



## **GENDER EQUALITY AND SOCIAL INCLUSION ANALYSIS REPORT**

### **REPORT 3: KAZA-GROW TRANSBOUNDARY AQUIFER WATER SCARCITY VULNERABILITY MAPPING STUDY**



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## **LIST OF ACRONYMS**

CBOs	Community Based Organizations
CSOs	Civic Society Organizations
GESI	Gender Equality and Social Inclusion
HWC	Human and Wildlife Conflict
KAZA	Kavango-Zambezi
PWDs	Persons with Disabilities
TFCA	Transfrontier Conservation Area
TDA	Transboundary Diagnostic Analysis
SADC-GMI	Southern African Development Community-Groundwater Management Institute
KAZA GROW	Kavango Zambezi Transfrontier Conservation Area

## **GLOSSARY**

<b>Access</b>	Refers to being able to use the resources necessary to be a fully active and productive participant (socially, economically, and politically) in society. It includes access to resources (like water), income, services, employment, information, and benefits.
<b>Knowledge, beliefs, &amp; perceptions</b>	Refers to the types of knowledge that men and women are privy to (who knows what), the beliefs that shape gender identities and behavior, and perceptions that guide how people interpret aspects of their lives differently depending on gender identity.
<b>Practices and participation</b>	Refer to peoples' behavior and actions in life – what they actually do – and how this varies by gender. It also includes how people engage in development activities.
<b>Time and space</b>	Include recognizing gender differences in the availability and allocation of time as well as space in which time is spent, including both productive and reproductive labor.
<b>Legal rights and status</b>	Involve assessing how people are regarded and treated under both the customary and formal legal codes and judicial systems.
<b>Power and decision-making</b>	Pertain to the ability of people to decide, to influence, to control, and to enforce and refers to the capacity to make decisions freely and exercise power over one's body and within and individual's household, community, municipality, and the state.
<b>GESI</b>	Gender, Equality and Social Inclusion
<b>Gender</b>	Socially defined roles for men and women in each society
<b>Sex</b>	biological classification of male and female
<b>Children</b>	Legal minors below the age of 18 years
<b>Patriarchal socialization</b>	Transmission of patriarchal values and ideas from one generation to another in the socialization process

**Patriarchy**

A system of society or government in which the father or eldest male is head of the family and descent is reckoned through the male line:

**Youth**

Young adults aged between 18 -35 years

## EXECUTIVE SUMMARY

This GESI analysis is a component of the *KAZA-GROW Transboundary Aquifer Water Scarcity Vulnerability Mapping Study* that aimed to identify entry points and develop strategies/frameworks to support sustainable groundwater development and management in the KAZA TFCA. It is important to identify and understand barriers to equitable access, knowledge, beliefs and perceptions, practice and participation, legal rights and status and power and decision-making in groundwater management and distribution. This understanding is critical for children<sup>1</sup>, women, Persons with Disabilities (PWDs), youth, and indigenous people to equitably take part in sustainable groundwater management. This will ensure the enabling development of initiatives and infrastructure that advances gender, equality, social inclusion (GESI) and empowerment of youth in communities. This analysis:

1. Identifies differential water needs and priorities of women, PWDs, youth and indigenous people<sup>2</sup> in Sesheke, Shangombo and Sioma districts in Zambia and Rivungo district in Angola that can be considered for groundwater infrastructure planning, project design, and management
2. Lists the key GESI recommendations and considerations for integration into the TFCA Groundwater Management Framework that is being developed under the KAZA-GROW framework as part of informing the Southern Africa Development Community Groundwater Management Institute (SADC-GMI) framework on the social aspects of inclusive water resources management.

The analysis covered six broad thematic areas/domains<sup>3</sup> namely and in no particular order, access, knowledge, beliefs and perceptions, practices and participation, time and space, power and decision making, and legal rights and status (Figure 1). The research covered eight sites (Zambia: Sioma, Sesheke, and Shangombo and Angola: Ruvungo specifically Boafe, Jamba, Kasuma, Katara, Lumbo, Showana and Ouze) of the KAZA located in the Western Province of Zambia and the Eastern part of Angola (Figure 2). As this was explorative research, a purposive sample was drawn from the sites and a semi-structured questionnaire administered to 74 respondents (46 men and 28 women).

The major findings of the research are that while children, women, youth and PWDs are involved in water resources management, there are critical gaps and challenges which must inform the KAZA-GROW project planning, design, and management (Table 1).

