The role of social capital and sense of ownership in rural community-managed water systems: Qualitative evidence from Ghana, Kenya, and Zambia

Emma Kelly [a], Kristen Lee [a], Katherine F. Shields [a], Ryan Cronk [a], Nikki Behnke [a, b], Tori Klug [a], Jamie Bartram [a, *]

[a] The Water Institute at UNC, Department of Environmental Sciences and Engineering, University of North Carolina at Chapel Hill, CB #7431, 135 Dauer Drive, Chapel Hill, NC, USA
[b] Water 2017, 1750 K St. NW, #400, Washington, DC 20036, USA

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ABSTRACT

Many water systems in rural areas of low- and middle-income countries are community-managed. Ensuring the long-term sustainability of community-managed systems is important to achieve Sustainable Development Goal (SDG) six, which calls for universal access to safe water. Social capital and sense of ownership are theorized to influence the effectiveness of community-management. To explore this relationship, we conducted a qualitative study of how and why social capital and sense of ownership facilitate water system sustainability, and their relationship to one another. Individual interviews and focus group discussions with community members, water committee members, local leaders, and external support actors were conducted in eighteen communities with successful community-managed water systems in Ghana, Kenya, and Zambia. We found that social capital facilitates water system solicitation, water committee elections, resource mobilization, and information sharing. Sense of ownership plays a role in organizing and enabling water system decision processes, physical labor, and resource mobilization. Both social capital and sense of ownership facilitate different forms of community participation that are crucial to processes which support water system sustainability. Further, our results suggest a new theoretical framework where social capital and sense of ownership are inherently linked through community participation and can thereby interact to magnify or undermine each other's effects. Results also suggest that social capital and sense of ownership can have meaningful effects on socio-economic and gender equality in rural communities by creating opportunities for alternative resource mobilization and female participation. We suggest external support actors actively assess and leverage the social strengths of rural communities, identify successful and skilled community members, encourage female leadership, and emphasize activities and trainings that incorporate social capital and ownership.

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1. Introduction

Over 2.6 billion people worldwide gained access to an improved water source between 1990 and 2015 (United Nations General Assembly, 2015). However, 663 million people remain without access and approximately 48% of those people live in sub-Saharan Africa (WHO/UNICEF, 2015). Access to drinking water is further reduced by water system breakdowns. It is estimated that 36% of communal handpumps in sub-Saharan Africa are non-functional at any given time (Rural Water Supply Network, 2009), forcing people to use alternative, often unsafe sources. Sustained access to safe drinking water is vital for human health, and inconsistent access threatens the health benefits gained from the use of safe sources (Bain et al., 2014; Bain et al., 2014; Hunter et al., 2009; Prüss-Ustün et al., 2014). Water, sanitation and hygiene (WaSH) actors have sought to expand their understanding of community water system management and how to ensure continuous functionality (Amjad et al., 2015; Bey et al., 2014)

Community management is considered most viable in situations where the commonly managed resource is moderately scarce: if water is considered very available or very scarce, community members are less likely to participate in operation and maintenance (O&M) (Agrawal, 2002; Araral, 2009). Water in Ghana, Kenya and Zambia can all be considered "moderately scarce" according to average rainfall (Thornton, 2014) and length of dry season (MacDonald et al., 2009). Community management is also widely used in areas where local and national governments are unable to carry out sufficient O&M of rural community water systems (Arlosoroff et al., 1987; Briscoe and de Ferranti, 1988). For example, Ghana, Kenya and Zambia have all undergone political decentralization movements in the past few decades, making community management an appealing option for natural resources management in these countries (Ribot, 2003). Water policy in these three countries is specifically written to encourage community management in rural areas, giving full O&M responsibility to communities (Harvey and Reed, 2007). Ghanaian, Kenyan and Zambian policies specifically address "Water and Sanitation" (WATSAN) committees, "Water Resouces User Associations" (WRUAs) and "Village Water Supply, Sanitation and Hygiene Education" (V-WASHE) committees respectively, and outline some of the overall goals and responsibilities of the committees (Government of Ghana Ministry of Water Resources (2007); "Republic of Kenya Ministry of Water and Irrigation The National Water Services Strategy (NWSS)," 2007, "Zambia National Rural Water Supply and Sanitation Program," 2006). Although these policies vary in many ways, all three endow the communities committees with the responsibility of O&M of the water system through a water committee, and emphasize striving toward cost recovery on a water system level and gender mainstreaming.

