

Research Paper

Myth and reality of community ownership and control of community-managed piped water systems in Ghana

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ABSTRACT

Water supply has remained centralised and governments advanced several reasons (health benefits and increase in rural productivity) for the state-led water services delivery. This approach had budgetary and sustainability challenges. This led to a community-based management approach in which communities were required to contribute towards water supply and own the water supply. This paper explores households' perception of who owns and controls community water systems that were provided under the ambit of community-based management regimes. The study was conducted in four communities in the Upper West Region of Ghana. Data were collected using two main sources: (i) a household survey, using questionnaires; and (ii) a platform, comprising 14 participants. The study found that there is a relationship between community contribution and ownership of the water systems. Community level actors argue that communities own the water systems, because they contributed towards capital cost and are responsible for operations and maintenance. Community level actors have control over the decisions of the water systems. Legal ownership resides in the government and communities manage the water systems and appropriate the returns, thus creating a sense of ownership of the water systems. As such, there is a dualistic ownership of the water systems.

Key words | beneficiary ownership, community-managed, control, dualistic ownership, Ghana, water systems

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HIGHLIGHTS

- A sense of ownership is strongly explained by community contribution.
- Legal ownership resides in the government.
- There is a dualistic ownership of the water systems.
- Households perceived water management staff as having control over decisions of the water systems.
- The elimination of community contribution risks reintroducing paternalism in the water sector.

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INTRODUCTION

The water services in Ghana, especially to rural areas and small towns, were delivered through a centralised approach between 1960 and 1994. The policy focus of the centralised approach is central government assuming responsibility for the provision and management of water services regardless of community needs and aspiration (McCommon *et al.* 1990; Fuest 2006). The argument for this approach was that the centralised provision of services will benefit from economies of scale in production, limit free-riding among actors in the process of service provision, and make the best use of the available scientific knowledge (technical expertise) (Rondinelli *et al.* 1989; Ostrom *et al.* 1993). As governments pursued this centralised approach, the performance of the Ghana Water and Sewerage Corporation (GWSC) suffered from challenges typical of public utility providers in developing countries: budgetary constraints; mismatches between development programmes and local level conditions; corruption, especially during construction, operation and maintenance phases; and illegal sub-payments to those involved in construction in order to divert funds for private benefits; lack of accountability and poor management of both funds and supply systems (Rondinelli *et al.* 1989; Ostrom *et al.* 1993; Fuest 2006). For instance, between 1980 and 1985, the Government of Ghana support to state-owned enterprises rose from ₵1.1 to ₵7.35 billion (\$3.18 to \$21.27 million) (Opere 2011). Besides the cost to governments, evidence suggests that when communities do not make a contribution towards the construction of water infrastructure, they do not have a sense of ownership of the water supply, leading to poor operations and maintenance (Howard 2002; Nauges & Whittington 2010).

The above challenges called for a new approach to water delivery, especially in rural and small towns in which citizens can participate in decision making about the supply and management of their water services. User participation in the planning and management of water services promotes a sense of ownership for the water system and this ensures users' commitment to long term sustainability (Marks & Davis 2012). Sense of ownership is associated with functionality and better management of water infrastructure (Madrigal *et al.* 2011; Marks *et al.* 2013). According to

Lachapelle (2008), a sense of ownership in community development and research entails a sense of ownership in process (whose voice is heard and taken up) and ownership in outcome (who has influence in decision making). This means that control is imbued in a sense of ownership.

Prior to 2009, the financing arrangement of water facilities was as follows: external support agency, 90%; District Assembly (Government of Ghana), 5%; and the beneficiary community, 5% (CWSA 2007). Since the Government of Ghana issued a policy statement embedded in the 2009 Budget abrogating the principle of a 5% community contribution, only the 5% District Assembly contribution remains effective (World Bank 2010). In the Upper West Region of Ghana five communities were in the process of mobilising the community contribution to capital cost when the Government abolished the financial arrangement. Following the abolition of the capital contribution requirement, the purpose of this paper is to analyse: (i) households' perspective on who owns the water systems and the rationale for an ownership attribution; and (ii) households' views on who has influence in decision making about the water systems.

