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THE IMPACT OF THE 2019 WATER SUPPLY AND SANITATION ACT ON RURAL WATER MANAGEMENT IN KONGWA AND CHAMWINO DISTRICTS, TANZANIA

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Abstract

This paper investigates the transformative impact of Act No. 5 of 2019, the "Water Supply and Sanitation Act" (WSSA), on rural water management practices in Central Tanzania. Supported by the Italian Civil Society Organization (CSO) Lay Volunteers International Association (LVIA) and funded by the 8x1000 grant from the Italian Prime Minister's Office, this research primarily focuses on the roles of Community Based Water Supply Organizations (CBWSOs) and the Rural Water and Sanitation Agency (RUWASA). The paper analyses data on community water management collected by the LVIA team in its field activities and by an ethnographic fieldwork undertaken in 2022 within a PhD research that included both quantitative and qualitative methods, namely focus groups, semi-structured interviews, questionnaires, photo elicitation, participant observation and transect walks. The article shows how the 2019 reform had uneven implementation in rural Kongwa and Chamwino districts because of challenges in the allocation of adequate resources from the national government to the rural communities, in terms of skills, financial resources, and personnel. The paper offers an analysis of the relationship between community water management and gender dynamics. It shows how water policies and legislative framework have been tackling gender issues by indicating the importance of reinforcing women's presence and participation in formal water management. Therefore, there is space for new and creative ways to foster gender equality through community water management system through the more comprehensive framework of gender-and-development (GAD). In conclusion, systemic reforms like the 2019 one require time to be metabolised by the local

communities as they intersect with broader environmental, economic, and socio-political dynamics. Therefore, the results presented in this article need to be understood in an constantly changing situation.

Keywords

Community Water Management, CBWSO, Tanzania, Gender

Introduction

This study is part of the research activity implemented by the CSO Lay Volunteers International Association (LVIA) in Central Tanzania supported with funding from the 8x1000 grant from the Prime Minister's Office. The paper focuses on the impact of the most recent water and sanitation law reform, namely Act No. 5 of 2019 "Water Supply and Sanitation Act" (WSSA). Specifically, the research investigates how the implementation of the WSSA is affecting rural water management carried out by the two main appointed entities, namely Community Based Water Supply Organizations (CBWSO) and Rural Water and Sanitation Agency (RUWASA). The study gives continuity to a research path initiated in 2015 by the University of Turin and LVIA on rural water management issues. Such path was initiated by a study on the implementation of water management strategy through community organizations, private sector participation, and monitoring systems in Dodoma Region (Fierro & Nelaj, 2017). It was then followed by a research activity carried out in the Iringa Region with a focus on policy support to Community Owned Water Supply Organizations (COWSOs), their institutional and strategic role, and the main challenges in the provision of water access and services (Mangione, Pozzobon, & Rizzi, 2019). Those studies were integrated by two participatory action studies carried out in Kongwa District. The first focused on the functioning and management capacity of the Hogoro-Nyerere CBWSO (Forzano & Zingari, 2021). The second is an evaluation of environmental risk factors in 5 villages about the pollution of water resources with the elaboration of hazards and vulnerability territorial maps (Sanna, 2022). Underlining the different components of this rich research path, on the one hand, it shows the extent to which the knowledge referred to in this paper is rooted in long-term fieldwork. On the other hand, it provides a map of the research experiences whose results have informed the contents of this paper. Overall, these contributions have been a tool for analysis of and methodological support to the work conducted by LVIA in its water related cooperation projects.

The data on which this paper is based are a synthesis of those collected by the LVIA team and the ones coming from an ethnographic fieldwork conducted in 2022 in the area of Kongwa and Chamwino districts, located in central Tanzania. This specific study area was chosen as it is where the water related projects of the NGO were carried out. Mixed methods (focus groups, semi-structured interviews, questionnaires, photo elicitation, participant observation and transect walks) were used in order obtain a more multifaceted interpretation of the functioning of these entities in light of the recent sector reform.

The article is structured as follows. First, it presents the debates within the literature on community resource management that frame the research and that guide the reflection on the issues that have emerged. Particularly, the debates concern the ones about the ability of local communities to effectively manage natural resources and how to measure their performance, and how socio-cultural elements that are connected to water management such as gender issues are reproduced and tackled within these community entities. These debates are relevant as they represent the entry points that this paper uses to understand the impact that the systemic 2019 water sector reform had on LVIA's areas of intervention. The specificities of the Tanzanian context (particularly as far as the 2019 reform is concerned) are then presented in the following section of the article, which is followed by the description of the methodology, and then by the presentation and discussion of the results.

Framing Tanzanian community water management

In this section we place the research within the literature on the topic by relating it to the relevant scientific literature about community management of natural resources, such as water. At the base of the Tanzanian rural water governance structure there are the CBWSOs that relies on the participation at different scales and intensity of people and actors involved in the local use of the resource. Studying how local communities, especially in the Global South, act to manage and govern the natural resources they need finds in Elinor Ostrom the scholar who first investigated and systematised the success and failure factors of these collective models. In her work she isolated eight principles[I] (Ostrom, 1990) to effectively manage the commons collectively. Such principles include normative elements that refer to participation, accountability mechanisms, trust, and transparency. Over time,

[I] 1.Define clear group boundaries.
2. Match rules governing use of common goods to local needs and conditions.
3. Ensure that those affected by the rules can participate in modifying the rules.
4. Make sure the rule-making rights of community members are respected by outside authorities.
5. Develop a system, carried out by community members, for monitoring members' behavior.
6. Use graduated sanctions for rule violators.
7. Provide accessible, low-cost means for dispute resolution.
8. Build responsibility for governing the common resource in nested tiers from the lowest level up to the entire interconnected system.

other scholars added on her work by addressing the criticisms that Ostrom's principles collected and suggesting more complex approaches in studying community management of the commons (Singleton, 2017). In this sense, Singleton (2017, p. 1001) effectively presented the main issues with Ostrom's principles that are connected first, to the fact that focus only on individual actors and this perspective could blind researchers to the influence of the macro-scales on the local ones (Peterson, 2010). Second, to the absence of attention towards "the web of social, emotional and power relationships" (Singleton, 2017, p. 999) between the people that are part of community management systems (Nightingale, 2011). From this debate, what emerges is the importance of considering both the strictly managerial and policy aspects that can measure and shape the performance of rural communities in tackling water issues on use and access including the different scales involved in the activity, and the more situated socio-cultural dimensions that contribute to its definition.

