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The Elephant in the Room: Informality in Tanzania's Rural Waterscape

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Abstract: Informality is pervasive in Tanzania's rural waterscape, but not acknowledged by development partners (donors and beneficiaries), despite persistent warnings by development scholars. Informality is thus the proverbial elephant in the room. In this paper, we examine a case of superior rural water access in two geographical locales—Hai and Siha districts—in Tanzania, where actors not only acknowledge, but actively harness informality to provide access to water to rural populations. We employ concepts from organization and institutional theory to show that when informal programs and related informal sanctions/rewards complement their formal counterparts, chances for achieving the Sustainable Development Goals (SDG) target 6.1 'By 2030, achieve universal and equitable access to safe and affordable drinking water for all' are significantly increased.

Keywords: informality; formality; programs; Sustainable Development Goals (SDGs); SDG Target 6.1; rural water supply; Community Based Management (CBM); sustainability

1. Introduction

Tanzania's rural water woes are chronic, despite substantial top-down policy reforms and funding by donors and lenders. In the past two decades, the Government of Tanzania (GoT) decentralised rural water supply, both through the National Water Policy [1], and subsequent legislative acts [2]. The most recent reform was the Water Sector Development Program (WSDP). The first WSDP phase (2007–2014) attracted funding by development partners (as donors and lenders are now known) to the tune of US\$1.3 billion. The second phase (2015–2025) is budgeted with US\$3 billion. Nevertheless, Tanzania was unable to meet the Millennium Development Goal (MDG) for water by 2015. The latest figures of the Joint Monitoring Programme (JMP) show almost no increase in overall improved water coverage access since 1990, with deficits in rural areas almost twice those of urban counterparts. About 52% of the population living in rural areas (21.1 million people) lack improved water [3]. Is the much more ambitious SDG Target 6.1 'By 2030, achieve universal and equitable access to safe and affordable drinking water for all' just wishful thinking?

Scholars' critiques of the donors' top-down, blueprint approach go back even further in time. Three decades ago, Ole Therkildsen [4] disparaged donor-funded rural water supply plans in Tanzania for 'collecting dust' [4] (p. 51) and donor-funded water schemes for ceasing to function soon after being handed over to their users. Therkildsen's appraisal, titled *Watering White Elephants*, was echoed recently in Booth's [5] essay *Still watering white elephants? The blueprint versus process debate thirty years on*. The donors maximized control over project activities and avoided contact with Tanzanian institutions, argues Booth [5]. They assumed that results 'would be best achieved by ignoring the political economy of the country at the planning stage and leaving relations with project beneficiaries to be handled by

implementation teams' [5] (p. 13). Booth reiterated Therkildsen's call for serious engagement with local informal institutions and for making room for informal ways of working '*with or around the interest conflicts and other unpredictable eventualities that such engagement typically throws up*' [5] (p. 14).

Nevertheless, development practitioners in Tanzania refrain from taking the informality in the water sector seriously. Instead, they focus their interventions on implementing the formal requirements of the National Water Policy and related legislation. For instance, they help establish formal local institutions (Community Owned Water Supply Organizations—COWSOs) for rural water management and support local councilors and district water teams to fulfil their legal roles and responsibilities. They teach councilors how to access public district records and how to raise questions in water-related council meetings. They train COWSOs to follow up on non-functional water points and to mobilize communities to finance their repair [6,7]. These efforts are laudable and necessary, but not sufficient for achieving the SDG Target 6.1. Metaphorically speaking, development experts still do not acknowledge the pervasive informality in the water sector—the proverbial elephant in the room.

Fortunately, critical social scientists have recently intensified the exploration of informality in urban water supply and access, both empirically and theoretically [8]. In numerous case studies, they reveal informal practices and logics pervading the entire water system and dominating the entire value chain. This occurs from water extraction, to water distribution all the way down to the last mile of access via pipes, water tankers, water points and water buckets. These practices cut across the traditional binaries 'formal' and 'informal', 'public' and 'private', 'state' and 'society' in large cities [9]. Formal (large-scale, piped, utility-run) urban water systems are becoming increasingly informal, while informal (small-scale, artisanal, community-run) water systems are becoming increasingly institutionalized [10]. Critical scholars examine the complex, heterogeneous ways in which the distinction between formal and informal is produced, showing how the dichotomy serves to consolidate power, legitimize some practices at the expense of others, and perpetuate inequalities [11]. Yet, while the trend of rapid urbanization has fueled research on the informal urban waterscape, similar studies in the rural water sector are non-existent.

In this paper, we examine a case of superior rural water access in two Tanzanian districts, where actors not only acknowledge, but actively harness informality to provide access to water to rural populations. We employ concepts from organization and institutional theory on (in)formality and show that when informal programs and related informal sanctions/rewards complement their formal counterparts, chances for achieving the SDG target 6.1 are significantly increased. We use the compound word (in)formality to suggest that formality and informality are not separate categories, but mutually constitutive and operate simultaneously in the same locale to produce rural water supply outcomes.

Our data consists in interviews (conducted in Kiswahili) with several actors in the rural water sector—bureaucrats, politicians, village and religious leaders. We collected data in two phases: between 2012 and 2016 during the execution of a large interdisciplinary research program and in late 2017. We used a semi-structured interview guide, organized around the themes of rural water supply in such a way as to accurately convey the meaning to the respondents and to motivate them to participate.

We identified 20 actors purposively using the snowballing sampling technique. We made sure that our sample was representative enough to cover all groups at all organisational levels in the rural water supply in Hai and Siha. Informed consent was obtained from each respondent who participated in the interviews, including respondents whose photos appear in the text. Finally, we used Kühl's programs and Helmke and Levitsky's typology to analyze the data and generate meaningful themes relevant for result presentation and discussion.

The rest of the paper is organized as follows. In Section 2 we highlight the progress in the (in)formality discourse from an "either-or" to a "both-and" view and introduce relevant concepts. In Section 3, we describe the empirical setting: the geography, the history (as well as the tribal and religious traditions of the two districts), followed by an account of the formal organization of the water sector and its performance to date. In Section 4, we detail the formal and informal programs and sanction/reward systems and their

interaction. In Section 5, we discuss the nature of the complementarity of informal programs and related informal sanctions/rewards and draw conclusions.

2. (In)formality: From “Either-Or” to “Both-And”

In terms of its origin and trajectory over time, informality is a rare concept in the social sciences. It was used first in the 1970s with a limited scope (labour markets) and a limited geographic reach (Ghana) to eventually become attached to a dizzying number of phenomena—politics, arrangements, networks, institutions, organisations, norms, rules, practices—in the global North and South. In 2018, informality acquired its own global encyclopaedia, an online resource for the world’s unwritten rules and invisible practices [12,13]. Informality can be defined broadly as ‘ways of getting things done’, in contrast to formality, which encompasses written rules and visible practices, or the ‘ways of how things ought to be done’.

The analytical differentiation between formality and informality has shaped a binary “either-or” view of the social world [8]. For instance, in the water sector, small-scale, artisanal, community-run systems are considered informal, are often associated with backwardness and inefficiency and are commonly attributed to developing countries. Large-scale, piped, utility-run systems are considered formal, are often associated with modernity and efficiency, and are commonly attributed to developed countries. The colours of Figure 1 [14] capture the “either-or” view of (in)formality while the two circles imply that “water sectors transform from being highly informal in poorly developed economies to more formalized ones as the national economies grow” [14] (p. 2).