COMMUNITY OWNERSHIP OF WATER SYSTEMS

In most instances, Community-based Water Management (CBWM) is tagged to community ownership, and the prominence of 'ownership' within the CBWM discourse requires further deliberation. This is because it is important to pay serious attention to how words are deliberately used to change resource allocation (Suddaby 2010). Ownership remains one of the vaguest words in CBWM (Schouten & Moriarty 2003). It is often related to a 'sense of ownership' which originates from community contribution in cash and/or labour towards the construction of the water system (Schouten & Moriarty 2003; Marks & Davis 2012). The sense of ownership is that communities behave as if they own the water systems and they do their best to protect and sustain them, although in most cases communities have no legal ownership of it (Schouten & Moriarty 2003;

Cleaver & Toner 2006). Theoretically, Schouten & Moriarty (2003) argue that ownership creates a sense of maturity and responsibility. They explain that ownership is not limited to possession of the water infrastructure, but entails the community taking charge of the water problems and finding solutions to them (Schouten & Moriarty 2003).

It is established that a capital contribution gives communities a strong feeling of psychological ownership (psychological ownership refers to that state in which individuals feel as though the source of ownership (materials or immaterial in nature) or a piece of it is theirs (Marks & Davis 2012)) and presumably gives them self-esteem because they contributed (cash and/or labour) towards the acquisition of the water project (Marks & Davis 2012). In southern Ghana, Gbedemah (2010) found that in Akatsi 35.6 and 54.8% of households indicated that District Assembly and the donor respectively own the water system. He further established that for those who think the water system belongs to the District Assembly, they indicated that the 5% capital contribution, which the community was required to pay, was paid by the District Assembly. Similarly, in Kenya, community members who contributed (cash) towards the construction of water systems expressed a higher sense of ownership than those who contributed labour (Marks & Davis 2012; Marks *et al.* 2013). Beyond capital cost contribution, it is argued that the community should have legal ownership and control of the services (Karikari 1996), based on the scholarly explanation of ownership. Ownership of an asset consists of the following elements: the right to use the asset; the right to appropriate the returns from the asset; the right to change the asset's form and/or substance; and the right to transfer the asset (Williamson 1993). The key issue in the above explanation is the 'right' of the individual or entity to control the various forms of the asset (the water system).

Participation and ownership depend on community characteristics and remain important ingredients of a functional water system because of their symbiotic relationship (Doe & Khan 2004). In Tanzania, households connect community ownership with user involvement. Community members want to be part of the decision-making process of projects, which are 'claimed' to be community-owned (Cleaver & Toner 2006). Harvey & Reed (2006) argue that although ownership may lead to effective management, it

does not necessarily translate into effective management and rather calls for a sense of responsibility towards the management of the water systems. Empirical studies tend to justify the call for responsibility over water systems. Juma & Maganga (2005) observed that in Tanzania, where water for domestic use is free, a sense of ownership of the water facility is only relevant in the dry season, a time that communities have relative shortage.

CONTROL DIMENSION IN CBWM

Community control over water services delivery is commonly associated with community-based water management (CBWM). Doe & Khan (2004) explained CBWM as a bottom-up development approach in which the members of a community have a say in their own development and assume control – managerial, operational and administrative responsibility – of their water facilities. The control element in CBWM means that a community is able to carry out and determine the outcome of its decisions (McCommon *et al.* 1990). The essence of CBWM is about control (McCommon *et al.* 1990; Schouten & Moriarty 2003; Doe & Khan 2004). Control gives communities the authority to make decisions about how the water systems should be managed, including tariff setting, and the people to employ to take care of operation and maintenance activities (Schouten & Moriarty 2003). In effect, control is what puts communities in charge of the entire water system.

STUDY AREA AND METHODOLOGY

The study was conducted in the Upper West Region of Ghana. The region has 27 small-town water systems and four water systems were selected for this study. In this study, the term 'water systems' refers to water infrastructure and services in which the water is drawn from underground, pumped in a treated form to high level tanks (HLTs), and then distributed using a gravity-activated distribution system (Anthony 2007). Five out of the 27 water systems were in the process of construction when the capital contribution was abolished in 2009. Two of these five water systems were selected to be part of the study: Babile water

system in the Lawra District and Busa water system in the Wa Municipality. Babile and Busa water systems were completed and started operation in May 2010. Figure 1 shows a map of the study areas.

The other two water systems studied, Gwollu (Sissala West District) and Daffiama (Daffiama-Bussie-Issa) District, were established in 1968 and 1973 respectively and transferred from Ghana Water and Sewerage Corporation (GWSC) to District Assemblies (DA) for community management in 1994. These water systems have had several breakdowns until the Government of Ghana secured support from the World Bank to rehabilitate and expand the water systems. Community members were required to make financial contribution towards the rehabilitation and expansion. Rehabilitation and expansion of the two water systems were completed and they resumed operations in May 2008.

