Better the devil you know? A relational reading of risk and innovation in the rural water sector.

Julia Brown and Marije van den Broek

Abstract

This paper introduces an innovation – CBM-*lite* - designed by a small Uganda NGO to remedy the shortfall of operation and maintenance (O&M) funds, identified as the key explanation behind the poor sustainability record of the Community Based Management (CBM) model. Without a radical change in government and NGO policy concerning post-construction support, the financing of hand pump O&M must come from communities themselves: hence the user pays principle is fundamental. CBM-*lite* aims to reduce hand pump downtime by replacing the voluntary Water User Committees with an incentivised Water Operator bolstering the user pays principle, and through an insurance-style micro-finance product that ensures funds are available for expedient repairs. This 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. Drawing on original and extensive ethnographic fieldwork, surveys and interviews, we argue that a relational reading of risk applied to an innovation that deviates from mainstream CBM goes some way towards explaining the intransigence within the rural water sector. This novel application of relational risk theory advances the conceptual and empirical contribution of geography to the conundrum of realising sustainability in the rural water sector. The known risks associated with CBM - a third of hand pumps being non-functional at any one time - may be seen as preferable to potential harm to ideology, to policy coherence, to organisational reputation, and to social and cultural norms. Finally, the study reconsiders current views about rural water management - notably the actual level of support for the user pays principle, key to both CBM and CBM-*lite*. Unpacking sectoral inertia assumes greater significance with estimates that 57% of the global population will be reliant on communally managed water sources by 2020.

Introduction

Since the 1990s, groundwater in rural Sub-Saharan Africa (SSA) has been managed in accordance with the Community Based Management (CBM) principles of the user paying for water, with a voluntary community management regime. This is endorsed by donor approval and government policy. The central concern of this paper is to unpack why there is still strong sector support for CBM and little appetite for radical reform, given the mounting criticism of CBM's sustainability record, with hand pump functionality rates little improved from the state-led paradigm - a third of hand pumps being non-functional at any one time (Baumann, 2006; Oxford/RFL, 2014; RWSN, 2010).

We argue that the perseverance with the CBM model is accounted for by two concurrent explanations. Firstly, there is no sector-wide agreement on the causes of hand pump failure: Carter & Ross (2016) suggest that the *primary* reason for the failure of rural water schemes is the low yield of ground water, poor water quality and mechanical failure. Another emerging body of literature believes that the dearth of Operation and Maintenance (O&M) finance is the *key* explanation (IRC/Triple-S, 2012; Jones, 2011; Le Gouais and Wach, 2013), compounded by a general disinclination for voluntary management *via* the Water User Committees and failures to sanction free-riding. 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 – that literature itself diverges over recommendations, ranging from the use of mobile technologies to capacity building efforts and more external post-construction support. Such adjustments are all attempts to bolster payment levels and in fact constitute only minor alterations to mainstream CBM (van den Broek & Brown 2015). For until donors and governments are prepared to fund or subsidise long-term O&M expenditure (Baumann's 2006 CBM-Plus model requires 70% state contribution) the reality is that developers are forced to re-engage with the user pays principle, whether they are comfortable with it or not.

The second explanation is that the complex situation outlined above is intensified by the very nature of innovation, which involves risk-taking and unknown outcomes (Vasvári 2015). We utilise relational risk theory (Boholm and Corvellec, 2011), outlined in the second section, below, to explore how known risks associated with CBM may be preferable to *potential* harm arising from the introduction of any innovation in the rural water sector.

We align ourselves in this paper with the literature that identifies the lack of O&M funds and management failings as the root cause of the high level of malfunctioning hand pumps, and present a modified version of CBM that strengthens the user pays principle. CBM-*lite*, as we have called it, is not offered as a silver bullet. Rather, we use its conception and progress towards piloting – viewed from the perspective of relational risk – as a vehicle to gain insights into what stakeholders value, which may be threatened by the proposed changes brought about by CMB-*lite.*

The paper, based on original and extensive ethnographic fieldwork, household surveys, interviews and focus groups, covers the period of the design of CBM-*lite* through to initial piloting in 4 villages (August 2012 to August 2013). A subsequent paper will explore the actual outcomes of the pilot (August 2013 until March 2015). Conclusions are drawn that suggest relational risk theory may provide important insights into the prevailing sector-wide inertia around substantive reform.

Relational Risk Theory

Relational risk theory, developed by Boholm and Corvellec (2011) building on work by Hilgartner (1992), comprises three elements for interpreting how and why individuals and social groups have different risk perceptions of the same event. The first component, *risk object,* is something that is identified as a danger or harm. Examples include natural phenomena, manufactured products, behaviour, and in our case an innovation in the rural water sector. It 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. A *relationship* of risk (the third component) must establish that it is the risk object that threatens the object at risk, and explain how and possibly why. *Interpretation* is a key feature: our decoding of the connection was the result of extensive deliberations between the authors, for the relational aspect of risk theory is a constructed phenomenon involving subjective connections made by an observer: “imagined, crafted, and established” (Boholm and Corvellec, 2011 p180). Once identified, the *risk object* takes on a certain independence: it is fluid according to context. Latour (1996) had already observed that *risk objects* and *objects at risk* are not fixed, but subject to reassessment.

The terminology used in the theory is clever and confusing at the same time: clever because risk and object are transposed, underscoring the fluidity of risk; confusing because of their close similarity. To aid clarity we propose *risk posing object* and *threatened object at risk*.

Conceptions of risk are found to be culturally biased by socially embedded values and beliefs (Boholm and Corvellec, 2011). Douglas and Wildavsky (1982) argue in their cultural theory of risk that risk perceptions can be explained by world views, further developed by Kahan in his cultural cognition thesis (see Kahan et al, 2011). A full immersion into the cultural theory of risk is not called for here, but it is useful to be aware there are differences amongst members of any community: strong group ties stem from a shared belief in order, stability, continuity and responsibility, or have their origins in an ideologically-driven altruism. Weaker group allegiance is evident in those minimally committed to their community, 'rubbing along' as best they can, or in individuals primarily alert to opportunities for self-advancement. Neither category is immune to the opinion of others.

Boholm observes (2003) that the same external phenomenon (*risk posing object*) will result in widely different perceptions of harm (*threatened object at risk*) according to the strength and nature of group ties. Thus the same *risk posing object,* in this context an innovation in the rural water sector, may be seen as destabilising, as an affront to a cherished ideology, an irksome block to free-riding, or as a business opportunity. In the last case a business venture may rebound and inflict damage on the would-be entrepreneur, exemplifying the fluidity of the *risk posing object* and *threatened object at risk*. The key is in identifying what is held to be of value by different stakeholders, and how it may be harmed. The present writers are offering *their interpretation* of stakeholder attitudes and actions as noted, an inherently subjective undertaking.

