



Sanitation and the commons: The role of collective action in sanitation use



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A B S T R A C T

A lack of safe sanitation threatens human wellbeing and has overlooked implications for environmental sustainability. There is a growing need to understand community-level drivers of sanitation use, as poor sanitation in a few households can create risks for neighboring households and contaminate the surrounding environment. This paper considers sanitation in the context of common-pool resources, focusing on processes of collective action and sustainable sanitation use, and draws on a case study conducted in Koassanga, Plateau-Central, Burkina Faso, where an ecological sanitation system intervention was implemented. Using a qualitative study design, 26 semi-structured interviews were conducted with residents using a social capital framework for water, sanitation and hygiene. Data were thematically analyzed to understand how collective action played a role in sustaining use of the sanitation system. The case study findings indicated that social capital characterized by membership in local groups and associations may have contributed to successful implementation of the intervention and ending open defecation, through normalization and monitoring of the use of ecological sanitation systems. In addition, community leaders played prominent roles in ensuring that collective management of the sanitation systems was sustained. These findings highlight potential for further examination of sanitation systems from a common pool resources perspective to identify other factors that contribute to long-term sustainability. With growing interest in community-led sanitation approaches, this understanding can inform more effective strategies for governments and NGOs to promote the health of entire communities to achieve SDG targets for universal coverage.

1. Introduction

Despite the human right to sanitation, around 2.4 billion people do not use an improved sanitation facility, of which almost a billion practice open defecation (UNICEF and WHO, 2015). A lack of safe sanitation has wide-reaching implications for human wellbeing, as well as overlooked impacts on environmental sustainability (Andersson et al., 2016; Bartram and Cairncross, 2010; Feris, 2015). Diarrhea is a leading cause of morbidity and mortality in children, and inadequate sanitation and hygiene is a major contributor to this disease burden (Fischer Walker et al., 2013; Prüss-Ustün et al., 2014). Poor sanitation also contributes to undernutrition and child stunting, and the spread of other diseases like typhoid and parasitic worms (Dangour et al., 2013). Women and girls disproportionately face risks of physical violence and psycho-social stress due to lack of access to safe, nearby sanitation facilities (Kwiringira et al., 2014; Mara, 2017; Sahoo et al., 2015).

There are also economic costs, with one study estimating annual losses of around US\$ 260 billion associated with inadequate water

supply and sanitation, linked to lost productivity and healthcare expenditures (Hutton, 2013). This does not include the impacts of releasing untreated waste into the environment containing organic matter, nutrients and pathogens that degrade aquatic ecosystems providing critical services, such as supporting fishing livelihoods and providing water supplies for household use. Moreover, the missed opportunities to recover and recycle these resources that are increasingly scarce in many regions is also not included (Andersson et al., 2016).

Despite large scale investments in sanitation technology and subsidies to address these challenges, uptake of latrines and sustained behavior change has been poor in many regions (Devine, 2009). This has led to increased focus on efforts to change attitudes and behaviors through education campaigns, awareness building and sanitation marketing. As part of a shift towards creating demand for sanitation, researchers have identified a range of individual drivers of sanitation use such as convenience, willingness to pay, status, privacy and dignity (Garn et al., 2017; Jenkins et al., 2015; Jenkins and Curtis, 2005; Jenkins and Scott, 2007). There is also a growing interest in using low-

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cost community-led methods to promote sanitation, particularly in rural areas. These approaches aim to stimulate collective behavior change, using triggers such as disgust and shame, with the aim of ending unhealthy open defecation practices at a community-scale (Kamal and Chambers, 2008).

While there has been extensive work to study common-pool resources such as fisheries, forests, and irrigation systems, poor sanitation and associated contamination of land and water resources has largely been regarded as a public health issue. However, safe environments free of pathogen contamination are common pool resources that are compromised in many regions by open defecation and poor sanitation. There is potential for greater consideration of poor sanitation within its complex social-ecological context, including investigation of how collective action can lead to more sustainable management of local sanitation conditions. The objective of this paper is to examine how sanitation challenges can be framed as a common-pool resource issue, and to examine collective action processes that can contribute to latrine use, drawing on a case study in rural Burkina Faso.

1.1. Sanitation as a common pool resources challenge

Unsafe environments where people practice open defecation or use unsafe sanitation systems that cause degradation of local water and land resources have potential to be analyzed from a common pool resource perspective. Ostrom (2008) defines common pool resources as those that are ‘sufficiently large that it is difficult, but not impossible, to define recognized users and exclude other users altogether. Further, each person’s use of such resources subtracts benefits that others might enjoy.’ In the case of poor sanitation, it is difficult to exclude people from contaminating land and water quality through open defecation or unsafe sanitation practices. In addition, contamination by some residents practicing open defecation is difficult to remediate and puts other residents’ health at risk (Sarker et al., 2008).