Data collection

This study used a quasi-experimental design to analyse communities' perspective on ownership of piped water systems, whereby a policy change abolished community capital contribution towards water supply in small towns. Data

were collected using two main sources: (i) a household survey, using questionnaires; and (ii) a platform, comprising 14 participants. The participants of the platform comprise: two staff of the regional Community Water and Sanitation Agency (CWSA); a staff from the District Water and Sanitation Team (DWST) in each of the four districts; two participants (one Water and Sanitation Management Team member and one operating staff) from each of the four communities. For the purposes of this paper, a platform refers to a negotiating and/or decision-making body (voluntary or statutory), comprising different stakeholders who perceive the same resource management problem, realize their interdependence in solving it, and come together to agree on action strategies for solving the problem (Steins & Edwards 1999). The study used a platform because it draws multiple stakeholders together to exchange knowledge and collectively deliberate on ownership and control over the water systems. Although distribution of power among actors can shape the processes of such platforms, the platforms are equally potential sources of minimising power asymmetries and promoting active participation (Cullen *et al.* 2014) as established in this study. The platform was preceded by a household survey of 150 households in the four communities. The sample size was not selected on the basis of

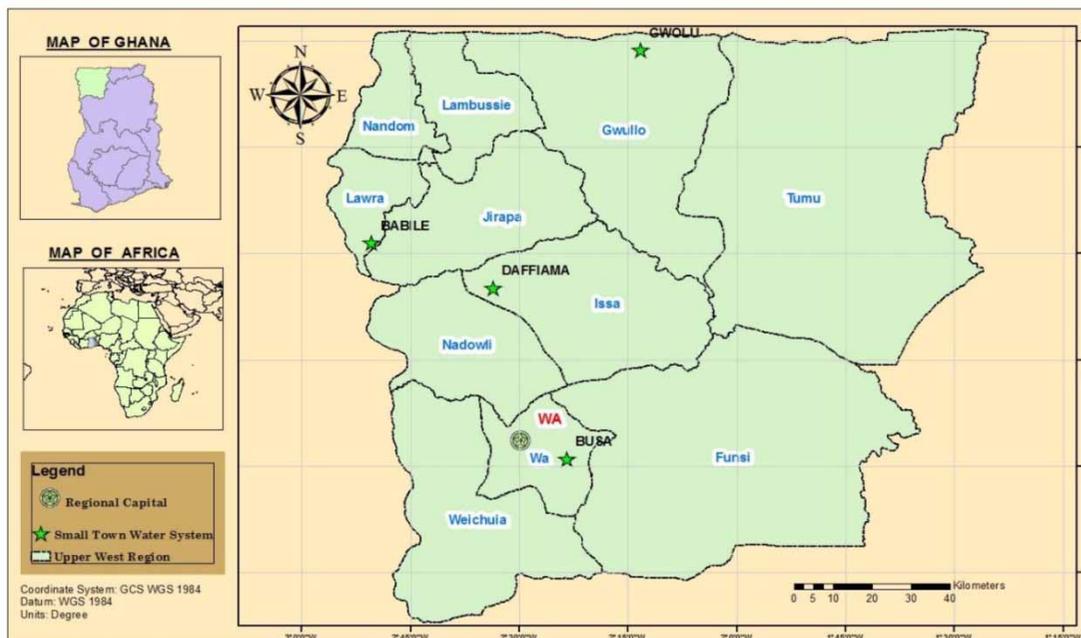


Figure 1 | Map of the study area in context: Upper West Region.

representation of the total population and generalisation of findings. The essence is to obtain reliable results on households' perspectives on ownership and control of the water systems. More reliable results are obtained with better planning and small sample size (Delice 2010). Table 1 shows the distribution of the sampled households.

In each community a list of households with on-premises taps was obtained from the management staff. The list contained serial numbers, contact names and mobile numbers of the households. Based on the lists, the study targeted 30 households in each of Gwollu and Daffiama, and 25 households in Babile. Simple random sampling was used to select the households to be surveyed. We chose a random start from the list of households in each community. Based on the total number of on-premises taps (Table 1), every third numbered household on the list was selected in Babile. In Gwollu and Daffiama, every fifth numbered household on the list was selected. A follow up on the selected households was carried out using their names and contact numbers to administer the questionnaire. In Busa, the target was to survey the three households, but one household declined to respond to the questions because the household water services were disconnected for default in payment. In each community, the initial plan was to survey 30 households who rely on public standposts. Households close to the standposts were conveniently selected for the survey. The selection of a household was based on the availability of a qualified person (household head/spouse or anyone above 18 years who can respond to the objectives of the study). Unavailability of households who rely on public standposts to respond to the questions accounted for the low numbers, especially in Babile and Daffiama (Table 1).