On the first aspect, in order to track the changes that have occurred since the 2019 WSSA reform and therefore look into the impact that such reform has had on local community entities, this paper has collected information on how CBWSO are keeping the water schemes functional, on their financial sustainability, on the internal composition of the CBWSO, and on their reporting activities towards RUWASA local offices. In this sense, the paper attempts to go beyond the focus on the micro scale alone by linking the day-to-day work of CBWSOs with how they are affected by the policies and legislative frameworks formulated at the national level. In particular, the paper aims to observe how the situation of CBWSOs has changed since a major sector reform affecting the management of water for human use in the country was defined, approved and implemented. This reform is relevant for CBWSOs because it has had a significant effect especially on the rural areas where they operate. The local scale dimensions that characterise the communities inhabiting the study area of this research were therefore intertwined with the dictates of a national law that regulates in detail the water life of rural communities. In selecting they type of information and data to consider, this paper has drawn from the previous research work that LVIA carried out over the years. Specifically, in 2015, LVIA together with the University of Turin in the framework of the UniCoo project - which allows Master's students to be involved in research projects co-designed by international cooperation NGOs and different University Departments - identified and designed a monitoring tool that could easily record the performance of rural water schemes. The specific literature on sustainability assessment of rural water development programs in Tanzania (Jiménez & Pérez-Foguet, 2010) (Giné & Pérez-Foguet, 2008) (Masanyiwa, Niehof, & Termeer, 2015) , together with the expertise of local water practitioners was key in selecting these dimensions to be included in the performance index. Specifically, this tool was based on three indicators designed to calculate their technical functionality, management stability, user satisfaction, and finally the effectiveness of communication both within the community

and between the community and higher administrative management bodies (Fierro & Nelaj, 2017). As effective as this tool is in operational terms, when the aim is to understand how CBWSOs are embedded in and interact with their institutional, socio-cultural and environmental context, triangulation of the information given by these indicators with other data sources is essential (Armitage, 2008). Including aspects such as power dynamics, modes of knowledge production, and the role of different members that hold different status within CBWSO is also crucial in order to understand on the one hand how to design actions that go to support community management of resources and on the other hand to improve the documentation of outcomes.

About the necessity to take into account relevant socio-cultural dimensions, the analysis was extended to also include the element of gender. This specific focus was chosen because it emerged prominently from the literature on water use and management in rural Tanzania (Adjei Adams, Juran, & Ajibade, 2018) (DeGraff, Levison, & Dungumaro, 2017) (Nelson & Stathers, 2009) (Masanyiwa, Niehof, & Termeer, 2014) (Venis, et al., 2022) as strongly intertwined with water practices. As a matter of fact, water governance have been defined as a "gendered, plural, multi-sited and complex field" (Hellum, Kameri-Mbote, & Koppen, 2015, p. 4). Moreover, the choice of gender as a focus, reflects the fact that its importance was recognised also at institutional level in the Tanzanian National Water Policy (NAWAPO) and then the 2019 reform. In fact, both documents identify this relationship as an entry point for tackling gender equality issues, especially as far as the empowerment of women is concerned. In this sense, even though the approach to gender issues in these documents is limited by its exclusive focus on the role of women, it indicates a willingness to use water as point of entry to address gender inequality issues (Fisher, Cavill, & Reed, 2017). Focusing on gender help us to understand the degree to which women and men are involved in community water governance and makes it possible to identify the type of participation, which often does not fall under the membership of formally established bodies such as CBWSOs but is no less relevant to community water management. Finally, it makes it possible to unveil practices, uses and knowledge that define how water and society meet and that go beyond the often technical approach to natural resource management.

Presenting the study area: mapping the location and the institutional framework of Tanzanian water governance

The study is based on direct data collection, analysis of official documents, and the consolidation of information provided by relevant administrative offices in the field in a study area that includes 8 villages in Kongwa District and Chamwino District (Dodoma Region). These two districts were

chosen as they are the places where LVIA has implemented its water-related projects about CBWSO and also where the NGO has an historical presence and deep knowledge of the context. The entire study area can be seen in Map 1. The area is characterized by a semi-arid climate, with unimodal rain season that spans from December to April.

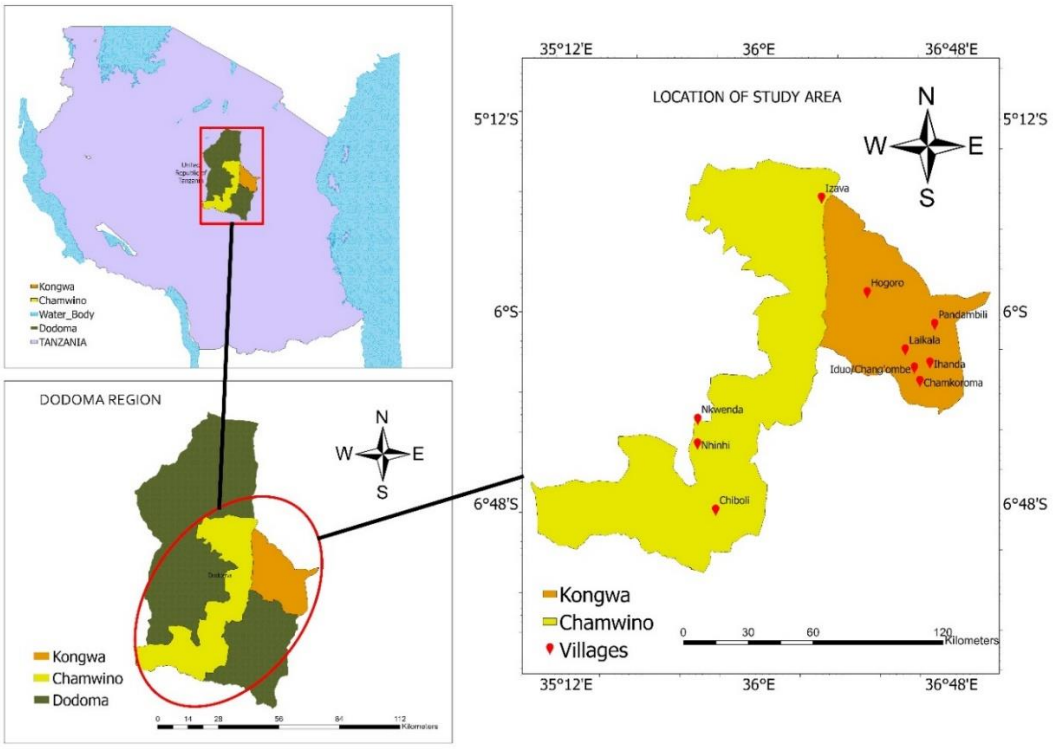

Fig. 1- Study area composed by the Districts of Chamwino and Kongwa in the region of Dodoma

In order to understand the water governance structure to which this research refers to, Figure 1 shows the institutional configuration that Tanzania has developed to govern and manage water access and services for its population.