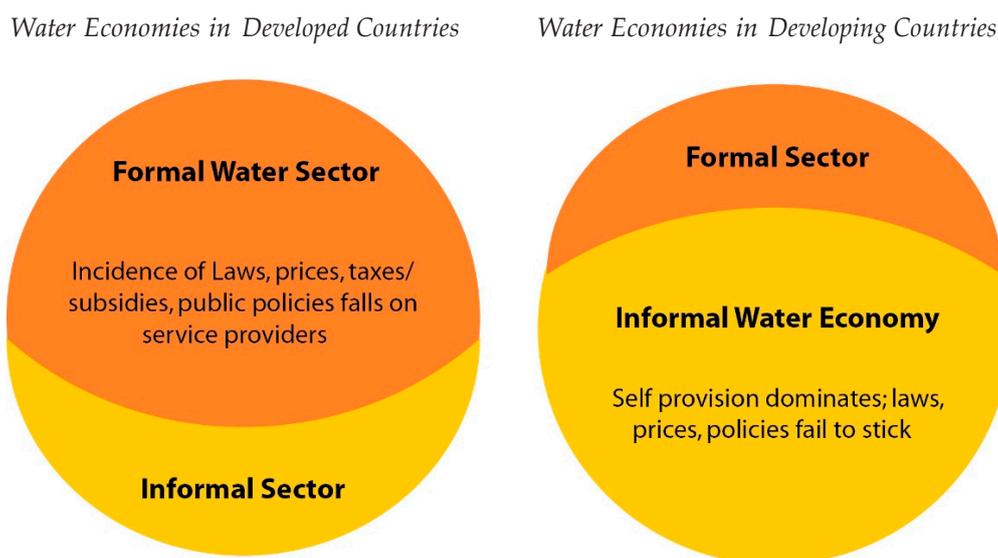


Figure 1. An “either-or” view of (in)formality and development, reproduced from [14].

This simple analytical differentiation suggests that not just formality and informality, but also developing and developed countries are separate categories [9]. However, the empirical reality suggests a much more complex view, with formality and informality operating simultaneously in the same space and affecting both affluent and poor citizens [8,10,15]. In major Tanzanian cities, small towns and villages, the formal and informal water sectors are deeply enmeshed [16,17]. For instance, DAWASCO, the utility that runs Dar es Salaam’s piped network, is unable to offer adequate salaries and motivating working conditions to its employees. As a result, informal practices among the employees are widespread. “Most illegal connections appear to be performed by DAWASCO employees and many [. . .] are thought to be earning money this way today. Water bill embezzlement and excessive charging also continue to be reported.” [18] (p. 44). Further, affluent and poor citizens are equally affected by informality, albeit in different ways—the affluent in Dar es Salaam deal with so-called five-star water

thieves, the poorer with thieves of lesser stars. About 40 five-star water thieves in Dar es Salaam, locally known as tycoons, typically:

“steal water from a main pipe of 24–30 inches, connect a smaller pipe of 3–4–6 inches length up to 4 km to the main, until they reach their residence. The water goes to an underground tank that has a capacity of 100,000 L. Some tycoons live very close to the main (300 m), and tend to sell to the affluent or to hotels who need larger water quantities. Lesser stars water thieves are too many to count. They are registered users of DAWASCO with a meter. They tamper with the meter, collect water from their tap and sell it to communities in 20 L buckets. They are very popular (a kind of Robin Hoods) with poor people and the poor get angry when their providers are caught in police raids”.

[interview with water official, 2016]

Ranganathan [9] reports similar findings. In Bangalore, India *“informality suffuses the entirety of the urban waterscape [and] is as likely to be found in elite, gated complexes and high-end real estate projects sanctioned by the state as it is in slums.”* (p. 6). The so-called water mafias in Bangalore and the water thieves in Dar es Salaam may engage in profiteering but also increase the reach of water into less serviceable areas, and enjoy significant popular support. Thus, the analytical “either-or” binary does not match the empirical reality. Instead, conceptualising (in)formality as “both-and” is empirically more powerful in capturing the mutual constitution of formal and informal elements in human activities in the water sector. Organization theorists [19] and institutional theorists [20] provide just such a view of (in)formality.

Organization theorists view informality as an indispensable complement to an organization’s formality and distinguish three types of (in)formal structures—programs, communication channels and members [19]. Formal *programs* determine which actions of members are to be viewed as right or wrong, and rewarded or sanctioned, respectively. For instance, district water officials must provide information on the status of water services to the district government. District councillors must access district public records and raise questions in water-related council meetings. Informal programs take the form of well-established, customary routines and dictate informal actions such as councillors contributing their personal funds to water projects to improve their chances of re-election. Formal *communication channels* govern the information flows among organisational members and are meant to prevent everybody communicating with everybody else.

Informal communication channels develop when formal hierarchies are routinely bypassed, or when informal hierarchies are set up based on political party or tribal affiliations. An example is Community Water Supply Organisation (COWSO) leaders bypassing the formal village assembly, and instead reporting their performance to leaders of grassroots associations during village feasts. Another example is citizens contacting political figures or central government public officials to pressure district officials to respond to their needs. Finally, who the *members* are affects the decisions the organization makes. A COWSO or village leader who belongs to the ruling political party may decide differently on rural water supply from a leader who leans towards the opposition party. Further, members can be formal, e.g., COWSOs, or informal, e.g., grassroots associations of villagers with a goal to improve water services by bypassing government entirely [16]

Institutional theorists view informal institutions—defined as *“socially shared rules, usually unwritten, that are created, communicated and enforced outside officially sanctioned channels”*—as either reinforcing or substituting formal institutions [20] (p. 729). On one hand, formal and informal institutional outcomes converge or diverge depending on whether informal rules produce a substantively similar/different result from that expected from a strict and exclusive adherence to formal rules. On the other hand, effective formal institutions constrain or enable political actors’ choices, while when formal rules and procedures are ineffective, actors believe the probability of enforcement (and hence the expected cost of violation) will be low. The two dimensions, outcomes and effectiveness, yield four ideal types of informal institutions: complementary, competing, accommodating and substitutive (Table 1).

Table 1. A typology of informal institutions [20] (p. 728).

Outcomes	Effective Formal Institutions	Ineffective Formal Institutions
Convergent	Complementary	Substitutive
Divergent	Accommodating	Competing

Complementary informal institutions ‘fill in the gaps’ left by formal institutions, by addressing problems not explicitly dealt with in the formal rules, but without violating them. For example, the ruling party Chama Cha Mapinduzi (CCM)—meaning a revolutionary party—has a socially shared rule that the presidential candidate representing CCM in general elections becomes the party chairperson after the election. This informal rule is not prescribed in the party’s formal constitution but is used to ensure stability within the party and the government under the ruling party.

Accommodating informal institutions are enacted when actors who dislike the outcomes generated by formal rules are unable to change or openly break them. They often help reconcile key actors’ interests with existing formal institutions. For instance, councilors may approve a water budget that serves not their constituents’ but their personal interests, including their chances of re-election.

Competing informal institutions co-exist with weak or ineffective formal institutions, and have antagonistic goals. They structure actors’ incentives in ways that are incompatible with the formal rules: to follow one rule, actors must violate another. For instance, politicians must serve their constituents by providing services such as education, health and water through public resources. However, when public resources are not readily available, they use clientelistic networks from friends, relatives and business elites.

