



Integrity Management in Community-based Water Tenure in Kajiado County, Kenya

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CGIAR Initiative on Climate Resilience

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TABLE OF CONTENTS

SUMMARY	5
1. BACKGROUND AND RATIONALE	7
1.1. BACKGROUND	7
1.2. AIM AND SITE SELECTION	8
2. METHODOLOGY.....	9
2.1. TRANSECT WALK	10
2.2. SAMPLING	10
2.3 LIMITATIONS	11
3. FINDINGS	11
3.1 OVERVIEW OF THE STUDY AREA	11
3.1.1 <i>Kajiado County</i>	11
3.1.2 <i>Mailua Community</i>	14
3.2 SEMPEWUETI WATER SYSTEM	16
3.2.1 <i>History</i>	16
3.2.2 <i>Technical status</i>	18
3.2.3 <i>Gendered uses and priorities</i>	18
3.2.4 <i>Water Governance</i>	20
3.3 OLCHORO NYIOKIE - PARAGISO WATER SYSTEM	22
3.2.1 <i>History and technical status</i>	22
3.2.2 <i>Gendered uses and priorities</i>	22
3.2.3 <i>Water Governance</i>	23
3.3 MAILI TISA TOWN WATER SYSTEMS	24
3.3.1 <i>General</i>	24
3.3.2 <i>Community Borehole (Korean); take over by WSP</i>	24
3.3.3 <i>Mosque Borehole</i>	25
3.3.4 <i>Privately Owned Borehole</i>	25
3.3.5 <i>Dysfunctional Maili Tisa gravity pipeline and interest in joining the WSP</i>	25
3.4 GOVERNMENT ACCOUNTABILITY TO COMMUNITIES: THE NEW DAM.....	26
4. CONCLUSIONS AND RECOMMENDATIONS.....	28
4.1 CONCLUSIONS	28
4.2 RECOMMENDATIONS.....	29
REFERENCES	31
ANNEXURES.....	32

SUMMARY

Smallholder production systems in low-income countries suffer the most from the impacts of climate change but receive the least benefit from climate adaptation programs. This is due to governance structures that make it difficult for governments and organizations to effectively reach marginalized communities. Technical, financial, and institutional support is provided in vertical siloes, limiting coordination between national government departments and hindering integrated climate interventions. Additionally, top-down support frameworks overlook the horizontal governance structures of rural communities, missing opportunities to recognize and build on their age-old knowledge and coping strategies to deal with climate variability.

The Water Integrity Network (WIN) advocates for integrity in polycentric water governance through transparency, accountability, participation, and corruption prevention across scales. WIN partners with national governments and NGOs to implement the Integrity Management Tool (IMT) for small water supply systems (SWSS). The IMT-SWSS aims to improve management and governance practices, increase customer satisfaction, and comply with regulations. In Kenya, where only half of the rural population has access to improved water sources, WIN has collaborated with policy makers and implemented the IMT-SWSS to support sustainable operation and maintenance of small-scale water supply systems, among other, in three systems in Mailua Community in Kajiado South County. This Maasai area was selected for the present study.

The study aims to analyse the integrity perspective for small-scale water supply systems within horizontal polycentric governance at the local community scale. The focus is on how the community manages multiple sources of water to meet their domestic and productive needs, and on the decision-making process between water users, their leaders, and government institutions. The Mailua Community has multiple gravity water systems, boreholes, and water vendors. Representatives of the water supply systems participated in a training on the IMT-SWSS, and an umbrella committee was set up to represent the interests of the systems to other governance structures.

The study methodology included a literature review of both published and grey literature for this particular area. The field research was done in two phases. Phase one involved participatory mapping, transect walks, interviews with key informants and focus group discussions. Phase two included further exploration of thematic areas with significant impact on water use and polycentric governance structures that were identified through data analysis during phase one. This included the planning of the new Namanga Dam, and the two-way vertical integration of top-down and bottom-up governance.

Key findings

Mailua Community has established three donor-funded small water supply systems that cater to specific user groups. However, during droughts, the water available is only used for domestic purposes and cattle. The management practices of all three systems have gaps, including lack of communication and effective engagement between the community and state institutions. Collaboration among key stakeholders in the water service delivery, management of water resources, land and water use for irrigation, and forestry sectors is limited. There is also a lack of clarity on the roles and responsibilities between the committees of the small water supply systems and the umbrella committee, as well as a lack of involvement of women

in decision making. Additionally, there is no comprehensive plan to mitigate the impacts of long drought periods.

Recommendations

Continuous capacity building is necessary to ensure accountability, transparency, community participation, compliance, equity, and inclusion in water service delivery. It is also important to support the formalization process of community water groups to become legal entities so that they can access financial and technical support from the government. The three groups in Mailua Community require training and follow-up activities for the implementation of the action plan drawn during the IMT-SWSS process. Stakeholders should work together to improve knowledge in the community regarding the application of Integrated Water Resource Management strategies and to promote partnerships for the protection and conservation of water resources.

Empowering women regarding water issues is essential, since they are the most important domestic water users and more affected when it comes to fetching and paying for water. Women's involvement in designing water infrastructure and managing water for livestock and domestic uses is crucial. Youth initiatives that focus on water conservation should also be strengthened. Structures aimed at providing early warning on drought and flooding need to be enhanced and made more climate change resilient. Adaptable methods and technologies for water use in farming and livestock need to be promoted. Community institutions should be supported to advocate for budgetary allocations from the government and to prevent water-related conflicts. Stakeholders need to be brought together for collaborative planning and implementation of water projects, and there is a need to allocate time and resources for their "buying-in" into the proposed dam project. Effective community participation and government stakeholder involvement are necessary for smooth coordination.

1. BACKGROUND AND RATIONALE

1.1. *Background*

Smallholder production systems in low-income countries are hit hardest by the effects of climate change such as drought, flooding, and high temperatures. Yet, they still benefit least from climate adaptation initiatives. For governments, other development organizations and donors, it remains a major challenge to effectively reach the most marginalized. This is mainly due to governance structures. Governance is polycentric in the sense that critical decisions are taken by many parties and institutions across international, national, provincial, district/county, and municipal levels, and, ultimately, by different community members (women and men, farmers and pastoralists, wealthier and poorer, etc). At each level, at its turn, a wide range of government and non-governmental and formal and informal stakeholders interact.

Government and non-governmental support agencies continue to provide their **technical, financial, and institutional** support in vertical siloes, in which top-down financing streams require upwards accountability. This limits the space for horizontal coordination by national government departments mandated to combine land, water and food systems in effective climate adaptation. Even legal frameworks separate water law from land, forest and other resource laws, constitutions or international human rights, indigenous peoples' rights, administrative law, etc.

Siloes are especially pronounced and counterproductive in water-related interventions. Yet, adapting to floods and droughts for climate resilience primarily requires adaptive water resource management. As a result of the vertical siloes, water resources continue 'seeping through the cracks' of land and food systems and other relevant interventions and legislation for climate adaptation. Vertical siloes even persist within the water sector despite longstanding efforts to develop Integrated Water Resource Management and Nexus approaches. Till today, the WASH sector for drinking and other domestic uses hardly communicates with irrigation or livestock sectors. Similarly, water legislation is particularly narrow. Whereas land and forest legislation recognize water appurtenant to land, water legislation tends to ignore these links.

This top-down, silo-ed approach not only prevents horizontal coordination for integrated climate interventions among national government departments, but even if such support reaches the most marginalized, siloed top-down support frameworks miss crucial opportunities to recognize and build on the horizontal governance structures of rural communities. In local governance, agriculture-based livelihood strategies are intertwined, often in informal, customary and life-bringing ways. As a result, climate adaptation risks overlooking the most important agency of this priority target group: communities' age-old knowledge and coping strategies to deal with climate variability and unpredictability. For mere survival and development, local resource tenure arrangements and food systems had to accommodate droughts and floods to a considerable extent. This horizontal integration has generated solutions that continue being ignored, or even defined as unlawful. Again, this is most evident, and counterproductive, for integrated community-based water tenure. Hence, transformative polycentric water governance seeks horizontal integration across tiers, and a two-way integration top-down and bottom-up.

The Water Integrity Network (WIN) pursues such polycentric governance from a water integrity perspective. Integrity warrants transparency, accountability, participation and corruption prevention. WIN does so through a blend of advocacy, capacity development and empowerment, knowledge development and sharing, as well as application of water integrity approaches, tools and methodologies. WIN establishes partnerships with national government top-down and has developed and implements an Integrity Management Tool (IMT) to strengthen water tenure bottom-up at the interface with the lowest-tier government and NGO support to small rural water supply systems.

The Integrity Management Toolbox for small water supply systems (IMT - SWSS) is a set of practical tools for community engagement, aimed at improving performance and regulatory compliance of small rural water supply systems and community-managed systems, through better management and governance practices. It guides water user groups to:

- Improve their performance, by putting in place better management and governance practices and improvements to functionality of the water system, therefore increasing customers' satisfaction;
- Become compliant in terms of regulation, by establishing an appropriate management model with inbuilt accountability mechanisms to monitor the quality of services provided, and manage water resources sustainably, with the aim to protect customers.

The present study focuses on Kenya, where WIN has a long-standing collaboration with Kenya's high-level policy makers, in particular the Ministry of Water and Irrigation, the Water Services Regulatory Board (WASREB), Water Sector Trust Fund and other key players. Only half of the rural population has access to improved water sources for just even basic domestic uses, and failure, if not collapse of those systems is common. In urban areas, government water provision is somewhat better.

Currently, WASREB promotes a change from community-managed projects to professional, paid Water Service Providers (WSP). WASREB's water service delivery guidelines of 2019 (WASREB 2019) have outlined the several models that the Small Water Supply Systems require, most of which require that they work closely with a Water Service Provider. In areas without WSPs, other options are provided. The Integrity Management Tool for Small Water Supply Systems (IMT-SWSS) by WIN is one of the WASREB recognized approaches that are being used to implement.