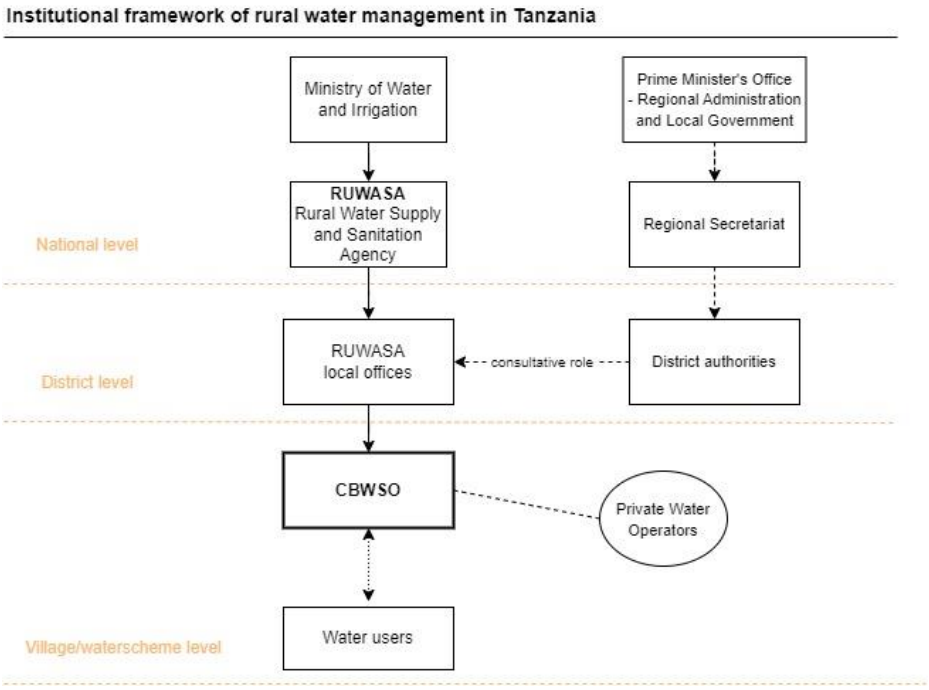

Figure 2 - Institutional map of Tanzanian water governance source: elaboration from (Mangione, Pozzobon, & Rizzi, 2019)

As visible from the figure, Tanzanian institutional framework of rural water governance operates within a multi-scalar structure, with key actors at national, district, and village scales. Its water governance structure is characterized by a decentralized structure, but it still holds some of the control in central institutions such as the Ministry of Water and Irrigation. In this sense, the Ministry of Water and Irrigation, alongside the Rural Water Supply and Sanitation Agency (RUWASA) at the national level, play pivotal roles in setting the strategic direction, policies and guidelines for rural water management. In the form of its local district offices, RUWASA carries out governmental control over the decentralized water entities, as its main role is to oversee, coordinate and support the communities in their water management tasks. However, as emerged from the interviews with both RUWASA officers and CBWSO members, the local presence of RUWASA is limited because of constraints regarding lack of financial, human and skill resources. In fact, especially in more remote areas, the village communities are often left alone in managing their water schemes without the adequate support from RUWASA in developing the right competences to successfully ensure water access and services. In its work, RUWASA district local offices receive support from local district authorities under the umbrella of the Prime Minister's Office - Regional Administration and Local Government. At the village level, CBWSO are instrumental in the daily management of water infrastructure and rely on the active participation of community water users. Notably, CBWSOs have the autonomy to

engage in agreements with private operators for the delivery of water services, still retaining a supervision role. In this multi-scalar framework, the research has focused at village level and therefore on how CBWSOs function, perform and manage water access for their communities.

Overview of the 2019 Water Supply and Sanitation Act

As previously indicated, in 2019, Tanzania went through a deep institutional, legislative and policy reform process of the way it manages its water resources. Such changes were contained in the new Water Supply and Sanitation Act, 2019 that replaced the Water Supply and Sanitation Act approved in 2009. The reform represents the most recent evolution of a decentralized system, which when it comes to rural areas had designated individual village communities as theoretically self-sustaining units capable of managing basic services. After a series of policies, laws, and regulations passed over time, the 2019 WSSA was supposed to resolve the problems that persisted in rural water management, particularly the lack of unified coordination that could take a strategic overview of the overall situation and more effectively distribute financial, human, and technical resources to the different areas. In this direction, the main changes brought by the reform were those related to the reorganization of water management in rural areas such as the rural Districts of Chamwino and Kongwa that are at the centre of this paper.

The first substantial novelty was the creation of a new institutional body, the Rural Water Supply and Sanitation Agency (RUWASA), that acts as coordinator of water management in rural areas. Specifically, RUWASA's duties include the submission of plans and operational informative reports to full Councils and to Regional and District Administration forums. Second, it is responsible for carrying out monitoring and regulation of community organizations, requesting reports from the CBWSOs about their work, and providing guidelines on how to carry out these activities. Then, RUWASA is in charge of guiding the establishment process of new community organizations and evaluating the optimal size of such community organizations and, where necessary, to cluster them in a single entity. Finally, RUWASA supervises the arrangements between CBWSOs and private water service providers by checking and approving the terms of such agreements (Mangione, Pozzobon, & Rizzi, 2019). These tasks were previously carried out by other institutions at different administrative levels such as the District Water Department, the Regional Secretariat, the Local Government Authorities, the Ministry of Water and Irrigation, and the Prime Minister's Office in a fragmented way. Therefore, the rationale behind the creation of RUWASA was to create a specific and unique institution that could systematize water management in rural areas and make it more efficient.