Community Based Management and CBM-*lite*

Meaningful information about what strategies may or may not improve hand pump sustainability can only be accumulated through organisations testing innovations based on their own problem analysis and goals. CBM-*lite* is a practitioner-developed model with the aim of improving the parlous funding situation for O&M of hand pumps[1] observed in the study area in Uganda by the designers, reducing hand pump downtime and ensuring communities have access to a sustainably managed water point. CMB-*lite* sought to reinforce the user pays principle by overcoming the reluctance of communities to pay for maintenance as observed in both the study area (see van den Broek and Brown, 2015), and more broadly in Uganda (Harvey, 2008).

To assist comparison between mainstream CBM and CBM-*lite* we utilise Bakker's (2007) three resource management categories, developed to promote a more nuanced analysis of neo-liberal reforms in the urban water sector. Bakker's first category is institutions, covering primary goals, regulatory frameworks and property rights. CBM-*lite* was designed to operate within the existing CBM institutional framework. The important differences between CBM and CBM-*lite* occur within the second and third categories – organisation and governance – and are set out in Table 1.

[1] The NGO in the study area fitted Consallen hand pumps, which are broadly acknowledged to be superior to the India Mark II or III hand pumps used by the government; the former use polyethylene rising mains and stainless steel rods and are considered corrosion resistant. All hand pumps are subject to wear and tear, but Consallen are accepted as more robust than India Mark II and III, despite the latter being government policy.

Table 1 Comparing CBM and CBM-*lite*

	CBM	Reality and Challenges of CBM	CBM-*lite*	CBM-*lite* Assumptions
Resource management organisation				
Organisational structure	Elected voluntary Water User Committee (WUC) (6-10 members) for each water point in a village.	Unclear leadership. Different rules per water point making it difficult to monitor and address handpump governance Van den Broek and Broek 2015.	Elected voluntary Water User Committee (WUC) (6-10 members) for each water point in a village.	Water Operator provides clearer line of responsibility. Presence of a leader is more important than the number of people managing a water point, (Cleaver, 1999) and may improve the execution of Operation and Maintenance tasks.
Resource Governance				
Financial Accountability	All households (registered exemptions - eldery, female-headed households and disabled) expected to pay water source caretaker 1,000 Ugandan Shillings per month. Fees stored by the WUC within community.	Lack of financial accountability over collected fees by WUC leading to breakdown of trust and wide-spread non-payment (Naiga et al 2015; Quin et al. 2011; Wittington et al 2009). Dearth of collected funds results in extended handpump downtime (van den Broek and Brown, 2015).	No increase in Water User Fee and exemptions register maintained due to clustering (also advocated by Foster et al 2015). Savings and Credit Cooperative (SACCO) provides an insurance-style product to Water Operator.	SACCO funds can only be accessed for repairs with signatures of handpump mechanic, and village councillor (LC1). SACCO passbook available to for accountability. Water Operator makes the regular deposits. Transparency: anticipated to induce willingness to pay (Cooke, 2001). Willingness to pay surveys are accurate. Water Operator makes the regular deposits. SACCO is capitalised.
Key incentives	Non-monetary rewards - WUC members acting altruistically.	WUCs argue for financial incentives (or as justification for use of fees) as compensation for role and sanctioning. WUC do not pay the water fee (van den Broek and Brown 2015).	The SACCO fixed fee is paid out of the collected water user fee. Remaining funds are the Water Operator's incentive from which caretakers remunerated.	Community happy to pay for Water Operator incentive. Incentive enough to motivate Water Operator in O&M (see Harvey, 2008). Fixed SACCO fee means has to ensure high level of payment (89.5%) in order to realise incentive.
Key sanctions	Social pressure and community formulated graduated sanctions to curb free-riding culminating in exclusion from source. Recourse to Sub-County officials (higher level).	Difficult to enforce; have to pay Sub-county. Use alternative source managed by a different WUC (ibid).	Roles, responsibilities and community agreed sanctions formalised in a contract signed by Water Operator, elected village councillor (LC1), Sub-County and NGO officials, witnessed at community meeting. Contact details of Sub-County publicised. Oversight provided by Sub-County and NGO on functionality and handpump repairs.	Level of Water Operator remuneration dependent on collecting fees: incentive to curtail community free-riding including neighbours and family. Community support for sanctioning. LC1 supportive. Community reports issues to Sub-County who will provide oversight aong with NGO. Level of training by NGO adequate. Workload of Water Operator manageable.

The most significant organisational change has been the replacement of the voluntary WUC at each water point with a single resident Water Operator, contracted through a competitive application process with the final choice made by the community, and subsequently responsible for the O&M of a cluster of village water points (balancing clarity about rules with economies of scale), for a period of three years. Water Operators needed to have some capital behind them as they would be required to open a regular Savings and Credit Cooperative (SACCO) customer account costing 75,000 Shillings (US$ 29 or £19[2]), and demonstrate entrepreneurial and leadership potential.

With the third category – governance - we are looking 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 inducement to carry out O&M duties. Storing collected funds in a SACCO[3] account was hoped to improve trust levels and willingness to pay the water user fee, which remained at 1,000 Shillings per month. The function of the SACCO was extended to incorporate an insurance-style product to allow for major repairs, with checks and balances as outlined in Table 1, in the event that saved funds are not enough. It was agreed that the SACCO would charge a monthly interest rate of 0.5 per cent over the money borrowed for O&M based on estimated costs of maintenance and repair over the three year concession, calculated and projected by using existing data in the WASHcost benchmarks (Burr & Fonseca 2013).

Under CBM-*lite* the decisions concerning the rules of operation and sanctions for non-payment are to remain locally determined by the community, as would be the case under conventional CBM, and formalised in a contract signed by all key stakeholders at a community meeting.