Within Kenya, WIN has implemented this IM – SWSS tool to support sustainable operation and maintenance of small-scale water supply systems Kajiado South County. In this semi-arid area, the majority are Maasai pastoralists. During persistent droughts, they risk losing significant numbers of cattle and livestock. This study takes the bottom-up perspective and citizens' interface with lowest-tier government and support agencies. The two-way vertical integration of top-down and bottom-up governance is addressed in the second study that focuses on the Namanga Dam, which is in the planning stage (see Njoroge et al 2023).

1.2. Aim and site selection

The aim of the study is to highlight an integrity perspective, as promoted by the IMT-SWSS tool for small-scale water supply systems, as part of the often ignored and overridden horizontal polycentric governance at the local community scale, so how women and men users and their leaders manage multiple sources of water to meet their multiple domestic and productive needs, through self-supply and infrastructure that is at least partly financed by government or other external support agencies. This entails vertical

decision-making bottom-up at the interface between water users, their (elite) leaders and county-level and national government institutions.

Within the county, Mailua Ward in Kajiado South was selected. The community people living in this area use water for domestic, livestock/cattle, subsistence irrigation and other uses in both rural and peri-urban settings. It has two gravity water systems (Sempewueti and Olchoro Nyiokie - Paragiso systems). These primarily serve the rural communities. A defunct gravity system serves a small town called Maili Tisa. Two communal boreholes and one private borehole with diesel pumps primarily serve this small town. However, water vendors cover both areas. A few households have own diesel boreholes in their homesteads; and a few farmers irrigate with diesel boreholes.

Representatives of the two functioning and one dysfunctional gravity systems participated in WIN's training on the Integrity Management Toolbox for Small Water Supply Systems (IMT-SWSS) in 2018. An umbrella committee was set up during this training. Its main role is to represent the interests of the other water supply systems to other structures of governance such as the WSP and the county government. It is composed of representatives of committee members from the three water supply systems of Sempewueti, Olchoro Nyiokie and Maili Tisa and of members of the borehole committees.

2. METHODOLOGY

The study started with a literature review and the references are listed in annex A. Both published and grey literature for this particular area, including research previously done by IWMI and WIN were reviewed. The field research was done in two phases.

Data collection phase 1

In the three service areas of the three small water supply systems, the field research started with participatory mapping of water, land, forest, grazing land or peri-urban areas. This revealed communities' holistic perspectives on the multiple surface and groundwater resources; on their seasonal variability and the perceived changes in that variability over the past decade; on individual or collective infrastructure for self-supply and externally supported infrastructure; and on the land-bound uses at different sites of use (homesteads, distant fields, other sites of use) for each infrastructure. Expectedly, in most cases the infrastructure was multi-purpose. Mapping was done separately for women and men and this was done after Focus Group Discussions (FGDs). See guideline is in annex B. Women's and men's perceptions can profoundly differ on socio-economic matters. Also, an all women group was able to talk more freely about gender related issues such as gender violence. In addition, FGDs were held with management committee members (annex C).

This was followed by transect walks and interviews with key informants to deepen the qualitative assessment of community-based water tenure. Attention was given to community-scale conflicts and existing (or missing) resolution arrangements for the 'sharing in' of water resources (so within what communities define as their territories with appurtenant water resources) and the 'sharing out' of especially gravity flows with communities or external third parties upstream and downstream of a community, as found in Kajiado county.

Data collection phase 2

After analysis of the data collected during phase one, key thematic areas of interest were identified and there was 'deep dive' on the thematic areas. The selection of the thematic areas was based on the areas that showed strong impact on water use and polycentric governance structures.

2.1. Transect walk

Transect walks are recognized as a means "to gain an overview of the water use situation in the area, and in relation to food and land systems, health, gender equality and climate change (EAWAG-Sandec, 2011). In addition to deliver insight into the perspective of the local residents concerning associated needs and challenges."¹ In this study, four transect walks were done to collect information on the condition of the affected populations' access to water and uses and to gauge what changes have resulted from extreme climatic conditions, such as experiencing long periods of drought.

The aim of the transect walks was to provide context to any findings and to provide evidence based on both direct observation (water uses) and testimony from the affected population. The transect walks provided information on the general condition with regards to water use in an area. They did not collect information on the water uses of specific households and/or individuals.

The researcher took part in the transect walk together with key informants from the community and semi-structured questions were used to collect information from the informants. Structured observation was done and a checklist of the observation is included in annex C. This checklist was drawn during the inception phase and was updated to include aspects highlighted during the community mapping activity during the FGDs. The researcher decided on the routes of interest for the transect walk after the FGDs and mapping of the village. The transect walk was a systematic walk along a path (transect) across the community/project area together with the local people to explore the water uses and current conditions by observing, asking, listening, looking and producing an illustrative map with the support of the water users. The information collected during the mapping of the village, the sketch map and the observations made were the basis of discussions with the participants. Each transect walk took approximately three hours.

2.2. Sampling

Within the study area, respondents were selected by snowball sampling²/chain referral sampling technique was used by the researcher to generate a pool of participants for the KIIs and FGDs. The researcher got the first respondents from the referral from the community leaders.

Table Sampling

Method of data collection	Details of sample
7 Focus Group Discussions (FGDs)	Sempewueti- women (6), men (15), youth (6), water system management committee (7) Olchoro Nyiokie/Paragiso- water system management committee (7), men (10)

¹https://www.eawag.ch/fileadmin/Domain1/Abteilungen/sandec/schwerpunkte/sesp/CLUES/Toolbox/t3/D3_2_Transect_Walk.pdf

² This is a recruitment method in which research participants are asked to assist researchers in identifying other potential subjects.

	Mali Tisa Town- men (5)
8 Key Informant Interviews (KIIs) community leaders	The community leaders included; business leaders (2), Chief (1), church leaders (1) and village elders (4) The community leaders interviewed were representative of the three groups
15 KIIs community members	This included 5 community members each from the Olchoro Nyiokie/Paragiso, Sempewueti and Mali Tisa Town community groups.
Unstructured KIIs during the transect walk	20 -25 short interviews were conducted during the study period. The kind of enquires were based on the observations made on the transect walk and brief interactions with the community members served by the three water systems.

2.3 Limitations

The key limitations of the study area are the following:

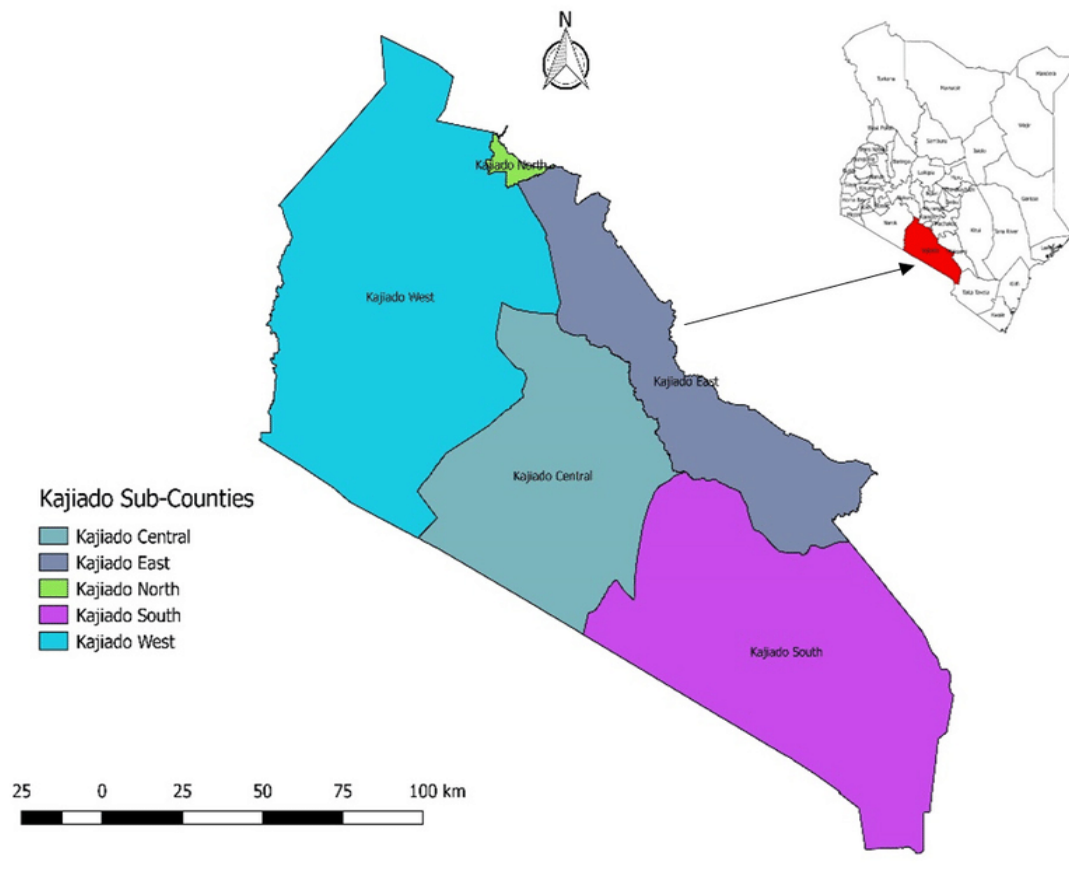
- The study was conducted at a time of severe drought period and the water users were engaged in activities relating to looking for cattle feed in the town or in the forest. It was difficult to get full attention of the water users except early morning and in evenings. It was also a challenge to get women in the evening hours since they would be getting ready to do domestic chores after being out all day. The researcher was able to capitalize on the hours that the water users were available and collected adequate information.
- It was a challenge to engage women and for them to open up about water issues even when they were on their own. Recording for notetaking was done with permission from the informants but the researcher noticed that once the informants are being recorded, they were very cautious and most of the times would only speak of the positive things and a few challenges. It was not possible to get FGD discussion with women from Ochoro Nyiokie-Paragiso group and this can be attributed to the fact that women don't feel that it is in their place to speak about a water source that is meant to be for animals; yet they fetch water for domestic use from there.