The second significant innovation is the redesign of the internal governance structure of the Community Owned Water Supply Organizations (COWSO), which were reshaped into the new form of Community Based Water Supply Organizations (Figure 1). In this sense, the new version of management structure is characterized by the splitting of the former executive body (the Management Board) into two different bodies, one playing a strategic and political role (Community Water Committee), and the other vested with the task of carrying on the day-to-day operation of the water scheme (Community Water Management Team).

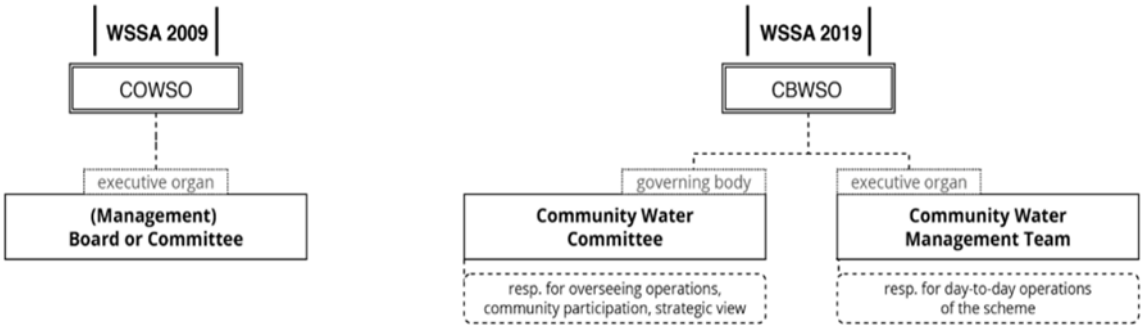

Fig. 3 - Changes in the internal structure of COWSO according to the 2019 WSSA source: (Mangione, Pozzobon, & Rizzi, 2019)

The purpose of this division of roles and responsibilities was to make local management more efficient and to separate strategic political and day-to-day management. On the one hand, within the CWC the reform sought to broaden the representativeness of the different actors and stakeholders in the area covered by the water scheme. On the other hand, according to the guidelines, the CWMT should ideally be composed by people with the appropriate level of skills proven with a diploma or certificate. Four years after the reform was passed, this paper seeks to ascertain how it is being implemented in the rural areas where LVIA works by focusing on both managerial and socio-cultural aspects that are relevant to the CBWSO work.

Methods

The data used in this paper come from two distinct data collection activities in the same study area. The first set of data was collected by LVIA staff, who conducted semi-structured interviews with District RUWASA Managers and Community Development Officers. These two institutions are key in the understanding of the CBWSO situation because they hold specific roles in the formation and

lifespan of these community entities. On the one hand, the District RUWASA Managers are responsible for the support and coordination of the rural water supply and sanitation services, and they constitute the main reference and regulator of the CBWSO. Community Development Officers, on the other hand, are the ones taking care of the administrative elements and they are responsible for the formation and registration of CBWSO. Survey interviews based on a questionnaire were conducted with the CBWSO Management Team and Water Committee members. This method allowed for the collection of specific data on the CBWSO activities. The questionnaire is divided into four sections exploring different aspects: i) Governance; ii) Technical iii) Financial Management and iv) Operational. Moreover, a set of Focus groups discussions (FGD) per village (8 Villages) was carried out with CBWSO members, women water users, men water users. A total of 116 persons from RUWASA offices (4), local authorities (16), CBWSO and Village members (96) participated in this part of the study that was conducted in November 2022.

The second set of data was collected by a PhD candidate collaborating with the NGO, through semi-structured interviews with members of community water management bodies, transect walks with community members, photo-elicitation with groups of women, and participant observation in the village's water practices. This part of data collection took place over an 8-month period (April to November 2022) in the district of Kongwa.

The combination of these two sources that were constructed both through qualitative and quantitative methods enabled the definition of a rich and in-depth analysis of local waterscapes and the different layers that make up community water governance in central Tanzania, specifically in reference to the changes that CBWSO have experienced and implemented after the 2019 reform.

Tracking the changes of the 2019 WSSA

This section of the paper presents and investigates the different changes that have occurred in the two district areas after the implementation of the 2019 reform in terms of the work. Before looking at such change, it is important to have an overview of the two districts in terms of type of management entities present under their jurisdiction.

From Table 1, we can see how there are still some villages in both districts that have not adapted to the new regulations by keeping a traditional form of the Village Water Committee, a COWSO management form, or rely on private operators. In this regard, according to RUWASA officers, these communities refused to accept to reform their water management system or otherwise they were not reached by the opportunity to do it. As for the number of communities that have engaged with the reform, there are substantial differences between the two districts. While for Kongwa most water schemes are managed by CBWSOs, Chamwino has a higher variety of management forms with

CBWSOs under the half of the total. Traditional WVC and COWSO forms are used in about 45 percent of villages, and in addition there is a minority but significant presence of private water operators.

District	Total Schemes	Under Village Water Committee (VWC)		Under Private Operators (PO)		Under COWSO		Under CBWSO	
		No	%	No	%	No	%	No	%
Kongwa	57	04	7.02%	00	00	13	22.80%	40	70.18%
Chamwino	128	20	15.62%	10	7.81%	36	28.13%	62	48.44%

Table 1- Type of management of the rural water schemes in Kongwa and Chamwino District

From this first glance into the two district water management situation, it is clear that the reform has still a long way to go before reaching all communities and therefore unleash its full potential. The next paragraphs will trace the path that the two rural districts have followed to reach this situation.

Supporting the transition towards the new CBWSOs

This first paragraph uses the data on the pace of transformation of COWSO into CBWSO collected at District level from both RUWASA and Community Development offices to understand the capillarity of the reform in the study areas and the ability of the new institution of RUWASA to perform its coordination, monitoring and supervision tasks over the community water organizations.

District	No of COWSOs	Reformed up to Nov 2022		Under Process	
		No	%	No	%
Kongwa	45	40	88.89%	05	11.11%
Chamwino	98	62	63.27%	36	36.73%

Table 2 shows how Kongwa district has almost completed the transition in that out of 45 COWSOs, 40 have been reorganized into the new CBWSO form. Chamwino on the other hand seems to struggle more in implementing the required changes. Thus, the two districts have only partially achieved the goals that the new water and sanitation law set out to achieve, which included reforming local management bodies within 2 years of the passage of the new law. According to the interviewed personnel of RUWASA, the slow pace of COWSO reformation is mainly due to challenges including a lack of financial and human resources in the RUWASA Regional and District Offices, and a lack of means of transport to facilitate the necessary field movements for the reformation and registration activities. So, even though the reform could have had a positive impact in terms of creating more adequate support to the CBWSO in their water management struggles, according to the people working in it this transition to the new governance system was not followed and sustained by adequate resources.