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<sup>1</sup> Though children were not initially a target group, the research findings show the need to incorporate them in analysis and framework.

<sup>2</sup> Although indigenous people (IPs) were identified as a target group in the design of the study, no IPs were identified in the research sites.

<sup>3</sup> The six domains framework is based on USAID definitions and was used for purposes of this GESI analysis

Table 1: Key findings and summary recommendations

Key finding	Recommendation
<p>Across all study sites, women, youth and PWDs have significant understanding of <b>access</b> to water issues but there is need to enhance their capacities to contribute <b>meaningfully</b> in groundwater management activities and processes (e.g., active participation in water committee meetings, planning and designing water infrastructure projects).</p>	<p>The study recommends the governments of Angola and Zambia to install boreholes in areas where they are none or inadequate, construction of protected wells for improved water quality and safety, especially for children. In addition, communal water points can be put in place in urban areas or district capitals in the KAZA areas close to Kwando and Zambezi River to enhance safe domestic supply. The communal water points will also address human-wildlife conflict which adversely affects, women, children, youth and PWDs as they try to access river water. An example was a village in Sesheke using a solar pump to pump raw water from Kwando River (200m away) to a raised 2500L plastic storage for domestic use.</p>
<p>In most sites, there are <b>beliefs and perceptions</b> which limits use of toilets by women, men, youth and PWDs resulting in 91% using the bush and this creates health challenges as it contaminates water sources especially shallow wells during the rainy season adversely affecting the health of the community.</p>	<p>This study recommends water and sanitation training and awareness programs by government, NGOs and ICPs, ensures male engagement to address perceptions that create barriers for women, children, youth and PWDs to participate in water resources management.</p>
<p>In all study sites, children face significant barriers to <b>access</b> water for recreational purposes because of safety issues due to human-wildlife conflict and community beliefs that children would waste water at boreholes.</p>	<p><b>Water for recreational play:</b> The study recommends that the governments of Angola and Zambia, NGOs working in the KAZA area, or local community leaders create safe spaces in schools where children (aged 9 and below) can safely access water for recreational purposes.</p> <p><b>Water for wildlife:</b> To prevent incidences of HWC, the governments of Angola and Zambia, and development partners, must protect wildlife corridors to prevent clashes between communities and wildlife. Furthermore, water points for wildlife will also need to be established. In this way, children will be safe from HWC. Where possible, living fences can be constructed to function as barriers against wildlife invading fields and destroying crops.</p>
<p>In all the study sites, there are robust traditional <b>practices</b> of water conservation and allocation such as limiting the</p>	<p><b>Increase amount of water:</b> The study recommends improvement, by governments or NGOs in the area, in rainwater harvesting techniques, installing more boreholes and protected wells to</p>

Key finding	Recommendation
<p>number of buckets to 3x20 liters for each family per day and reuse of water in watering gardens and mulching crops to prevent water loss.</p>	<p>increase supply of water during the flooding season when the water quality is compromised by turbidity and contamination by run-off. Training on safe ways <b>Ensure safe practices for water conservation:</b> Government, NGOs and ICP to develop ‘how to train’ on safe practices to re-use and recycle water at homestead including conservation of water to prevent sicknesses associated with dirty water. For sustainability and further cascading of the training, community health officers should be made the custodians of the training and information.</p>
<p>Water Committees in the majority of research (90%) sites have equal representation of men and women but women, youth and PWDs have little say in final decision made during the Water Committee meetings because of limited capacity to contribute on the issues and <b>cultural barriers</b> governing gender and youth inclusion in such meetings.</p>	<p>To address the issue of power and decision making in water committees, the study recommends that NGOs in the KAZA capacitate the existing water committees across the research sites with meeting facilitation skills to make their engagements more inclusive for meaningful women, youths and PWDs participation. This will ensure that women are not only relegated to the default position of treasurers as the study found out, but also hold other positions such as chairpersons and technical positions such as maintenance and plumbing officers.</p>
<p>Across all the study sites, the <b>legal rights</b> and status of women, youth and PWDs in water resources management decision making processes are limited dues to patriarchal attitudes and limited awareness of the rights of women, youth and PWDs.</p>	<p>To address the challenges from the findings, the study recommends that local government structures and local NGOs undertake rights and GESI awareness programs, including the right to water, in the research sites and surrounding areas of the KAZA. Currently, women, children, youth and PWDs have token enjoyment of their rights set out in national and regional legal regimes and increased awareness of rights is important in building agency of women, youth and PWDs to add their voices in water resources management.</p>
<p>In some of the study sites, groundwater is saline and has high iron content which presents serious water quality challenges for children, women, youth and PWDs when using the water. Women take pride in cooking good and nutritious meals for their families, and failing to do so, is a direct ‘attack on their womanhood’.</p>	<p><b>Water quality:</b> To address the challenge of water salinity, and shortages in some months the study recommends that governments, local authorities, and NGOs deploy community and homestead technologies and innovations to improve water quality which should address this challenge faced by women, youth and PWDs.</p> <p><b>Water quantity:</b> More groundwater sources must be installed, and conjunctive use (groundwater and surface) implemented, where feasible, by local authorities, and development partners, to address water shortages in the dry months in areas where water is not available throughout the year, and</p>



