting water user fees, was consequently perceived as anti-social and unfair. Threats of witchcraft and other harassments directed at the Water Operator could therefore be seen as efforts to restore equality, as noted by Offiong (1991). This also brings to mind the Scandinavian concept of the Janteloven (the Law of Jante) by the Danish author Aksel Sandemose (1899-1965) where people learn to refrain from feeling or acting superior from others, or behave differently than others, and fear individualism. This may represent the real threatened value and object at risk, rather than money per se. On the one hand there is evidence of loose group ties demonstrated by the lack of willingness to volunteer and mistrust, yet at the same time community members are bound by a collective code of conduct they fear to break. These self-defeating behaviour patterns resulted in withholding payment, led to handpump breakdown and inconvenience and possibly sickness rather than seeing the Water Operator profit. Further, threats of witchcraft were expressed by women. This provides an interesting element to processes of institutional change, whereby women play a powerful role in correcting socially 'wrong' behaviour, as also observed by Dolan (2002), showing their ability to exercise agency and influence to alter formally agreed rules, even though they may not have actively participated in formal decision-making processes, as i.e. community meetings (Chabal, 2009).

The finding that threats of witchcraft and verbal harassments were directed at the rule enforcer are surprising; Douglas (1987) and Cleaver (2012) found that informal norms caused free-riders to be indebted with "disease and death" (Douglas 1987, p. 74). In the pilot villages, informal sanctions were directed at the rule infringers and free-riders got off scot-free. The enticement of a financial incentive could not compensate the Water Operators for the high transaction costs upon enforcement of water user fees. To protect their social standing, Water Operators did not

disclose their earnings to the community and rested with the situation community members were unwilling to contribute, despite the almost unanimous willingness to pay prior implementation of the CBM-*lite* model. Paradoxically, the very reason to elect the Water Operators – their entrepreneurial qualities and assumed authoritative power – was turned against them and the threats they received rendered them inept at public endorsing the CMB-*lite* model.

### 8.7.3 Outcomes of Institutional Bricolage

‘Organic’ institutional bricolage similarly failed to generate adequate Operation and Maintenance (O&M) funds. In Nyakatugo, the water management arrangements evolved to a mixture of elements from CBM, CBM-*lite* and specific local preferences. Despite the attempts of community members to familiarise rural water management arrangements, institutional bricolage did not improve the prospect of sustainable rural water supply: non-payment, ambiguity over the financial incentives and lack of funds for O&M were still the order of the day. Scott and Meyer (1994 p.2) remind us that “visible structures and routines that make organisations are direct reflections and effects of rules and structures built into wider environments”. The locally adapted and organically created water management arrangements in Nyakatugo may show us the inertia to changing management structures and the consequent acceptance of unreliable access to water from a particular source.

Overall the CBM-*lite* pilot failed for a host of reasons compounded by the lack of external support and regulation by the sub-county and the shifting priorities of The Water Trust (TWT). The demise of the pilot and the departure of the Programme Manager who was profoundly engaged with the pilot project, happened almost concurrently and corresponds with the perspective of Garforth and Usher (1997): “... the degree of uptake and impact are basically linked to the quality of project management.” Although the lack of supervision and ability to redirect and evaluate elements of the CBM-*lite* model are critical to the rapid collapse of the pilot, ultimately, the general equanimity to non-payment in conjunction with the high transaction costs to enforce rules due to powerful collective codes of conduct, bring us back to the risky rural water management practices of today and described in the first empirical Chapter 5. In the end, the outcomes of CBM, CBM-*lite* and organic processes of institutional bricolage were similar and did not guarantee reliable access to water. Moreover, the critical case study on

the CBM-*lite* pilot teaches us that when the outcomes of rural water management innovations are dependent on upfront user payments and the ability of community members to enforce rules on resource use, such models may lead to non-management, leaving the functionality of the water infrastructure fatalistically controlled by the Gods. Therefore, initiatives as that of the ‘Smart Handpump’ project by the University of Oxford and the ‘Sub-County Water Supply and Sanitation Boards’ (SWSSB) of IRC/Triple-S and the Ugandan Ministry of Water and Environment (MWE) discussed in Chapter 6, are unlikely to lead to effective management regimes and long-term reliable access to water as they are based on willingness to pay and human rule enforcement.

Thus, when universal access to clean water is the objective and when the user pays principle remains the dominant paradigm, should the rural water sector consider taking community control out of the equation?

# Chapter 9

## **Why Community Based Management Thwarts Reliable Access to Water and Why Rural Water Management Innovations Maintain the Status Quo**

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### **9.1 Introduction**

This final chapter answers the research objectives and overall aim of the thesis. The chapter draws the study to a conclusion by stressing key findings that feed back into the literature and make recommendations for policy and practice.

This research has culminated into two key findings: **1) the failure to successfully reconcile the user pays principle and community control and, 2) sectoral inertia and reluctance to move away from the CBM model amongst actors at all levels in the rural water sector.**

This chapter now seeks to consider the implications of the thesis's key findings for debates on handpump management in Sub-Saharan African (SSA) countries and future approaches to sustainable rural water management. The chapter begins with a background of the study in Section 9.2 before it summarises the thesis's key contributions in Section 9.3. The proceeding Sections 9.4 and 9.5 discuss the key findings in relation to the research objectives of this thesis. Section 9.4. addresses the failure to successfully reconcile the user pays principle and community control. The section highlights that reforms within the parameters of the CBM model will not be sufficient to guarantee both user payment and community control. The key themes addressed in this section are the role of informal norms and power relations, 'the typology of rural groundwater 'good'' and the human right to water in ensuring sustainable management outcomes. Section 9.5. addresses the inertia in the rural water sector to deviate from the CBM model. The section concludes that handpump non-functionality resembles a 'wicked problem'.

The chapter closes with the implications of this study on policy, future rural water management innovations and research in Section 9.6.

## 9.2 Background to the Study

This thesis has studied how handpumps in rural Uganda can be sustainably managed in terms of finance and management. To date, sustainable rural water management in Sub-Saharan Africa (SSA) countries is expected to be secured through the Community Based Management (CBM) model. In the CBM model, water users are expected to pay for system upgrades, rehabilitation and expansion expenditures and maintenance costs (Burr and Fonseca, 2013). A Water User Committee (WUC) is responsible for the collections and the Operation and Maintenance (O&M) of the water source and the members are required to invest their time to keep the system running. At any one time, however, an estimated one out of three handpumps is non-functional across rural SSA (Baumann, 2006; Oxford/RFL, 2014; RWSN, 2010). The high loss of infrastructure reflects high-sunken costs by governments and the donor community, and is threatening people's health, livelihoods and the human right to water which is intensified by growing population rates and the detrimental effects of climate change.

In response to an increasing body of literature showing the failings of the CBM model to secure handpump sustainability (i.e. Chowns, 2014; Cleaver, 1999; 2002; 2012; Fonseca, 2014; Jones, 2011), this thesis has aimed **to critically evaluate the challenges of the Community Based Management (CBM) model and alternative approaches for sustainable rural water management**. As such, the objectives of the thesis were to:

1. Examine the underlying ideologies and theoretical underpinnings of the CBM model;
2. Evaluate the outcomes of 100 community based managed water sources in mid-west Uganda.
3. Analyse the risk perceptions of community members, NGO staffs, and local and national government officials about the introduction of an alternative rural water management model – referred to as *CBM-lite*.

#### 4. Evaluate the outcomes of the CBM-*lite* model in four pilot villages in mid-west Uganda.

The study was conducted in mid-west Uganda in Masindi and Kiryandongo districts and is rooted in an iterative research strategy whereby data collection and hands-on experience was alternated with insights from ‘mainstream’ and ‘critical institutionalism’ to understand and interpret the outcomes of community based managed handpumps (refer to methodology Chapter 4 for a detailed overview of the research methods). The study was built upon action research in conjunction with a cross-sectional and a critical case study design. It adopted a mixed-method approach which included rigorous ethnographic fieldwork, interviews and surveys covering the period August 2012 to November 2015. The research was established through close collaboration with a local Ugandan NGO ‘The Water Trust’ (TWT) and Masindi and Kiryandongo local government.

The study has been divided into two separate parts. The first part of this study investigated the outcomes of the CBM model in mid-west Uganda. The second part of the study, investigated an alternative rural water management model, referred to as CBM-*lite*. This local niche innovation was co-developed by the author who was the Programme Manager of TWT from June 2012 until January 2014.

### 9.3 Summary of the Thesis’s Key Contributions

This thesis has made an **original contribution** to the handpump sustainability debate and the growing geography of water literature by demonstrating that non-functionality of handpumps, and the precarious status of many, cannot be blamed solely on poor technology or siting of wells but is fundamentally related to the institutional framework of the Community Based Management (CBM) model that attempts to mesh the commodification of water with community control amid the messy complex reality of rural environments. The thesis has contributed to the increasing body of evidence that the problem of handpump non-functionality *is* related to the CBM model, specifically the dearth of user funds to pay for maintenance costs (Burr and Fonseca, 2013; Fonseca et al., 2013; Jones, 2011; Kalulu et al., 2012; Peter and Nkambule, 2012) and the inactivity of a management body or a Water User Committee (WUC) to organise community meetings, collect user funds, carry out Operation and Maintenance

(O&M) tasks, organise handpump repairs and maintain proper hygiene and sanitation practices near the water source (Carter et al., 2010; Mugumya, 2013; Naiga et al., 2015).

Through various examples in the thesis, this study has advanced insights into why recommendations for improvement that fall within the CBM model will struggle to succeed. This has been illustrated by evaluating both the current CBM policy and an alternative rural water management model –the ‘CBM-lite’ model. The CBM-lite model attempted to overcome the dearth of user funds and inactivity of the WUCs by reconfiguring the organisational and governance arrangements of the CBM model. However, being confined within the institutional framework of the CBM model, the CBM-lite innovation did not transcend the current risk of handpump failure. The study lends therefore support to a growing critical institutional scholarship that questions the effectiveness of initiatives that aim to design “the right formula” (Golooba-Mutebi, 2012 p. 430) for sustainable resource use (Clever, 2012; Cleaver and de Koning, 2015; Chowns, 2014; de Koning, 2011)

In contrast to the recommendations of Hassenforder et al. (2015) Jones (2011) and Cleaver (2002), to connect rural water management interventions to “existing socially embedded arrangements” (Jones, 2011 p. 68), this study has shown that such approaches of facilitating ‘institutional bricolage’ continue to maintain the risky ‘hit-and-miss’ strategy characteristic of the current CBM policy. It has demonstrated that the management of handpumps in such processes remains dependent on the particular mix of community members having the willingness and ability to take an active role in managing the groundwater source. Hence, when organisational and governance arrangements cannot be effectively designed and when processes of institutional bricolage maintain the status quo of a one third handpump failure rate, the rural water sector may need to explore potential rural water management arrangements that substantially deviate away from CBM and consider other actors for the management of rural water sources as shown in Table 6.1.