Investigating further into the matter of this lack of resources, a first component regards financial constraints. Data displayed in Table 3 show that before the New Water and Sanitation Act No. 5 of 2019 the yearly amount allocated to the District Water Departments for the formulation and registration of COWSO/CBWSOs was of 12.22% (Kongwa) and 13.33% (Chamwino) of the total budget for the rural water sector. According to the District officers, sometimes even the low requested budget was not provided both because of actual resources' scarcity and under-prioritization of rural water management in the broader national agenda. After the introduction of the new Water and Sanitation Act, and the creation of RUWASA, new emphasis was bestowed on the management of rural water schemes but the budget destined to the creation and support of CBWSO was only slightly increased to reach the 13.16% in Kongwa and the 19.41% in Chamwino. Financial constraints therefore appear as one of the causes of the delay in the implementation of the new governance structure, but not the main one as stated by some.

District	Before New Act (2018-2019)			After new Act (2021-2022)		
	Overall Budget	Allocated for CBWSO	%	Overall Budget	Allocated for CBWSO	%
Kongwa	180,000,000 TZS	22,000,000 TZS	12.22 %	190,000,000 TZS	25,000,000 TZS	13.16%

Chamwino	150,000,000 TZS	20,000,000 TZS	13.33 %	170,000,000 TZS	33,000,000 TZS	19.41%

Table 2 - Budget allocated to the CBWSOs registration out of overall budget before and after the 2019 WSSA. TZS stands for "Tanzanian schillings"

The second issue that affects the registration of the CBWSO is linked to the scarcity of "competent" human resources to be employed in RUWASA's offices. Since its establishment in 2019, RUWASA's district offices do not have enough personnel to reach all rural areas at least to the ward level for close follow up and monitoring of the rural water schemes. In 2019 RUWASA's office in Kongwa had a total of 9 staff members. However, due to the increase of RUWASA offices and duties both at District and National level, some District level staff members had to be transferred to different areas and at the time when this research was conducted Kongwa's office personnel was reduced to 6 units that include engineers, community development officers (responsible for the CBWSO formation), and administrative staff. As for RUWASA's office in Chamwino, in 2022 they were able to increase their staff up to 12 people, which represents an improvement, but it is still not enough to implement all the activities effectively and timely. The low number of people employed however it is not the only issue as what emerged from the field is that often the staff does not receive proper training to effectively support rural water management entities in the transition laid in the 2019 reform.

The evolution of CBWSO's work after the 2019 reform

This paragraph moves from the situation of the RUWASA district offices to the scale of the local CBWSOs. Comparing the new data with pre-2019 status information, the overall performance of rural water schemes in the study area from 2019 to 2022 has overall improved. This improvement covers several areas including economic sustainability of community management, infrastructure operation, transparency, and management effectiveness of CBWSOs and this could be a sign of positive impact of the novelties carried by the reform.

District	2018-2019	2020-2021
	Monthly Average collections per CBWSO	Monthly Average collections per CBWSO

Kongwa	300,000 TZS	800,000 TZS
Chamwino	400,000 TZS	1,000,000 TZS

Table 3 - CBWSO average revenue collections before and after the new water Act

Regarding economic sustainability, Table 4 shows that the average revenue of CBWSOs has increased more than twice in both districts' CBWSOs. This increased ability to collect and set aside revenues from water bills is extremely relevant as it allows individual CBWSOs to be able to cope with unexpected problems such as minor infrastructure breaks or malfunctions and to ideally expand the water distribution network in villages. In addition, saving money in a bank account accessed by a small number of CBWSOs has helped raise accountability and transparency of the way the local government operates at different levels. Some CBWSO however lamented the fact that the money raised through water management is tied to be used in the water sector. They perceive this limitation as a lost opportunity in the case there are other emergencies in the village such as the need to build or fix the school building, buy school supplies, expand the health centre... this is especially true for those villages whose water infrastructure is new and well functioning.

In connection with the issue of transparency, from what people interviewed reported, the sharing of information about the management of the water scheme has improved through the conduction of regular quarterly community assembly meetings and the posting of updates on village notice boards. Not only is this positive because it legitimizes the role of the CBWSO in the eyes of users, but it also reflects positively on the ability of CBWSOs to systematize information and carry out the reporting required by RUWASA.

District	**Before 2019 New water and Sanitation Act**				**After 2019 New water and Sanitation Act**			
	Number of water schemes	Functioning	Not Functioning	Under repair	Number of water schemes	Functioning	Not Functioning	Under Repair
Kongwa	47	45	02	00	57	55	02	00

Chamwino	128	92	36	00	128	125	0	03

Table 4 – Technical functionality of the district's water schemes before and after the introduction of the new Water and Sanitation Act No.5 of 2019

Another element that accounts for the average performance of the water schemes in the study area is the technical functioning of the water schemes and their adequacy with respect to the number of inhabitants using it. Table 5 displays the data of the water schemes present in the two districts and shows that, especially for Chamwino, at the time of data collection, the state of the water infrastructure is in better condition than it was before the 2019 reform. The two districts seem to have adopted two different strategies. Kongwa, which already had a far better level of functioning water schemes, has focused on building new schemes by increasing from 47 to 57. Chamwino on the other hand, has chosen to repair malfunctioning schemes without building new ones. In both cases, the result is increased functionality of the schemes that should increase the number of people with access to safe water. The data seem to show that the introduction of the WSSA reform has contributed to the improvement of the infrastructure situation in rural areas. Comparing this snapshot of the state of functioning of water schemes with the difficulties there are still in the formation, creation, and registration of CBWSOs seen in the previous section, we see how RUWASA has chosen to prioritize a technical approach over one geared toward supporting the creation of water management skills in village management committees.