A digital recorder was used to complement the field notes during the platform discussion. The audio recordings were transcribed manually and analysed. The administered questionnaires were edited and entered into Statistical Package for Social Scientists (SPSS version 21) software for analysis. The outputs of the quantitative data were corroborated with the qualitative results. This kind of complementary data source and analysis greatly improved the validity of the results. The use of multiple respondents, particularly the platforms, to understand ownership and control of water systems, improved the internal validity of the results and revealed causal relationships.

RESULTS

Background of respondents

The background of the respondents was limited to gender and educational status. The detailed gender composition and educational levels of the household respondents are presented in Table 2.

An average of 4% of the respondents had teacher or nursing training. In Gwollu, 20% of the respondents have tertiary education. In Busa, there was no household respondent who had secondary, training college or tertiary education. Although the household survey was based on a random sample, the characteristics of the communities partly explain the variations in educational levels. Gwollu and Daffiama are urbanising with skilled labour migrating into the communities, especially Gwollu (District capital). Busa is typically a farming community and relatively rural,

Table 1 | Distribution of sampled households

Sample characteristics	Babile	Busa	Gwollu	Daffiama	Total
Total population in 2014	4,061	3,256	4,854	3,519	15,690
Number of households	582	390	591	502	2,065
Standposts surveyed	15	21	22	8	66
Total taps on premises (within yard or plot)	92	3	145	141	381
On premises taps surveyed out of the target sample	23 out of 25 taps	2 out of 3 taps	29 out of 30 taps	30 out of 30 taps	82 out of 88
Households surveyed: standposts and on-premises taps	38 (25.3%)	23 (15.3%)	51 (34%)	38 (25.4%)	150 (100%)

Table 2 | Educational level of respondents

	Babile (%)	Busa (%)	Gwollu (%)	Daffiama (%)	Average (%)
Sex					
Male	56.8	30.4	66.0	22.5	46.7
Female	43.2	69.6	34.0	77.5	53.3
Educational level					
No formal education	29.7	60.9	36	37.5	38.7
Primary education	24.3	17.4	12	10	15.3
Junior high school/Middle school	13.5	17.4	14	25	17.3
Vocational/technical	0	4.3	2	12.5	4.7
Secondary	21.7	0	14	5	11.3
Training college	2.7	0	2	10%	4
Tertiary	8.1	0	20		8.7

explaining the low levels of literacy. All community members are eligible to access water from the water system irrespective of educational level and occupational status.

Ownership of the water systems

Ownership was assessed by seeking actors' views on who owns the water systems. During the platform (interactions), participants were asked, who owns the water systems? In response to this, the regional CWSA indicated that legal ownership of the water systems rests with the District Assemblies. Accordingly, public resources were used to provide the water systems and then allocate them to communities. Thus, ownership rests with government, who are represented at the local level by the District Assemblies: the communities are managing the water systems on behalf of, and in trust for, the District Assemblies (government). The initial idea of community contribution towards capital cost was to let communities feel part of the water projects and take responsibility for managing it. This was corroborated during the regional platform where the regional and district level staff emphasised that the underlying assumption is that devolving water management to communities will create a sense of ownership in them and make them accountable to the community members. As regards transferring legal ownership to communities, they indicated that entrusting legal ownership to the respective communities potentially eliminates the role of the

government (District Assemblies) in serving as a referee, especially during conflict.

On the contrary, all four communities and the operational level management staff during the regional platform maintained that the communities own the water systems, irrespective of the legal contentions. They contributed cash and labour towards the construction and it was also emphasised during the commissioning that the water systems 'belong' to the community. In order to establish whether communities really have a sense of ownership, the households' respondents were asked, who owns the water systems in the community? Table 3 shows the views of households on the ownership of the water systems.