While trial and error learning may accumulate meaningful information about what strategies may improve sustainable rural water management, the study, however, demonstrated in Chapter 6 that contemporary innovations that aim to improve management failings such as the ‘Smart Handpump’ project by the University of Oxford and the ‘Sub-county Water Supply and Sanitation Boards’ (SWSSB) by IRC-Triple-S, do not move away from CBM. The thesis has made a considerable *contribution to knowledge* by applying a relational reading of risk (Boholm and Corvellec, 2011) on actors’ risk perceptions to unravel why there has been little reform in

the rural water sector: an area of research that has been under recognised in the rural water literature. The analysis has shown one of the clearest dilemmas in this thesis: a rural water sector resistant to radical change due to aversion to risk, conflicting diagnose of problems and consequent solutions and, CBM as a means, counterintuitively, to avoid the user pays principle.

The conclusion proceeds with a synthesis of the key findings of this thesis: 1) *inability to successfully reconcile the user pays principle and community control and, 2) sectoral inertia and reluctance to move away from the CBM model amongst actors at all levels in the rural water sector*. The following Sections (9.4 and 9.5) link the key findings to the thesis' research objectives.

## 9.4 CBM is a Blueprint for Breakdown

The chief purpose of this thesis has been to demonstrate conceptually and empirically that problems arise from the neo-liberal user pays principle and grassroots approaches merged within in the Community Based Management (CBM) model. As noted in Chapter 2<sup>45</sup> that addressed the first research objective and critically examined the underlying ideologies and theoretical underpinnings of the CBM model, the neo-liberal arm of the CBM model assumes that upfront contributions towards the construction of the water source result into feelings of ownership and a commitment to pay for the upkeep of the system whereas the grassroots arm holds romantic views about 'the community', claims that local institutions can be designed and believes in the corrective leverage of participatory approaches to build social capital and enhance collective action. This study has argued against such 'orthodox science' where environmental science and politics are coproduced (Forsyth, 2003) and that has endless lists of requirements to ensure communities can sustainably manage their natural resources. As Blaikie (2006 p. 1949) writes: "... it leaves policy makers with the task of finding a needle in a haystack, where the haystack itself has far from clear outlines."

Chapter 5<sup>46</sup> addressed the second research objective of this study and empirically evaluated the outcomes of the CBM model across 100 water sources in Masindi and Kiryandongo districts in

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<sup>45</sup> Parts of the arguments in this chapter are based upon:  
Van den Broek. M.A., and Brown.J., 2015. Blueprint for breakdown? Community Based Management of rural groundwater in Uganda. *Geoforum* 67, 51-63. (**Published**)

<sup>46</sup> This chapter is based upon the case study presented in:

mid-west Uganda. The case study demonstrated the failings of the CBM model to ensure both user payment and community control and argued that user payment ultimately undermined the CBM model. Although the established water user fee rates were claimed to be affordable by the majority, water users were reluctant to pay. Only at 3% of the studied water sources Water User Committees (WUCs) had been able to secure sufficient funds for O&M (as per the guidelines of the WASHCost benchmarks of Burr and Fonseca (2013)). The collection of funds reverberated resistance by water users as they feared WUCs could misuse the funds for personal gain: a fear that was expressed in the analogy that WUC members were ‘eating the money’ and seemed to be rooted in the wider social-political context of Uganda where corruption has penetrated into all layers of society.

As a result, the collections of water user fees threatened to destabilise close social relationships and WUC members had no authority to enforce locally agreed sanctions to deter free-riding. Mistrust towards WUC members over money, often justified, had in many cases undermined collective action. WUC members often discontinued collections and tended to abandon their management roles as they did not want to subject themselves to abuse. Those few individuals that did remain committed to their management function often felt they were entitled to be compensated for their efforts and endurance. Although sometimes formally agreed upon by the water users, the commodification of the (previously voluntary) service undermined the CBM model.

Theoretical Chapter 6,<sup>47</sup> explored contemporary rural water management innovations and introduced the *CBM-lite* model; the central focus in the remainder of this thesis. The *CBM-lite* model drew upon recommendations from practitioner literature to improve handpump management outcomes and was designed to overcome practices of non-payment, misappropriation of public funds and inactivity of the WUCs in the CBM model. *CBM-lite* sought to restructure resource governance and reconfigured the organisation of rural water management within the existing institutional framework that promotes the user pays principle and communal ownership.

In the *CBM-lite* model a user-paid Water Operator, supported by a caretaker for each water source, is selected by the community with the involvement of the local government through a

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Van den Broek, M.A., and Brown, J., 2015. Blueprint for breakdown? Community Based Management of rural groundwater in Uganda. *Geoforum* 67, 51-63. (Published)

<sup>47</sup> Some of the arguments presented in this chapter draw upon:

Brown, J., and van den Broek, M.A., Better the devil you know? A relational reading of risk and innovation in the rural water sector’ (**under review** with *The Geographical Journal*).

competitive application process and assumes responsibility for Operation and Maintenance (O&M) of a cluster of village water points serving a term of three years. The collected community funds are ‘banked’ with a local Savings and Credit Cooperative (SACCO) that provides an insurance-style product, which, with checks and balances, grants the operator access to funds for even major repairs. The Water Operator pays a fixed fee per agreed period to the SACCO based on estimated costs of maintenance and repair. Roles, responsibilities and sanctions are formalised in a contract signed by all key stakeholders.

Empirical Chapter 8 addressed the fourth research objective of this thesis and critically evaluated the outcomes of the *CBM-lite* model in four pilot villages in Kiryandongo district. The case study on *CBM-lite* demonstrated that similar problems emerged as in the CBM model described in the empirical findings of Chapter 5. Banking the funds and an insurance against handpump breakdown, a financial incentive for the Water Operator and clustering the water sources did neither improve user payment nor improve community control. Instead, the emphasis on user payment and the provision of a user paid financial incentive to the Water Operators caused considerable tensions in the village. Innovators must therefore be wary of placing too much faith in surveys in general, and willingness to pay surveys in particular, as a foundation for rolling out an innovation. Although Swyngedouw (2006 p.4) argues that “[p]roviding safe and clean water to communities is not exactly rocket science” guaranteeing user payment *and* community control prove complex for a number of reasons.

First, this thesis has shown that informal norms and power relations prevented user payments and obstructed community control. Although the majority of the community members claimed a water user fee of 1,000 UGX was affordable, non-payment appeared the norm and the mindset that access should be for free – as in the state-led era – largely persists into the present time (Jones, 2011; Quin et al., 2011; Whittington et al., 2009; Fritz and Menocal, 2006; Woolcock and Pritchett, 2004). The resistance to the *CBM-lite* model by the majority of the community members was therefore unlikely rooted in a desire to return to the CBM model, but originated from a reluctance to the institutional framework of the ‘user pays’ paradigm that is easily circumvented in the CBM model.

Another source of resistance in the *CBM-lite* model was the financial incentive for the Water Operator upon water user fee collections. Although community members were disinclined to volunteer and felt they needed recompense for their efforts as demonstrated in case study Chapter 5, formalising user paid financial compensations disagreed with informal codes of conduct that value patron relationships and prescribe equal distributions of wealth (Ferguson,

1999; Golooba-Mutebi, 2005; Niehaus, 2001; 2013; Pottier, 1988). Similar to the situation in the CBM model, public support for the village Water Operators faded due to open accusations from powerful individuals in the village that claimed the Water Operators were ‘eating the money’ and failed to provide ‘accountability’. These rumours engendered a downward spiral of suspicion and provoked community members against those in charge of the management of the water source. The suspected financial incentive for the Water Operators (similar to the WUCs, the Water Operators feared to openly admit they were earning from the collections) instigated feelings of jealousy and of being unfairly treated. In all four pilot villages, these feelings were discharged through threatening and abusing the Water Operators and the caretakers: actions that served the ultimate goal of non-payment. In sum, community members rather withheld payment, leading to handpump breakdown and inconvenience and possibly sickness from the use of surface water rather than seeing a Water Operator profit, even though payment to the Water Operators was formally agreed upon and despite the fact that the surveys conducted by TWT showed community members’ support to the CBM-*lite* pilot project. The social repercussions for maintaining the village water sources outweighed the financial compensation of the Water Operators and caused them to abandon their tasks.

Innovators must be aware that the expressed calls for ‘accountability’ are no indication that financial transparency and measures to prevent misuse of funds are likely to result in a willingness to pay. Even when there is no opportunity for misuse of funds, the informal norm is that water should not be paid for, and the lack of understanding why money should be paid before handpump breakdown, will continue to supersede locally agreed formal rules (i.e. paying the Water Operators) on resource use, as suggested by Cleaver (2012). As long as community members are in charge of correcting such informal norms of non-payment by enforcing locally agreed bye-laws on close friends, family and close social relationships, they are fighting a losing battle as breaking such norms have proved to be costly to the rule enforcer. The insurmountable task of the Water Operators to deter free-riding and enforce locally agreed sanctions has been well-illustrated in the following quote by one of the Water Operators: *[upon rule enforcement] “... me and the relatives will remain [to have] a problem. The sub-county will come and go away, the police will come and go away, but I am the one who remains in the community” (6 November 2014).*

Second, this study adopted a geographical perspective and highlights the importance for academics studying the significance of place and the outcomes of natural resource management to consider the *nature* of the resource dealt with. While CBM is based on Common Pool

Resource (CPR) theory as discussed in Chapter 2, this thesis has demonstrated that the water sources in the case studies did not reflect CPRs (rivalrous in nature and difficult to exclude outsiders). Water was abundantly available and people did not eschew from taking water from unsafe open water sources. The water sources in the case study area, rather, resembled a public good wherein people's access to water was not dependent on that particular resource. As suggested by Mancur Olson (1965), public goods are prone to the free-riders problem.