However, data on the operation of schemes should be read with caution because considering the number of functioning water schemes present as the only information to assess the adequacy of rural water systems would be misleading. This is because there are cases where although the water scheme is functioning, its flow rate is not sufficient to provide safe and clean water to a fast-growing population such as Tanzania[II]. In addition, this classification of infrastructure as functioning or non-functioning does not consider the overall state of the water network, which often lies on a continuum between these two poles. Although a water scheme is classified as functional it often suffers from frequent malfunctions, leaks, interruption of parts of the scheme, and other problems that make it less effective than it would be. Another element to consider is water quality. Especially Kongwa District is characterized by the fact that most of its water schemes extract water from underground aquifers out of which many have chemical characteristics that make it "salty" (Elisante & Muzuka, 2017)

[II] According to the 2022 Tanzanian Census, the population grew at a rate of 3.2% passing from 45 million of 2012 to almost 62 million of 2022. Both rural and urban areas have shown this tendency to population growth and looking at the projections for the future, such trend is expected to keep going at a steady pace (The 2022 Population and Housing Census: Administrative Units Population Distribution Report, 2022).

(Shemsanga, et al., 2017). Such characteristics, even when the water quality is acceptable as per the Standard fixed by the National Guidelines, make this water unpreferred or unsuitable for some uses that people make of it. For example, salty water no can be used for cooking beans (one of the main foods for local people), washing laundry, or even drinking as it has an unpleasant taste. The result is that the piped water is less used especially during the rainy season, by part of local community which also for economic reasons still rely on less safe and uncontrolled alternative sources of water.

A final element that gives us information on how community management works since the reform is to check how the changes in the governance structure of the CBWSO, formerly COWSO, have been transposed in the communities. As seen in the section on explaining the key points of the reform, one of the major changes was the separation of policy activities, embodied by the Community Water Committee (CWC), from operational activities, performed by the Community Water Management Team (CWMT).

As for the CWC, it is composed partly of locally elected representatives and partly of people in senior positions in the community (such as the Village Executive Officer and Ward Executive Officer). From what emerged from the field, this dual composition demonstrated both advantages and disadvantages. On the one hand, the presence of people with respected positions who have expertise in drafting documents and have an overview of the socio-political situation in the area has led to improving the whole system of managing rural water scheme in activities such as the preparation of minutes of the meetings, the development of informed decisions in the light of the general situation of the village, and the drafting and presentation of the quarterly CBWSO reports for the RUWASA. About this last point, even though the reporting activities have improved, there is still a need to set standard monitoring procedures and data collection tools that can make reports more reliable and precise. In some cases, the CWC was effective in improving the relationship with local authorities that in this way were included in the decision-making process regarding water, and this resulted in the reduction of conflicts. On the other side, including relevant political figures in the committee resulted in internal power imbalances that prevent all the voices and opinions to be heard. As a matter of fact, “regular” members (meaning the elected community members) of the CWC reported not to feel comfortable in expressing their ideas and suggestions in front of such prominent members of the community. In addition, the majority of the interviewed CWC regular members affirmed that some Ward chancellors failed to differentiate their political position and role from their membership in the CBWSOs, hence disturbing the overall management of the water scheme.

As for the CWMT, responsible of the everyday water management activities, according to the 2019 reform it must be composed by competent staff including a Manager, a Secretary, a Technician, an Accountant and any other staff deemed to be necessary to run the water scheme. In order to be

appointed, the Team members are required to have specific qualifications and certificates that prove they are fitted for the position. Even though the rational behind the reform is understandable as it is aimed at achieving better and more efficient water management, what emerged in the study area is that more often than not communities struggle to find qualified people to be part of the CWMT within the village. As a result, the villages rely on people that over time have developed the necessary know-how in the different areas of expertise needed to run the water scheme. In this sense, on the one hand, the reform still has a long way to go to achieve a professionalization of the rural water sector. On the other hand, there is a clear gap between the definition of what it means to be a professional used in the reform's text and the ways in which knowledge, skills and know-how are traditionally built in rural villages. Training and education are expected to be the tools with which to fill this gap, and in this sense LVIA has developed in collaboration with the Tanzanian Vocational Education and Training Authority (VETA) and "Hydroaid - Water for Development Management Institute" a specific "Course for Rural Water Managers" which has shown good results. However, RUWASA still has to find an effective way to carry these activities out in a uniform and stable manner as still in several villages of the study the interviewed CBWSO members reported the inadequacy of the training provided by the RUWASA community development officers to manage the community water scheme.

Gender dynamics and community water management

This paragraph moves from the specific managerial issues regarding rural community water management and answers to the need of considering also the socio-cultural elements that are relevant in the way in which communities relate to their waters. The previous section has discussed to some extent the power issues at play within the CWC, that depend on the status of the people that are part of the committee. Here, on the other hand, the dimension of gender integrates the analysis in order to see how it intersects with such power dynamics and overall, with the way in which communities in Kongwa and Chamwino manage and use water. In the study area, women's and men's participation in the use, management, and knowledge of water runs along lines that trace often unequal socio-cultural dynamics. What often happens paradoxically is that even though women are the ones who have the most to do with water and the water scheme on a daily basis, and self-described as the ones who "*know more about water*," they are not actively involved in its formal management. What emerged from women's experiences through the research is a complex set of practices and values that include not only domestic and care activities, but also productive work such as running small businesses, conducting agricultural work, collecting water for other people,… Often it is them who are the ones that whenever a failure of the scheme occurs are the first to notice and the ones that notify the issue to the management entity. Also, they are the ones that over time have developed a deep knowledge of

the surrounding environment that include the alternative water sources to be used in the case of emergency or malfunctioning of the infrastructure. They know which water source has better taste, quality and availability and it is often upon them that falls the task of educating their sons and daughters on how to use water efficiently and safely.

It has been time and time established that without safely managed Water, Sanitation, and Hygiene (WASH) services, women and girls are among the most vulnerable groups to abuse, attack and ill-health, and this affects their ability to study, work and live in dignity. This means that improvements to WASH at home, school, work and in public spaces is an essential point of entry in tackling - directly and indirectly - gender equality. This is why women and girls must be put in the conditions to play a central role in designing and implementing water solutions, so that services respond to their specific needs. This importance of the gender dimension in rural water management has been recognized also in the Tanzanian National Water Policy that states that "*In the rural areas women bear the burden of searching for water and guardians of the living environment. However, this pivotal role has seldom been reflected in institutional arrangements for the development and management of rural water supply and sanitation services"* (NAWAPO, 2002, p. 35-36). The policy then lists the three macro measures that the government choose to implement in order to promote gender equality within the rural water sector. The first aims at encouraging *"a fair representation of women in village water-user entities*" (NAWAPO, 2002, p. 36). The second principle states that rural water management "*shall be based on what both men and women in rural communities know, want, and are able to manage, maintain and pay for*" (NAWAPO, 2002, p. 36). The third and last point advocates for the creation of the conditions ensuring active participation of women *"at all levels (…) including decision making, planning, supervision and management*." (NAWAPO, 2002, p. 36)

Looking at how these principles have been translated and strengthened into the water sector's legislative framework, the 2019 Water Supply and Sanitation Act states that at the higher administrative level of the RUWASA Board, a gender quota shall be adopted. Specifically, it is stated that a third of the board members should be women. Looking at how this gender perspective was legally recognized at the village level, such gender quota mechanism was not extended at CBWSO level and the law only states that there must be one "representative of women" in the Community Water Committee.