Substitutive informal institutions combine weak formal institutions and compatible actor goals. They are created or employed by actors seeking to achieve outcomes that formal institutions were expected, but have failed, to generate [20] (p. 729). A good example is community policing. Following increasing crime rates in major cities of Tanzania and the failure of the police force to protect people and their properties, communities established their own ways of protecting themselves. Youth groups (called *Sungusungu*) protecting the community from criminal threats are compensated with monthly community contributions and are still operational in relatively poor peri-urban and rural areas.

The two theories outlined above espouse the mutual constitution of formality and informality, the “both-and” view of (in)formality, despite the differences in terminology. Kühl’s formal and informal *programs* are similar for all practical purposes to Helmke and Levitsky’s formal and informal *rules*. Both theories mention *communication channels*, albeit more explicitly in the first case. Helmke and Levitsky [20] separate the actors (or “players”) from the rules they follow and focus on the rules themselves, while Kühl [19] considers *members* a key organizational structure. Finally, both theories highlight the importance of rewards and sanctions for following or not following programs or rules, whether formal or informal. In what follows, we use Kühl’s [19] programs (as a synonym of rules) as well as the concepts of rewards and sanctions present in both theories. We analyze the actions of actors in rural water supply as effective or ineffective, and producing convergent or divergent outcomes, using Helmke and Levitsky’s [20] typology in Table 1.

3. Empirical Context

Our empirical context comprises two neighbouring Tanzanian districts, called Hai and Siha, with populations of 210,533 and 116,313 respectively [21]. The districts are located on the western slopes of mountain Kilimanjaro in the north-central part of Tanzania. Administratively they belong to the Kilimanjaro region, which comprises seven districts in total. Their capitals are the small towns of Bomang’ombe and Sanya Juu respectively. The political landscape is dominated by the opposition political party, Chama Cha Demokrasia na Maendeleo (CHADEMA)—meaning Party for Democracy and Progress—a centre-right political party campaigning largely on an anti-corruption platform.

During the 2015 presidential elections, the party secured a majority in both districts and won the two available parliamentary seats [22].

The Chagga and the Maasai tribes make up the majority ethnic groups in Hai and Siha. They practice mixed farming, growing mainly coffee and bananas, maize, beans, finger millet, peas, sweet potatoes and yams. Zero grazing predominates in the coffee and banana belt whereas open grazing is common in the lower plains [23]. Commercial farming, petty trading and tourism are major economic activities generating income for rural inhabitants [23]. Although the Chagga and Maasai co-exist, they differ socially, economically and politically. Unexposed to colonial influences and western education in general, the Maasai have maintained strong traditional values. Their culture has remained intact despite the increasing Maasai migration into urban centres.

The Chagga are known for their entrepreneurial skills and advanced literacy levels in Tanzania [23–25]. The colonial state gave them preferential treatment through education and wealth-generating opportunities through coffee growing [23]. As Werner [26] (p. 363) puts it: *“The Chagga are one of the most highly educated people in Tanzania, with over 80 percent literacy in the 1980s. During the colonial period, Chagga welcomed missionaries and the majority of them are Christian. [. . .] As the most educated population of Tanzania, they exercise a great deal of influence in economics and politics and have the highest number of people in government, education, and the arts”* [27] (p. 69). With increased literacy levels and the subsequent formation of a single political leadership under a paramount Chief in 1950, the Chagga sought to achieve social and economic interests, a period historians call ‘Chagga nationalism’ [23,25].

Colonial missionaries introduced Christianity as the dominant religion in the Kilimanjaro region. Mafikiri [28] (p. 2) summarizes the experience: *“When the Gospel message was brought for the first time to the Chagga people of Moshi in 1880s, it was received with enthusiasm to the extent that the people of Moshi were nicknamed by the non-Chagga as the community of “Yesu, Maria na Yosefu” meaning the community of Jesus, Mary and Joseph.”* Following its successful reception, Christianity would blend well with the daily work routines of the Chagga in politics, work and at home. Every function, event, activity, be it political, economic or social would start with prayers. This practice was evident during the first anniversary of Thomas Marealle’s, the Paramount Chief of Chagga, election as the “Mangi Mkuu” in 1952. According to [23] (p. 199) *“the celebration started with prayer services held at the Catholic and Lutheran churches, followed by a ceremony attended by major local dignitaries.”* Seeking God’s blessings in public functions became a long-established Chagga routine. All official activities, including in the rural water sector, are still preceded by prayers.

The Chagga have a long history in water management, especially in the construction and maintenance of irrigation furrows. In *Being ‘Chagga’: Natural Resources, Political Activism, And Identity on Kilimanjaro*, [23] attributes the Chagga tribe’s success in water management to their intimate knowledge of water and their belief that the waters of Kilimanjaro belong first and foremost to them and that water management should rightfully be handled by local specialists with Chagga tribal ties [23]. Sir Harry Johnston, who led an expedition to Kilimanjaro in the early 1880’s reported that *“there was scarcely a ridge without its own irrigation channel. He marvelled at the skill with which the Chagga used tiny channels to irrigate the terraced hillsides and the time spent in turning the soil, manuring it with ashes and raking it with wooden hoe”* [29] (p. 431). Those tribal members who failed to maintain the irrigation furrows faced a hierarchy of sanctions, as [29] (p. 440) explains: *“For minor offenses, such as washing in a furrow, the culprit is warned informally by a neighbour or more publicly at a ten-cell meeting. [. . .] If the offense is repeated, the neighbours can decide on a punishment such as cleaning the furrow or brewing banana beer for them all. More serious cases were dealt with by the village council. [U]rinating in a furrow would be punished by the elders slaughtering a cow belonging to the offender and cooking and eating it where it had been killed.”*

While irrigation furrows are now outdated due to the shift to piped water supply, the history and experiences in community-based furrow and water management is still a solid foundation of community participation and volunteerism [30]. It paved the way for the involvement of citizens in the design, implementation and management of the rural water supply in the Hai and Siha districts [16].

3.1. The Rural Water Supply Organization

Organizationally, rural water supply in Hai and Siha is modelled along the Community Based Management (CBM) scheme, officially introduced in Tanzania through two interrelated policy frameworks: the National Water Policy (NAWAPO) of 1991 and its revised version of 2002. The two policy frameworks give citizens formal responsibilities for the design, operation and maintenance (O&M) of rural water projects, and the professional management and revenue collection through billing systems [1] (pp. 31–33). The CBM rationale is that rural water supply can only be improved if the community takes ownership of the water projects in terms of design, operation and maintenance [1] (p. 33).

CBM schemes for rural water supply come in several variants and different names depending on the type of management model. One of these variants is the Community Water Supply Organization (COWSO), a single management model for rural water supply management recognized in the sector policies and strategies [1]. Another variant is the Water Service Facility Trust (WSFT), consisting of a number of water user associations or water groups which join to form a federation of Water Trusts (WTs)—allowing the bundling and economies of scale of a larger overall management unit [31]. Other organizational models are relatively small-scale and not widely documented [31]. Our analysis will focus on Water Trusts under a WSFT, the model adopted in Hai and Siha.