Third, and as discussed throughout this thesis, the water sources in the case study failed to meet the minimal requirements for sustainable CPR management as set out by Ostrom (1990) such as clear boundaries of the resource. Clear boundaries imply that users (more specifically free-riders and 'wrong-doers') can be excluded from the resource. However, water is a special case, or as Bakker (2003) argues an 'uncooperative commodity' due to the human right to water. As a result, the user pays principle has proved difficult to enforce because refusing access to water is perceived as morally and ethically wrong. An ironic state of affairs, as at the same time a dearth of user funds threatens the long-term functionality of the water system and ultimately the human right to water.

The thesis has demonstrated that reforms within the CBM model do not offer any guarantee for improved outcomes and do not overcome the central failings of willingness to pay and community control. Tweaking participatory processes, technological innovations and external support are therefore unlikely to enhance rural water management outcomes. Neither will interventions that improve financial accountability, or cluster handpumps to pool community funds for handpump repairs, resolve the difficulty for community members to both control the management of the water sources and ensure user payments. *Until user payment and community control are merged, the sixth post-2015 Sustainable Development Goal of universal access to clean water will remain an illusion, as the CBM model has turned out to be a blueprint for breakdown.*

While experimenting with alternative rural water management arrangements may seem imperative, the second key finding of this thesis indicates limited appetite amongst actors in the rural water sector to move away from CBM.

## 9.5 Better the Devil You Know?

Even though alternatives to Community Based Management (CBM) have been developed to improve handpump functionality, Chapter 6 has demonstrated that they remain within the parameters of the CBM model. Through Karen Bakker's (2007) resource management categories it was shown that such new endeavours rather build *upon* the CBM model through introducing additional elements such as a technological innovation or a bureaucratic layer to support communities in managing their water sources. The third research objective served as a lens to understand the lack of reform in the rural water sector by analysing actor's risk perceptions on the CBM-*lite* innovation.

The thesis has made an important contribution to knowledge by demonstrating that innovations that deviate too far from CBM represent a possible risk to strongly held values. It has shown that the CBM framework acts as a tanker; that irrespective of the risks it entails it may be challenging to turn around. The relational theory of risk of Boholm and Corvellec (2011) provided a conceptual framework to unravel how 'risk posing objects' could potentially threaten underlying values and has proved helpful in explaining *why and how* innovations in the rural water sector pose risks to local and national actors.

As Chapter 7 has demonstrated, which describes and reflects upon the development and implementation process of the CBM-*lite* model, the seemingly rational changes within the model caused a host of perceived risks to a wide range of stakeholders represented in this study; NGO staffs, local and national government officials and community members. The most prominent 'risk posing object' was a single and paid Water Operator. A salaried Water Operator proved highly contentious and NGO officials feared that Water Operators could deny community members access to water to prevent free-riding. The human right to water appeared to override the user pays principle in the mind-set of many NGO officials. The emphasis on user payment in the CBM-*lite* model made the model contentious to central NGO custodians. While user payment is key to the CBM model and the long-term functionality of rural handpumps, the analysis revealed a low level of support for the user pays principle.

The persistence of the CBM model may therefore be explained by the fact that payment is easily circumvented in the CBM model. In addition, and as described in the literature Chapter 2, North (1990) may explain the institutional invariance when he wrote: "... [when] *organisations owe*

*their existence to the institutional matrix, they will be an ongoing interest group to assure the perpetuation of that institutional frame structure – thus assuring path dependence (p.6).*

Communities shared the low level of support for the user pays principle and felt that a user paid Water Operator offended their sense of fairness. Although it was claimed that ‘voluntarism was dead’, paying the Water Operator disagreed with social and cultural norms; inertia to change was also evident at the local level.

In sum, a relational reading of risk demonstrated that for many stakeholders the known risks of CBM may be preferable to potential harm to ideology, policy coherence, organisational reputation, and social and cultural norms. The relational theory of risk has therefore proved powerful in predicting the outcomes of the CBM-*lite* model and essentially showed that the CBM-*lite* was already ‘dead in the water’ before implementation. Yet, simultaneously and ironically, it is the institutional CBM framework – user payment and community control – that essentially runs counter to what community members and various WASH stakeholders value.

The sum of this thesis is a ‘classic wicked problem’ (Rittel and Webber, 1973). As noted throughout, actors disagree on the root causes of handpump failure and consequently how to solve it. Furthermore, solutions may not be agreeable due to competing and strongly held values such as efficiency, equity and social justice (Ludwig, 2001). They may lead to undesirable and unexpected side-effects and, balancing functionality, social wellbeing and the environment may prove difficult to achieve (Franks and Cleaver, 2009). A key feature of wicked problems is that easy and technological ‘fixes’ do not suffice (Balint et al., 2012) and that there is no single solution to address handpump non-functionality. Inevitably, inertia may be the outcome.

## **9.6. Engendering Evidence-Based Policy Making**

This thesis has moved beyond critiquing the Community Based Management (CBM) model and aims to start setting a research agenda that explores viable and empirically grounded rural water management alternatives outside the CBM framework (van den Broek and Brown, 2015 p. 26). Ultimately, to have a chance to achieve the sixth post-Sustainable Development Goal and to adapt to changing rural environments, the rural water sector needs to embrace experimentation to enhance learning and to devise appropriate strategies for improving handpump sustainability. As highlighted by the human right to water, the provision of water is

the responsibility of the state (de Albuquerque, 2014). While capital repair of rural water services financed by governments and the international community may be preferable to some (Franceys et al., 2016; Swyngedouw, 2006), there is no evidence that these actors are willing to take on such a responsibility. As long as states and donors are not committed to fund the maintenance of rural water systems, the user pays principle persists and rural communities will need to pay for the recurrent costs of their water systems. As community control does not guarantee user payments and will therefore continue to threaten reliable access to clean water, alternative strategies outside the CBM model may need to be explored.

As described in Chapter 2, recent debates in the rural water sector signal an increasing interest to introduce market mechanisms in the supply of rural water services – illustrated by the increasing calls to ‘professionalise’ CBM (Moriarty et al., 2013; Smits et al., 2010). However, endeavours to alter water users from service providers to clients and replace voluntarism with a paid service provider responsible for the O&M of the water service, have been targeted at rural growth centres and more complex water technologies such as piped water systems. To date, CBM is predominantly viewed as the best water management model in rural villages that use simple handpump technologies. This thesis has clearly argued against the romantic perception that rural communities are able to effectively control the management of their handpumps and are willing to pay for its upkeep. The findings of the thesis implicate that debates on professionalising rural water services may need to be extended to rural areas and water sources fitted with a handpump. After all, 82% of the Ugandan population lives in a rural area (World Bank, 2016).

The *CBM-lite* model that has been studied in this thesis resembles a possible reading of professionalising the management of handpumps in rural villages. The results of the *CBM-lite* model may prove helpful for innovators aiming to improve the outcomes of rural water management arrangements. First, the impression from extensive fieldwork is that there is no evidence that communities actually want full citizen control (Golooba-mutebi, 2005). The study showed that a financial incentive for a Water Operator may not be sufficient to engender user fee collections and execution of maintenance tasks due to social repercussions. Second, the findings support Olson’s (1965) suggestion that a ‘special devise’ may be needed when exclusion of free-riders is too costly for the rule enforcer. The study shows that Olson (1965 p.2) may have been right when he wrote: “... unless there is coercion or some other special devise to make individuals act in their common interest, rational, self-interested individuals will

not act to achieve their common group interest”. Indeed, to guarantee user payment more draconian measures may be required such as pre-payment technologies.

Professionalising the management of handpumps and moving away from CBM may, however, be difficult to achieve due to poor road networks in rural areas, potential low-returns on investment in scarcely populated areas and low-purchasing power of rural villagers (Koestler et al., 2010). In addition, the application of a ‘special devise’ may not only threaten the human right to water but also pose an additional financial burden. After all, the technology and retrofitting the handpumps need to be paid for by someone.

A special case is a recent proposed project by the French handpump manufacturer Hydro Vergnet, that aims to remove community control and use a pre-payment water system (Barbotte and Guillemin, 2016). Their initiative – coined as the ‘UDUMA project’ that potentially will be co-funded by the Dutch government – aims to commodify both the management of the service and the water (the ‘good’) of rural handpumps (in CBM, communities only pay for spare parts and labour costs of the mechanic). In the ‘Hydro Vergnet model’, a private Water Operator is responsible for the distribution of water. Water users pay for water use (around USD 1 per m<sup>3</sup>), regulated through the use of ‘smart handpumps’, fitted with a water meter and monitoring technology that transmits usage data to a cloud. An independent body is responsible for the maintenance and repair of the handpumps and are paid a set rate per pump. The project hypothesizes that water users are willing to pay for a good and reliable service and can afford the projected costs of water (Barbotte and Guillemin, 2016).

The proposed Hydro Vergnet project may suggest Friedrich Hayek (1944) might be justified when he wrote: “... most people still believe that it must be possible to find some Middle Way between ‘atomistic competition’ and central direction. [...] Yet mere common sense proves a treacherous guide. [...] Planning and competition can be combined only by planning for competition, but not by planning against competition” (p. 31). However, a research agenda that studies the impact of rural water management innovations must consider that the move towards privatisation in rural water service delivery may, just as the CBM model, represent an initiative of its era. European countries have increasingly shifted their domestic and foreign policies to the political right and economic decline combined with increasing public discontent about foreign aid has progressively channelled hope towards the private sector to address societal problems (Akkerman et al., 2016). As a result, scientists need to be wary of producing yet another ‘science-policy’ such as CBM where policies may shape environmental science and in turn reinforce a political project (see Forsyth, 2003).

Furthermore, the perspective of handpump non-functionality as a wicked problem may guide the research agenda. Researchers must acknowledge the underlying values that shape rural water management innovations and may need to debate whether interventions that remove community control to enforce user payments are yet another move that reinforce deep structures of injustice and inequality. Potentially challenging is the low purchasing power of community members that may cause people to resort to open and contaminated water sources to avoid user payments. Indeed, human rights activists may recite urban water privatisation efforts that failed to guarantee ‘access to clean water for all’ (Bakker, 2007; Finger and Allouche, 2002; Johnstone and Wood, 2003; Laurie and Marvin, 1999; Swyngedouw, 2005). Further, as Chapter 8 has shown, communities may become a powerful source of resistance for the successful implementation of water management reforms that require user payments. Compulsory water user payment may lead to strong feelings of being treated unjustly and may lead to self-defeating behaviour patterns such as vandalising water infrastructure to avoid user payments.