Due to the collective nature of sanitation problems, behaviors and practices of other residents that result in degradation of the surrounding environment is an important challenge for people living in areas with unsafe sanitation (McGranahan, 2015; Winters et al., 2014). When one household constructs a latrine others receive indirect benefits as there is reduced contamination of the surrounding environment and water supplies, which is particularly important in more densely populated areas (Spears, 2013). Fuller and Eisenberg (2016) use a disease transmission model to show that “sanitation provides no direct benefit to the user, but protects the entire community equally.” This is also evidenced by studies that have found significant external benefits generated by individual access to improved sanitation that results in lower risk of contact with human excreta for others in the community. For example, a study on early childhood health in India found that positive externalities (i.e. reduction in diarrhea prevalence) from community sanitation coverage was three times higher than individual benefits (Andres et al., 2014). Given this evidence, the authors suggest that household sanitation is a collective good with collective benefits. Similarly, in a study conducted in Ecuador, Fuller et al. (2016) found that sanitation practices provide herd protection to the entire community, and argue that sanitation interventions that do not account for positive externalities underestimate the overall protective effect.

The existence of externalities and collective benefits to sanitation further suggests that community level interventions are more likely to produce optimal benefits. However, many sanitation intervention projects in some developing countries provide infrastructure to individuals, such as residents who show interest, contribute part of the cost, or who assist with implementation, while other members continue to practice open defecation. Such an approach, targeted at individuals, can fail to produce maximum benefits in terms of reduction in human contact with excreta, and reduction in diarrhea diseases (Clasen et al., 2016). Given the collective nature of sanitation challenges and benefits, greater investigation is needed of community interactions that enable

cooperation and the development of social norms that promote safe and sustainable sanitation use at the community level. This is particularly relevant for the water and sanitation sector, as governments and development organizations are increasingly relying on collective action as part of low-cost methods to promote sanitation use.

1.2. Collective action to promote sanitation behavior change

Community-based management of rural water services is the dominant management model in many low and middle-income countries (Hope, 2015). This approach has been promoted due to a lack of provision by the state or private sector in many cases, and emphasizes community involvement in the implementation, operation and maintenance of water and sanitation systems including paying associated costs (Bakker, 2008; Castro and Morel, 2008; Waterkeyn and Cairncross, 2005). An emphasis on bottom-up management approaches is also motivated by the belief that communities can effectively manage water and sanitation services through collective action, due to existing social capital such as well-established social networks and norms (Zuka, 2013). These characteristics have been explored in relation to management of water supplies (Holvoet et al., 2016; Hutchings et al., 2015; Lubell et al., 2002), but there is less evidence of how community-led sanitation impacts the sustainability of rural sanitation services.

Social capital has been identified as an important determinant of collective action, which is critical for conservation and management of common-pool resources (e.g. Ostrom and Ahn, 2007; Pretty, 2003). Aspects of social capital have also been studied in health literatures, such as in relation to air quality and other environmental health issues (Wakefield et al., 2007), suggesting greater opportunity for application to sanitation contexts that are at the nexus of human wellbeing and environmental concerns. Social capital has been defined in a number of ways, but often refers to a range of attributes, such as social networks, shared knowledge and trust that promotes cooperation (Putnam, 1993). In the case of water and sanitation, there is some evidence that networks of social relations can promote sharing of information about interventions and contribute to adoption of desirable water and sanitation behaviors. For instance, a study in rural India showed that individuals were found to be more likely to use latrines if their social contacts did, after controlling for standard predictors such as education or income (Shakya et al., 2015).

Social capital is also characterized by shared norms, values and beliefs that lead to collective action (Krishna, 2002). This may include approaches for conflict resolution and monitoring, which is critical for management of common resources, as they establish norms that facilitate cooperation (Bodin and Crona, 2008). Sanitation promotion approaches in rural areas increasingly rely on collective awareness of health risks and enforcement of social norms. For instance, Community Led Total Sanitation (CLTS) uses community walks to trigger feelings of shame and disgust about fecal contamination of the environment, aiming to achieve ‘open defecation free villages’ (Kar and Chambers, 1989). Examining the role of social capital in this approach, a large scale randomized evaluation of a CLTS program in rural East Java, Indonesia found that high pre-existing levels of community participation were strongly positively associated with program outcomes, in terms of rates of toilet construction and reduced open defecation. However, while the CLTS approach aims to motivate entire communities to change their sanitation behaviors together, the sustainability and the risks of marginalization associated with these methods require further examination (Movik and Mehta, 2010).

Beyond social capital, researchers have identified other factors that contribute to collective action, that must also be considered to enhance sustainability of interventions. In a review of successful community water management case studies, Hutchings et al. (2015) found that strong leadership was a key predictor of success. Further, the presence of ‘agents’ such as leaders or influential actors is important for ‘activating’ existing social capital to achieve collective action (Bodin and

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