3. FINDINGS

3.1 Overview of the study area

3.1.1 Kajiado County

Kajiado county (see figure 1) occupies 21,900.9 Km² Southern area of Kenya and is mostly inhabited by the Maasai community who are mainly pastoralists and increasingly settling as farmers. Wildlife and agro-forestry conservancy are also common activities (NEMA, 2022). Other economic activities include minerals and sand mining (CIDP, 2018-2022). The county is categorized as part of arid and semi-arid region. The main occupation of most household heads is livestock herding (31.9%) and waged or casual labor (25.9%). According to the County Water Policy (2019), sale of livestock and casual labor formed bulk of income source for most households with 29.8% and 29.1% respectively implying that drought situation may have a significant impact on the households' income sources and eventually households' food insecurity.



v

Figure 1: Map of Kajiado Sub Counties

According to National Drought Management Authority (NDMA), 2022a, in the recent past, impacts of climate change and rainfall unreliability are very common (CIDP, 2018-2022). Drought is a serious challenge. For example, in the past year, failed long rains (March to May 2022) and short rains (October to December 2021) has led to consecutive seasonal dryness receiving very little rainfall in the range of (< 10mm - 50mm) in July 2022. The County has remained in moderate drought situation for five continuous months since May (see figure 2). In May, the Vegetation Condition Index (VCI) for the County was 33.08 and 27.5 by September indicating worsening of drought situation in the County since May 2022. (NDMA, 2022b)

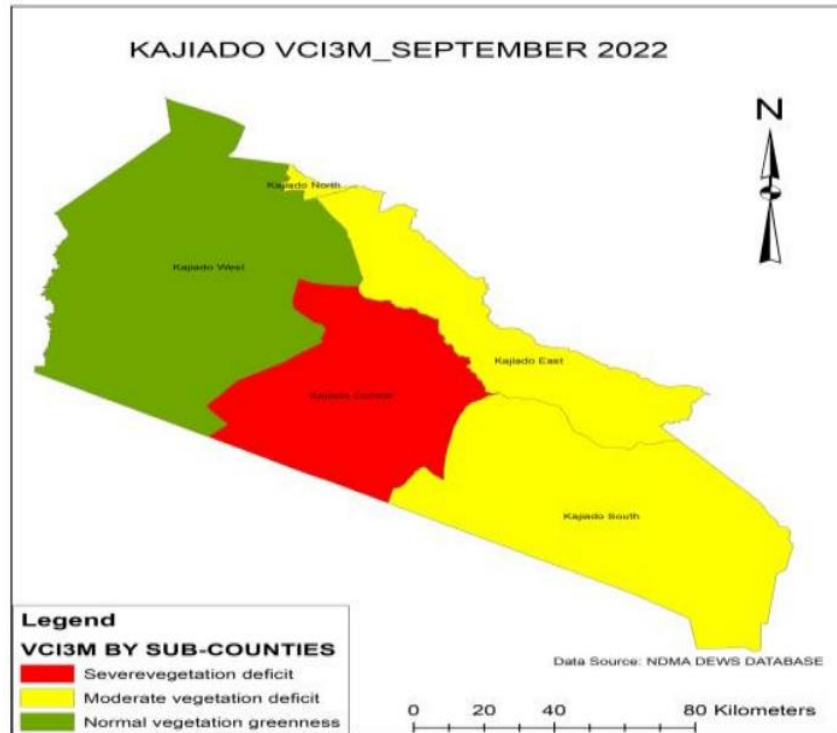


Figure 2: Kajiado Vegetation Condition Index (VCI) (Source: National Drought Management Authority, 2022)

The county's Department of Water, Irrigation and Natural Resources is in charge of water resources and the water projects and developments (CIDP, 2018-2022). According to the County Water Policy 2019, there are a number of water service providers in the county which are classified as either small, medium or large water service providers depending on the number of connections. These include Olnjoro Orok Water and Sanitation Company, previously known as the Namanga Water Users Trust, which serves Namanga town, Maili Tisa town and the environs in Mailua Ward, and this is classified as a small water service provider with less than 5,000 household connections.

There is Olnjoro Orok Water Resource Users Association (WRUA) in Mailua/Namanga water catchment area. The WRUA has got 100 members. WRUAs exist to promote good water resources management practices; safeguard the reserve flows for downstream ecological demands and basic human requirements; reduce and solve water resource use conflicts; promote catchment conservation measures to improve water quantity and quality. However, as found in the study, only one of the water users from Sempewueti system indicated that he is a committee member of the WRUA.

At community level, women spend long hours and long distances every day to fetch clean water and there is a conflict with men driving their livestock to the communal water sources and making the water dirty, although the sources are shared by users for both domestic uses and livestock. Water management in Kajiado communities follows the patriarchal and cultural systems where men solely manages the affairs excluding women in critical water related decisions (Nafula, 2020).

The main water sources for livestock are boreholes that are mostly permanent water sources. The long-term average distance that livestock trekked from the grazing fields to the watering points is 4.3 kms and 5.9 kms during rainy and dry season respectively (NDMA, 2022a).

At county level, there is an on-going project by the same Ministry of Water and Irrigation (MoWI): the Namanga Dam Water Supply Project, which is implemented by the Tanathi Water Works Development Agency (TAWWDA). This is one of the nine Water Works Development Agencies in Kenya, serving Kitui, Makueni, Machakos, and Kajiado Counties (<https://www.tanathi.go.ke/>). This project was planned by the MoWI more than 5 years ago. According to TAWWDA, the dam will have capacity to impound 3.4Mm³ of water and water supply system and will supply 71,000 people with clean water together with their livestock. The dam is to supply water to Namanga town, Mailua Community, Ngeitataik town and Bisil town. There will be water pump stations to pump water to the designated areas. The dam and water supply infrastructure project are already in the advanced planning stage in which detailed proposals and designs are being done, and beacons installed on sites for the construction to start. The project also includes a water treatment plant and sanitation facility at Namanga town. This study also explored whether the project had been transparent and accountable to affected community. This is further elaborated in Njoroge et al (2023).

3.1.2 Mailua Community

Mailua Community is found in Mailua Ward, Kajiado South Constituency. The community is largely involved in pastoralism as the key economic activity. Some community members practice small scale rain-fed and irrigated farming. In the recent past, the water has become so scarce such that the farming activities have become minimal.

Mailua Community comprises of three sub-groups: the natives who have lived there all their lives; the Maasai new comers who came from Kenya and others from Tanzania and bought land there but have lived there for many years; and new comers who are not Maasai, who do business in Maili Tisa town. The major source of problems is between the two groups of Maasai; the native Maasai and new comers that are assimilated. The latter, the assimilated Maasai are seen as the elites and they collude with the political elites to make decisions that are not necessarily good for the entire community. However, this group does not represent the community at any forums, but the natives do. Hence, the natives are influenced 'behind the scenes' to comply with the decisions that are made by the elites who have the economic power and political goodwill. The other new comers, who are not Maasai are not involved at all, neither in the forums nor in other decision making about community programmes.

As indicated in figure 3, the study area has three small-scale gravity water systems; Sempewueti, Olchoro Nyiokie - Paragiso and the – dysfunctional - Maili Tisa town system (this system is to share water from Olchoro Nyiokie tank). The water sources of these systems are the various natural springs that are found in the hills of the Mailua Ward about 5 kms distance from the community residential area. In Maili Tisa Town, there are two community diesel-powered boreholes and one privately owned borehole. There is a fourth system within the study area that has a pipeline from the water intake and water storage tank but there is no water distributed from the storage tank. This system is not part of the three systems that were studied.

The umbrella committee that was supposed to manage the water sources at the hills and comprised of members from the management committees of the three gravity systems has been dormant for the last two to three years. This umbrella committee was created in 2018 during the implementation of the IMT-SWSS to enable the committees of the three groups to work together towards improvement of the governance structures and to enable transparent access to state funding and technical support. The committee has not been functional since 2019 due to lack of proper coordination by the members.