Study site and methods

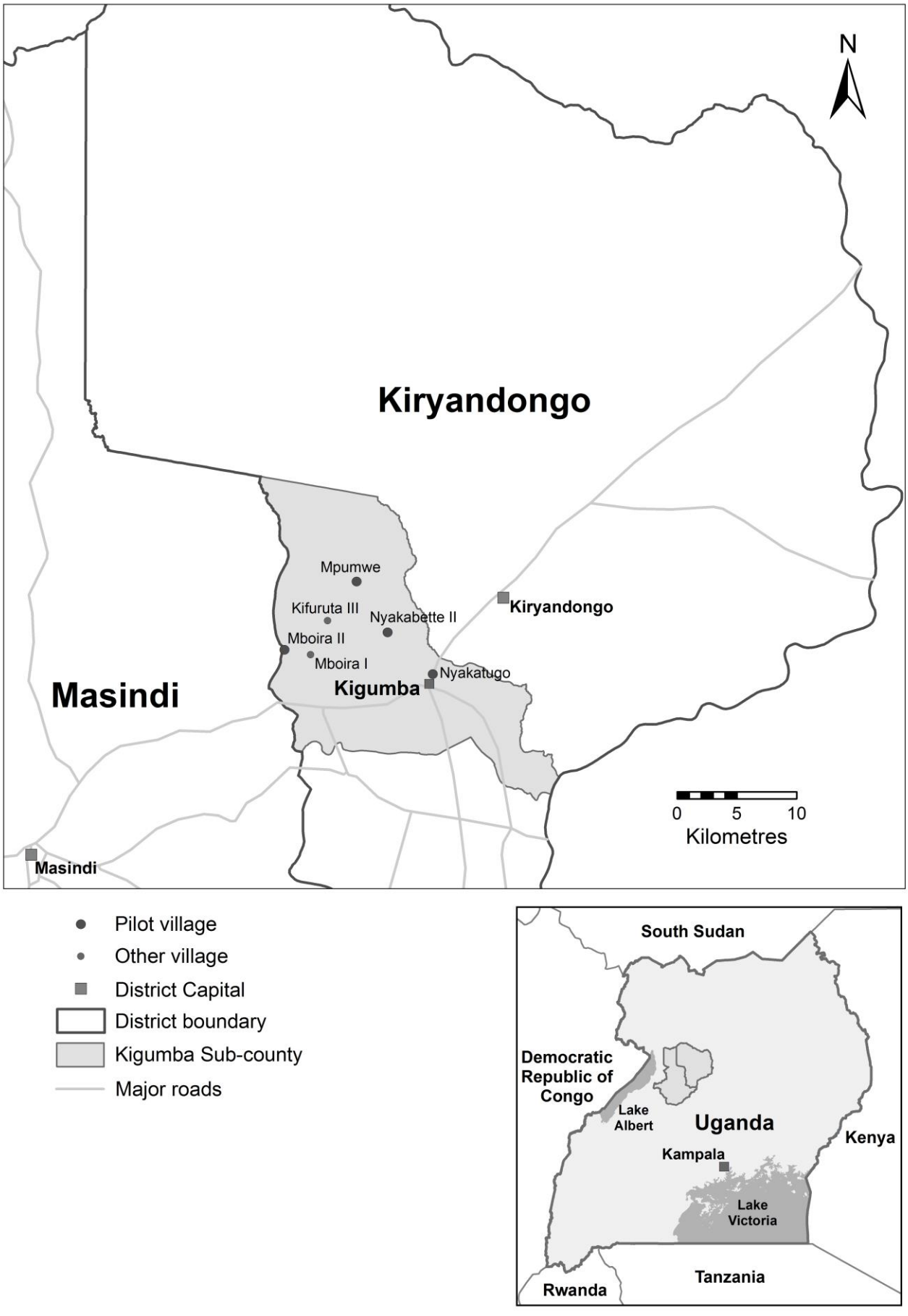
Our study centres on the multi-ethnic (with 56 recognised languages), and predominantly rural, mid-west Ugandan districts of Kiryandongo and Masindi, where subsistence farming dominates, with an average monthly income of 185,000 Shillings, and where 21.4 per cent live on less than US$1 per person per day (Ugandan Bureau of Statistics, 2012). Public

[2] Uganda Shilling to Sterling exchange rate in August 2013 was 0.000250.
[3] In 2006, the government of Uganda capitalised SACCOs in each sub-county to increase access to finance in rural areas (Makoba, 2011).

support for trialling CBM-*lite* was gauged in six villages in Kigumba sub-county of Kiryandongo district, which had shallow hand-dug wells constructed by either local government or a local Ugandan Water And Sanitation and Hygiene (WASH) NGO[4]. The innovation was piloted in four villages: Mpumwe, a relatively large village of 297 households with six hand pumps; Nyakatugo, located close to the town of Kigumba, with 132 households and three hand pumps; Mboira II, a poor immigrant village of 147 households with two hand pumps and a protected spring, and Nyakabette II, a large village of 264 households with three hand pumps (see Figure 1).

[4] Established in 2008 and funded by USA philanthropic donors, the NGO had one Director based in New York, a Programme Manager and 15 Ugandan fieldstaff at the time of fieldwork.

Figure 1 Map of study area



Source: Paul Carter

The comprehensive dataset presented is a result of action research, ethnographic fieldwork, surveys and interviews over the period of March 2011 – June 2014. The second author, who initiated the development of the CBM-*lite* model, was embedded in the day-to-day realities of local communities as the Programme Manager of the small WASH NGO specialising in the construction of shallow hand-dug wells, from June 2012-January 2014. Two surveys, with open-ended questions, were designed and implemented by the NGO: a six day 'Willingness to Participate' survey of 150 randomly selected household respondents across six Kigumba sub-county villages, and a 'Willingness to Pay' survey amongst all 1,138 households in the four selected pilot villages over seventeen days. Between July 2013 and June 2014 21 in-depth interviews were conducted, either individually or jointly by the authors, with NGO staff members; local and national government officials; SACCO and insurance company representatives and finally the four water operators. In all four pilot villages, focus groups were arranged and community meetings observed. A forum meeting of NGOs headquartered in Kampala was also attended. Ultimately, the purpose of data collection was to gauge attitudes towards CBM-*lite*, its potential rewards and risks, in order to identify what elements of the innovation comprise the principal *risk posing objects* and what values may be harmed i.e. *threated risk objects.*

Findings

The case study focuses on the development and initial implementation of CBM-*lite* and the attendant risk perceptions of the different stakeholders.