CBM schemes are lauded as ‘best practices’ for sustaining rural water supply in developing countries [32] and the organisational model par excellence for achieving the SDG water target 6.1 [33]. Sustainability of rural water supply is also highlighted in the NAWAPO of 2002, which provides seven pre-requisites: “(i) adopting the principle of managing water schemes at the lowest appropriate level; (ii) the beneficiaries themselves establishing, owning and managing their water schemes; (iii) ensuring full cost-recovery for operation and maintenance, and replacement; (iv) facilitating availability of spare parts and know-how for timely repair and maintenance of the schemes through standardization of equipment and promotion of private sector involvement; (v) protection of water sources areas; (vi) reconciling the choice of technology and the level of service with the economic capacity of the user groups; and (vii) recognizing women as being among the principal actors in the provision of rural water supply services.” [1] (pp. 31–32). In practice, however, donors and the government concerned with sustaining the rural water supply sector are doing less to sustain it [32].

The rural water sector in Hai and Siha is organized in five levels (see Figure 2). The highest level is the regional government, which oversees the sector wide performance of the water sector both rural and urban.

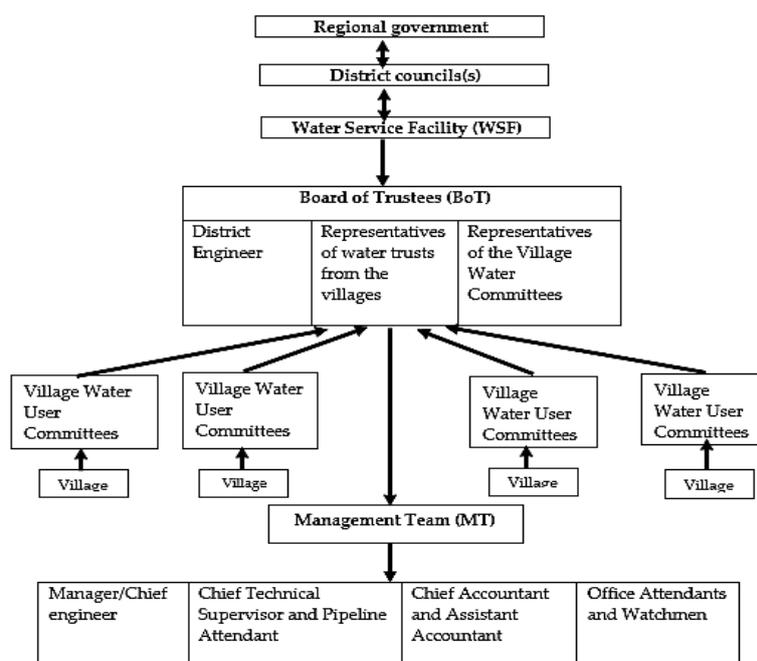


Figure 2. Organisational levels in the rural water supply in Hai and Siha (Source: Fieldwork data, 2017).

The second level is the *District Council(s)* consisting of water departments headed by District Water Engineers (DWEs). The DWEs are responsible for the design, monitoring, coordination and implementation of water projects. The third level is the *Water Service Facility (WSF)*. The WSFT is a legally established organization under the Hai and Siha Districts Councils and cooperates with the water supply trusts as a non-profit professional service provider facility. It is headed by a manager supported by two departments—a technical and a commercial department—assisted by a small team of full-time professionals. The vision of the Water Service Facility is “to make sure that the water supply trusts established during the project implementation are sustainable and can meet the requirement of supplying clean and safe drinking water to the targeted beneficiaries efficiently”. The constitutions of all Water Trusts ascertain the WSFT as the provider of technical and advisory support.

The fourth level is the *Board of Trustees* formed by DWEs, representatives of water trusts from villages and representatives of village water committees and users. The fifth level is the *Management Team*, formed by a manager/chief engineer, a chief technical supervisor, a pipeline attendant, chief accountant and assistant accountant, office attendants and watch-men. Each organisational level has formal roles and responsibilities in rural water supply and associated rewards and sanctions in case of good or bad performance (see Table 2).

Table 2. A summary of formal responsibilities and sanctions of various organisational levels in Hai and Siha (Source: Fieldwork data, 2017).

Organisation	Formal Responsibilities/Roles	Sanctions
Regional government	Oversee the rural and urban water supply sector across the region. Member of steering committee, formed to execute water projects in Hai and Siha. Resolve conflicts and enforce regulations.	Transfer, demotion, termination of employment (for administrative staff) Termination of appointment (for political appointees)
District councils	Design, monitor, implement and evaluate water projects. Provide land for the water projects.	
Water Service Facility Trust	Supports and sustains Water Trusts. Cooperates with the independent existing water supply trusts as a non-profit professional service provider facility.	Cancellation of funds and technical assistance from donors
Board of trustees	Supreme decision-making organ Policy making and planning Directing, managing and supervising the management team Sustain, safeguard, operate and maintain the water project on behalf of the stakeholders or beneficiaries	Termination of appointment to serve as a member of the board
Management team	Carry out the day-to-day operation and maintenance of the Water Trusts	Demotion, termination of employment
Water Trusts and Village Water Committees	Oversees the quality of water supply in the villages Ensures the timely payment of water fees.	Not being elected or allowed to compete for election in the WTs and VWC. Formal warning for poorly performing WTs and VWC.

3.2. Performance of Rural Water Supply

Like most districts in rural Tanzania, Hai and Siha experienced serious water problems until the early 1980s and 1990s. Senior rural water officials mentioned to us “an aged and dilapidated water supply schemes built in 1960s and 1970s; pollution and contamination of traditional furrows by animals and human wastes, fertilizers and pesticides. As a result there were outbreak of diseases such as cholera, typhoid, amoeba, induced by the polluted and contaminated water sources” [interview WSFT engineer]. Other problems were financial constraints, poor technology for storing and treating the water, absence of a billing system, a fragmented water distribution network, absence of community management schemes for rural water supply and frequent vandalism of water pipes.

In response, a few community members organized themselves through the local Church, the Evangelical Lutheran Church of Tanzania Northern Diocese (ELCT-ND), and initiated the first community water project at Uroki village and its neighbouring villages in the year 1990. To secure funding, the local Church presented a project proposal successfully to their sister Lutheran (protestant) Church in Germany and the German government. The latter agreed to finance the project jointly with the Government of Tanzania and the local church (ELCT-ND) in four phases: 1991–1996; 1998–2000; 2001–2004; 2005–2013. In this agreement, the German government provided a whopping €27 million, the German protestant church contributed €230,000 and the European Union offered an additional €3.5 million. The Government of Tanzania contributed €790,000 while community contribution through self-help was valued to the tune of €935,000 [fieldwork data]. Table 3 summarizes the activities, financial allocations and target populations for each water project per each phase.

Table 3. Historical trajectory of the financing and implementation of seven Water Trusts in Hai and Siha [Source: Fieldwork data].

Phase	Name of Water Supply Schemes	Physical Implementation	Scheme Completion	Cost in Euros (million)	Cost in Billion Tshs	Target Population by Year 2015
I	Uroki Bomangombe Water Supply Trust (WST)	1991	1996	7.17	14.3	62,000
II	Losaa Kilimanjaro International Airport (KIA) WST	1998	2000	4.40	8.8	65,000
III	Magadini Makiwaru WST	2001	2002	1.715	3.43	22,000
III	Lawakate Fuka WST	2002	2003	1.815	3.36	42,000
III	Masama Extension WST	2003	2004	1.375	2.74	-
III	Rundungai extension WST	2003	2004	0.96	1.92	-
IV-1	Lyamungo Umbwe WST	2005	2008	8.01	16.02	75,000
IV-2	Five schemes: Machame, Mkalama, West Kilimanjaro, North west Kilimanjaro WST	2008	2013	8.21	16.42	97,000

Compared to the 52% of the population in rural areas lacking improved water in Tanzania (World Bank Group, 2017), the performance of Hai and Siha along the five dimensions underpinning the SDG target 6.1 and indicator 6.1.1. [34] is impressive. Table 4 summarizes the rural drinking water situation against five sustainability dimensions.