Even though the limited provisions contained in the reformed water and Sanitation Act No. 5 of 2019, and the WID approach that water policies and legislations seem to adopt, data from the field shows that since the introduction of the reform there has been an improvement on the formal involvement of women in the management and operations of rural water schemes in the study area. Such involvement can be seen from the increased number of women present within the CBWSO

Management Board, who are involved in decision making for the management of the rural water scheme. Looking merely at the numbers, in the 8 Villages where the Focus group have been conducted, out of 80 CBWSO members interviewed a total of 43 (53.75%) were women who were under the CBWSO Structure. Breaking down this number to look bat the types of position held by women in the local water governance, out of the 43 women present in the 8 CBWSOs, only 12 (28%) were part of the Management Team (which is responsible for the day-to-day operations), while 31 (72%) were in the Community Water Committee. This means that the everyday management is still largely in the hands of men but even though the number is low, there is an improvement comparing to the previous situation where the formal involvement of women in the Management Team was very close to zero. Overall, the results show that after the introduction of the 2019 reform the involvement of women in management and operation of rural water schemes has improved.

However, as promising these data can look, caution is needed in the interpretation of the actual impact on making the decision-making processes over water more equitable and gender sensitive. This is because often the formal participation of women within the CBWSO does not match an actual and active participation in the decision-making processes concerning water (Mandara, Niehof, & van der Horst, 2017). In fact, there are cases in which even though women are officially part of the CBWSO, they don't really have influence power over the decisions, and they don't feel free to speak up. Moreover, during fieldwork, some reported that they didn't really know what it does it mean to be the "representative of women" within the CBWSO. On the other hand, ensuring a formal presence within the CBWSO can have a positive effect in terms of increasing women's formal participation as it allows them to get exposure and knowledge about the possibility to be active at different scales. It is therefore key to encourage women to be able to access different relevant positions in order to be involved in decision making for the management and operation of the rural water schemes. This can be achieved through the definition of specific activities targeting women who are interested in gaining more skills in water management. The inclusion of both men and women in gender equality-oriented activities is key to ensure their sustainability and effectiveness. Moreover, women have shown to possess high practical knowledge about the local waterscapes and therefore it would be useful to find a way to unlock such knowledge in the perspective of improving community water management.

Looking back at the abovementioned NAWAPO principles about the importance to strive for gender equality through community water management, we can see how the efforts have been put into the first point about the representation of women in village water management entities. The other two principles that are equally important, have been somehow subordinated to the first one and require specific actions. In this sense, the promotion of skill building activities for both men and women who are already in the CBWSO could be a way to step up the quality of their participation that could

change from passive to active. Promoting exchange of practices and experiences among different CBWSOs where the presence and contribution of women is different could also represent an opportunity to achieve the objectives set by the national policy. The inclusion of both men and women in this kind of activities is central in ensuring the success of a gender mainstreaming approach within the water sector.

Conclusions

From what emerged in this study, the implementation of the 2019 WSSA in Kongwa and Chamwino District seems to have produced some relevant change in terms of improvement of rural water management. Most of the COWSO have been re-formed into CBWSOs which are performing better than before, though some efforts are still needed to make community water management more resilient and sustainable. The areas that appear to need strengthening are financial management, operation and maintenance, record keeping, setting and respecting clear roles and responsibilities in order to avoid (or at least minimize) the risk of political leaders taking over the decision-making processes. The overall performance of the rural water scheme has generally improved, especially looking at the increase of the average revenue collection, the use of quarterly meetings to share different information regarding the management of the rural water scheme and the functionality of water infrastructure. However, even though the work of RUWASA in fixing and constructing water schemes showed its results, there is still gap in the capacity to improve the water scheme management and governance. As for the gender dynamics linked to water management, even though the national level (through the NAWAPO and 2019 WSSA) recognises the importance of actively involving both men and women in the CBWSO system, what emerges is that there is still significant room for improvement in this direction. What often happens is that the presence of women in the room where decisions are made does not translate into an actual and active participation.

From this overview in the Kongwa and Chamwino districts, the issue of water management emerges as something extremely complex and intertwined with dynamics that go beyond the development of suitable technical knowledge or the more generous and effective allocation of resources of different types (financial, personnel, training). In this sense, the issue of skills development through the organisation of specific training is certainly of central value as demonstrated by projects such as the one carried out by LVIA together with the Tanzanian Vocational Education and Training Authority. In this sense, the development of specific skills relates to conducting field follow ups and monitoring, financial management, technical maintenance, and report writing.

However, how one shapes the conception of what it means to create the right competencies must take into account, on the one hand, the peculiarities and untapped resources that different communities

have within them. Indeed, in many of these areas, competence, particularly in the field of water, is built through a variety of different experiences rather than on qualifications formally obtained in educational institutions, and water knowledge circulates through informal channels that are not always intercepted by a purely managerial and technical view of water management. On the other hand, it is necessary to reflect on what are the most effective ways to transmit skills and stimulate communities to care for water within the framework of national policies and laws such as the 2019 WSSA. In this sense then, it may make sense to think of a knowledge-sharing construct that brings together a vertical approach from experienced water managers or cooperating agencies, to a horizontal one where different CBWSOs can come together and be enabled to learn from each other about best practices to improve the water situation in their communities. This approach would take some of the pressure off the RUWASA and make the communities more involved in understanding the best ways to manage water and interface with other actors in the area doing the same work.

Attention to the power dynamics that reproduce within CBWSOs and how they intertwine with the gender dimension also emerged as essential both for understanding the strong political dimension of water and as a starting point for imagining new and creative ways to foster gender equality through community water management system through the more comprehensive framework of gender-and-development (GAD). Tackling the inequal gendered issues affecting rural water management could benefit from actions that deal not only with activities aimed at fostering women's participation, but also addressing the inherent masculinity of water management structures in order to identify ways to fit a gender approach to water related projects that could effectively allow both men and women to be part of the change.