A higher proportion (39.3%) mentioned community as the owner of the water system while 29.3% could not indicate the owner of the water system (Table 2). Aside indicating the owners of the water systems, the respondents were asked 'how does the said person/organisation own the water system'? Three main reasons were given for community ownership. Out of the 59 respondents, 50.9% of them indicated that community members contributed money towards the construction. Another 25.4% indicated that during the commissioning of the water system (at a ceremony), it was mentioned that the water system belongs to the community and, as such, members should be responsible for its operation and maintenance. Accordingly, this was the basis of using individuals from the community to manage it. They further indicated that the water systems are located on the community land and there is no way the government can take away the communal infrastructure. Finally, 23.7% of them indicated that any resource that is located within the community and where its access is not limited to particular

Table 3 | Households' perception of ownership of the water systems

Perceived owner	Babile (%)	Busa (%)	Gwollu (%)	Daffiama (%)	Average % (count)
Community	27.0	26.1	56.0	37.5	39.3 (<i>n</i> = 59)
WSMT/operating staff	13.6	39.1	16.0	5.0	16.0 (<i>n</i> = 24)
Government (District Assembly)	10.8	17.4	14.0	15.0	14.0 (<i>n</i> = 21)
NGO	0.0	4.4	0.0	2.5	1.4 (<i>n</i> = 2)
Don't know	48.6	13.0	14.0	40.0	29.3 (<i>n</i> = 44)

individuals, then that resource belongs to the community. For these people, the water services are available to all community members, depending on one's ability to pay for it.

Interestingly, 16% (24 respondents) indicated that the WSMTs/operating staff own the water system. Out of the 24 respondents, 79.2% of them mentioned that the management staff are directly responsible for daily operation of the water system and they take major decisions, such as tariff setting, about the water system. The remaining 20.8% said the water system belongs to the WSMT/operating staff because the water bill payment receipt bears the name of the specific community WSMT, thus, suggesting that they are the owners. In Busa, the households tagged the stand-posts to the vendors' name, and such situations are basically 'ownership by identity'. That is, the respondents mention the name of the vendor of the stand-post as the owner and do not immediately link the stand-post to the general production and distribution system. Basically, those who mentioned the Government as the owner maintained that public resources reside in the government, and government decides which community can benefit from it, using its allocation powers. The views of these people lend support to the reasons given by the CWSA staff and the DWSTs. There are divided views on ownership making it necessary to examine the most influential person(s)/bodies in taking decisions about water systems.

Control over the water systems

The assessment of control over the water system focused on only households' views on the most influential person or organisation/body over decision making and outcomes of the water systems. As such, households were asked to mention an individual or any organisation/body that controls decision making and operations of the water systems. Table 4 shows the households' perception of who controls the water systems.

An average of 66.7% of the respondents mentioned WSMT/operating staff as most influential and those who control the water systems. The proportion is higher in Gwollu. Accordingly, management staff mainly take and implement decisions about the water systems. For those who indicated Traditional Authorities as controllers, they related level of control to their roles during the inception

Table 4 | Households' perception of who controls the water system

Who has control over the water system?	Babile (%)	Busa (%)	Gwollu (%)	Daffiama (%)	Average (%)
Traditional authority and elders	13.5	13.0	2.0	15.0	10.0
Management staff	62.2	60.9	78.0	60.0	66.7
District Assembly/ Government	13.5	4.3	12.0	5.0	9.3
General community	8.1	0.0	4.0	10.0	6.0
Diaspora	0.0	21.7	0.0	5.0	4.7
Don't know	2.7	0.0	4.0	5.0	3.3

phase of the water system and in selecting members to constitute the WSMT. In Busa, some respondents (21.7%) mentioned some citizens of Busa who reside outside Busa as most influential over decision making about the water system. Some community members in the diaspora who are professionals in the water sector and are constantly in close contact with the community (their original home) periodically provide technical and professional advice to the management of the water systems.

DISCUSSION

As part of the community-based water management principles, the communities' contribution towards capital cost of the water infrastructure is aimed at inculcating a community sense of ownership. Similar to what has been established by others (Doe & Khan 2004; Gbedemah 2010; Marks & Davis 2012), some households in this study associated community ownership with their contribution towards the capital cost, and the fact that community members are responsible for maintenance and operation of the water systems (diagnosing problems and finding solutions to the water systems). Although some households and WSMTs argued that ownership of the water systems rests with the community, community ownership is largely psychological ownership (Marks & Davis 2012). Even when communities cannot pay for capital contribution and it has to be paid by the District Assembly, the latter is perceived by households as the owner of the water systems (Opore 2011). This creates a strong connection between payment for the capital

cost of the water system and ownership of the water system. The elimination of community contribution has the potential of compromising an indicator for efficient resource allocation (that is, using community contribution as a signal of community's ability to sustain water systems). On the other hand, the abolition of community contribution will reduce the financial burden of rural communities. This is because previous studies that analysed the tariff structure in these four communities indicated that they incurred higher tariffs than their urban counterparts. More so, households without on-premises connections in these communities spend 166% higher on water than households with on-premises connections (Fielmua & Dongzagla 2020). Therefore, these communities incur higher tariffs in addition to the cost incurred as contribution to capital cost of the water infrastructure.