This thesis supports Douglas and Wildavsky’s (1982 p.189) suggestion that “no change ever comes from the centre” and has shown the sector’s strong commitment to the status quo. To avoid the deadlock in the sector, a new social science community may need to investigate and share innovations that come from “the margins of society” recognising that management strategies may be context specific. The accumulation of empirically grounded research will feed evidence-based policy making which ultimately may acknowledge the risks CBM entails.

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## **Appendix 2.1 – Critical enabling conditions for sustainability on the commons (adapted from Agrawal )2001 p.1659))**

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### *1. Resource system characteristics*

- (i) Small size
- (ii) Well-defined boundaries
- (iii) Low levels of mobility
- (iv) Possibilities of storage of benefits from the resource
- (v) Predictability

### *2. Group characteristics*

- (i) Small size
- (ii) Clearly defined boundaries
- (iii) Shared norms
- (iv) Past successful experiences—social capital
- (v) Appropriate leadership—young, familiar with changing external environments, connected to local traditional elite
- (vi) Interdependence among group members
- (vii) Heterogeneity of endowments, homogeneity of identities and interests
- (viii) Low levels of poverty

### *1. and 2. Relationship between resource system characteristics and group characteristics*

- (i) Overlap between user group residential location and resource location
- (ii) High levels of dependence by group members on resource system
- (iii) Fairness in allocation of benefits from common resources
- (iv) Low levels of user demand
- (v) Gradual change in levels of demand

### *3. Institutional arrangements*

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- (i) Rules are simple and easy to understand
  - (ii) Locally devised access and management rules
  - (iii) Ease in enforcement of rules
  - (iv) Graduated sanctions
  - (v) Availability of low cost adjudication
  - (vi) Accountability of monitors and other officials to users

1. and 3. *Relationship between resource system and institutional arrangements*

- (i) Match restrictions on harvests to regeneration of resources

4. *External environment*

- (i) Technology:
    - (a) Low cost exclusion technology
    - (b) Time for adaptation to new technologies related to the commons
  - (ii) Low levels of articulation with external markets
  - (iii) Gradual change in articulation with external markets
  - (iv) State:
    - (a) Central governments should not undermine local authority
    - (b) Supportive external sanctioning institutions =
    - (c) Appropriate levels of external aid to compensate local users for conservation activities
    - (d) Nested levels of appropriation, provision, enforcement, governance
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## **Appendix 2.2 – Building Blocks for Sustainable Rural Water Management (Smits and Lockwood (2015 p. 2)).**

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<p><b>Professionalisation of community management</b></p> <p>Community management entities supported to move away from voluntary arrangements towards more professional service provision that is embedded in local and national policy, and legal and regulatory frameworks</p>
<p><b>Recognition and promotion of alternative service provider options</b></p> <p>A range of management options beyond community management, such as self-supply and public-private partnerships, formally recognised in sector policy and supported</p>
<p><b>Monitoring service delivery and sustainability</b></p> <p>Monitoring systems track indicators of infrastructure functionality, service provider performance, and levels of service delivered against nationally agreed norms and standards</p>
<p><b>Harmonisation and coordination</b></p> <p>Improved harmonisation and coordination among donors and government, and alignment of all actors (both government and non-government) with national policies and systems</p>
<p><b>Support to service providers</b></p> <p>Structured system of direct (post-construction) support provided to back up and monitor community management entities and other service providers</p>
<p><b>Capacity support to local government</b></p> <p>Ongoing capacity support provided to service authorities (typically local governments) to enable them to fulfil their role (planning, monitoring, regulation, etc.) in sustaining rural water services</p>
<p><b>Learning and adaptive management</b></p> <p>Learning and knowledge management supported at national and decentralised levels to enable the sector to adapt based on experience</p>
<p><b>Asset management</b></p> <p>Systematic planning, inventory updates, and financial forecasting for assets carried out, and asset ownership clearly defined</p>
<p><b>Regulation of rural services and service providers</b></p> <p>Regulation of the service delivered and service provider performance through mechanisms appropriate for small rural operators</p>
<p><b>Financing to cover all life-cycle costs</b></p> <p>Financial frameworks account for all life-cycle costs, especially major capital maintenance, support to service authorities and service providers, monitoring and regulation</p>

## Appendix 3.1 – Graphical Image of the Consallen and India Mark II handpumps

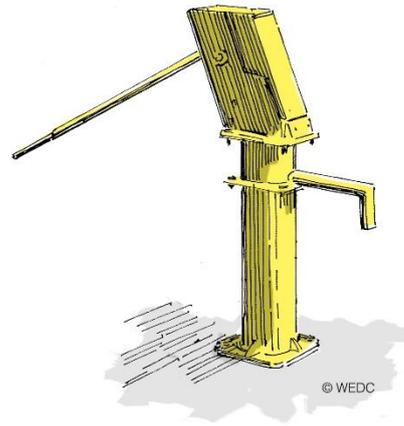
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**Consallen Handpump**



Rod Shaw © WEDC Loughborough University

**India Mark II Handpump**



Rod Shaw © WEDC Loughborough University

## Appendix 4.1 – Breakdown of Research Methods per Research Design and Research Objective

Research method		Sample	Purpose & Rationale
<b>Cross-Sectional Research Design – Research Objective 2</b>			
Semi-structured interviews at micro-level		In all, 30 semi-structured interviews were conducted with WUC members and community users from 18 water sources in 15 villages. Of this sample, 7 water sources concerned local government constructed water sources and 11 water sources were constructed by TWT.	Questions were directed at personal, village and water source level to unravel the water management processes in the community. The interviewees were asked about their household composition, livelihood strategies and levels of education. People reflected on community relations and involvement in social and public activities. On water source level, questions were directed at their involvement with the construction phase, satisfaction with the water point; roles and responsibilities of the WUC; the payment process of water user fees and O&M collection, implementation of graduated sanctions and suggestions for improvement of O&M.
Semi-structured interviews at meso-level		Semi-structured interviews were conducted with seven staff members of TWT, as well as five technical government officials from both sub-county and district level: (1) District Water Officer Kiryandongo; (2)	TWT and local government officials were asked about the implementation process of a rural water point and to reflect on their experiences of post-construction follow-up support, the O&M of rural water points and potential way forwards.

		Assistant Engineer Kiryandongo; (3) Assistant Engineer Masindi; (4) Sub-county chief Kigumba; and (5) Community Development Officer Kigumba sub-county.	
Focus group Discussions		Seven Focus Group Discussions were held with a mixture of community members and WUC representatives. In total 40 community members were included in these group interviews of which 12 women and 28 men. Between 4-8 people participated in these discussions.	During these focus group discussions community members were asked about their satisfaction with the water point; roles and responsibilities of the WUC; the payment process of water user fees and O&M collection, implementation of graduated sanctions and suggestions for improvement of O&M.
Surveys		Two surveys have been conducted concerning TWT constructed water points.  The first survey included WUC members at 84 water sources.	To gain insight in the available funds for O&M at water source level. The survey included information and evidence of O&M fund collection and WUC activities.
		The second survey, termed ‘the Water User survey’ concerned water users at thirteen water sources in thirteen different villages with a total of 195 respondents. In each village, an average of 15 households were	To gain insight about payment patterns and water use. The survey asked respondents about: age; gender; sources of water used by the household; payment of water user fee and how often; and willingness to pay for a reliable water service.

		randomly selected. The main criteria for selection was that they used water from the selected TWT source.	
Documents and records		Of the 18 examined water sources, 13 WUCs possessed an accounting book that showed who attended public meetings and which households paid water user fees in which month.	To examine the procedures of water user fee payment per water source.
<b>Action research: Research Objective 3</b>			
Participant observation		<p>I participated in the feasibility study and implementation process of the <i>CBM-lite</i> model (August 2012-January 2014).</p> <p>I attended the information meetings about <i>CBM-lite</i> in three villages (Mpumwe, Mboira and Nyakatugo) in May-June 2013.</p>	To observe the interactions between community members and to gain an insight in the challenges community members experience in managing their water sources and people's willingness to participate in the pilot project.

	I attended the application and selection process of the Water Operators in three villages (Mpumwe, Nyakatugo and Nyakabette) in July 2013.	To understand the reasons of the Water Operator to apply, to witness the selection process and to understand the reasons for the selection of the Water Operator.
	I attended the establishment of the bye-laws on resource use in two community meetings (Mpumwe in August 2013 and Nyakabette in November 2014).	To observe the interactions between community members.
	I attended the two day training for the Water Operators of Mpumwe, Mboira and Nyakatugo that was organised by TWT in August 2013.	To observe the interactions between the Water Operators and to understand the reasons of their application, their understanding of the pilot project and their risk and reward perceptions about the implications of the <i>CBM-lite</i> model on personal, water management and village level.
	I organised a meeting with the political Board of Masindi District about the <i>CBM-lite</i> pilot in November 2013.	To observe the attitudes of the Board members towards insurance and to explore their interest in exploring the use of insurance against wear and tear of handpumps.
	I was invited to present the <i>CBM-lite</i> model to national and international NGOs (members of the Uganda Water and Sanitation NGO Network (UWASNET)) in Kampala in August 2013.	To share insights about the challenges of rural water management, to present the <i>CBM-lite</i> model and to understand the problem analyses of the NGO representatives on handpump non-functionality.

		<p>The following participants were present:</p> <ol style="list-style-type: none"> <li>1) Communication and Documentation Officer – UWASNET</li> <li>2) Executive Director – UWASNET</li> <li>3) Planning Monitoring and Evaluation advisor Uganda WASH alliance – ICCO</li> <li>4) Programme Officer – Austrian Development Agency</li> <li>5) Programme Officer WASH – ZOA</li> <li>6) Programme Officer WASH – Link to Progress</li> </ol>	
Focus group discussion		One focus group discussion was carried out in December 2013 with the Water Operators of three CBM- <i>lite</i> pilot villages.	To reflect on the CBM- <i>lite</i> model, maintenance of the handpump, repair process, storage of funds, challenges and suggestions for improvement.
Semi-structured interviews at meso and macro-level		In total, 11 semi-structured interviews were conducted and included the following actors:	

		the Manager of the Savings and Credit Cooperative (SACCO) in Kigumba	To gain insight about the funds available at the SACCO, willingness to participate in the pilot and capacity to monitor the transfer of user fees of the Water Operators to the SACCO.
		Local government officials: (1) District Water Officer Kiryandongo; (2) District Water Officer Masindi (3) Assistant Engineer Masindi; (4) Sub-county chief Kigumba; and (5) Community Development Officer Kigumba sub-county.	To understand their perceptions about the CBM model on handpump functionality. During these interviews I explained the <i>CBM-lite</i> model and asked their feedback.
		Representative of an insurance company with a branch in Masindi (Leads insurance)	To gain an understanding about the possibilities of insuring handpumps against breakdown.
		Representatives of three NGOs: 1) Sector lead for the WASH sector at SNV (Kampala) 2) Programme advisor at ZOA (Kampala) 3) Project Manager at HEWASA (WASH NGO in Masindi)	To understand the problem analyses of these NGOs on handpump breakdown and to discuss the <i>CBM-lite</i> model.
		the Director of the Directorate of Water Development at national government level.	