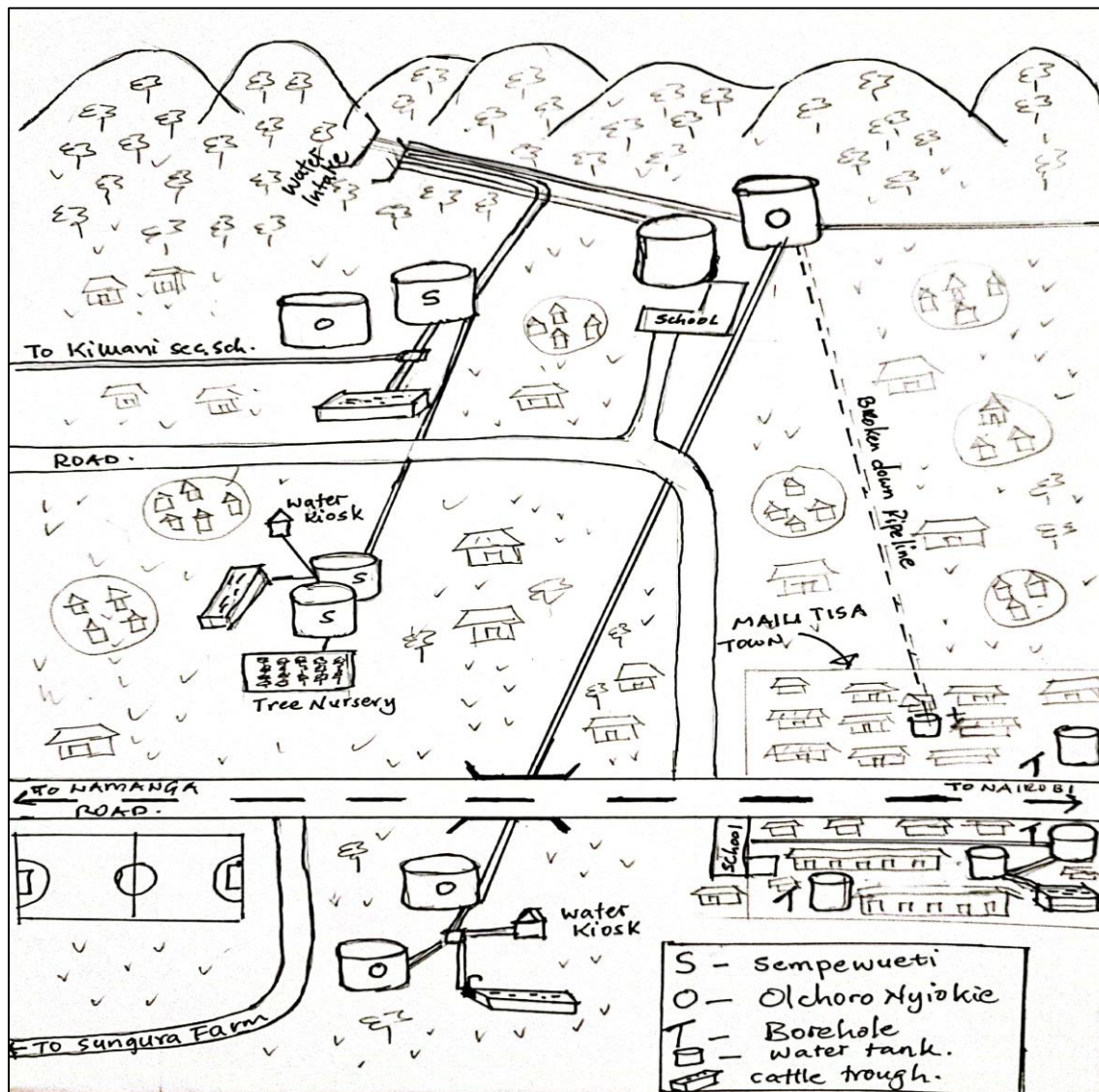


Figure 3: Map of water supply systems in Mailua Ward

During the rainy season there is too much water, and this reaches all the water users. However, during the dry season, the water does not reach the water users downstream. The water users do not always adhere to the water rationing schedule where the people living upstream tend to extend their time of water supply without consultations. This means that some water users pay for water which they hardly

get and this discourages them. The water supply is not reliable and therefore some sections of the water users are not keen to make the monthly payment. They prefer to buy water from the trucks or motorbike suppliers which is more expensive but reliable throughout the year. In addition, due to the long distance of the water kiosks/boreholes from the households, the water vendors are more preferred in relation to the users fetching water for themselves. This therefore becomes an added expense for the households.

A few farmers have adopted irrigation technologies and depend on ground water where water is pumped using diesel pumps from hand dug wells. These are farmers from outside the community who have leased land from the local community and others have bought land from the community with the purpose of farming. Different types of irrigation technologies are used by the farmers: groundwater diesel pumps with drip irrigation and furrow irrigation methods.

Wild animals also get water from the community water troughs that are meant for cattle. When the animals do not access water in the forest, they dig out the water pipeline. As a measure to mitigate conflict with the animals, the water users ensure that the water troughs are full of water in the evening so that the wild animals can drink.

It was reported that that when water dries up in the hills, the wild animals come down the hill to the village looking for water. Natural habitats and eco-systems play a major role in water cycle and regulation. When there is environmental degradation, the whole eco-system gets water scarce. The community has a perennial challenge of wild animals destroying their crops and killing their animals. The community leaders need to work with the relevant authorities such as Kenya Forest Services (KFS) to ensure that long term solutions are implemented. This will eliminate any water related conflict between community, livestock and wildlife. There are cases of livestock being eaten by hyenas, lions etc. This means that as the community leaders plan for the long drought periods, there is need to consider strategies that enhance preparedness on issues relating to the whole ecosystem. This requires involvement of the Kenya Wildlife Service (KWS) for them to apply approaches that they use to deter animals from accessing community properties such as installation of electric wires.

3.2 Sempewueti Water System

3.2.1 History

The project started in 2002 and was the brainchild of the county, which channeled support from the Swedish International Development Cooperation Agency (SIDA) to this system. It was launched in 2003 with 84 registered individual water users who are the founding members, contributing half of the construction costs. In a few years the system broke down and lacked proper management to ensure repairs. Consequently, there was no water available for a few years and the community used to get water from the springs in the forest of which they risked being attacked by wild animals. The pioneer management team members got old and the water system was revived in 2018 by the younger generation of community members. Before, the project was registered as Self-Help Group but since the population had increased and water services were required by more people, the Sempewueti was registered as a Community Based Organisation (CBO) in 2018. The CBO has licenses that are required by the government including a water abstraction license from the Water Resources Authority (WRA). The project pays KES

5,000³ per km of the pipeline per year to the WRA. In addition, Sempewueta CBO is involved in other community development activities in other sectors such as livelihood improvement programs.



Figure 4: Sempewueta water storage tanks and water kiosk

The system serves approximately 5,000 people and serves three towns: Kiluani, Indinyekatio and Maili Tisa (the line to Maili Tisa has been dormant, see below). The water project is essentially for domestic water, livestock and small scale farming. However, currently there is no farming going on due to scarcity of water. There are 58 household connections of which 40-45 pay a regular fee of KES 300 per month. The other water users fetch water at the two water kiosks installed and payments are done per jerry can. Other households fetch water from the few households that have household connections. They get this for free. This reduces revenue collection for the system, which is a challenge.

The Sempewueta community group through Mailua Group Ranch⁴ was given two parcels of land of 5 acres each to put up water infrastructure. Before 2018, there was a plan by the larger community to repossess the land that the Sempewueta group owned since it was deemed idle but the community has since given the water project full ownership and with an allotment letters issued and are in process of acquiring title deeds. One piece of land that is nearer to the water source has a concrete water tank of 60,000m³ (see figure 4) and a cattle trough (see figure 5) whereas the other piece of land has three 10,000m³ plastic tanks (see figure 4), a tree nursery and cattle troughs (see figure 5). The water systems got support for infrastructure installation and renovation from NETFUND, a State Corporation established by the Environmental Management and Coordination Act of 1999. (see <https://www.netfund.go.ke/who-we-are/>).

The Sempewueta CBO has a vision to set up a sanitation facility and greenhouses when water becomes sufficient. The tree nurseries are a form of income generation activity where the CBO has leased space to

³ 1 KES = 0.00812 USD

⁴ Mailua Group Ranch is a community owned and land management group where community leaders make decisions relating to land tenure, environmental conservation and land use such as management the grazing land for the community livestock.

a youth group based in Maili Tisa town. The management's goal is to ensure that the project is sustainable in terms of operation and maintenance and envision that it can be a source of employment for more youth in the community. The Sempewueti CBO has a vision of doing other activities such as bee- keeping and starting a Community Centre that has a focus on youth activities such as sport.



Figure 5: Sempewueti Cattle Troughs

3.2.2 Technical status

The water management committee is not able to fully maintain the water system and depends on external donor funds. From the water in-take point, the metal pipes are three inches wide, they are old and rusted from inside and with some breakages. In addition to broken pipeline, there is a lot of debris and leaves that clog the pipeline. This causes loss of large amounts of water and only little water reaches the tanks. NETFUND has supported the group to build the water storage tanks and repairs of the pipeline. However, some sections of the pipeline still need repairs (metallic pipes to be replaced with the plastic rollers).

The capacity of the four tanks is not large compared to the amount of water from the source. It fills up quickly and a lot of water pours out and goes to waste. There is need for resource mobilization for the system to be sustainable. The broken and rusty pipeline needs repair and the project is in need of more storage tanks. There is no meter at the source or at the two water kiosks.

3.2.3 Gendered uses and priorities

During the drought season, the water is scarce and therefore not enough to reach the whole community. The Sempewueti water which is meant for domestic use, livestock and farming (supplemental irrigation during the rainy season) does not reach the water users 'downstream' in spite of a rationing programme that has been set by the committee in collaboration with the community. This is effective for the water users living 'upstream'. This aspect has become a source of collaboration/cooperation instead of conflict. During the study, since it was during the drought period, the water was only being used for domestic purposes.

During the rainy season there is too much water and this reaches the water users but during the dry season, the water does not reach the water users downstream. The water users do not always adhere to the water rationing schedule where the people living upstream tend to extend their time of water supply

without consultations. This means that some water users pay for water which they hardly get and this discourages them. The water is not reliable and therefore some sections of the water users are not keen to make the monthly payment. They prefer to buy water from the trucks or motorbike suppliers which is more expensive but reliable throughout the year.

In the Focus Group Discussion (see figure 6) women indicated that the installation of the water systems have reduced the distances they used to cover and workload that they used to do in a day in search of water. However, there is still need to take the water kiosks closer the households and make the sources more reliable and they are willing to pay for that water. Some women are still walking about 6 kms to get to the water source. Most of them have to pay high charges for water to be delivered to them at their households by motor bikes, bicycles or donkeys. This means they pay more money for this water since the resellers buy at KES 5 per 20 liters jerry can and they sell the jerry can at KES 50. The women are most of times buying water for domestic use, young calves and sickly cattle especially during the drought period. For most of the households that do not have a household connection, they also depend on the neighbours for water for domestic use and for the cattle.