Table 4. Sustainability dimensions ascribed in SDG water target 6.1 on drinking water [34].

Dimensions of SDG Water Target 6.1	Hai and Siha Districts
<i>Universality</i>	Access extends from households to schools, health care facilities and work places.
<i>Equity</i>	Progressive reduction and elimination of inequalities among population sub-groups.
<i>Access</i>	Seven piped gravity water supply schemes managed by seven trusts serving a population of around 366,696. Sufficient water to meet domestic needs and reliably available close to home. 92% percent of the population has access to water.

Table 4. Cont.

<i>Safety</i>	Safe drinking water, free from pathogens and toxic chemicals at all times. State of the art technology to purify and treat water
<i>Affordability</i>	Payment does not restrict rural communities from meeting basic water needs. The poor and less privileged pay according to their level of income, often receiving subsidies from the Chagga diaspora and local churches and mosques.

The sustainability dimensions in Table 4 are articulated in the mission statements of all seven water trusts in Table 2, for instance: “To supply clean and safe drinking water, twenty four hours in a day, three hundred and sixty five days in a year, for at least next fifty years at affordable costs.” Supply of water on a 24/7 basis is true only for house connections. Public standpipes do not supply water at night, because the water seller is not available at night. However, all citizens are aware of when to expect water at public standpipes. Each standpipe has a sign with a timetable for citizens to collect water. Hence, even in this case, the provision of water through public standpipes does not take away reliability. Most importantly, citizens who are using the public standpipes can opt for a higher level of service—a house connection that provides water on 24/7 basis [16].

According to the WSFT director, the investments by donors, the church, community members and the government resulted in “a network of 1314 km of pipeline constructed for distributing water to the targeted population (feeder mains, trunk mains, distribution mains and service mains). 25,043 customers were connected with piped water, including domestic, commercial and institutional customers. 1682 public taps were constructed for the beneficiaries or water users who could not afford private house connections. 142 storage tanks of different capacities were constructed to store water for peak consumptions. All points of abstraction became metered to enable customers to pay according to consumption. Total cash collection through water bills and other services for the year 2013 for all seven water supply trusts was Tsh Billion 2.311 and total expenditure for operation, maintenance and sustainability for the year 2013 for all seven water supply trusts were Tsh Billion 1.758”.

4. Formality and Informality in Hai and Siha Districts

The superior performance summarized in Table 4 motivated our fieldwork. We set out to identify the sources of informality at work that explain why similar formal programs in other Tanzanian districts produces such different outcomes in Hai and Siha. In other words, we wondered why money and water flows in these two districts, while money flows and water only trickles in most others [35].

4.1. Formal Programs and Rewards/Sanctions

Formal programs include: (i) the billing system with pre-determined tariffs for customers; (ii) the Operation and Maintenance (O&M) of rural water infrastructure; (iii) recruitment, training, promotion, and retaining staff and interactions between donors and the leaders of WSFT and WTs. Formal sanctions include not being elected or allowed to compete for election in the WTs and VWC, not being selected in the next round of appraisal, formal warning for poorly performing WTs payment of fines for those who pollute water sources and vandalise water projects. Formal rewards include certificates of recognition, prize money and a trophy. We present the formal programs first followed by the rewards/sanctions.

4.1.1. The Billing System with pre-Determined Tariffs for Customers

The billing system structures the formal actions of members and determines their formal responsibilities and the likely consequences of their actions or inactions. It sets out the formal responsibilities of the *accountant*, which include: identifying which customers should pay water bills; establishing how many cubic meters of water customers should consume in a month; establishing how much money they should pay depending on consumption; as well as assigning account numbers and meter numbers to each customer. The accountant regularly updates the database to ensure efficient

revenue collection. The billing system determines the formal responsibilities of the *tap attendant* and *pipeline attendant* who are responsible for reading water meters in customers' households and delivering the respective bills to the accountant. A *water technician* linked to this formal programme has to ensure the accurate reading of the water meters and fix them when they break down. The formal relationships in the billing system between the accountant, tap attendant and water technician serve to countercheck each member's role fulfilment.

Describing how the billing system works, a respondent from the WSFT noted: "... readings are sent to the trust's main office for billing process by a computerized program. Then to customers through pipeline attendants within a period of one week. Collection is done by accounts through the trust's main and sub-offices, then the collection is sent to a bank. Withdrawal from a bank is done by authorized staff and an authorized board member only. Expenditure is done according to the budget approved by the Board of trustees. Applicants for private connections pay full costs for private connections from the main pipeline or branch pipeline to the household yard. Installation costs cover water meter, pipes, pipes fittings and accessories for the installation" [Interview with WT staff].

4.1.2. Operation and Maintenance (O&M) of rural water infrastructure

O&M was introduced by the National Water Policy (NAWAPO) of 2002. The policy stipulates: "for sustainability of water schemes, communities will be required to pay full operation and maintenance (O&M) costs and costs of higher service levels as well as to manage their schemes ... communities may contract private operators to operate and manage their schemes" [1] (p. 33). It thus bundles the criteria used to reach decisions regarding how the rural water infrastructure is operated and maintained. O&M in Hai and Siha is overseen by the WSFT, the Management Team (MT) and the DWE. It determines which actions should be taken by the WSFT, WTs, DWE, VWC technicians and pipeline attendants and which should not. It enforces accountability for errors and distributes sanctions to the person responsible. For example, if the water technician does not meet the goal of cleaning and repairing water meters as his/her formal responsibility, the fault is primarily with him/her.

The WSFT's support consists in making sure the infrastructure is operated and maintained as required. For this purpose, the WSFT built a water meter workshop for repairing broken and worn out meters, and a seminar/conference hall to attract funding from third parties who hire the hall for private activities. The funding feeds into O&M, e.g., to buy spare parts (See Figure 2). The MT monitors and coordinates the daily routines of WSFT. It is responsible to create budgets and plans for O&M and inform the WSFT properly. DWEs must provide information on the status of water services to the district government.

Figure 3 above depicts part of the O&M infrastructure and the formal processes undertaken to repair water meters. The picture on the left (A–F) depicts a formal process of repairing water meters as follows: A—the water meters are disassembled from their cases; B—the water meters are cleaned with a brush and water; C—the water meter's covers are polished and varnished; D—when a water meter is malfunctioning a new one is installed, if not, it is retained; E—sembled newly cleaned, polished water meters, some are installed with new water meter readers. F—at the final stage, the water meters are subjected to a technical test to check whether they can handle (high, medium and low) pressure of water in a special designated hi-tech machine. The picture on the right (1–7) shows spare parts stock and part of the infrastructure used for O&M. 1—sealed containers loaded with spare parts and equipment from Germany; 2—the opened container shows brand new spare parts for water e.g., taps, pipes, meters, etc.; 3—a fleet of 4WD vehicles for the Hai WT; 4—a water trucker for cleaning and loading water in tanks; 6—seminar hall which is used for internal meetings with members of water trusts and sometimes hired to private groups which pay user fees; 7—water meter workshop.