Surveys		<p>A feasibility study was carried out that consisted of two surveys undertaken by staff of TWT and that were designed by me (view Appendix 4.3).</p> <p>First, a ‘Willingness to Participate’ survey was conducted amongst 150 household across six villages in Kigumba sub-county, Kiryandongo district.</p>	<p>To reflect on changes made in the CBM-<i>lite</i> model in comparison to CBM and to give their opinion about the different elements in the CBM-<i>lite</i> model.</p>
		<p>Second, a ‘Willingness to Pay’ survey was conducted amongst all 1,138 households in the six selected villages in the feasibility study.</p>	<p>To gain an insight whether people are prepared to pay 1,000 UGX for accessing the water source.</p>
<b>Critical Case Study –Research Objective 4</b>			
Semi-structured interviews at micro-level		<p>In total 36 semi-structured interviews have been conducted in the case study villages</p>	<p>To reflect on the works of the Water Operator, caretakers, the maintenance and repairs of the water sources, user payments and collection strategies, community relations, challenges and suggestions for improvement.</p>
Semi-structured interviews at meso-level		<p>Semi-structured interviews were conducted with TWT staff, the Manager of the SACCO, the local government and NGOs.</p>	

		Repeat interviews were conducted with four Community Development Officers (CDOs) of TWT that were heavily engaged in the pilot study.	To reflect on the processes in the pilot villages, discuss challenges and ways forward.
		Repeat interviews were conducted with three technical government officials from both sub-county and district level: (1) District Water Officer Kiryandongo; (2) Assistant Engineer Masindi and; (3) Sub-county chief Kigumba.	To reflect on the processes in the pilot villages, discuss challenges and ways forward.
		Repeat interviews were conducted with the Manager of the SACCO in Kigumba.	To reflect on the processes in the pilot villages, discuss challenges and ways forward
Focus group discussions		Four focus group discussions were undertaken in the case study villages with in total 29 participants (26 males and 3 females).	To reflect on the works of the Water Operator, caretakers, the maintenance and repairs of the water sources, user payments and collection strategies, community relations, challenges and suggestions for improvement.
Documents and records		The accounts and receipt books of the Water Operators and the payment slips at the SACCO were examined.	To verify the anecdotal data about user collections and repairs.

Participant observations		Participated in two community meetings about the selection of the Water Operator in Nyakabette and the payment to a caretaker in the same village.	To observe community interactions.
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## **Appendix 4.2 – Surveys Cross Sectional Research Design**

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### **4.2A) Water User Committee Survey**

Name Surveyer: \_\_\_\_\_

Village:

Parish:

Sub/county:

District:

1. Number of active Water User Committee members:
2. Number of males and females in the Water User Committee:
3. Water User Committee account balance:
4. Last repair and expenditures:

### **4.2B) Water User Survey**

Name Surveyer: \_\_\_\_\_

Village:

Parish:

Sub/county:

Name Household:

Sex Interviewee: M/F

1. **What kind of water do you currently use?**  
Traditional open water source/shallow well/Borehole/protected spring
2. **Do you pay water user fee?**  
Yes/No
3. **How much do you pay?**  
\_\_\_\_\_
4. **How often do you pay water user fee?**  
Monthly/Quarterly/Annual/Seasonal/Irregular/Other \_\_\_\_\_
5. **How do you feel the water user committee is managing the water source?**  
**Please indicate on a scale from 1 to 5:**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Poor	Fair	good	very good	Excellent

**Why?**

- a) The water user committee is very effective: they collect water user fee, they keep the money safe and they use the money for repair and maintenance of the water source.
  - b) The water user committee only collects money when repair needs to be done
  - c) The water user committee misuses the money
  - d) The water user committee does not carry out any work
  - e) Other: \_\_\_\_\_
- 

**6. How many people of the Water User Committee are active?**

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**7. How much would you be willing to pay if the water sources in your village are managed well and immediately repaired when necessary?**

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**When would you like to pay the Water User Fee?**

Per: Month/quarter/year/season/other: \_\_\_\_\_

## **Appendix 4.3 – Surveys Action Research**

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### **4.3A) Willingness to Pay Survey**

#### **Why a Pilot Project?**

To ensure that villages can pay for repairs and maintenance of their water sources TWT and the local government are starting a pilot project. Currently, there are many challenges with Water User Committees. In many villages the committees are not operational or not operational enough. In the end, there is no money to pay for repairs; e.g. due to misuse of water user fees or due to the fact that Water User Committees do not collect funds from the community. And what happens? The water source is broken and people have to fetch from an open source or walk further to the next borehole.

#### **How does it work?**

One person from within the village manages the water sources of the entire village. This person is selected by the local government and TWT through an interview process. This person collects water user fees from all households that use a borehole or a shallow well. The fee is: 1,000 UGX per month.

From the start the Water Operator receives a loan from the micro credit organization. This money is only used for repair and maintenance of the water sources. Every month the Water Operator pays back the loan. The loan is repaid through the water user fee he/she receives from the community.

A part of the water user fee people pay, is profit for the water source manager. In return the Water Operator ensures that: the water source is clean, there is a fence, and that the water source is functional throughout the year. The Water Operator manages the water source for 3 years. After this period other people can apply and a new Water Operator will be selected by the local government.

#### **The Study - What we need**

##### General:

- Number of households within the village (LC1)
- Number of Water Sources within the village (LC1) – including open water sources
- Map of the village. If there is no map, ask if the village leadership can draw a map. The map identifies the water sources (borehole U2 pump, Shallow well U2 pump, Consallen pump, open water source), the households and the roads.

##### Household Level:

- Which water source(s) does the household use for drinking?
  - o Open water source

- Protected Spring
- Borehole U2 pump (identify which borehole if there are more than 1 in the community)
- Shallow Well U2 Pump (identify which shallow well with U2 pump if there are more than 1)
- Consallen (identify which Consallen if there are more than 1 in the community)
- Does the household use water from an open source? If so, how many months per year?
- Is the household prepared to pay 1,000 UGX per month in return for continuous O&M of the water source?

Village: \_\_\_\_\_

No.	Name Household	Which water source(s) does the HH use for drinking?	Does the HH use drinking water from an open water source? If yes, how many months per year?	Is the HH prepared to pay 1,000 UGX per month in return for 100% functionality?

**4.3 b) Willingness to Participate Survey**

Village:

Sub-County:

Name Household:

**1. What kind of water do you currently use?**

Traditional Water Source / Shallow Well / Borehole / spring

**2. Currently, do you pay for using the water?**

Yes/No

If yes, how much do you pay?

If yes, how often do you pay? (per month, per quarter, per year, irregular)

**3. Would you be willing to pay 1,000 shilling every month for using clean drinking water?**

Yes/No

If not, why?

*One of the major problems with boreholes/shallow wells is that they break down at one point and that the water source is not being repaired. In many times it is difficult for a Water User Committee that is working on a voluntary basis ,to maintain and repair the borehole. The result is that nobody can fetch water from that water source anymore.*

*Therefore, the following concept has been developed.*

- I. By means of interviews, 1 skilled person (man/women) from and living in the village is selected to manage the village water sources for a few years (around 3 year).*
  - II. In order to manage the village water sources, the person puts an X amount of money on a bank account. This money is secured in the account and can only be used when the pump breaks down. This will provide the community the security that when the water source breaks down it can be immediately repaired.*
  - III. The person who manages the water source collects a monthly water user fee of 1,000 from every household. Part of this money compensates the Water Operator and the caretaker for the time invested in operating and maintaining the village water sources.*
  - IV. A contract is made with the community and the local government to ensure that the Water Operator cannot increase the water fee. He/She is not able to access the bank account for personal gain. If the manager of the water source is not performing he/she will be replaced.*
- 4. Do you like to have 1 skilled person from the village to manage the water source for a given number of years? (around 3 years)**

Yes/No

Why?

**5. Would you allow 1 skilled person in the village to manage the water source in return that he/she puts an X amount of money on a bank account for maintenance and repair?**

Yes/No

Why?

**6. Would you agree that this person asks 1,000 shilling a month from every household in return that the water source is maintained well and will not break down?**

Yes/No

Why?

## Appendix 4.4 – Ethical Approval of the Study & Form UPR16 Research Ethics Review Checklist

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Faculty of Science  
University of Portsmouth  
St Michael's Building  
White Swan Road  
PORTSMOUTH  
PO1 2DT

Marije van den Broek  
Department of Geography  
Date: 18th October 2014

### FAVOURABLE OPINION WITH MINOR AMENDMENTS/CONDITIONS

**Protocol Title:** Sustainable Rural Water Management; a case study in Uganda.  
SFEC 2014 - 060, VAN DEN BROEK,

**Date Reviewed:** 17th October 2014

Dear Marije,

Thank you for submitting your application for ethical review. The proposal was reviewed by the Science Faculty Ethics Committee in September and early October 2014.