A consensus emerged during the latter half of 2012 between the WASH NGO and local government officials in the case study area of Masindi and Kiryandongo Districts over the causes of hand pump non-functionality and the precarious state of many others. Irrespective of location, type of hand pump, project implementer, population size or heterogeneity, the common denominator was the dearth of collected water user fees to pay the hand pump mechanics. Ineffectual voluntary Water User Committees (WUCs), considered untrustworthy over the safe keeping of funds, constitute a significant factor in the failure of the CBM model: a community member in Nyakatugo said, "the challenge of the WUC is that they don't give accountability. That is why we lost trust in them" (13 September, 2013): this is ostensibly a rationale for withholding payment. From the perspective of WUC members, extracting money from reluctant and often abusive community members was a thankless task: "it is very difficult to get money from people. I am tired of it. There is that chance that I

will leave" (Kyakamese village 13 June, 2104). NGO staff, who monitored activities post-construction, found there were often only a couple of active WUC members, if any, for each source, with another local NGO representative wryly suggesting "voluntarism is dead" (22 November 2013).

The second author, appointed Programme Manager in June 2012 with experience of other regions in Uganda with an international NGO, realised along with her team, that the pattern outlined above was widespread, and misgivings about the CBM model itself began to creep in: "it is quite fascinating why I had not thought about it…..we did not question the model and whether the WUCs were working or not……it is a friendly concept – people do it for their community, and whistle while they collect money and keep it in a box in their mud house" (11 August, 2013). She came to realise how uncritically she had accepted community-based approaches. It was the opportunity of working with a small regional NGO that made it possible to explore alternatives that deviate from the CBM framework.

In order to combat the real or perceived misuse of funds, it seemed desirable to put in place "a wall between the manager and the money" (13 August 2013), and at the same time investigate bespoke insurance-style financial products that could allow water operators to authorise costly repairs immediately, before routine contributions could be built up. This way, hand pump downtime would be kept to a minimum. However, financial services in Uganda have a chequered record: the Masindi District Chairman suggested insurance companies are "…not trustworthy….I would never insure my property; if something happened they already would have eaten my money! And, what would happen if the hand pumps don't break down?" (27 November, 2013)[5]. In the event, after eight months it was the insurance company that pulled out after concluding that they could not cover for wear and tear of the pumps. The NGO now approached the Uganda Savings and Credit Union Limited (a SACCO) which had a reliable reputation, and its manager saw a potential business opportunity in CBM-*lite*: "[i]f this model works, other villages and water operators will follow" (17 April, 2013) and felt "[i]t is very unlikely that all hand pumps break down at once" (8 August 2013).

[5] Local concerns over insurance companies were vindicated when in January 2015 the Uganda Insurance Regulatory Authority withdrew the licence of the company due to mismanagement.

Despite a shared problem analysis, there were two very different responses from two adjacent districts over possible ways forward. The District Water Officer of Kiryandongo and the sub-county chief of Kigumba welcomed the model: “This pilot is good as people will feel the money is secure” (13 June 2013). According to the Assistant Engineer Kiryandongo (20 August 2013) “most (hand pumps) break down because the money is not there. The advantage of the pilot (CBM-*lite*) is the funds are there”. By contrast, Masindi District declined the opportunity to participate in piloting CBM-*lite,* citing the risk of poor services and misuse of funds, and the possibility that incentivising the Water Operator could exacerbate community tensions.

With the support of Kiryandongo District it was agreed to identify potential pilot villages within Kigumba sub-county, and determine village-wide appetite for CBM-*lite*, necessary for clustering sources under a standardised set of rules managed by a single operator. To this end the NGO identified six “problematic communities” with non-functional WUCs and hand pumps in disrepair (in Mpumwe a third of the nine pumps were non-functional) (11 August 2013). With the approval of the village councillors (LC1), the Willingness to Participate household survey was undertaken with 150 households across the six villages, with women often being the respondents. Following an overview of the key principles of CBM-*lite*, four structured questions were augmented by explanatory open-ended questions. NGO field officers also mapped the main features of the villages, the location of water sources, their status and estimated O&M costs.

The Willingness to Participate survey (N 150), undertaken February-March 2013, found very strong support for the central tenets of CBM-*lite* – in particular the monthly payment of 1,000 Shillings (93.3% support). Householder respondents recognised that a financial incentive taken from funds collected was a positive step (89%): “he will work hard because he needs the profit as well” (Nyakatugo, 13 March 2013), although doubters felt that maximising profit might become a priority over providing clean water. The insurance package and secure deposit provided by the SACCO found favour with 87% of respondents, who believed it could increase willingness to pay because “money will be kept well” (Mboira II), and “even if this person has a sick person, he/she cannot access the money” (Nyakatugo, 13 March 2013). The assurance of funds for O&M won approval “here the community is assured” (of money for repair). Some did not trust the Water Operator to bank the funds and had misgivings about SACCOs, but thought it could be a welcome change because “WUCs are always inactive”. The biggest area of doubt was centred on lack of trust in having a single

Water Operator (19% thought of this as a risk): an individual could “take away our powers as water users”. The three-year concession concerned some if an unscrupulous Water Operator was appointed, and also there was a feeling the role could prove too much to expect from one individual, even with the assistance of caretakers.

The second survey, running concurrently, captured all households in the six potential pilot villages and was undertaken by the NGO. It focused solely on Willingness to Pay 1,000 Shillings per month for guaranteed O&M – the crux of the innovation. Of the surveyed 1,138 households, 98.86% (1,125) were supportive “as long as it is accounted for” (Nykabette II, 21 March 2013) and “because no one in this village cannot afford 1,000 Shillings per month” (Kifuruta III, 14 March 2013). Reasons for refusal by the minority were the existence of an alternative source, which charged 5,000 Shillings per annum, and a seasonal shortage of cash, rather than affordability *per se*.

The outcomes of both surveys justified proceeding with piloting CMB-*lite* in three (later extended to four) of the six surveyed villages[6]. Pilot implementation, which commenced in August 2013 (Nyakabette II in October 2013), followed a similar pattern in all the villages: NGO, local government and SACCO representatives attended community meetings, which were poorly attended (50 out of 290 households in Mpumwe). Arrangements were made to appoint a Water Operator who had to apply in writing for the post and demonstrate his/her suitability. The candidates selected (by a show of hands in a public meeting) tended to be better-educated (for example the Mpumwe Water Operator had been a secondary school teacher), had proved themselves in business (the Mboira Water Operator ran a public market and the Nyakatugo Water Operator owned a mobile phone repair shop), and were all considered trustworthy. The register of vulnerable households, notably elderly and widowed, that were exempt from paying the water user charge under CBM was reconfirmed in accordance with their human right to water. A two-day Water Operator training session with the NGO and SACCO, followed by contract signing, completed the process.