Figure 3. Part of O&M infrastructure in Hai & Siha (Source: Field work data).

According to the Chief engineer of the WSFT, O&M is sustained because of the structure tariff: *“the financial capacity to meet O&M costs comes from structured tariff that sets aside funding not only for operation and maintenance but also for future repairing, replacement or expansion, covering the costs of depreciation or repairing or replacement of items that will last less than ten years”*. In addition, a respondent from a water trust noted: *“regular professional support from the experts of the Water Service Facility (WSFT) and District water Engineer (DWE) and regular on job training contributes to the success of O&M. The cost of O&M is also significantly lowered because water supply schemes are all based on gravity fed piped water supply and their water sources are springs, streams and rivers. Thus, the production cost is low and eventually favors the end user by paying less”*. The chief engineer from WSFT noted further: *“all seven water supply trusts are financially and economically sustainable and can meet the costs of operation and maintenance of rural water supply effectively.”*

4.1.3. Recruitment, training, promotion, and retaining of staff

This formal program is anchored on tapping the potential of each professional to improve the rural water supply. There are 211 employees with different professions in Hai and Siha. They include engineers, technicians, accountants and skilled laborers, employed by the seven water supply trusts [35]. Each professional in the hierarchy has formal responsibilities in the rural water supply. Responsibilities reflect the position in the hierarchy and the type of profession. Senior management comprises professionals with first and second engineering degrees, certified under the Tanzania Engineers Registration Board (ERB). As you enter the main office of WSFT, you find original copies of engineering degrees and certificates from the ERB decorating the wall of a corridor leading to the WSFT chief engineer. Other professions include certified accountants, technicians, computer engineers, water quality experts.

Professionalization is evident in the WTs and VWC, whose staff have degree and diploma qualifications. The lower cadre of staff, i.e., pipeline/tap attendants and watchmen have ordinary level secondary education. This level of specialisation did not happen by chance. According to the chief engineer of the WSFT: *“the constitution of each water trust put a solid legal ground for recruiting professionals. This is usually done by recruiting people with professional experience who reside within the project area or by training existing employees and growing them professionally”*. However, the majority of WTs staff grow with the organisation over time, limiting opportunities for new hires. For instance, one current water technician joined the organisation during its inception as a security guard: *“we would work all night creating threads of pipes. We were trained and they would pay us 1000 Tsh for every pipe we threaded. I would*

thread five pipes per night. It was a lot of money, we would not sleep, we worked all night. By then, the monthly salary was 40,000 Tsh”.

The professional management of the trusts is reinforced by the WTs’ full autonomy from the government system of human resource management. The WSFT chief engineer explained that: *“the government can’t interfere in hiring, transferring, or disciplining the WT Staff. The DWE cannot interfere either. He is mainly responsible for coordinating and monitoring the activities of the Water Trusts and reports to the Ministry of Water”*. The autonomous status of the trusts allows for flexibility in decision making pertaining to daily routines in the rural water supply. However, the chief engineer also noted: *“the autonomous status is increasingly being challenged by government officials at the district because the government feels that the activities of the trusts are not legible enough to its eyes. The government also want access to financial resources provided by donors. However, trust officials feel that allowing the government to intervene in their work will lead to the collapse of the trusts, with poor service delivery as a result”*.

4.1.4. Interactions between donors and the leaders of WSFT and WTs

Donors play a central role in rural water supply in Tanzania, through technical and financial assistance. The assumption is that such financial and technical assistance will improve rural water supply. In light of [35] ‘money flows and water trickles’ the thinking is that the more money is invested in the rural water supply sector the cleaner the water will flow to the rural population. Several donors have a foothold in Hai and Siha: the German Ministry for Economic Cooperation and Development (responsible for providing the funding); the Kreditanstalt für Wiederaufbau (KfW) Bank (responsible for transacting the funds); the European Union (EU) and the local government authorities. The EU through its EU water facility also provides funds and spare parts to the WSFT on a regular basis.

The donors work with government structures at regional and district levels. The government, particularly, at the district level is responsible for the design and implementation of the water projects and reporting to the donors. Our interviews with the MT and members of the board of trustees revealed that donors who fund rural water projects in Hai and Siha maintain a strong foothold on the funded water projects. They engage a rigorous monitoring and review programs to account for value for money in rural water supply. The chief engineer explained that *“donors conduct performance evaluation of all the seven WTs and the WSFT, the appraisal is based on looking at indicators such as operation and maintenance, economic efficiency, environment, sanitation and water resources protection. The appraisal is carried out through site visiting and inspections of vital structures and installations, holding meetings with the management and Board members, management and employees. Usually an experienced consultant is hired to do such evaluations.”* This is sharply in contrast to other rural areas of Tanzania where donors profess a concern for sustaining rural water supply through funding and technical assistance but do not actively engage in monitoring and evaluation of the projects.

Apart from the formal programs which spell out the responsibilities of each member(s) in the WSFT, the WTs and VWC, formal sanctioning and rewarding program(s) influence the behavior and performance of members. The reward and sanction program is based on an annual performance appraisal which evaluates the performance of the participating WTs in billing collection, economic efficiency, customer satisfaction, environment, sanitation and water resources protection and operation and maintenance. The evaluation of O&M checks on quality concerning storage tanks, public taps, intakes and vital installations. The appraisal is carried out through site visiting and inspections of vital structures and installations, holding meetings with the management and Board members, management and employees as well as water users and VWC members. The evaluation team comprises of members from the WSFT, the Board of trustees and management team of the trust as observers [36]. The team uses a special form with a list of indicators to evaluate the WTs (Figure 4).

**2011 ANNUAL PERFORMANCE COMPETITION BETWEEN HAI AND SIHA
DISTRICTS WATER SUPPLY ENTITIES (Uroki- Bomang'ombe, Losaa- K.I.A,
Magadini- Makiwaru, Lawate- Fuka and Lyamungo- Umbwe)**

Name of entity

Name intake Year of construction

Name of village allocated.....

Date of inspection

S/N	Item to be inspected or checked	Points to score	Scored points
1	Demarcation of the water source catchment area and right of occupancy or land title for the intake catchments area.	10	
2	Water source protection & conservation- records of trees planted in each year	20	
3	Cleanness of the intake chamber and water Functioning of the fittings installed (8)	10	
4	Cleanness of the strainer	5	
5	The conditions of interception ditches (floods diversion furrow)	10	
6	Cutting of grasses and bushes surrounding the intake	10	
7	Leakage from the intake structures	10	
8	Rust on the bolts and nuts of the flanges	5	
9	Rust on the outlet and over flow pipes	10	
10	Chemical storage room	2	
11	Chlorination dosage equipment	3	
12	Appearance of the whole intake structure (good; or bad)	5	

Figure 4. Appraisal form used to evaluate the WTs [37].

Appraisals are carried out in the form of a competition among the Water Trusts and the winners are awarded with a trophy, a certificate and prize money. The first winner receives a trophy, a certificate and two million shillings. The first runner-up gets one and a half million shillings while the second runner up gets one million shillings. *“The money can be spent as per Board of Trustees’ decision. For instance, they may wish to give it to their well performing staff or organize a big party for their staff”* commented the head of WSFT.