You have provided a very full account of your proposals which contain relevant considerations and contingencies to address areas of potential sensitivity that you identify. I am pleased to inform you that your application has been given a favourable opinion subject to minor amendments/conditions (listed below) by the Science Faculty Ethics Committee:

- 1) It is important that identify yourself to participants clearly as a University of Portsmouth researcher and explain that your past NGO role by which some may know you does not apply to this research;
- 2) Please pay close attention to your considerations outlined in respect of recruiting participants (see Section 4.3 of your protocol document). In particular, it is important to recruit and interview women in a setting in which they can express their views freely. I know that you discuss this in Section 4.3, but our review is identifying this as being especially important;
- 3) Some important considerations are included within your supervisors' peer review statement. Whilst we accept that you have incorporated them within your documentation it is important to continue to keep these points in mind during your work in the field. Do not hesitate to contact your supervisor for guidance should you encounter uncertainties whilst in the field;
- 4) I recommend that you consider adding an opportunity on the consent form for participants to consent to their interview being recorded;
- 5) Point number 4 on your consent form could appear worrying to participants. Could there be a case for altering it to "regulatory authorities with legal authority in Britain?" This is up to you since you may not think that this statement is a problem; should only be an issue should the translator and the participant know each other – please be

aware of this possibility;

7) Please ensure that you comply with the University's Overseas Travel Policy and be aware of the University's Field Work guidance <http://www.port.ac.uk/special/overseastravel/>  
<http://www.port.ac.uk/departments/services/humanresources/healthandsafety/atoz/fieldwork/>

8) In annexe 3 Semi-structured interviews there are: (a) a number of undefined abbreviations e.g. SACCO, LCI and MFI and (b) inconsistencies in the use of scales for certain questions e.g. poor to excellent is used in one question and poor to exceptional in others. Please can you ensure that participants understand any abbreviations used. Please amend your scales to ensure consistency; Items 1-3 and 7 are reminders while the others are minor items to address. You do not need to respond back to me on these points unless you specifically wish to as they are intended for your guidance. Please notify us in the future of any substantial amendments that may be required. On completion of the study please send the SFEC a final study report.

All of the reviewers were complimentary about your proposed research and wish you good luck with the study.

*Dr Malcolm Bray*  
Geography Dept. Science Faculty Ethics Committee

## **Appendix 6.1 – Sources on the Smart Handpump project and the Sub-County Water Supply and Sanitation Boards.**

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### **Smart Handpump Project – University of Oxford**

#### World Wide Web:

University of Oxford press release, 2 July 2015.

<http://www.ox.ac.uk/news/2015-07-02-%E2%80%98smart-handpumps%E2%80%99-bring-reliable-water-service-rural-africa>

University of Oxford press release, 2 July 2015.

<http://www.ox.ac.uk/news/2015-07-02-rcuk-highlights-oxfords-innovative-smart-handpumps-project>

Government UK, press release, 8 June 2012.

<https://www.gov.uk/government/news/water-smart-hand-pumps-send-texts-if-they-break>

Unicef, 22 March 2016.

<http://www.unicefstories.org/2016/03/22/can-a-rural-handpump-tell-you-its-not-well/>

Economic and Social Research Council (ESRC), March 2016.

<http://www.esrc.ac.uk/news-events-and-publications/impact-case-studies/secure-water-supply-with-smart-hand-pumps/>

#### Reports:

Foster, T., Hope, R., Thomson, P., 2015. Insuring against rural water risks. Evidence from Kwale, Kenya. Water Programme, Working Paper 3, Smith School of Enterprise and the Environment, Oxford University, UK.

#### Academic journals:

Thomson, P., Hope, R., Foster, T., 2012. GSM-enables remote monitoring of rural handpumps: a proof-of-concept study. *Journal of Hydroinformatics*. 14 (4) 829-839; DOI: 10.2166/hydro.2012.183

Koehler, J., Thomson, P., Hope, R., 2015. Pump-Priming Payments for Sustainable Water Services in Rural Africa. World Development. [Doi:10.1016/j.worlddev.2015.05.020](https://doi.org/10.1016/j.worlddev.2015.05.020)

Media:

The Guardian. 22 March 2016.

<https://www.theguardian.com/global-development-professionals-network/2016/mar/22/how-do-you-solve-a-problem-like-a-broken-water-pump>

BBC news, 8 June 2012.

<http://www.bbc.com/news/science-environment-18358766>

The Telegraph, 25 July 2016.

<http://www.telegraph.co.uk/education/educationpicturegalleries/11750796/Ten-groundbreaking-university-research-projects.html?frame=3381417>

**Sub-County Water Supply and Sanitation Boards by IRC/Triple-S and the Ugandan Ministry of Water and Environment.**

World Wide Web:

IRCWASH, 6 September, 2014

<http://www.ircwash.org/news/experiment-overview-0>

Water Services that Last (Triple-S website: date unknown)

[http://www.waterservicesthatlast.org/experiments/uganda\\_experiments/adopting\\_sub\\_county\\_model\\_to\\_improve\\_operations\\_and\\_maintenance](http://www.waterservicesthatlast.org/experiments/uganda_experiments/adopting_sub_county_model_to_improve_operations_and_maintenance)

Water Services that Last press release (Triple-S website: date unknown)

[http://www.waterservicesthatlast.org/media/publications/sub\\_county\\_water\\_boards\\_handbook](http://www.waterservicesthatlast.org/media/publications/sub_county_water_boards_handbook)

Conference Papers:

Kiwanuka, J., Sentumbwe, A., 2015. Effectiveness of the community based maintenance system for rural water supplies in Uganda. 38<sup>th</sup> WEDC conference, Loughborough University, UK, 2015. Briefing paper 2111.

Mirembe, L., 2014. Sub-County Water Supply and Sanitation Boards: a more effective approach to community-based management. 37<sup>th</sup> WEDC International Conference, Hanoi, Vietnam. Sustainable Water and Sanitation Services for All in a Fast Changing World. Briefing Paper 2071, 1-7.

## Appendix 6.2 – Service Contract CBM-*lite*

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This contract for **Water Source Manager** is made effective as of \_\_\_\_\_(date) by and between \_\_\_\_\_(Name) \_\_\_\_\_(Title) of **Kigumba Sub-county in Kiryandongo District** AND \_\_\_\_\_(Name) \_\_\_\_\_(Title) of \_\_\_\_\_ **Microfinance organization** in \_\_\_\_\_(place) AND \_\_\_\_\_(Name) in \_\_\_\_\_(village) AND \_\_\_\_\_(Name village representative) \_\_\_\_\_(Title) of \_\_\_\_\_(village).

### 1. SERVICES WATER SOURCE MANAGER

Beginning on \_\_\_\_\_(date) and ending on \_\_\_\_\_

(date), \_\_\_\_\_(name) will provide to \_\_\_\_\_(village) the following services (collectively the “Services”):

The water source manager maintains and repairs \_\_\_\_\_(number) hand in pumps in \_\_\_\_\_(village).

*The water source manager maintains the hand pump*

- The hand pump and the surroundings are clean and free of waste
- The water source has a fence that protects animals from approaching the water source
- The water source has a soak pit

*The water source repairs the hand pump*

- Every four month a Hand Pump Mechanic services the pump for preventative maintenance.
- The entrepreneur calls the Hand Pump Mechanic within 24 hours when the hand pump needs repair.
- The entrepreneur purchases the spare parts necessary for the repair.

### 2. SERVICES MICROFINANCE ORGANIZATION

*The Microfinance organization provides a loan for maintenance and repair to the Water Source Manager*

- The Microfinance organization in \_\_\_\_\_(Location) shall provide a loan of \_\_\_\_\_ UGX for \_\_\_\_\_(number) hand pumps in \_\_\_\_\_(village) to the Water Source Manager. The interest rate is 0.5% per month. The total loan for a period of 3 years including interest is: \_\_\_\_\_ UGX.
- The loan will stay in the account of the microfinance organization and will not be given directly to the Water Source Manager.
- The microfinance organization shall monitor whether funds are needed for repair by checking the hand pump on the ground.
- The microfinance organization shall provide the requested funds (within the total loan amount) to the Water Source Manager in case funds are needed for maintenance and repair. The microfinance organization can only accept to pay the Water Source Manager when the ‘Maintenance & Repair form’ has been filled in by all involved parties.

### 3. SERVICES SUB-COUNTY

- The Sub-county monitors the services provided by the Water Source Manager to \_\_\_\_\_(village).
- Community members in \_\_\_\_\_(village) can contact the sub-county chief on \_\_\_\_\_(telephone number) in case the Water Source Manager does not provide the agreed services.
- The Sub-county monitors the payment of 1,000 UGX by every household for using water from a hand pump in \_\_\_\_\_(village).
- The Water Source manager can contact the sub-county on \_\_\_\_\_(telephone number) in case a household fails to pay the monthly water user fee of 1,000 UGX.

### 4. PAYMENT WATER SOURCE MANAGER TO MICROFINANCE ORGANIZATION

The Water Source Manager shall pay the Microfinance organization in \_\_\_\_\_(Location) \_\_\_\_\_ UGX per \_\_\_\_\_(i.e. month/quarter) to recover the loan including interest for a period of 3 years.

If the Water Source Manager fails to pay the monthly payment of \_\_\_\_\_ UGX per \_\_\_\_\_, the Microfinance organization shall charge the Water Source Manager a fine of 10,000 UGX. After 2 months of late

payment the microfinance organization shall seek legal remedies and will report the water source manager to the police.

**5. PAYMENT COMMUNITY TO WATER SOURCE MANAGER**

The households in \_\_\_\_\_(village) shall pay 1,000 UGX per month to the Water Source Manager for using water from a hand pump in \_\_\_\_\_(village).

If a household fails to pay the monthly payment of 1,000 UGX for using water from a hand pump, the following community bye-laws shall be imposed on the household:

\_\_\_\_\_  
\_\_\_\_\_

After 2 months of late payment, the household will be excluded from using water from a hand pump in the village.

**6. TERM**

The Contract will expire automatically on \_\_\_\_\_(Date).

**7. WARRANTY WATER SOURCE MANAGER**

The Water Source Manager shall provide its services and meet its obligations under this contract in a timely and workmanlike manner, using knowledge and recommendations for performing the services in \_\_\_\_\_'s Community.

**8. WARRANTY MICROFINANCE ORGANIZATION**

The Microfinance Organization shall provide its services and meet its obligations under this contract in a timely and workmanlike manner, using knowledge and recommendations for performing the services in \_\_\_\_\_'s Community.

**9. WARRANTY SUB-COUNTY**

The Sub-county shall provide its services and meet its obligations under this contract in a timely and workmanlike manner, using knowledge and recommendations for performing the services in \_\_\_\_\_'s Community.

**10. DEFAULT**

The occurrence of any of the following shall constitute a material default under this Contract:

- a. The failure to make a payment (both community and Water Source Manager) when due
- b. The insolvency or bankruptcy by either party
- c. The failure to deliver the Services as described in the Contract.

**11. REMEDIES**

If a party defaults by failing to substantially perform any provision, term or condition of this Contract,(including without limitation the failure to make a monetary payment when due), the other party may terminate the Contract by providing written notice to the defaulting party. This notice shall describe with sufficient detail the nature of the default. The party receiving this notice shall have \_\_\_\_\_days from the effective date of such notice to cure the default(s). The failure to cure the default(s) within such time period shall result in automatic termination of this contract.