Systemic reforms such as the 2019 represent a great opportunity to improve water access conditions in a broad sense and to find new ways to do things. The long time needed for such significant changes to land, adjust and produce the expected effects in a fast-changing context such as Tanzania and the fact that water issues intersect with broader dynamics that pertain environmental, economic, political and socio-cultural aspects of the society, are creating spaces for change and putting novel emphasis of water access issues.

References

Adjei Adams, E., Juran, L., & Ajibade, I. (2018). 'Spaces of Exclusion' in community water governance: a Feminist Political Ecology of gender and participation in Malawi's Urban Water User Associations. *Geoforum*(95), 133-142.

Armitage, D. (2008). Governance and the commons in a multi-level world. *International Journal of the Commons, 2*(1), 7-32.

DeGraff, D., Levison, D., & Dungumaro, E. (2017). Environmental Chores, Household Time Use, and Gender in Rural Tanzania. In R. K. Connelly, *Gender and Time Use in a Global Context.* New York: Palgrave Macmillan. doi:https://doi.org/10.1057/9

Elisante, E., & Muzuka, A. N. (2017). Occurrence of Nitrate in Tanzanian Groundwater Aquifers: A Review. *Appl. Water Sci., 7*(1), 71–87. doi: https://doi.org/10.1007/s13201-015-0269-z

Fierro, A., & Nelaj, E. (2017). Rural water supply management in Tanzania: an empirical study on COWSO strategy implementation and private sector participation. *JUNCO – Journal of Universities and international development Cooperation*(2), 1-27.

Fisher, J., Cavill, S., & Reed, B. (2017). Mainstreaming gender in the WASH sector: diluition or distillation? *Gender & Development, 25*(2), 185-204.

Forzano, E., & Zingari, G. N. (2021). *Disputed waters. Improving communities' capacity to manage their resources.*

Giné, R., & Pérez-Foguet, A. (2008). Sustainability assessment of national rural water supply program in Tanzania. *Natural Resources Forum, 32*(4), 327-342.

Hellum, A., Kameri-Mbote, P., & Koppen, B. (2015). The Human Right to Water and Sanitation in a Legal Pluralist Landscape: Perspectives of Southern and Eastern African Women. In A. Hellum, P. Kameri-Mbote, & B. Koppen (Eds.), *Water is Life: Women's human rights in national and local water governance in Southern and Eastern Africa* (pp. 1-31). Weaver Press.

Jiménez, A., & Pérez-Foguet, A. (2010). Challenges for Water Governance in Rural Water Supply: Lessons Learned from Tanzania. *International Journal of Water Resources Development, 26*(2), 235-248.

Mandara, C. G., Niehof, A., & van der Horst, H. (2017). Women and Rural Water Management: Token Representatives or Paving the Way to Power? *Water Alternatives, 10*(1), 116-133.

Mangione, R., Pozzobon, C., & Rizzi, I. (2019). Rural Water Supply Management in Iringa region, Tanzania. *Journal of International Cooperation - JuNCo*.

Masanyiwa, Z. S., Niehof, A., & Termeer, C. J. (2014). Gender perspectives on decentralisation and service users' participation in rural Tanzania. *The Journal of Modern African Studies, 52*(1), 95-122.

Masanyiwa, Z. S., Niehof, A., & Termeer, C. J. (2015). Users' perspectives on decentralized rural water services in Tanzania. *Gender, Place & Culture, 22*(7), 920-936. doi:10.1080/0966369X.2014.917283

NAWAPO. (2002). National Water Policy. Republic of Tanzania.

Nelson, V., & Stathers, T. (2009). Resilience, power, culture, and climate: a case study from semi-arid Tanzania, and new research directions. *Gender & Development, 17*(1), 81-94. doi:10.1080/13552070802696946

Nightingale, A. J. (2011). Beyond Design Principles: Subjectivity, Emotion, and the (Ir)Rational Commons. *Society & Natural Resources, 24*(2), 119-132.

Ostrom, E. (1990). *Governing the commons -the evolution of institutions for collective action.* Cambridge University Press.

Peterson, N. D. (2010). Choices, options, and constraints: decision making and decision spaces in natural resource management. *Human Organization, 69*(1), 54-64. doi:10.17730/humo.69.1.82153826v2484743

Ray, I. (2007). Women, Water and Development. *Annual Review of Environment and Resources*(32), 421-449. doi:10.1146/annurev.energy.32.041806.143704

Sanna, E. R. (2022). *Participatory Environmental Planning. Evaluation of environmental risk factors through participatory methods in 5 villages of Kongwa Districts.*

Shemsanga, C., Muzuka, A. N., Martz, L., Komakech, H. C., Elisante, E., Kisaka, M., & Ntuza, C. (2017). Origin and mechanisms of high salinity in Hombolo Dam and groundwater in Dodoma municipality Tanzania, revealed. *Applied Water Science, 7*, 2883-2905.

Singleton, B. E. (2017). What's missing from Ostrom? Combining design principles with the theory of sociocultural viability. *Environmental Politics, 26*(6), 994-1014. doi:10.1080/09644016.2017.1364150

The United Republic of Tanzania (URT), Ministry of Finance and Planning, Tanzania National Bureau of Statistics, President's Office - Finance and Planning, & Office of the Chief Government

Statistician,, Z. (2022, December). The 2022 Population and Housing Census: Administrative Units Population Distribution Report. Tanzania.

Venis, R. A., Taylor, V., Sumayani, P., Laizer, M., Anderson, T., & Basu, O. D. (2022). Towards a participatory framework for improving water & health outcomes: A case study with Maasai women in rural Tanzania. *Social Science and Medicine, 301*, 114666. doi:https://doi.org/10.1016/j.socscimed.2022.114966

List of Acronyms

CBWSO	Community Based Water Supply Organization
COWSO	Community Owned Water Supply Organization
CSO	Civil Society Organization
CWC	Community Water Committee
CWMT	Community Water Management Team
FGD	Focus Group Discussion
NAWAPO	National Water Policy
RUWASA	Rural Water Supply and Sanitation Agency
WSDP	Water Sector Development Programme
WSSA	Water Supply and Sanitation Act