Water Trusts spend significant amounts of their resources, particularly time and money, to participate in performance appraisals. The process is very long and each cycle takes about nine months: *“We begin in July and the last report is printed on March or April the next year. It is very intensive work. We visit every connection, every water tank,”* explains one of the WSFT staff. These annual performance appraisals have improved service delivery. *“People need to be motivated by something. Don’t think that all what you see here comes automatically. The performance appraisals push the water trusts to excel,”* he comments. One appraisal report for the Lawate-Fuka Water Trust reads *“toilet paper holder was missing at the watchmen toilets”*. Such a high level of performance detail is rare in rural water projects in Tanzania.

In case of bad performance of the WTs and VWC, sanctions are imposed to individual members or the organization itself. The sanctions are listed in the constitution of each WTs and are enforced accordingly. According to the chairman of WTs in Bomang’ombe *“there has never been any gross violation of the roles and responsibilities by the members by the WTs and VWC to warrant sanctions. However, in cases where citizens pollute water sources the respective WT and the citizen in question will pay a fine in monetary terms.”* Some of the sanctions listed in the constitution include not being elected or allowed to compete

for election in the WTs and VWC. This sanction is usually imposed on poorly performing leaders in the WTs and VWC.

4.2. Informal Programs and Rewards/Sanctions

Informal programs entail socially shared rules, norms and ‘practices’, usually unwritten, that are created, communicated and enforced outside officially sanctioned channels and include: shaming those who fail to pay water bills by reading their names in church or mosque; prayers to God that those who vandalize and do harm to water projects do not succeed in life. The rewards include: recognition during a public mass; and special prayers for continued good service (Figure 5).



Figure 5. The Chief engineer of Hai and Siha pictured left, in the middle and right engaging Islamic and evangelical church leaders on rural water supply issues [Fieldwork data, 2017] [37].

4.2.1. Religion as an Instrument for Creating Socially Shared Values

The Evangelical Lutheran church and some local mosques use religion as an instrument to create socially shared values in the rural water supply sector. Public mass sessions in churches and mosques make direct reference to rural water services [Figure 5]. The leaders of WSFT, WTs and VWC accompany church leaders to sensitise local communities regularly on issues related to paying water bills on time, maintaining water infrastructure, protecting sources of water and refraining from engaging in vandalism. They frame their message using biblical and Quran references related to water in general. According to a respondent from Lewatefuke Trust, the most cited reference in the Holy Quran is chapter 56 verse 68–70: “Have you observed the water you drink? Do you bring it down from the rainclouds? Or do we? If it were our will, we could make it salty. Then why are you not thankful?” “The leaders would then proceed to contextualize the message into the daily workings of the communities related to water in general while appealing to super natural powers”, notes one of the respondents from the local Lutheran Church.

Biblical and Quran references are used in community radio interviews about water. In one of the radio presentations, the WSFT engineer talked about “paying water bills [as] a sacred good, those who do not pay water bills go against God’s Ten Commandments”. He urged customers connected to water facilities managed by water trusts to “pay their water bills in time because it will not only make God happy but improve the revenue collection of the water trusts which can then help to improve the delivery of water services”. He further suggested “customers who do not pay the water bills will be punished by God, they will not succeed in whatever endeavors they will pursue in their lives because failing to pay for water while they are capable to do so amounts to denying somebody a right to live because water is life.”

As part of its outreach programme to the less fortunate, the Lutheran church pays some water bills of its members, if it can be assured that they cannot afford to pay them themselves, liaising with the tap attendants. Commenting on this practice, a senior pastor of the Lutheran church said: “We believe in sharing spirit. There is no better way to share the little that we have than helping the poor. Even in the Holy

Bible it is written help your neighbour in times of trouble. But we don't just help anybody. We help the needy. We assess the person in question and satisfy ourselves that they really need the help. If we don't do that we will have hundreds of people capable of helping themselves seeking help".

4.2.2. The Chagga Diaspora's Contributions to the Water Bills of Their Kin

The Chagga diaspora comprises Chagga population residing in cities such as Dar es Salaam, Arusha, Mwanza, Dodoma, Mbeya and abroad. They form a network of business elites in the hotel industry, mining, real estate, malls, garages, bars and restaurants and in the public service, including financial institutions and universities. They regularly visit their ancestral homes in Kilimanjaro during Christmas and New Year's Eve.

The Chagga diaspora plays an important role in water supply in Hai and Siha districts by indirectly facilitating their parents and relatives financially to acquire a house water connection: *"I just wanted to relieve my mother from the burden of carrying a bucket of water from the public water point a few meters from home. I am happy that my mother can access water at her own homestead"* (Citizen, Hai district). *"Some [Chagga diaspora] have houses in the village but they live in urban centres. Their houses are connected with water, however, but it is only consumed for a short period of the year when the owners are visiting the village,"* says a water technician. There is a special connection between the Chagga diaspora and their ancestral homes. According to the WSFT director: *"the feeling of attachment to home is an underlying feature among the Chagga. The Chagga people love their ancestral homes. This connection originates across generations and is like a ritual passed on from generation to generation"* The connection to an ancestral home *"without having the financial capacity to travel during Christmas holidays and pay the bills is ridiculed by most Chagga,"* explains a director of WSFT. It is through the trading activities and capitalist ventures that they can cover the costs of water bills in their ancestral homes.

4.2.3. Solidarity, Self-Help and Volunteerism as Socially Embedded Norms and Values among the Chagga

The Chagga solidarity extends to paying water bills to committee members. The village water committees are formally responsible for making sure all water users pay water bills, including the individuals who are members of a VWC. However, if the water attendant (who is a member of a water committee) fails to pay the water bills, the water committee members pay the bill themselves to avoid shame: *"one public tap attendant did not pay a water bill and the water board wanted to disconnect water. We were concerned that people [who were paying money when collecting water at the tap] would miss out water, we collected money and paid the bill on his behalf"* (Water committee member). The committee felt *"it would be a shame for the water board to disconnect water while people are paying their bills"*. A delay of payment would suggest that they are poor and cannot afford to pay for water. Appearing destitute is highly discouraged among the Chagga.

5. Discussion

Informal programs in Hai and Siha complement the formal programs and so do the respective sanctions and rewards (Table 5). Informality fills in gaps by addressing problems or contingencies that are not explicitly dealt with in the formal rules, and without violating them. Formal programs are grafted on informal programs, creating or strengthening incentives to comply with formal rules, which elsewhere in Tanzania only exist on paper. Thus, while the formal programs ostensibly function as designed in WSFT, WTs and VWC, ensuring regular supply of water and payment of bills, in practice they are substantially reinforced by their formal counterparts.

Table 5. Summary of formal and informal programs/sanctions and rewards in Hai and Siha (Source: Fieldwork data, 2017).