**12. ENTIRE AGREEMENT**

This contract contains the entire agreement of the parties. There are no other promises or conditions in any other agreement, whether written or oral. This contract supersedes any prior written or oral agreements between the parties.

**13. AMENDMENT**

This contract may be modified or amended in writing by mutual agreement between the parties, if the writing is signed obligated under the amendment of the agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their duly authorized representatives as of the date first above written.

**Representative Service recipient:**

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

**Service Provider/Water Source Manager**

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

**Service Provider/SACCO (Microfinance organization)**

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

**Service Provider/Sub-County Kigumba**

Name: \_\_\_\_\_

Signature: \_\_\_\_\_



## Appendix 7.1 – Draft of Handpump Insurance Agreement

---



### Leads Insurance Limited

Plot No 52 Kampala Road

Tel: 256-414-253283/4/5, 0312-263980,  
0752-253283

King Fahd Plaza

Fax: 256-414-253286

P.O. Box 26191, Kampala

E-mail: [leads@utlonline.co.ug](mailto:leads@utlonline.co.ug)

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18<sup>th</sup> November 2013

### INSURANCE AGREEMENT FOR WATER SOURCES

We are glad to introduce to you Leads Insurance Limited as one of the leading Insurance players in the market. We are licensed by the Insurance Regulatory Authority to operate as an Insurance Company handling non – life business. Our offices are conveniently located in the prestigious King Fahad Plaza, Kampala Road.

**Leads Insurance Limited** is in the market mainly to address inconsistencies among some of the existing players with regard to settlement of genuine claims. We observe there is a missing link between customers and players in the industry. We are therefore here to instil a sense of trust among the insuring public. **Our philosophy at LEADS is to ensure that our customers get the “worth” of their money, more especially in the event of genuine losses.** We are therefore set to operate as a model player company aimed at raising standards for which all others should emulate, hence improving the image of the industry. In order to comply with this philosophy, the company has attracted well-trained and experienced personnel to man the organisation

We are proud of being one of the highly Capitalised Companies in the market, with an asset base of over, UGX 6,000,000,000/= exceeding by far the statutory. This is reinforced further by the strong reinsurance support we have arranged on our behalf by the world’s renowned reinsurance broker by the names of **J.B BODA**.

### SERVICE DELIVERY POLICY

Leads Insurance Limited provides a service delivery policy to ensure villages against loss, breakdown and maintenance costs of their water sources. This is expected to be done through designing community insurance sensitive policy which will on assumption call on the local leadership (the government) to exempt the village to pay taxes (VAT) which increase the premium that the community cannot afford. It is based on this assumption that the

18% VAT on water in this current budget of FY 2014 and others to come should not apply to loss, maintenance and repair costs of water sources in rural villages in this particular model.

### **ALL RISKS POLICY**

This is an all risks cover offering protection to the insured village \_\_\_\_\_ against the risk of loss, maintenance and breakdown costs for the water sources in the village.

The village \_\_\_\_\_ has \_\_\_\_\_ (number) of hand pump(s) and \_\_\_\_\_ (number) protected spring(s).

The insurance company interprets policies as follows:

- a) Loss: This is intended to mean loss or theft of spare parts from a water source but not arising out of negligence from the concerned parties.
- b) Maintenance costs: This is intended to mean routine service of the water source by a qualified Hand Pump Mechanic; this includes costs of maintenance and labour costs of the Hand Pump Mechanic. Fencing of the water source is not part of the policy. Routine community meetings are not part of this policy.
- c) Damage and Breakdown: This is intended to mean replacement of spare parts of water sources due damage or breakdown of the particular spare part. It does not involve capital investments, i.e. constructing a new water source due to for example poor water quality/bad siting of the water source/water source drying up.

### **PAYMENTS**

The premium shall be calculated annually at a rate of 7% of the current value of the water sources in the village. This will be followed by adding the stamp duty of 35,000 UGX currently and a sticker fee of 6,000 UGX. This will form the total monthly premium to be charged of the village.

The current value of the water sources in the village is: \_\_\_\_\_ UGX

The water source manager \_\_\_\_\_ (name) pays \_\_\_\_\_ UGX on behalf of the \_\_\_\_\_ village on a monthly basis to Leads Insurance Limited.

The first premium is paid in advance of 1 month by the water source manager on behalf of the village and the contract becomes effective in the second month. The first premium is paid in the month of \_\_\_\_\_ 2013 and the contract becomes effective from the month of \_\_\_\_\_ 2014 until the month of \_\_\_\_\_ 20\_\_.

The other payments will follow promptly on a monthly basis.

Monthly payments will be done by the water source manager to Leads Insurance Limited either through the agency office in Masindi Town or directly deposited into the insurers' bank account to be specified.

Bank details:

-----

We, the undersigned having read and interpreted the intention of this model in the interest of service delivery to the village, here attest our signatures and seal in agreement of the same.

------(Signature)

------(Date)

**GIDUDU JAMES FRED**

**UNDERWRITING MANAGER**

**LEADS INSURANCE LIMITED**

------(Signature)

------(Date)

Water Source Manager

for and on behalf of \_\_\_\_\_ village

**IN WITNESS OF**

------(Signature)

------(Date)

Masindi District Water Office

------(Signature)

------(Date)

Local Council Chair person I

\_\_\_\_\_ village

**ANNEX**

In this contract the parties involved in this model have been fully identified and given their due responsibilities. It also spells out the remedies or checks and balances attached to either party in case of non-compliance. It is as follows:

**Partners:**

- District Water Office/Sub-county
- Insurance Company
- The village (LC1)
- Water Source Manager
- SACCO
- HPM

**District Water Office**

- Identifies water sources and calculates potential costs for maintenance and repair of water sources in the village (LC1 village) together with the HPM
- Conducts household surveys to get a register of all households in the village/willingness to pay water user fee
- Holds village meetings to inform community about the model
- Conducts interviews with applicants for water source manager
- Monitors work done by water source manager
- Monitors payments done by water source manager (by information received of the insurance company)
- Verifies the need for repairs and maintenance within 48 hours after receipt of insurance company
- Resolves conflicts in the village concerning management water sources
- Monitors work done by insurance company
- Approves the bye-laws made by the village into ordinances and ensure enforcement

### **Insurance Company**

- Designs suitable policy to ensure water sustainability in the village
- Monitors monthly payments insurance fee water source manager
- Ensures compliance payments by water source manager
- Communicates with the water department on monthly payment by water source manager
- Communicates with the water department if payment is delayed by water source manager
- Informs water department about the repairs quoted by the manager within 24 hours after receipt of repair and maintenance form
- Investigates needs for repair and maintenance on the ground within 48 hours after confirmation from water department
- Liaises with SACCO to ascertain finance position of the village
- Reports to water department and copy to the manager the insurance overview (what has been spend so far) on quarterly basis
- Trains water source manager in entrepreneurship/basic accounting

### **SACCO**

- Opens a savings account in the name of the village
- Receives deposits from water source manager on behalf of the village
- Registers the households that have contributed each month
- Provides transactions slips to the water source manager for accountability towards village and keeps a duplicate copy
- Allows one withdrawal per month to the insurance company
- Informs insurance company of the monthly transactions before being effected
- Provides a monthly statement of each village with names of all contributing households to the insurance company and the water department

### **Water Source Manager**

- The hand pump and the surroundings are clean and free of waste
- The water source has a fence that protects animals from approaching the water source
- The water source has a soak pit
- The Hand Pump Mechanic routinely services the pump for preventative maintenance
- Informs the Hand Pump Mechanic within 24 hours when the hand pump needs repair

- Informs insurance company of the defects of the water source by providing the maintenance and repair form.  
*(Insurance company notifies district of received maintenance and repair form. The district verifies and contacts insurance company about the need for repairs. Then the insurance company investigates the need for repairs on the ground and provides the funds if needed.)*
- Repairs the water source within 7 days.
- Collects monthly water user fees from all user households
- Deposits the water user fee on a monthly basis on the village savings account
- Transfers monthly insurance fee from the village account to the insurance company
- Organizes community feedback meetings to show accountability of water user fees every two month.
- Draws up (preventative) maintenance action plans and their timeframe. The work plan should reflect the priorities of the village

**Village**

- Pays agreed monthly water user fee
- Selects the water manager
- Selects 1 village representative to be the SACCO co-signatory
- Reports any abnormalities about the water sources to the water source manager
- In case abnormalities are not resolved, the community reports to line local government representatives.
- Forms part of the procurement and disposal of spare parts
- Makes bye-laws for payment water user fee and can question with evidence the actions of the water manager
- Participates in village meetings and forms part of the resolutions

**HPM**

- Routine checks and maintenance of water sources
- Repairs water sources
- Is part of the procurement of spare parts to identify the right spare parts

We, the undersigned having read and interpreted the intention of this model in the interest of service delivery to the village, here attest our signatures and seal in agreement of the same.

------(Signature)

------(Date)

**GIDUDU JAMES FRED**

**UNDERWRITING MANAGER**

**LEADS INSURANCE LIMITED**

------(Signature)

------(Date)

Water Source Manager

for and on behalf of \_\_\_\_\_ village

**IN WITNESS OF**

----- (Signature)

Masindi District Water Office

----- (Date)

----- (Signature)

Local Council Chair person I

\_\_\_\_\_ village

----- (Date)

## **Appendix 7.2 – Video Selection Water Operator in Nykabette**

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Click on the address to view:

<https://drive.google.com/open?id=0B8Tq7TWzBc3ucU84MFgwZmd5Zlk>

## **Appendix 7.3 – Introduction Water Operators in the CBM-lite Pilot Villages**

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### ***Mboira Water Operator***

The selected Water Operator in Mboira was an affluent and educated man (up to senior level 4) with 10 children (of which 7 lived at his home) and a newly wedded wife. He lived in the village for over 20 years, and was born in a nearby village. He was friendly with the LC I of the village but the majority of his friends lived in neighbouring villages. He owned three acres of land, where he planted cash crops such as sunflower and tomatoes. Every season he earned around four million shillings from his produce. His wife sold fish at the market and earned around 200,000 shillings per month. His main income was generated from his work for an Indian company (Mukwano) where he mobilised farmers to grow sunflower. For this work, he received an annual commission of approximately 15 million shillings. In addition, he acquired a contract of the local government to collect monthly fees at a market where merchants pay for their running stalls, yet the income of this undertaking was disappointing and so far he had not retrieved an income from this undertaking. Thus on average, the household's annual income was 26 million shillings (US\$ 7,703) which sharply contrasts with the estimated regional annual household income of 2,2 million shillings, and where 21.4 percent of the population is projected to live below the poverty line of US\$1 per person per day (UBOS 2012a).