[6] To illustrate the financial breakdown of CBM-*lite,* if the 297 households were charged the agreed tariff of 1,000 shillings per month, the maximum monthly revenue for Mpumwe village was 297,000 shillings (however, the list of eligible exemptions would reduce this slightly). The estimated O&M costs *over three years* for 6 sources was 4,237,380 Shillings: 1,539,000 Shillings for minor repairs; 2,052,000 Shillings for major repairs and SACCO interest rate of 0.5% per month (646,380 Shillings). The monthly SACCO payment was thus 118,000 Shillings leaving a maximum monthly incentive of *197,000 Shillings* (£49.25) out of which the caretakers’ remuneration was paid.

As we moved closer to the implementation stage, a marked change took place in the risk perceptions of the community. In meetings to decide on the rules of operation and sanctions for non-payment of the water user fee (called 'byelaws' locally), and attended principally by men, the foremost concern was payment of the water user fee. Surveys had shown almost universal support, yet "1,000 shillings is too much for us to pay" (Nyakabette II, 13 June 2014) signalled a shift in attitude. Having to pay at the time stipulated by the Water Operator was not popular: "you cannot touch where your height cannot reach" referred to seasonal variation in income, yet allowing users to pay as and when they could spelt chaos and unnecessary work for the operator.

Appointed Water Operators identified risks to their social standing as a result of being salaried by the water user fee, and the Mpumwe operator even claimed he would be working on a voluntary basis in a public meeting, reasoning afterwards that: "it is very bad to hear for community members that I will earn money" (9 August, 2013). From the outset this incentive had been made clear. The female Water Operator of Nyakabette II told a community meeting "I don't want you to charm me (use witchcraft) because I am hard" (13 June, 2014) referring to enforcing user payments. Water Operators also felt the former WUC members could disrupt the pilot: "[t]he WUC are resisting now. They don't want to talk about the money [previously collected] they thought I would dig… so they dodge. They did not come to the meetings. They want free access to water" (Nyakatugo Water Operator, 7 August, 2013). The community bye-laws (locally-agreed rules) were the sole mechanism for punishing free-riders: in Mpumwe village it was agreed that the Water Operator could confiscate water collection cans after three warnings in one month and if the owner failed to pay within three days, the can could be sold. The thorny issue of dealing with habitual free-riders was brought up in a meeting in Nyakabette II: "Are there people that can arrest those people that are not willing to pay?" (13 June, 2014).

The authors were invited to present the model at a meeting convened 21 August 2013 in Kampala to national and international NGOs based there. The problem analysis that identified failing WUCs and flaws within the CBM model was not well received: "I have just visited a village last week and the WUC was doing fine," with another stressing "our organisation believes in the strengths of the WUC." It was insisted that any issues over payment could be solved by "sensitising", "building capacity" and "changing their mind sets". A prevalent viewpoint was that being forced to pay was likely to push people to use contaminated water, putting health at risk. Another objection was the use of the SACCO as

provider of an insurance-style product: “they are not an insurance company”, and risks were foreseen. It was felt that deviations from the CBM model could harm the sector as a result of creating a lack of coherence and consistency. In sum, the reaction from these NGOs was discouraging, with the concluding advice: “come back when you have evidence that the model is working.”

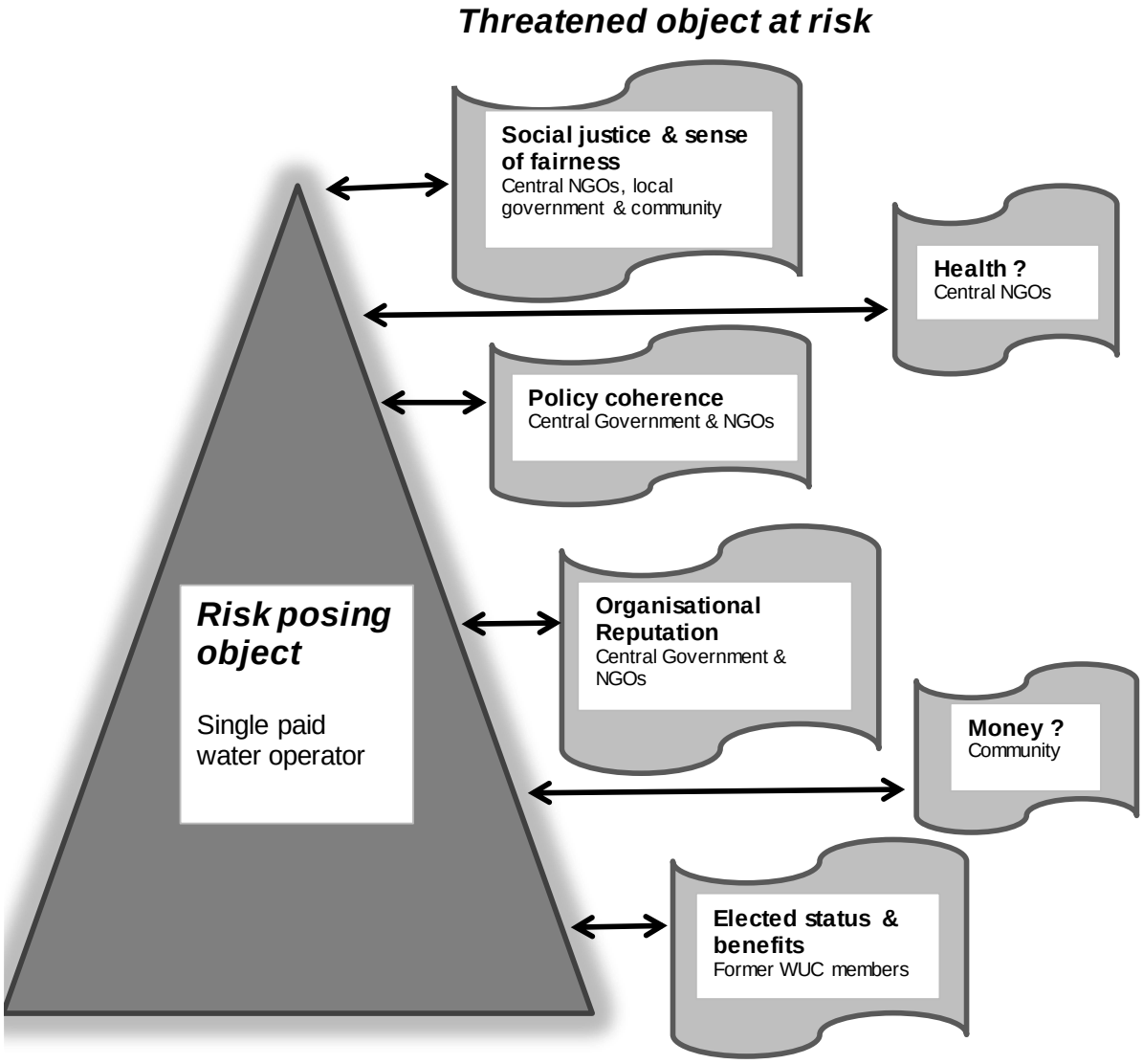
A similar response about the potential threat of the pilot to the CBM framework was expressed by the director of the Directorate of Water and Development of the Ministry of Water and Environment: “[w]e have the O&M framework. We are happy about this. I request the NGOs to support the WUC. To me it doesn’t 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).