Figure 6: Sempewueti Women Focus Group Discussion

Cases of domestic violence have been reported and most of these come as a result of men getting violent against women due to issues relating to cattle at home not having been fed or not getting water for the cattle. The women reported that the men in the community care more about the cattle than supporting their own children to pay school fees and access social amenities such as school activities. According to the focus group discussions with women and other KIs, there are no incidences of sexual abuse/violence or exploitation that relates to water fetching. Even though women have to go to collect feed for the cattle in the forest at times, there has been no incidences of sexual nature that have been reported. This can be attributed to the community norms and culture.

The Maasai community is a patriarchal community and this is evident in the way the community handles the water issues. Women do not have a voice in the management of the water resources even though they are most affected whenever there is scarcity of water. For the Sempewueti CBO, despite the

management committee having five women, these women are not always called upon for meetings where decisions regarding the water are always made. In the focus group discussion, women also indicated that there is tendency for the men to advocate for women who are illiterate (and not very enlightened) to be elected on the water management committees. This is done by the men to reduce scrutiny from the women counterparts.

The existing storage tanks are very small and unable to meet the water needs of the community. During the discussion, the women requested that they need to be linked to a programme that can support them get household level storage tanks.

Although most of the community members can afford to pay for water, there are a few vulnerable in the community who are very poor and elderly and are unable to pay for the water. Both the rural community water groups provide water for these groups of people; they don't even have to be members of the water system.

3.2.4 Water Governance

Governance structure

For the Sempewueti Group, management is done in a structured manner and water users are consulted before decisions are made. The group has a committee that was elected in 2021 after they had some issues with the previous management where the chairman was not transparent on his dealings. It was reported that the chairman was selling membership shares without the knowledge of the committee. In addition, he was not cooperating well with other committee members in terms of the decision-making processes. The previous chairman attended the training by WIN on the Integrity Management Toolbox for Small Water Supply Systems (IMT- SWSS) as member of the umbrella committee. However, he did not pass the information to the rest of the committee. The current committee was not provided proper hand over and apparently has limited knowledge on the IMT process.

Male respondents in Sempewueti reported that they are very much involved in the decisions that are made by the committee and they are always consulted on decisions made regarding the water system. However, the women felt that they are not fully involved in some of the decisions made by the water committee since they are not consulted.

Membership and committee

The committee has transitioned into a CBO and it has a constitution that clearly stipulates governance guidelines such as period for election of management committee, committee meetings, general meetings with the water users and roles and responsibilities of the stakeholders. There are 15 committee members of which 5 are women but no youth. The committee has office bearers that include Chairman, Vice Chairman, Secretary, Treasurer and Vice Secretary.

The current Sempewueti management committee was elected in 2021 after 3 years' tenure as stipulated in the CBO's constitution. There was no handover done by the previous committee and therefore, the committee is not aware of the Integrity Management Toolbox for Small Water Supply Systems (IMT-SWSS) that was implemented in 2018.

The new committee comprises of 12 members from the previous committee, so only 3 members were replaced including the chairman. It was reported that the former chairman used to do things without consulting the rest of the committee members and he attended the IMT-SWSS process without informing other members. He was also involved in illegal activities such as connecting new consumers with water at night without following the agreed procedures.

Finances and transparency

The large section of the rural community in the study area does not want to pay for metered water because they claim to have paid for the infrastructure that was built at the water intake. They are fine paying a flat rate of KES 300 per household although not all the connected households pay this amount. The Sempewueti committee members are aware that the system is not performing at its maximum and if there are governance reforms, it would deliver better results. For example, installation of household meters would mean more revenue collection, better pipes and repairs can be done. There would be reduced water loss (non-revenue water) due to breakage and blockage of pipes. In addition, there would be funds for expansion and investing in more storage tanks. There are varying ideas between the water users regarding the possibility to install meters since the system is used for multiple uses (domestic, small scale farming use and also for cattle).

Sempewueti CBO makes monthly payments through *m-pesa*⁵ paybill or they pay to the bank account through community banking known as *Mashinani* agents.

Interest in joining Water Service Provider

During the time of the study the Sempewueti committee members had limited knowledge about the activities of the Oljoro Orok Water and Sanitation Company-WSP. Some members had reservations of being part of the WSP because:

- Community members are not interested in metered water
- Community members fear high water bills that will be instituted by the WSP
- The water management will be put in the hands of foreigners who will not take into consideration community interests.
- The community has heard rumors that the WSP wants to construct a dam instead of expanding their water system.
- The community is not sure whether the dam will provide them water for multiple uses as the Sempewueti water system provides now.

Sharing mountainous springs

The water related conflicts reported relate to the water source where the Sempewueti system was constructed and provides an outlet pipeline to another group (different from Olchoro Nyiokie). This group is said to have shifted its pipe to the upper side of the water intake and is reportedly taking more water than others.

⁵ Mobile money payment system that is widely used in Kenya

3.3 Olchoro Nyiokie - Paragiso Water System

3.2.1 History and technical status

The Olchoro Nyiokie – Paragiso water system was started in 1973 by an unknown donor and it was initially meant for cattle and domestic use. The group was registered as a Self-Help group in 2014. The water system has three main tanks of which one (approximately 50,000 m³) is near the water source and located at the Sempewueti plot of land. The other two tanks are located at the main water point meant for animals. The system serves six smaller villages, totaling approximately 1000 households. In the service areas there are two schools, one ECD and a church.

Challenges are the maintenance and repair of infrastructure. The piping network to the water kiosk is rusted and broken so people were fetching water from the cattle trough. They also still have to cover one of their tanks that is able to supply 100,000³ of water to the community.

The system was broken down for many years and was revived in 2019 through the support of the Al Khahir foundation and the community. The group was previously supported as well by the national government Constituency Development Fund (CDF) to repair some of the broken and rusted pipes.

3.2.2 Gendered uses and priorities

For the Olchoro Nyiokie Group, the committee members interviewed indicated that the matters to do with cattle are handled by men and therefore women do not need to be in the committee. It was difficult to do an FGD with women since they are not allowed to talk about issues related to water.

The committee and water users indicated that currently the water is meant for cattle since the community gets water for domestic use and small-scale farming (subject to water availability) from the Sempewueti water system. However, on visiting the cattle trough, the water users were fetching water for domestic use (See figure 7). This can be attributed to the fact that the Sempewueti water system had no water flowing downstream due to the drought and thus scarcity of water. The Olchoro Nyiokie water system has no household distribution networks meaning that water is available at the cattle troughs.



Figure 7: Olchoro Nyiokie Cattle Trough

In addition, many non-members fetch water for domestic use from this trough. They buy the water at KES 5 per 20 litres jerry can and sell at KES50 in the community and in town (when the community borehole is not open in Maili Tisa town).

When the water is scarce, the water users and cattle make very long queues at the cattle troughs. This however does not escalate to unmanageable levels.

3.2.3 Water Governance

Olchoro Nyiokie group members feel that the committee is not transparent in their operations. They wish to have more information and get involved in key decision-making processes but it is never possible. The KIIs indicated that there is no forum where they can raise this kind of issue. The users said that it is possible that the committee is doing its best and fully utilizes the resources that they have access to, but the water users need to be given relevant information and accountability. The committee members indicated that they have dismissed some committee members and replaced them along the way due to graft.

The water users of Olchoro Nyiokie seem very disconnected from the management committee and are not aware of the plans that the committee is making regarding the water system. The men are to some extent informed and have the right to meet to discuss the water issues while the women are not expected to take part in management of the water source since this is allocated to cattle and cattle issues are the responsibility of men. However, in practice, the women fetch water for domestic use from here.

Olchoro Nyiokie group members feel that the committee is not transparent in their operations. They wish to have more information and get involved in key decision making processes. Key informant water users indicated that there is no forum where they can raise this kind of issue. They said that it is possible that the committee is doing its best and fully utilizing the resources that they have access to, but the water users need to be given the details. The committee members indicated that they have dismissed some

committee members due to graft and replaced them along the way. The committee did not give credible information on the procedure that was being followed to dismiss such members.

Governance structure

The group doesn't have a written constitution although they have certain rules and regulations that they follow relating to meetings and payment of bills. The committee has not held elections since 2014. Committee members reported that when the election period comes, the community agrees that they continue in office, and they meet once a week. Two employees are kiosk operators although one of them was on leave due to scarcity of water. It is apparent that there could be management gaps with possible misappropriation of funds and poor leadership. The leadership of the committee has been in office for too long with unexplainable circumstances that lead to no formal elections for many years. This is attributed to high illiteracy levels of in the members and inadequate knowledge about their rights as consumers. The committee members highlighted that they did not have adequate information regarding the IMT training so they have not been able to use it.

Finances and transparency

The member community members do not pay for domestic water, but each household pays for cattle per head each month. At the Olchoro Nyiokie water point, there is an operator who sells water to the community (non-members) for domestic use and to resellers, but the management committee and the community did not have information on how the funds are used. The committee reported that they have a bank account but the community group members reported that they did not have information on the financial status. The committee reported that when someone misappropriates project money, a general meeting is called and the person involved pays back the money. Before, there was no bank account, so committee treasurer used to keep cash money. When the time comes for the money to be put to use, the treasurer would have spent the money. This occurrence motivated the group to register the project and they opened a bank account and m-pesa paybill account.

Interest in joining WSP

The Olchoro Nyiokie water system is meant for cattle and the committee does not plan to have this system taken over by the WSP. According to the committee members the WSP is only interested in supplying water for domestic use at the household level. No discussions were mentioned having taken place between the WSP and the Olchoro Nyiokie management committee on areas of possible collaboration.