### ***Mpumwe Water Operator***

The selected Water Operator in Mpumwe was an educated and popular man. He was the local councillor of his sub-village (Mpumwe consists of three sub-villages) and a small-scale, but successful business man. He owned six oxen who he regularly rented out for people to plough their land. He further owned twelve acres of land where he mostly grew cash crops such as sunflower and maize. He further owned a milling machine to produce maize flour. He bought maize from other farmers to process it into flour and sold it to middle-men or people could use his milling machine, paying per bag of maize. Prior to his career as a business man, he was a secondary school teacher. Like a number of other households in the village, he originally came from east Uganda (Mbale) where his first wife and three children still resided and whom he occasionally visited. In 1996, he left his home area due to violent cattle raiding by the Karamojong (a tribe in eastern Uganda<sup>48</sup>) and the opportunity to get free and fertile land in mid-west Uganda. He

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<sup>48</sup> For more information on the Karamajong and livestock raiding I refer to: Agade, K.M., 2010. Complexities of livestock raiding in Karamoja. *Nomadic Peoples*, 14 (2), 87–105.

Mirzeler, M., and Young, C., 2000. Pastoral Politics in the Northeast Periphery in Uganda: AK-47 as change agent. *Journal of Modern African Studies* 38 (3), 407-30.

acquired a second wife in Mpumwe but they did not live together. She stayed in the centre of Mpumwe village and they also had three children, who were regularly at the Water Operator's home.

### **Nyakatugo Water Operator**

The selected Water Operator in Nyakatugo left school at senior two and owned a cell phone repair shop in Kigumba. He originally came from northern Uganda and migrated to Nyakatugo when he was still a young child. He did not own land in Nyakatugo and therefore his earnings were acquired from the shop. He had two wives and four children. One wife stayed with him in Nyakatugo.

### **Nyakabette Water Operator**

The Nyakabette Water Operator was the only female Water Operator in the pilot study. She previously fulfilled the role of a caretaker at one of the water sources in the village. She originally came from a nearby village and was married to a man from Nyakabette with whom she had four children. She was a local business woman and traded in second hand clothes, selling her goods at the nearby market places.

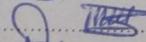
**Appendix 7.4 – Example Deposit Slip Mpumwe at the SACCO**

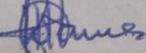
 **RECEIPT** No. **192462**

Name of Society: **VIKUMBWA S/COUNTY SACCO**

Member's Name: **MPUMWE COMMUNITY H.O. SOURCE** Date: **22/8/03**

	Shs.
Shares .....	
Deposits <b>Savings</b> .....	<b>120,000</b>
Loan Repayment .....	
Interest .....	
Stationery Sales .....	
L.P.F. ....	
Others .....	
<b>One Hundred twenty thousand only</b>	
<b>TOTAL</b> .....	<b>120,000</b>

Cashier's Signature: 

Member's Signature: 



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## **Appendix 7.5 – Experiences Nyakatugo Water Operator About the Pilot Project**

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Click on the address to view:

<https://drive.google.com/open?id=0B8Tq7TWzBc3uLXVkr1ZUbzBSbTg>

## **Appendix 7.6 – Experiences Mpumwe Water Operator About the Pilot Project**

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Click on the address to view:

<https://drive.google.com/open?id=0B8Tq7TWzBc3uWG5PRGs3T0xXd0E>

## Appendix 8.1 – Example Page Mpumwe Accounts

NO	DATE	NAME OF HOUSEHOLD HEAD	LOCATION ZONE	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY
69	14/1/2015	NABANGALA MELIZA	KABALE	✓											
70		WEXETA STEPHEN	"	✓											
71		GEORGE PAUL MUKOLE	"	✓											
72		MUMUMUZA GERALD	"	✓	✓	✓									
73		KARONGARI JOHNSON	"	✓	✓	✓									
74		MAJONI ISAAC	"	✓	✓	✓	✓								
75		UZARI ROSSA	"	✓	✓	✓	✓								
76		BIGARALIYO WILLIAM	"	✓	✓	✓									
77		KALINA ANGWEN (Mama Wabwani)	"	✓											
78		ADJO KATALINA	"	✓	✓	✓	✓	✓	✓						
79		MUSINGUZI GOFFREY	"	✓	✓	✓	✓	✓	✓	✓					
80	15/1/2015	PAUL NYAKINA	MUMUMUZA	✓	✓	✓	✓	✓	✓	✓					
81		NGONZEBWA NORAH	"	✓	✓	✓	✓	✓	✓	✓					
82		KABUGO	KABARANGA	✓	✓	✓	✓	✓	✓	✓					
83		ANYANGO JANE	"	✓	✓	✓	✓	✓	✓	✓					
84		ADONGO GRACE	"	✓	✓	✓	✓	✓	✓	✓					
85		KIIZA DAVID	"	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
86		TINKA DENIS	"	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
87		MUTUKA STEPHEN	KABALE	✓	✓	✓	✓	✓	✓	✓					
88		WANAMBWA JOHN	"	✓	✓	✓	✓	✓	✓	✓					
89	16/1/2015	JUGUME CHARLES	KABARANGA	✓	✓	✓	✓	✓	✓	✓					
90		ARAMAZANI KIBIKA	KABALE	✓	✓	✓	✓	✓	✓	✓					
91		MAMA KAWA	"	✓	✓	✓	✓	✓	✓	✓					
92		WAGOLI WICKLIFE	"	✓	✓	✓	✓	✓	✓	✓					
93		BOSCO OYERI	"	✓	✓	✓	✓	✓	✓	✓					
94		MASINDI JOSEPH	K "	✓	✓	✓	✓	✓	✓	✓					
95		NAKALILA JOHN	MUMUMUZA	✓	✓	✓	✓	✓	✓	✓					
96		MUCHE NAMBUKA	"	✓	✓	✓	✓	✓	✓	✓					
97		WABIMETA FRED	"	✓	✓	✓	✓	✓	✓	✓					
98		YASINI ASUMAN	"	✓	✓	✓	✓	✓	✓	✓					
99	17/1/2015	DRUPIA DAVID	KABALE	✓	✓	✓	✓	✓	✓	✓					
100		TABU SAUL	"	✓	✓	✓	✓	✓	✓	✓					
101		ARAJUNE JAMES	"	✓	✓	✓	✓	✓	✓	✓					
102		WATUWA GEOFFREY	"	✓	✓	✓	✓	✓	✓	✓					

## CURRICULUM VITAE MARIJE VAN DEN BROEK

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### Personal Details

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Name : Marthe Antoinette van den Broek (Marije)  
Date of Birth : 20 March 1985  
Nationality : Dutch

### Education

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10/2013 – (01/2017) University of Portsmouth, United Kingdom  
Department of Geography  
Position: PhD candidate  
Project: Sustainable water resources management in sub-Saharan Africa  
Grounded in work experience in the WASH sector in Uganda, this research analyses the factors contributing to handpump failure and explores alternative rural water management models.

- 01/2010 – 01/2011      Radboud University, the Netherlands  
*Post-graduate Advanced Master of International Development*  
 The course combines work experience with a broad understanding of critical development theories/issues and the processes involved in policy development and project implementation.
- 09/2007 – 11/2008      Utrecht University, the Netherlands  
 Human Geography  
*MSc International Development Studies*  
 Analysis of development policy in three different themes: sustainable development, governance and the interaction between globalization and local/regional strategies.
- 09/2003 – 08/2006      Utrecht University  
*BA Cultural Anthropology*  
 Minor in International Development Studies.

### **Relevant Work Experience**

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- 01/2014 –                      **University of Portsmouth (UK) – University of Amsterdam**  
 Guest lecturer development theories and groundwater management
- 06/2012 –01/2014            **The Water Trust, Masindi, Uganda**  
Position: Programme Manager  
 Based in mid-west Uganda of a US based Water and Sanitation Organisation. Leading a team of 15 field staff. In charge of: Development water and sanitation programme, Logistics, Communication, Human Resources and Finance.
- 03/2011 – 03/2012            **ZOA refugee care, Pader, northern Uganda**  
Position: Assistant Programme Manager and Manager Water, Sanitation and Hygiene.  
 Co-managed the following programmes: Agriculture (UN based project on farmer field schools), Agro-business development, Education and Employment opportunities.
- 01/2010 – 03/2011            **Investing in Children and their Societies (ICS), Amersfoort, the Netherlands**  
Position: Programme Officer  
 Advanced the concept of ‘social business’ through action research in Kenya. Developed a curriculum on Social Business, Civic Driven Change and Social Return on Investment for staff of ICS in the Netherlands, Africa and Asia.
- 08/2008 – 12/2009            **PAX, Utrecht, the Netherlands**  
Position: Programme Officer  
 Organised seminars on peace and justice as well as philosophical master classes on the causes and effects of conflict in Africa, Asia and Europe. Organised events and facilitated exposure visits to Israel and the Palestinian areas.
- 09/2009 – 12/2009            **Co2Operate, Utrecht, Netherlands**  
 Conducted a market study on natural rubber.

## Research & Consultancy

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- 02/2017                    **Research on suitable rural water management models, Uganda, Gomba district**  
Scoping study on merits and demerits of implementing alternative rural water management models for the NGO the Water Compass
- 05/2010 & 09/2010      **Post-graduate research on social business, Kenya**  
Conducted research on the concept of social business in collaboration with Context and Stichting het Groene Woudt in rural Kenya.
- 02/2008 – 07/2008      **MSc research and internship on inclusive business at SNV, Laos**  
Studied the impact of a Swedish and Indian industrial tree plantation company on local community's livelihoods. On the basis of the *inclusive business* model, recommendations were made to SNV for possible cooperation to increase local livelihood strategies.
- 03/2007 – 07/2007      **Research 'Leonard Cheshire Disability', Ethiopia**  
Conducted research on the impact of the rehabilitation programme on the social lives of children with a physical disability.
- 01/2006 – 05/2006      **BA research, South Africa**  
Anthropological fieldwork on the integration of children with an intellectual disability in Hiv/Aids education campaigns.

## Publications

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Van den Broek, M.A., and Brown J., 2015. Blueprint for Breakdown? Community Based Management of Rural Ground Water in Uganda. Geoforum

Brown J., and van den Broek, M.A., 2017. Better the devil you know? The Geographical Journal (under review)