Discussion

Based on our interpretations, the CBM-*lite* package appeared to embody multiple *risk posing objects* to the strongly held and valued beliefs of several stakeholder groups. To exemplify the usefulness of a relational reading of risk we take a central component of CBM-*lite*[7]: a single Water Operator incentivised to collect the water user fees. This *risk posing object* refracts into multiple *threatened objects at risk* (Figure 2), and affords the opportunity to discuss *why and how* innovations in the water sector pose risks to national and local scale actors, with consequences for the sector as a whole.

[7] There are other risk objects emanating from CBM-*lite* – such as microfinance insurance style financial product offered by the SACCO and the village level clustering of pumps for economies of scale which could also be subjected to scrutiny.

Figure 2 Relationship between single paid water operator (risk posing object) and the identified threatened object(s) at risk by stakeholder group



Source: Authors' construct

Bakker's (2007) three-tier framework, set out above, is particularly helpful at this point. Ostensibly CBM-*lite* has not affected the institutional level of CBM policy. The organisation and governance levels have, however, been adjusted with important ramifications for mainstream CBM. The community still sets the rules of use, and carries out sanctions under CBM-*lite*, and pumps are not owned by the water operator. Yet undeniably CBM-*lite* destabilises the foundations upon which CBM rests; by disbanding WUCs it erodes opportunities for voluntary community collective action, thereby undermining one of the two pillars of CBM policy. However, at the same time the innovation strengthens the complementary 'user pays principle' of mainstream CBM.

Commencing with the national and international NGOs with headquarters in Kampala, it was clear from our meeting that removing the WUCs and replacing them with a single operator clashed with their commitment to community collective action, and retention of communal responsibility for effecting punishment for non-payment was no consolation. Reflecting on organisational priorities and ethics is important at this juncture: the explicit goal of the developers of CBM-*lite* was sustainable access to water and the vehicle was an incentivised water operator. Our subsequent deliberations highlighted a different set of priorities for NGOs attendees: social justice and a sense of fairness. An innovation that replaces a fundamental component of community management – voluntary WUCs – with an already relatively advantaged individual placed in a position to benefit financially out of the water user fee could be viewed as reinforcing inequity and running counter to a social justice agenda. Concentrating power into the hands of one individual could have undesirable social consequences – a point brought up by the Masindi District Water Officer. This raises the whole issue of water, payment and profit leading in the direction of professionalisation and a move to the political right. Profiting from water is deeply contentious in NGO circles (Adams & Halvorsen 2014) and we note links to the urban water literature where control over access to water becomes a "formidable source of social power" (Swyngedouw, 2006: 15). Fears at the Kampala meeting were expressed about possible high-handed treatment, even denial of water to community members failing to pay.

In addition, because payment would be more strictly enforced under CBM-*lite* as the Water Operator was incentivised, the large national and international NGO representatives protested that the health of communities could be put at risk since they could be driven to use contaminated surface water. It seems plausible that the issue of health could also be a cover for the real *threatened object at risk* for these NGOs: reservations about paying for water at all. It must be stressed there was no price increase with CBM-*lite,* the register of exemptions was to be maintained and free-riding was meant to be curtailed by communally-agreed sanctions as under mainstream CBM. Work by van den Broek and Brown (2015) suggests free-riding is the norm under CBM. Our experience is that 'off the record', many officials of larger NGOs are not fully committed to encouraging the user pays principle post construction, widely conveying the sentiment that "water should be free" in accordance with the human right to water, as also observed by Quin et al. (2011). Taking a social justice perspective, the water user fee under both CBM and CBM-*lite*, with the exemptions, is really a regressive form of taxation – in that all households despite income levels are charged a flat rate of 1,000 – reinforcing inequitable outcomes. From our experiences in Uganda, we

suggest that enforcing the user pays principle does not in reality sit comfortably with many NGO officials, despite official policy. To what extent this has contributed to the dire O&M statistics for CBM could be an important research agenda, with implications for any innovation based on the user pays principle. This example also shows there is a need to be alert to the fact that behind a stated benevolent concern (health) there may be an underlying value that stakeholders prefer to shield. The implications of the foregoing are not that the NGOs prioritise social justice over long-term access to water, rather they were critical of the chosen vehicle to deliver it (a Water Operator incentivised to uphold the user pays principle): an ethical line was perceived to be crossed.

The central Government sees its policy coherence threatened by CBM-*lite* and its single paid Water Operator, an opinion shared by the national and international NGO representatives. Islands of innovation randomly set up at the margins create confusion and indicate a weakening of the Government's overarching control, and could be interpreted as a signal of dissatisfaction with mainstream CBM. Comments by the Ministry representative indicated the Government would not stop local NGOs from experimenting, but this was not to be at the cost of destabilising the current CBM framework. Linked to policy coherence as a *threatened object at risk* is the goodwill of the international donors. They have invested long and heavily in the CBM principle, and uncertainty could have implications for funding streams and organisational spheres of influence. Put simply, piloting an alternative, such as CBM-*lite,* may be perceived as implicit recognition of the failings of CBM.

The central government representative made it clear that there is little room to experiment and learn from mistakes. The public sector often becomes paralysed as a result of increased uncertainty, and attributes its risk-averse nature to the personal and organisational costs of failure (Townsend, 2013). Our findings support Douglas and Wildovsky's (1982:189) suggestion that "no change ever comes from the centre" which has a strong commitment to the status quo: "all innovation comes from without" from "the margins of society", in this case represented by small local NGOs.