Beyond community contribution, households also linked ownership to the water systems being managed by community members who take decisions about the water system while others attributed community ownership to the location of the water systems: simply because the water system is located in their community it belongs to the community. In addition to a sense of ownership being explained by user participation (Marks & Davis 2012), it is explained by capital contribution, structural and place characteristics of the communities. That is, the fact that community members constitute the governing body (that is the WSMTs) and the management body (the operating staff) signifies that the communities own the piped water system. Similar to the findings of Madrigal *et al.* (2011), community members have property rights over the land in which the water systems is located (place characteristics), making them exercise a sense of ownership of water systems.

Although ownership has a legal connotation (Williamson 1993), no household respondent was able to relate community ownership to legal ownership. Giving legal ownership of the water systems to the communities implies that all the dimensions presented by Williamson (1993) will be vested in the communities. While this is advocated, it is unlikely to happen in situations where governments have little trust in the community and its internal dynamics, including management capacity (Schouten & Moriarty 2003). This is particularly the case in Ghana, where ownership of water resources/bodies is vested in the President of

Ghana (Agyenim & Gupta 2010) and this is represented at the local level by the District Assemblies.

Although communities have no legal ownership of the water systems, they are legally expected to control the functioning of the water systems. The control element in CBWM is expected to be all encompassing, including taking decisions and actions on tariff setting, extension of pipe lines, composition of water management organisation, and disconnection of defaulters of water bills. Additionally, the WSMTs are expected to have authority over and responsibility for all public water supplies within their jurisdictions. Households attributing ownership to community and WSMT/operating staff means that they (households) are not able to draw a link between the WSMT and the general community. In other words, they barely see the WSMT as representing the community. Based on previous studies, this is attributed to lack of user involvement in decision-making and the general absence of downward accountability in water management (Fielmua & Dongzagla 2020). Whereas the majority of respondents mentioned community as the owner of the water system, a few of them (6%) mentioned community as the most influential in decision making about the water system. Community members do not take part in decision making about the water systems (Fielmua & Dongzagla 2020) and, as such, they have limited influence over decision outcomes of the water systems. This reaffirms the view of Lachapelle (2008) that some citizens may have the desire to influence decisions but the opportunity to do so does not avail itself.

CONCLUSION

This paper has analysed the perspectives of actors of community-based water management systems on ownership of and control over water systems. Although communities can control decisions relating to operation and maintenance of the water systems, they cannot take decisions relating to transfer of ownership of the infrastructure. Communities do not have absolute ownership of the water systems. Communities are not concerned about legal ownership of the water systems because they appropriate the returns (water services) of the water systems, thus creating a sense of ownership of the water systems. Therefore, whilst the

government has legal ownership, the communities have beneficiary ownership, leading to a dualistic ownership of the water systems in both the state and the communities.

There is still a relationship between community contribution and ownership of the water systems. The lack of ownership as indicated by other community members is attributed to non-payment by community members towards the acquisition of the water systems. There is a collective view in the literature, among policy makers and also confirmed by some community members, that a sense of ownership is explained by contribution to capital cost. In addition to this, there are internal (community-level) perspectives of ownership and these are explained by structural and place characteristics of the communities. Given the strong connection between community contribution and ownership, the elimination of community capital contribution, as a government policy, risks gradually reintroducing paternalism in water services delivery. While the abolition of community contribution remains in force, placing emphasis on community commitment towards water systems needs to be mainstreamed in water services planning and management. Water users' perceptions of and rationale for ownership of water systems have implications for sustainability of water services. This is especially important during the Sustainable Development Goals era when various governments have prioritized targets on access to sustainable water supply in their development agendas. This paper therefore contributes to knowledge in ownership and control over decision making about community-managed water systems that is useful to policy makers and practitioners in the water sector.

DATA AVAILABILITY STATEMENT

All relevant data are included in the paper or its Supplementary Information.

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