Community management of rural water systems involves the formation of a local water committee responsible for the O&M of the water system. The committee is supplemented by post-construction support (PCS) from other community members or from external support actors — defined here as government entities, non-governmental organizations (NGOs) or private companies. PCS in a rural water supply context can include either financial or technical support targeted at either hardware or management rehabilitation. PCS is considered most effective when external support actors cooperate with the community in order to collectively repair the water system or rehabilitate the water committee (Klug et al., 2017). Although community management with PCS is theorized to organize the community, encourage water system cost recovery, and empower water users to participate in decisions about their water service (Tigabu et al., 2013), high rates of system breakdown have led WaSH researchers to question the sustainability of the model.

Social capital is defined here as social structures that foster cooperation for the common good of a community (Putnam, 1993). *Structural social capital* comprises social networks and organizations that are supplemented by rules, procedures, and precedents to facilitate information sharing, group decision-making, and collective action (Grootaert and Bastelaer, 2001). These social networks and norms facilitate community coordination and communication, foster patterns of reciprocity, "embody past successes at collaboration and serve as template for future collaboration" (Putnam, 1993). *Cognitive social capital* consists of a person's reputation and interpersonal trust, which affect the decisions of that person and of others concerning that person (Grootaert and Bastelaer, 2001). Coleman (1988) uses the concept of "credit slips" to discuss the accumulation of cognitive social capital in the form of trust, showing that it can be stored and later "spent" like other forms of capital. By establishing norms of cooperation and allowing people to build "stocks" of trust, social capital ultimately facilitates the flow of physical and human capital (Bisung et al., 2014) in the form of community participation. Community participation is defined as the involvement of community members in the planning, construction and ongoing management of their water system (Marks and Davis, 2012)

Within the context of WaSH, Bisung et al. (2014) found that upfront labor and financial contributions were barriers to community participation. Structural social capital in the form of transparent, active community groups provided an avenue for people to participate in addressing issues; and cognitive social capital in the form of trust in other community members predisposed people to participate in O&M (Bisung et al., 2014). In Kähkönen's literature review (1999, p 25), social capital was found to be necessary for a community to manage its own water system, as it "aids in crafting and enforcement of operational rules that govern the use and O&M of the water system in the community." Social capital has also been found to play a role in the success of other informally-governed natural resource management operations. Katz (2000) argues that informal social structures can replace formal resource ownership in remote developing communities. In these situations where the legal status of resources is ambiguous, norms of reciprocity and social networks can help overcome barriers to collective management.

Although social capital has been shown to facilitate community management in rural water and sanitation, it is important to note that social capital alone is insufficient to successfully manage a common resource. Social capital is a resource which must be activated or utilized in order to facilitate collective action and successful water system management, thus capable and willing leaders, or "agency", must also be present in the community (Krishna, 2001). The establishment of agency and eventually capacity is especially important in circumstances such as political decentralization, where informal structures such as social capital replace formal regulation. One such type of leader can be a community member with a strong sense of ownership for the water system — which is defined here as a psychological state in which people feel as if their community's water supply system is "theirs" and express commitment to the water system infrastructure (Marks and Davis, 2012; Pierce et al., 2001). Sense of ownership has recently become a point of focus in rural WaSH as a determinant of sustainability. Yacoob (1990) argues that a sense of ownership is likely to contribute to a person's willingness to operate and maintain a water system for a long period of time. Water committees' sense of ownership has likewise been positively associated with infrastructure condition and community members' sense of ownership has been associated with users' confidence and sustainable management (Marks et al., 2013). Sense of ownership has furthermore been linked to certain forms of community participation, including involvement in decision-making processes and community labor (Marks and Davis, 2012). Although sense of ownership and community participation have been associated with overall water system sustainability, it is important to note that not all forms of community participation improve sustainability. For example, community participation in decisions related to finances and management have been shown to improve water system sustainability, whereas community involvement in technical decisions such as system technology and siting negatively affects sustainability (Khwaja, 2004; Marks et al., 2014).

While both social capital and sense of ownership have been noted to contribute to the success of community-managed water systems, there is little understanding of these pathways or any horizontal relationship between the two. This study uses a qualitative design to examine the relationship between social capital, sense of ownership, and water system sustainability in rural sub-Saharan Africa. The purpose of this study is to identify a