What the larger NGOs and government have in common are strong group ties and a commitment to shoring up CBM. The foregoing helps explain the inertia in the rural water sector, and explains why it is unlikely that radical change will be inspired by either central government or central NGO actors, and why changes and ideas amenable to the centre are "those best known and closest to existing programmes" (*ibid*:93). They have the power to

stifle innovation, yet sector-wide change is a top-down process that ultimately central government has to sanction and implement (Townsend, 2013).

At the local level, we identify stakeholders with looser group ties. For the rank and file community members, numerically the largest stakeholder group, the cited *threatened object at risk* was money. This is another example of a cover for an underlying *threatened object at risk*. Our research suggests that affordability is not the issue in the case study area (also see van den Broek and Brown 2015): an opportunity cost perhaps, but one that would purchase very little (one third of a bottle of beer). Rather, a principle is at stake, the symbolic meaning represented by their money being used to pay a water operator. Often heard in this connection is the graphic expression “eating my money”: the thought rankles to have to sit by while a fellow villager grows fat on money you have paid out for a service. A paid Water Operator directly offends the community’s sense of fairness, a *threatened object at ris*k and sentiment shared by NGOs and Masindi District on behalf of communities. The issue runs deeper than this, however. We believe there exists an unwritten code of conduct, evident from the concerns of the Water Operators (discussed shortly), that puts one in mind of the Scandinavian law of Jante: people should not feel or act superior to their neighbours, and to do so is an affront to a sense of homogeneity – the *real threatened value* and *object at risk*, rather than money *per se*. On the one hand there is evidence of loose group ties manifested in a lack of community spirit, a sense that “voluntarism is dead”, disaffection and deep mistrust, yet at the same time community members are bound by a collective code of conduct they fear to break: inertia is also evident at the local level. These potentially self-defeating, even myopic, behaviour patterns could take root and result in withholding payment, leading to hand pump breakdown, inconvenience and possibly to sickness, rather than seeing a Water Operator profit.

Disbanded WUC members are an elite group within communities: when a single Water Operator takes over, they stand to lose the perks of their position (another *threatened object at risk*): elected status, free water and accessing the collected funds. Their displeasure can be inferred from the boycott of public meetings about CBM-*lite* and their evasion over previously-collected water user fees.

To date in the analysis, the Water Operator has been the embodiment of the *risk posing object* to the valued *threatened objects at risk* of other stakeholder groups (Figure 2). Our focus now shifts to the fluidity of risk, exemplified by the positions of the Water Operator, the local NGO project designer and finally former WUC members. Applicants for the Water

Operator positions exhibited entrepreneurial spirit in pursuing a business opportunity to supplement their income. Initiative and a desire for self-advancement may set an individual apart, but does not necessarily indicate indifference to public opinion or community welfare. Hitherto the Water Operators were the *risk posing object*, but they find themselves on the receiving end of a threat – their business becomes a *threatened object at risk*. It might be described as a Janus style role; simultaneously a *risk posing object,* and a *threatened risk at object*. This role change is subject to certain circumstances, such as the failure to collect water user fees, or the failure by the community to deter free-riding, in which case the Water Operator's position could become untenable. Business success apart, a *threatened object at risk* for the operator is acceptance in the community – Jante-style ostracism could be the price he/she has to pay. Concerns on this count were raised by the Water Operators, and sometimes reflected in a pretence that no remuneration was involved. The designer of CBM-*lite* is similarly placed to the Water Operator: circumstances that may undermine the operator are likely to discredit the driving force behind the innovation along with the organisation she represents.

SACCOs, which can also be viewed as a *risk posing object* "eating" the communities' money and/or failing, with the loss of community funds – a not unlikely event - may also become a *threatened object at risk* if non-payment and unchecked free-riding pre-dominate – these may become the new *risk posing object* in-waiting. The community meetings and interviews with Masindi District Chairman highlighted the lack of comprehension over how insurance works - to guarantee speedy repairs and continuous access – and that premiums have to be paid regardless of whether claims to finance pump repairs are made. Paying for something that is not broken appeared counterintuitive to many, and could translate into a *risk posing object* for CBM-*lite*.

The above are examples of a shift from *risk posing object* to *threatened objects at risk*. Not all fluidity is in that direction. Former WUC members – themselves bundled out of elected office by the innovation - could become *risk posing objects* to the new single Water Operators. Petulant and obstructive behaviour, signs of which have already been witnessed, could undermine the implementation of CBM-*lite* and its appointed officials.

The contrary and differing results garnered from the surveys and public meetings warrant investigation. The surveys that were conducted prior to setting up the CBM-*lite* pilot were highly supportive of paying for water, of having a single operator paid from collected fees, and of using a SACCO to store collected fees with an insurance policy. Yet post-appointment

a very different picture began to emerge in the public meetings – disquiet over paying - raising potential questions for the viability of CBM-*lite*. Possible explanations include, firstly: selected villages were admittedly problem ones with very high levels of breakdown and ineffective WUCs (the reason for targeting them initially). Enthusiasm for anything that could bring improvement could account for inflated initial support. Secondly, the surveys took place in homes and were predominantly answered by women - the ones most burdened with collecting water, along with their children, and who tend to be more focused on family health. The objections and risk protests were later voiced by men in the public meetings. There is an important gender element here to augment the water, money, power nexus (Swyngedouw 2006). Thirdly, the public meetings to determine rules were mostly male-dominated and occurred near to the time of implementation. As we move from the distant and hypothetical to the imminent and actual switch to CBM-*lite,* should we expect to see risk aversion increasing? From the foregoing we argue that innovators need to 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, and that the gender of research participants can skew results.

Conclusions

Our novel application of relational risk theory to an innovation in the rural water sector in Uganda has proved illuminating: it has helped disentangle a messy web of complex and contradictory behaviour patterns. It has demonstrated to us that for many stakeholders the known risks of CBM may be preferable to potential harm to ideology (social justice), policy coherence, organisational reputation, and social and cultural norms, which is an important contribution to the geography of water literature and practitioner debates. Unpacking sectoral inertia in Uganda assumes greater significance when we consider that 57% of the global population will be reliant on communally managed water sources by 2020 (Joint Monitoring Program, 2011).

The analysis suggests we have a classic ‘wicked problem’ (Rittel & Webber 1973), where a solution for one group is a problem generator for another. CBM-*lite,* in its attempt to bolster user payment with an incentivised Water Operator met with resistance because it had the potential to curtail free-riding which was widely practised under CBM. Fundamentally, the study questions the level of support for the user pays principle, central to both mainstream

CBM and CBM-*lite*. We are keen to promote a sector-wide debate over the financing of post-construction support because of the apparent incompatibility between social justice and the human right to water on the one hand, and the user pays principle.