Formal Programs	Informal Programs
Standardized billing system with pre-determined tariffs for customers. Formalized operation and maintenance of the rural water infrastructure. Recruitment, training, promotion, and retaining staff. Interactions between donors and the leaders of WSFT and WTs.	Prayer sessions in every Monday morning to strengthen team work and work ethic; leaders of the WSFT addressing church and mosque congregations on how to maintain the rural water supply by protecting water sources, doing away with vandalism, and paying water bills on time; church and mosque leaders preaching the sanctity of water. Chagga diaspora paying for the water bills of their tribal kin. Solidarity, self-help and volunteerism as Chagga values
Formal Sanctions/Rewards	Informal Sanctions/Rewards
<u>Sanctions</u> Not being elected or allowed to compete for election in the WTs and VWC Not being selected in the next round of appraisal Formal warning for poorly performing WTs Payment of fines for polluters and vandals	<u>Sanctions</u> Shaming those who fail to pay water bills by reading their names in church or mosque. Prayers to God that those who vandalize and do harm to water projects do not succeed in life.
<u>Rewards</u> A trophy, a certificate of recognition, prize money	<u>Rewards</u> Recognition during a public mass. Special prayers for continued good service.

These findings contradict concerns raised by scholars that CBM schemes, the leading paradigm for rural water supply in East Africa, are not effective. Chown's [38] study of community-managed water supply in four districts of Malawi shows that both technical and financial performance under community management are weak. She argues that "*community management has 'worked' for the state (and donors) as a means of offloading responsibility for public service provision*" [38] (p. 263) and not for water users for whom community management is the least preferred management option. Chown's [38] concludes that "*community management endures [. . .] because it enables [the state and donors] to abdicate long-term responsibility for service provision*" [38] (p. 272). Similar problems are prevalent in most of rural Tanzania as well. However, we argue that this is a direct consequence of those involved in the rural water supply, particularly donors and government officials, not acknowledging and harnessing informal practices.

Further, our findings challenge claims that it is rational for development partners and beneficiaries to ignore the pervasive informality in the water sector, and other sectors for that matter. In his celebrated ethnography of urban water utilities in Tanzania, Rottenburg [39] explained the reluctance of development partners from the North to engage with informal practices of beneficiaries in the South. He argues thus: On one hand, the two parties in a development project—a development partner from the North and a beneficiary in the South—are socially and culturally heterogeneous. For instance, a member of a beneficiary organization in the South often fails to differentiate among her different social roles. Upon joining the organization in the South (e.g., a ministry or a district government), a new member cannot reject demands made upon her when she is approached at work as a tribal member, a co-religionist, or a party member. Presumably, a member of an organization in the North can do so [40]. On the other hand, a development partner from the North and a beneficiary in the South have one concern in common: the need to be accountable for money flows but not for the unpredictable consequences which often haunt development projects. Being accountable for unpredictable results would stop any rational individual or organization from getting involved in a development project and, as a result, no joint initiative of social transformation would ever start. The two parties solve this paradox by bracketing out the social and cultural complexity of the beneficiary, in other words, the beneficiary's informal programs. After all, a development project is supposed to be a co-operation between equal partners, who only differ in wealth and technological expertise, but not socially and culturally. In contrast, our case casts the development partners in Hai and Siha as eager to acknowledge and harness informality and to seriously engage in all aspects of rural water supply, from design to maintenance to scaling up of the projects.

Bracketing out the social and cultural complexity of the beneficiary blinds donors to informal programs, which can shape development projects, a practice Kelsall [41] calls ‘going with the grain’. Many Africans do not “think of themselves as individuals; they think of themselves as members of limited extended families (extended families that may extend before birth and after death). Beyond that they identify, in concentric circles of weakening moral obligation, with wider extended families, clans, ethnic groups, and only then, with the nation state.” [41] (p. 18). Informal programs include the extended African family and ethnic tribes, which place a high value on celebrating basic life-cycle rituals, on mutual financial help and the resolution of conflicts without appealing to formal state agencies. Informal programs also include churches and mosques. Although never mentioned in water policies and regulations, they enjoy so much popular support that they are often financially self-sustaining. They are heavily involved in providing local education, water, and health, services and surpass in quality those provided by the state. Thus, working with the grain of existing informal programs and socially embedded institutions can complement and strengthen formal programs.

Nevertheless, donors still frame development interventions in the rural water sector in formalistic ways [35]. For instance, a 2017 World Bank report, titled *Rural Water Supply in Tanzania: High Investments, Low Returns*, recommends adherence to formality in order to achieve the SDG Target 6.1. It advocates the strengthening of downward accountability, facilitating smooth financial flows between levels of government, promoting of a motivation to pay, and incentives for rehabilitating existing water points and improving monitoring systems [42] (p. 7).

In this paper, we showed that strengthening adherence to formality is necessary but not sufficient. We need to accept, argues Kooy that “the so-called informal as an enduringly dominant, rather than a remnant, mode of supply, and attend to ways in which the codification of informal practices reveal a more nuanced politics of access that reflect complex realities of southern urban waterscapes” [43] (p. 35). Kooy’s argument is relevant for rural waterscapes as well. Often, when donors acknowledge informality [44,45], they relegate it to underdeveloped schemes for the poor hoping that it will fade away as formalization kicks in [43]. This thinking obscures the symbolic and cultural meaning of informal programs. Further, “the process of strengthening informal institutions is not just a matter of forming alliances with formal entities. Just as importantly, it is also a process of increasing scalar influence. Such a distinction is significant because it implies that governance structures might remain informal in the sense of not having legal property/user rights, yet still exercise substantial political influence as a relatively permanent feature of the urban waterscape” [46] (p. 84). Equally, [47] (p. 297) underscore the importance of informal institutions giving primacy to ad-hoc ‘rules-in-use’ that suit the local context, and adapting forms of free-rider sanctions that are typically minor, low level and triangulated with local norms and behaviors.

The two districts examined here will most likely achieve universal and equitable access to safe and affordable drinking water for all citizens by 2030. The two districts have (un)consciously figured out a way of harnessing useful informal programs embedded in shared tribal and religious norms and practices, blend them with formal programs and sustain that combination as a daily governance routine in the provision of rural water supply. Other parts of the country could use these lessons but taking into account their local peculiarities rather than applying isomorphic mimicry [48] (p. 5). The great political economist Albert Hirschman signaled this approach in 1958, exactly six decades ago. He proposed to search for endogenous mechanisms, which foster change from within—in our words, by mobilizing the elephant in the room. These mechanisms are important as “development depends not so much on finding optimal combinations for given resources and factors of production as on calling forth and enlisting for development purposes resources and abilities that are hidden, scattered, or badly utilized” [49,50] (p. 5). If the Hai and Siha districts can achieve the SDG water target 6.1, so can others in Tanzania.

The implications of our study are twofold: first, development agencies, governments, and NGOs searching for new ways to meet SDG6 should acknowledge the elephant in the room by harnessing and nurturing useful informality in their development interventions in the rural water sector. Second, lesson learning and lesson drawing can be taken by other parts of the country and indeed other countries in sub-Saharan Africa to harness productive informality and improve rural water supply.

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Abbreviations

CBM	Community Based Management
COWSO	Community Water Supply Organization
DAWASCO	Dar es Salaam Water and Sewerage Corporation
DED	District Executive Director
GoT	Government of Tanzania
IWMI	International Water Management Institute
JMP	Joint Monitoring Program
MDG	Millennium Development Goals
NAWAPO	National Water Policy
O & M	Operation and Maintenance
PO-RALG	President’s Office Regional Administration and Local Government
SDGs	Sustainable Development Goals
URT	United Republic of Tanzania
VEO	Village Executive Officer
WEO	Ward Executive Officer
WSDP	Water Sector Development Program
WSFT	Water Service Facility Trust
WT	Water Trust
VWC	Village Water Committee

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