3.3 Maili Tisa Town Water Systems

3.3.1 General

Maili Tisa town is the main shopping centre for the community and the two rural water systems, i.e. Sempewueti and Olchoro Nyiokie, do not reach this centre. The town residents rely on three boreholes that are within the town. Most of the population in the town come to do business during the day and return back to the rural dwellings. Most of the businesses in the town are operated by people who are originally not from the area. The majority of the business people rely on the water sellers who fetch water from the boreholes.

3.3.2 Community Borehole (*Korean*); take over by WSP

This community borehole at Maili Tisa town was dug recently (2020) when the Nairobi-Namanga highway was being rehabilitated. Due to pressure from water facilities, the road contractor decided to dig his own borehole and once the road construction was over, he moved with his equipment including the borehole

pump, but handed the borehole over to the community. A Korean missionary working in the community proposed to renovate the borehole and the community agreed. From thereon, the Korean missionary manages the borehole operations. The borehole has now come to be known as the 'Korean Borehole'. The community members do not pay for water - it is free for everyone including the business people in town. Today the Korean Borehole is the main source of water for the community in town. The borehole is operational in the morning and evening. Because water is free, some water sellers fetch water from this borehole and take it to the rural community for sale.

The involvement of the Korean Missionary in the management of the community borehole is short-term since this will be taken over by the Onjoro Orok Water and Sanitation Company. The pipelines for individual connections are already being installed.

3.3.3 Mosque Borehole

A borehole was built in 2004 and is run by the Muslim based organization at the mosque as a service to the community and it supplies water to the primary school and a cattle trough near Maili Tisa town. The community members pay a small fee to buy water. The users are mainly the business operators in town and also water sellers buying water from here when the Korean borehole is not open. The fees paid go to the maintenance of the facility and payment of the operator.

3.3.4 Privately Owned Borehole

A private borehole was built in 2020. The owner of the borehole was interviewed and indicated that in recent years he has noticed that the quality of water reduces during the dry season (which he considers normal) and that there is increased yield during the rainy season. There was never a lack of water at the borehole due to a breakdown of the facility. This enterprise is controlled by the market and makes a lot of business. He consults with the community only on a few issues such a setting of prices, but he runs the management of the borehole as an individual.

3.3.5 Dysfunctional Maili Tisa gravity pipeline and interest in joining the WSP

There is a committee that originally represented the community water pipeline that gets water from the springs at the mountain to a Kiosk at the Catholic Church. This pipeline has been broken down since 2012. The community has been relying on the boreholes in the town and for most of the time, they have been getting water from the *Mosque* borehole and the Ochoro Nyiokie water point (for cattle). This has changed after the installation of the *Korean* borehole.

The management committee of the Maili Tisa pipeline have come to an agreement with the Onjoro Orok Water Company that the small water supply system be managed by the WSP. The company has taken a few steps and installed some pipelines in the town but there is still no water. The intention is to take over the management of the community borehole and supply water through individual connections and charge a fee that is agreed between the users and the company.

The community members interviewed do have some information on the management of the water in the town and a few have heard about the plans of the Onjoro Orok Water and Sanitation company to take over the pipeline but they do not have details. The committee of the pipeline has now been incorporated into the Onjoro Orok Water and Sanitation Company management and they no longer operate independently.

3.4 Government accountability to communities: the new dam

During the first phase of interviews, the community and the leaders indicated that they did not have information on the planned dam and the researcher did not get clear details on the project from the respondents. After the preliminary findings, this issue was identified as the key issue for further probing in the phase 2.

Within this broader picture of communities' management of multiple water sources for multiple uses and mostly multi-purpose infrastructure, attention was paid to the infrastructure installed with external support from government or otherwise. Some history of the planning process, and (selected) community members' participation in that, or not, is relevant to understand ownership and sustainability issues. For this analysis, the following six steps in a standard planning cycle (see also figure 8) were useful: 1) setting up representative and inclusive communication structures for any of the further steps; 2) participatory diagnosis; 3) identification of solutions for interventions, 4) detailed proposals with budgeted workplans for technical, institutional and financial support, 5) implementation of the workplans, and 6) monitoring and adjustments during the use phase.



Figure 8: six steps of planning cycle (source: Van Koppen et al 2020)

From the interviews with the consultant of TAWWDA, the feasibility study and public participation for the community regarding the construction of the dam has been done. The dam and the water supply system are currently being designed. The TAWWDA consultant informed the consultant that three community meetings were held; one in Namanga town and two in Maili Tisa town. The community participation was led by the County Commissioner, Assistant County Commissioner and the chiefs. The meetings included

community members, village elders, *Nyumba Kumi*⁶ leaders, pastors and Imams. Each of the meeting had about 70 community members in attendance.

Issues identified included:

- The participation forums only involved the community at large (about 70 people per meeting from Maili Tisa and the rural community and did not involve the existing community water systems management committees. This presents a major gap since the water management committees are key stakeholders in the planning process. There is a key question that has not been addressed by the implementing party (MoWI and related institutions- TAWWDA and County Government): how will the dam project incorporate the existing water systems? It is evident that the project will resolve water shortage problems but there is need to engage the community by conducting more intense and strategic community participation meetings/forums. One Sempewueti committee member said that he had attended the community participation meeting as a village elder.
- There is a plan by the TAWWDA consultant to foster the formation of a community management committee for the dam and water supply system. This will be late since it would have been at the first step to ensure 'buy-in' with the community, anticipate possible impacts, and enhance a sense of ownership of the whole process.
- The county government official interviewed indicated that the problems in Mailua Community are not technical, but governance related and mainly politically motivated. It was pointed out that the technical issues are manageable and the hindrance to development in this particular community is mainly social-political dynamics. There is a lot of interference by the political elite in the community issues and this is motivated by selfish agendas that may not benefit the whole community. For example, there is a tendency of politicians to recommend water facilities to be installed in their neighborhoods without considering other locations that may have direr need. The community is not well sensitized on how they can effectively manage their water related challenges.
- The County Department of Water is planning to involve the youth in water development projects to enhance positive change among young people.
- The County Government Department of Water pointed out that some development partners and government parastatals engage the community from national level without engaging the county government first. The partners and parastatals sometimes engage the county government after encountering problems at the community level. For example, TAWWDA involved the county when the planning of the dam had already started. The National Irrigation Board also built water pans for rain water harvesting in Mailua Community without consulting the Department of Water and these failed to function due to technical factors.

⁶ *Nyumba Kumi Initiative* is a strategy of anchoring community policing at the household level to reduce crime. This involves having leaders that oversee activities of a few households both at the villages and towns.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

Mailua Community has structured small water supply systems that target different types of users within their community. There is a system that is meant for water for domestic use and small scale farming, a separate system for cattle and boreholes that serve the urban area of Maili Tisa. Despite the plan to have these systems serve targeted users, during droughts the water that is available is only being used for domestic uses and cattle.

All the three systems have gaps in their management practices. There is lack of communication and effective engagement between the community and the state organs at different levels, for example, the institutions responsible for the dam project have not given clear and full information to the community and this indicates a lack of accountability, participation and transparency.

In terms of follow-up activities on the previously implemented IMT-SWSS, there is a disconnect between the current water user management committees and those who followed the training of the IMT. There was no proper hand over and orientation of the new committees regarding the application and use of the IMT implementation plan.

The key stakeholders for water service delivery, water resources management, land and water use for irrigation and related sectors such as forestry operate in top-down and siloed nature. The study highlighted that collaboration is limited. In some cases, different government institutions do not plan with the community structures but without their involvement they rather only communicate what they want the community to do.

At the local level, there is lack of clarity on the roles and responsibilities between the committees of the small water supply systems and the umbrella committee. There is also lack of accountability for the umbrella committee since they were mandated to inform/train the individual systems on the IMT-SWSS topics, but this did not happen. The community does not participate in selection/election of the members of the umbrella committee and therefore, the umbrella committee is not directly answerable to the community. There was no clear information on follow-ups done by the county government officials on the activities of the umbrella committee. For accountability, the umbrella committee is supposed to have a strong link with the county government (department of water services).

There is lack of involvement of women in decision making in all the three systems studied. Women do not make decisions in relation to the management of the water facility. At times women are invited to meetings when there are external stakeholders or would-be funders. The minimal participation in meetings does not also lead to their voices being heard.

There is no elaborate plan to mitigate the impacts of long drought periods that have become recurrent in the recent past. This is both at the community level and at local government level.

4.2 Recommendations

Monitoring and follow up of IMT action plans

Continuous capacity building of the small water systems on the IMT is needed to ensure accountability, transparency, community participation, compliance, equity and inclusion in water service delivery and ensure governance is always fresh the minds of the water management committees. It is also important to support a formalization process of the community water groups to become legal entities that are recognized by WASREB, so that these water suppliers can access financial and technical support from the county and other related government structures.

The three groups in Mailua Community need training and, if possible, a repeat of the IMT-SWSS training but this time targeting all the committee members as opposed to the earlier plan of involving the umbrella committee only. There is need to also factor in more time and resources for follow-up activities and implementation of the action plan drawn during the IMT-SWSS process. The IMT has proved to be a good tool in enhancing compliance and functionality of the small water supply systems as indicated in the early years when the three lines had acquired the training.

Support in building water resilient communities

Stakeholders should work together to improve knowledge in the community regarding the application of Integrated Water Resource Management (IWRM) strategies such as promoting a diverse range of water supply systems to better cope with different climatic conditions, for example the application of locally available rain harvesting technologies and also exploring other sources of water such as ground water. Partnerships should be promoted by supporting dialogue between the water users and private sectors for the protection and conservation of water resources through the use of efficient technologies and sound land management and agricultural practices with increased water use for production, particularly in agriculture.