Knowledge is said to be the key to risk management, for it helps to generate trust and neutralise a perceived threat of harm (Dobbie and Brown, 2014) and so we argue that the sector needs to embrace experimentation and encourage shared learning from the outcome of trials. Colvin et al. (2014) believe that the way to break the deadlock is through a body of evidence that cannot be ignored at the centre. However, this faces obstacles from the government, which sees experimentation as threatening policy coherence. Nevertheless, the power to make sector-wide change rests with central government itself. Further, whether the rural water sector is ready to publicise and learn from failure, an essential part of experimentation, is debatable: the Rural Water Supply Network, in calling for 2016 forum entries, stipulates "papers must relate to practices and innovations that have been proven to work" [8]. As things currently stand, the comfortable mantra 'better the devil you know' may indeed render any proposed innovation that threatens mainstream CBM dead in the water.

[8] https://rwsn7.net/participate/submissions/

References

Adams E A and Halvorsen K E 2014 Perceptions of Nongovernmental Organization (NGO) Staff about Water Privatization in Developing Countries *Human Geographies – Journal of Studies and Research in Human Geography* 8 (2) 35-49

Bakker K J 2007. The “commons” versus the “commodity”: alter globalization, anti-privatization and the Human Right to water in global South. Antipode 39, (3) 430-455.

Baumann E 2006 Do operation and maintenance pay? *Waterlines* 25 (1) 10–12

Boholm A 2003 The cultural nature of risk: Can there be an anthropology of uncertainty? *Ethnos: Journal of Anthropology* 2 159-178

Boholm A and Corvellec H 2011 A Relational Theory of Risk *Journal of Risk Research* 14 (2) 175-190

van den Broek M and Brown J 2015. Blueprint for breakdown? Community Based Management of rural groundwater in Uganda. *Geoforum*, 67, pp.51–63.

Burr P and Fonseca C 2013 Applying a life-cycle costs approach Costs and service levels in rural and small town areas. Costs and Service Levels in Rural and Small Town Areas in Andhra Pradesh (India), Burkina Faso, Ghana and Mozambique. IRC International Water and Sanitation Centre. Working Paper 8. The Netherlands.

Carter R C and Ross I A N 2016 Beyond “ functionality ” of handpump-supplied rural water services in developing countries. *Waterlines*, 35(1) 94-109

Cleaver F 1999 Paradoxes of Participation: Questioning Participatory Approaches to Development J*ournal of International Development* 612 597–612.

Colvin J et al 2014 In search of systemic innovation for sustainable development: A design praxis emerging from a decade of social learning inquiry *Research Policy* 43(4) 760–771

Cooke B 2001 The social psychological limits of participation? In **Cooke B** and **Kothari** U eds *Participation: the New Tyranny?*

Dobbie M F and Brown R R 2014 A framework for understanding risk perception, explored from the perspective of the water practitioner. *Risk Analysis* 34(2) 294–308

Douglas M and Wildavsky A B eds 1982 *Risk and Culture: An Essay on the Selection of Technological and Environmental Dangers* University of California Press

Foster T Hope R and 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.

Harvey P 2008 Poverty Reduction Strategies : in sub-Saharan Africa Progress in Development Studies 8 (1)115–128

Hilgartner S 1992 The social construction of risk objects: Or, how to pry open networks of risk. In **Short J F** and **Clarke L** eds *Organizations, uncertainties, and risk* 39–53 Boulder, CO: Westview Press

IRC/Triple-S 2012 Community Management of Water Services Approaches, Innovations from Lango & Rwenzori regions. www.ircwash.org/sites/default/files/20120706tsuggoodpracticesbookletfinal_0.pdf.

Joint Monitoring Program 2011. Drinking Water Equity, Safety and Sustainability: Thematic Report on Drinking Water. http://www.wssinfo.org/fileadmin/user_upload/resources/report_wash_low.pdf

Jones S 2011 Participation as citizenship or payment? A case study of rural drinking water governance in Mali *Water Alternatives* 4 (1) 54-71

Kahan D M Jenkins-Smith and Braman 2011 Cultural cognition of scientific consensus *Journal of Risk Research* 14(2) 147-174.

Latour B 1996 *Aramis or the love of technology*. Cambridge, MA: Harvard University Press.

Le Gouais A and Wach E 2013 A qualitative analysis of rural water sector policy documents. *Water Alternatives* 6 (3) 439–461

Makoba J W 2011. Rethinking Development Strategies in Africa the triple partnership as an alternative approach: the case of Uganda. Oxford; New York; Peter Lang.

Naiga R Penker M and Hogl K 2015 Challenging pathways to safe water access in rural Uganda : From supply to demand-driven water governance *International Journal of the Commons* 9 (1) 237–260

Oxford/RFL 2014 From Rights to Results in Rural Water Services – Evidence from Kyuso, Kenya. Smith School of Enterprise and the Environment, Water Programme, Working Paper 1. Oxford University, UK.

Quin A Balfors B and Kjellén M 2011 How to “walk the talk”: The perspectives of sector staff on implementation of the rural water supply programme in Uganda. *Natural Resources Forum* 35(4) 269–282

Rittel H W J and Webber M M 1973. Dilemmas in a general theory of planning. *Policy Sciences* 4(2)155–169

Rural Water Supply Network (RWSN) 2010 Myths of the Rural Water Supply Sector. Perspectives Paper 4. Switzerland.

Swyngedouw E 2006. Power, water and money: exploring the nexus. Human Development Report 2006. Human Development Report Office Occasional Paper UNDP

Townsend W 2013. Innovation and the perception of risk in the public sector. International Journal of Organizational Innovation 5 (3), 21-34.

Vasvári T 2015 Risk, Risk Perception, Risk Management – a Review of the Literature. *Public Finance Quarterly* 1 29–48

Whittington D Davis, J., Prokopy, L., Komives, K., Thorsten, R., Lukacs, H., Bakalian A and Wakeman, W 2009 How well is the demand-driven, community management model for rural water supply systems doing? Evidence from Bolivia, Peru and Ghana. *Water Policy* 11 (6) 696–718

World Web Pages:

Uganda Bureau of Statistics (2012) http://www.ubos.org/onlinefiles/uploads/ubos/UNHS_12_13/2012_13%20UNHS%20Final%20Report.pdf [accessed 27 May 2016)