Gender, equity and inclusion

The need to empower women and give them a voice and forum to be heard is paramount. There is a need for an intense campaign in the community to sensitize both men and women on the reasons why women should be empowered regarding water issues. The women should be empowered since they are the biggest user of water at the domestic level. Women are more affected when it comes to fetching water; and in some cases paying for the domestic water. Women should be involved in planning and design of water infrastructure. The water users should also be sensitized on the need to include women in management of water for livestock. It is also important to strengthen the already existing youth initiatives that focus water conservation.

Early warning on drought and flooding

The existing structures aimed at giving community warning and supporting them to adapt in cases of flood or drought need to be enhanced to become more climate change resilient. This will also encourage the development of water infrastructure that ensures storage of water during the rainy season; and enables the community to make informed choices. Adaptable methods and technologies for water for livestock and farming/irrigation need to be promoted. There is also the need to identify impacts of climate

variability and changes in local livelihood systems and potential strategies for sustainable risk diversification.

Supporting community water user groups, WRUA and CFA

Institutions at the community level need to be supported to advocate for budgetary allocations from government. Identification is needed of areas of collaboration with other SWSS and prevention of water-related conflicts by advocating for peace and security partnerships. This can be initiated at the water source by reviving the umbrella committee and building the capacity of the umbrella committee as well as management committees of individual systems. All the stakeholders need to be brought together for collaborative planning and implementation of activities.

At the start of water projects, there is a need to allocate time and resources for activities that relate to all the stakeholders' 'buying-in' into the proposed project. One of the major issues identified during the study is the lack of sufficient information on the planned dam project by the water stakeholders at the community level. There is also need to involve the government stakeholders (both technical and political) to ensure smooth coordination and effective community participation.

REFERENCES

EAWAG-Sandec (2011): Community-Led Urban Environmental Sanitation Planning (CLUES) toolkit, Tool D3.2 – Transect Walk, <https://www.eawag.ch/en/departmentsandec/projects/sesp/clues/>

Kajiado County Integrated Development Plan (CIDP) 2018-2022
<https://www.devolutionhub.or.ke/resource/kajiado-county-integrated-development-plan-2018-2022>

Nafula, W. G., (2020). Determinants of Gender Responsive Management of Water Resources and Projects in Kajiado County, Kenya. M.A, Kenyatta University.

At: <https://ir-library.ku.ac.ke/handle/123456789/21587?show=full>

National Drought Management Authority (NDMA, 2022a), September 2022 Bulletin, Kajiado
<http://knowledgeweb.ndma.go.ke/Public/Resources/ResourceDetails.aspx?doc=50a1c330-afb0-412c-a8d2-8b0738c1382e>

National Drought Management Authority (NDMA, 2022b), April 2022 Bulletin, Kajiado
<http://knowledgeweb.ndma.go.ke/Public/Resources/ResourceDetails.aspx?doc=cf0e8cfb-a95c-4f9f-808d-741c85dbb514>

Njoroge, D.; Manishimwe, E.; Schreiner, B.; Van Koppen, B.; Amarnath, G. 2023. *Community-Focused, Polycentric Governance of Water Supply Systems for Climate Resilience: Lessons from the Namanga Dam Water Supply Project in Kajiado, Kenya*. Colombo, Sri Lanka: International Water Management Institute (IWMI). CGIAR Initiative on Climate Resilience

Van Koppen, B.; Molose, V.; Phasha, K.; Bophela, T.; Modiba, I.; White, M.; Magombeyi, M. S.; Jacobs-Mata, I. 2020. *Guidelines for community-led multiple use water services: evidence from rural South Africa*. Colombo, Sri Lanka: International Water Management Institute (IWMI). 36p. (IWMI Working Paper 194). [doi: <https://doi.org/10.5337/2020.213>]

Water Services Regulatory Board (WASREB), 2019. Guidelines for Provision of Water and Sanitation Services in Rural and Underserved Areas
<https://wasreb.go.ke/downloads/Guideline%20on%20Provision%20of%20Water%20for%20Rural%20and%20Underserved%20Areas.pdf>

ANNEXURES

Annex – A: Questions Community members (men/women/youth)

This questionnaire was used to collect information from the management committee of the water systems. This was collected from the three FGDs comprising of (1) men, (2) women and (3) youth

Questions for community members
Group Organization/ water system Questions
<p>The date of the establishment of the community water project.</p> <p>Brief History of the community group/water system.</p> <p>Who has funded the infrastructure investments? What has been the community contribution? <i>(this is for triangulation purposes since more details will be from the management committee)</i></p>
Understanding Water Access for Domestic Use
What sources of water do you use for household and domestic in this Community ?
<ul style="list-style-type: none"> ▪ Ground water sources – boreholes with hand pumps, solar-powered boreholes, mechanized wells, shallow wells etc. ▪ Who designed and paid for the water infrastructure of the most important source of ground water you use Self-supply? Or Supplied using external funds i.e. Government, NGOs etc? ▪ Surface water sources – Naturally available i.e. rivers, streams, dams etc; Infrastructure based i.e. dams, weirs etc. ▪ For water sources with infrastructure, who designed and paid for the water infrastructure of the most important source of surface water you use Self-supply? Or Supplied using external funds i.e. Government, NGOs etc? ▪ Do you access it directly or with abstraction? Where and how is the storage done (dam, weirs), if any? Is there a conveyance infrastructure (weir, intake, canal, pipe)? Which one?
Is water sufficient for everyone's domestic uses in the community ? Especially during the dry season?
<ul style="list-style-type: none"> ▪ From those mentioned, are there sources that dry up during the dry season? Which sources do not have sufficient water during the dry season? ▪ What about in the rainy season? Is water sufficient then? ▪ In the last five to ten years, have you noted any significant changes in ground water/ surface water resources? ▪ Do they dry up more than in earlier years? ▪ What measures do you put in place when your sources of water dry up? ▪ Do the water sources have more water than earlier years? ▪ Do your sources get flooded? Is that a challenge? How do you adapt to this challenge? ▪ Recount your experience. For all sources (ground and surface sources) mentioned
Do you sometimes use alternative sources of water for domestic uses in this community other than the identified source(s) due to non-availability of water, price, or any other reason?
<ul style="list-style-type: none"> ▪ What alternative sources of water do people use? ▪ What alternative sources of water are used for? ▪ How often do you use alternative sources of water? ▪ Why do they use alternative water sources? (probe, breakdown of infrastructure, saving money, no membership/denied access?)
Are there some particular water sources/places/seasons/situations where it is hard to get the water for domestic uses because many people want it?
<ul style="list-style-type: none"> ▪ <i>Probe</i> what happens in such cases; are there any rules for sharing?

<ul style="list-style-type: none"> Are those rules followed? What happens if rules are broken? Recount your experience.
Understanding Water Access for Productive Use
What are the major productive activities that use water in this village?
What are the main sources of water for productive use(s) i.e. farming, gardening, cattle, brick making, etc.?
<ul style="list-style-type: none"> Ground water sources – boreholes with hand pumps, solar-powered boreholes, mechanized wells, shallow wells etc. Who designed and paid for the water infrastructure of the most important source of ground water you use Self-supply? Or Supplied using external funds i.e. Government, NGOs etc? Surface water sources – Naturally available i.e. rivers, streams, dams etc; Infrastructure based i.e. dams, weirs etc. For water sources with infrastructure, who designed and paid for the water infrastructure of the most important source of surface water you use Self-supply? Or Supplied using external funds i.e. Government, NGOs etc? Do you access it directly or with abstraction? How is ground water channelled to fields, gardens, cattle troughs etc. for productive use(s)? Who pays/paid for the channelling of ground water for productive use(s)? Where and how is the storage done (dam, weirs), if any? Is there a conveyance infrastructure (weir, intake, canal, pipe)? Which one?
Is there enough water for ALL productive uses mentioned i.e. farming, gardening, cattle, brick making, etc.? in the household? At the community? Especially during the dry season?
<ul style="list-style-type: none"> From those mentioned, which sources have sufficient water during the dry season? From those mentioned, which sources do not have sufficient water during the dry season? What about in the rainy season?
Is the most important source(s) of water (ground/surface) for productive uses available throughout the year?
<ul style="list-style-type: none"> In the last five to ten years, have you noted any significant changes in the ground/surface water resources that you use? Do they dry up more? Do they hold more water than earlier years? Recount your experience How have people responded to drying of water resources? Adaptation in type of crops grown? Diversified farming/livestock activities? Changed income generating activities? Etc.
Do you sometimes use alternative sources of water, for EACH productive uses other than the identified source?
<ul style="list-style-type: none"> What alternative sources of water people use? What alternative sources of water are used for? How often do you use alternative sources of water? Why do you use alternative water sources and how long do you use? (probe, no water, no membership, cheaper, main source broke down/under repair.
What proportion of people/community uses water for each identified water source e.g. proportion of the community uses water for that purpose, e.g. Zero, less than one third; between one and two thirds, more than two thirds, really everyone.
What kinds of water use is most easy to get here? (Consumption, cattle, farming etc.) And what kinds are most difficult to get?
Are there some particular places/seasons/situations where it is hard to get the water for productive uses because many people want it?
Water Governance Questions (PROBE water for domestic and for production use)
Community Participation
Who decided the kind of water infrastructure to implement for the community for the public infrastructure? Did community members have a say on what kind of infrastructure to implement? Who among communities? Men, women, both? Proportion of men and women in decision making

Are women given voice in the planning, design and management of WASH facilities? And if so, how?
How do you get information about the water system/ communicate with the group that manages the water system?
Is there a functional water management committee? <i>(probe for domestic and productive use)</i>
What is the role of the committee? <i>PROBE to establish whether the community members are informed</i>
Has the community been consulted before the water tariff/prices were set and how? Do you think the water prices are fair? <i>(Probe for domestic and water for productive use)</i>
How many meetings has the committee held with the community in the past 12 months?
When was the last management committee elected and how has the committee been elected?
How many men and women are in the water point committee? <i>This is for triangulation purposes</i> Probe the different roles of women and men in the committee
Accountability
Do you think water committees serves the interest of the entire community?
Do you feel involved enough in the decisions regarding the water system?
Do you feel informed enough in the decisions regarding the water system?
Do you know how much money the Community Group collects? Do you know how the Community Group uses the money from the water fees?
Are there challenges that you see in managing the water resource among the water point committees? How are the problems resolved?
How are disputes managed? Between community members, committee members and between committee and the community
How is allocation of water determined in dry periods? Is allocation of water fair during dry and normal periods?
Do women and men get equal access to water for productive purposes?
Transparency
Who makes the rules about who can use how much water, when and where (and are women involved, and the very poor?) <i>(Probe statutory/ customary rules)</i>
How are the rules communicated to the community members?
If someone breaks the rules, what happens and who does the dispute resolution and/or compliance enforcement?
Does the community/committee have direct engagement with government representatives regarding water use. If so, what, who, where, how and why; irrigation water or domestic water); what do they understand the role of government to be; do they understand about permit/permissions for water use;
If government has funded infrastructure and funds its maintenance, how do they hold government accountable in this regard.
Six steps of planning cycle (
How was the process done to put up the water source? Where access is for community? Where the following done?
PROBE -For public infrastructure and collective self-supply if any)
PROBE -polycentric governance structure and the rights holders using an integrity lenses i.e. Participation, Accountability and Transparency.
<ul style="list-style-type: none"> ▪ Setting up representative and inclusive communication structures – who was the contact person and did they represent the views of the communities (e.g. all sections of the communities and neighbouring community)? How was communication done between the implementers and the community? ▪ Participatory diagnosis – how did the support agency get to know about the water situation? Was the community involved? ▪ Identification of infrastructure solutions for intervention – understanding who in the community: men, women? Where are they located? What positions do they hold in this location?

<ul style="list-style-type: none"> Who participated in deciding the site and how the source would be used? Who decided where the borehole, well etc. could be sited? Probe the proportion of men and women (none, less than 1/3 – between 1/3 and 2/3, more than 2/3) Was community required to contribute something towards implementation? Do you pay to access water for domestic and household uses? (User fees?)? How are the payments done? Where sustainability plans established? Etc. Detailed proposals – with budgeted work plans for technical, institutional and financial support (<i>Probe whether these were done and if community was informed</i>) Implementation of the work plans – obtaining materials, construction, how was this done? Who participated how? Women? Men? Community leaders? How was expenditure monitored, by whom? Was the budget used as it should have been? How is budget information communicated? Monitoring and adjustments during the use phase. (<i>probe if any adjustments have been made and whether the community is informed</i>)
Equity and inclusion (<i>PROBE what has not been addressed above</i>)
How many women and men serve in the in the committee? Probe the different roles of women and men
How many youth and people with special needs have key positions in the committee?
How are women and youth involved in decision making processes in the committee? Are their voices being heard and what are the channels of communication and feedback mechanisms? Probe how women and youth are involved
What actions have been taken to ensure environmental protection?
How is safety /dignity of beneficiaries upheld?
How is protection of vulnerable groups safeguarded?
Sextortion Questions
Have you experienced Sexual Gender Based Violence at water/toilet/bathing facilities? Have you heard of any community member who has? How was this handled and by whom? Do you think there is good mechanism to handle such cases?
If yes, Was the perpetrator alone or in a group in the last incident? What was the age and gender of the perpetrator(s) from the last incident? What actions did you take against the perpetrator of the last incident?
What happened with the services you wanted to receive when the last incident happened?
What is your view of providers of water or sanitation services who have sexual acts with their customer?
In which circumstances, do you think it is acceptable for a woman to engage in sexual acts with water operator/vendor?
Impact/quality of services delivered
What is the total number of connections? HHs, schools, health Care facilities, business premises and other institutions? How many connections are metered?
What is the total quantity of water produced in the last month?
How many hours are the kiosks open in one day? How many days a week are the kiosks open?
Do you need permission to access the public/private water infrastructure? From whom?
How many breakdown have been reported over the past year?
For the biggest breakdown of the last year, how long did it take to get the water system functioning?
How many water quality samples have you taken over the past year? How many fulfilled the standards for drinking water quality? (<i>water for domestic use</i>)
How many treatment interventions have you undertaken at the source or in the tanks?
Water Resource Management
Do you have any Water Resource Management activities? <i>Probe WRUA membership</i>
Are you collaborating with Water Resources Users Association (WRUA) in the region?
What is the relationship between the WRUA and the other water committees? Is there any collaboration or engagement?

If there is collaboration with WRUA, in what activities?
Water Issues and Conflict
Are there conflicts related to water access on the (private, public sources you mentioned)? Ground water or surface water indicated?
<ul style="list-style-type: none"> What are some of the most common types of water conflicts and the causes in this village? Describe some of the incidences that relate to water disputes in this community you witnessed or heard of? How were the conflicts resolved? Who is/was consulted to settle conflicts and why? If multiple actors/institutions are involved, what are each of their roles?
Do you think the resolution process for water conflicts in this village fairly represents the common man?
Woman/ every village member, young, old?
<ul style="list-style-type: none"> Do you think it is fair or unfair? Why or why not?
Probe: Are there specific people or groups of people whose water access are negatively impacted because of the cultural or lineage system? Women? Men?

Annex B: Questions Committees

This questionnaire was used to collect information from the management committee of the water systems. This was collected from the three different management committees under Olchoro Nyioki Community Group.

Questions for committee members
Group Organization Questions
The date of the establishment of the water project. Who supported the establishment of the system?
<i>Probe-</i> Brief history of the project.
Is the community group/ water system formalized? Do you have a constitution?
What are the different uses of water? How is this being managed?
How many members are there in the committee?
How many members in the committee are active?
Has the constitution been approved and implemented by the committee?
Participation Questions
Do you have a Calendar for committee meetings?
How many meetings was the committee holding with the community yearly before COVID-19?
Has the community been consulted before the water prices were set?
Capacity Questions
Do you have a management team in place- Treasurer, Kiosk Attendant, Accountant, Chairperson
How many people in the community group (or management team?) can read and write, speak English or Swahili?
How many staff do you employ? How many staff have a contract and job description?
Equity and inclusion, in water service delivery and governance
How many women and men serve in the in the committee?
How many youth and people with special needs have key positions in the committee?
How are women and youth involved in decision making processes in the committee?
What actions have been taken to ensure environmental protection?
How is safety /dignity of beneficiaries upheld?
How has the composition and/or operation of the group changes as part of the toolbox application?

How is protection of vulnerable groups safeguarded?
Impact/Quality of Services Delivered Questions
What is the total number of connection? How many connections are metered?
How many HH, schools, HCFs, Institutions and business premises are served by the water system?
Are these paying for services?
What is the average quantity of water produced the per month? How much of this is sold to the customers?
What is the total income of the committee over the last year? What was the cost of O&M? <i>PROBE on whether this is sustainable</i>
What is the tariff? Has it been calculated based on planned income and expenditure?
In case of breakdown, how long did it take to get the water system functioning? What is the process to get this fixed and is the system able to meet the cost?
How many water quality samples have you taken over the past year? How many fulfilled the standards for drinking water quality?
Are there any outlined repercussions/ procedures of dealing with lack of accountability for the committee members or misuse of funds?
Compliance questions
How many meetings held with County, private sector or WSP have you had over the past three months?
Are there written procedures and agreements (or a constitution in place)? Is there compliance with the agreements?
What are government regulations regarding the system and is the system compliant with these regulations?
Stage in registration as WUA
What steps have you made towards establishment of an appropriate management model?
Water Resource Management questions
Do you have any Water Resource Management activities? <i>Probe WRUA membership</i>
Are you collaborating in any way with Water Resources Users Association (WRUA) in your region?
If there is collaboration with WRUA, in what activities?
Land use
On whose land or property do the CITED public ground water infrastructure sources (boreholes with hand pumps, solar-powered boreholes, mechanized wells, shallow wells etc) sit Private land? Communal land?
On whose land or property do the CITED public surface water sources (Naturally available i.e. rivers, streams, dams etc; Infrastructure based i.e. dams, weirs etc.) sit Private land? Communal land?
<ul style="list-style-type: none"> ▪ If the land that gives access to the surface water or ground water source sits on private property, how is the access to water source on private land ensured/controlled? ▪ What are arguments and/or compensation used to convince the title holder to provide access? ▪ How is the implementation of public water infrastructure done at a land that is privately owned? What challenges do you see? How are problems resolved? ▪ Are you sometimes denied to use water from the private or public source that you have mentioned? Could you narrate some incidences when you were denied access and what happened?

Annex C: Observation Checklist- Transect Walk

Where do different population sub-groups live? Are they segregated or mixed? Do the poorest households live in certain areas (such as on the edge of an area/community)?
What kind of settlements are there? Communal, or individual households?
What are the observable features? physical features, landscape, type of soil, forest, surface water e. g. rivers, infrastructure, farms
Is the vegetation green or dry vegetation?
What kind of physical buildings, institutions are within the community? Schools, Health Care facilities, business premises etc.
What resources are abundant or scarce?
What kind of crops are grown by the community? Are there kitchen gardens?
What kind of livestock are seen un the village? Where are thy drinking water from?
What are the observable water sources and infrastructure? What is the general condition and is it functional?
What are the main socio-economic activities?
Is there irrigation activity going on? If so, what is the water source? <i>Probe</i>
How do these resources change through the area?
Which resources seem to have challenges? What challenges?
Where do people obtain water and firewood? Who collects the water and firewood?
Who are tilling the land? How are they using water?
Where do livestock graze? And where are they drinking water
What general community constraints or problems in the different areas? What possibilities or opportunities are in the different areas?