Key finding	Recommendation
	proper construction of groundwater infrastructure including solar energy use will also greatly limit the external contamination concerns.
Human and Wildlife Conflict (HWC) is widespread across the study sites and affects <b>access</b> to water for women, youth and PWDs by limiting movements to rivers and water points while posing danger to human life and crops for the communities.	To address HWC, this study recommends that the governments of Angola and Zambia strengthen security in areas bordering the national park and install adequate water sources within the park to limit wildlife movement and consequently prevent HWC. Further, women, youth and PWDs should have equipment to timeously communicate with wildlife management authorities when animals break loose from the national park and must be part of committees designing interventions to deal with HWC at village and district levels. Governments and private sector establish insurance to compensate loss by the community of their crops, livestock, and water infrastructure. It can also work with relevant forestry departments to help communities to put up living fences that can act as barricades against wildlife invasions in their fields. As the HWC mostly occurs during the dry season, both governments can also establish dedicated task forces during this time.
The study did not obtain any significant information on indigenous people <sup>4</sup> in the target districts.	To have an in-depth understanding of indigenous people in the target districts, the study recommends a dedicated inquiry into the status of indigenous people in the KAZA because this research was not able identify and interview indigenous people to understand their differential challenges.

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<sup>4</sup> USAID uses seven criteria to identify indigenous people (as opposed to a tightly bound definition) namely: a. Self-identification as a distinct social and cultural group, b. Recognition of this identity by others, c. Historical continuity with pre-colonial and/or pre-settler societies, d. Collective attachment to territories and their natural resources, e. Customary social, economic, or governance institutions that are distinct, f. Distinct language or dialect, g. Resolve to maintain and reproduce their ancestral environments and systems as distinctive peoples and communities (USAID, 2021, Toolkit for identifying indigenous peoples.)

## **I. INTRODUCTION**

### **I.1 KAZA-GROW Project**

The Kavango Zambezi Transfrontier Conservation Area (KAZA TFCA) is the largest transfrontier conservation in the world (insert reference). It covers 520,000 km<sup>2</sup> and has unique natural ecosystems, interlinked supporting water systems, and massive biodiversity. The Member States sharing the TFCA (Angola, Botswana, Namibia, Zambia, and Zimbabwe) are undergoing significant economic and population expansion with women and youth constituting the majority of the demographic groups (insert reference). The TFCA is facing intertwined challenges of water scarcity, climate change, inadequate water infrastructure, growing human-wildlife and land use conflicts. This situation demands for more proactive management of natural including water resources management and strong transboundary cooperation.

Due to the various factors discussed above, availability of water in the TFCA is becoming a concern. To this end, groundwater particularly transboundary aquifers are playing an important role in supplying reliable, and widely available water to communities and wildlife. Resultantly, there has been an explicit demand to bring in expertise on groundwater management in the TFCA to address knowledge gaps between Partner States. There is a need to develop the knowledge base, capacity and decision support tools, and policy guidelines as well as management frameworks around groundwater in a regional cooperative framework, at the most suitable integrated scales, from local to transboundary levels.

Project Goal:

- To support water security and resilience in the KAZA TFCA through the sustainable development and management of groundwater resources.

Objectives:

With focus on the Kwando River Wildlife Dispersal Area (KRWDA), the KAZA-GROW Project will:

- enhance the knowledge base on the water resources of the KAZA TFCA through a joint and interdisciplinary Transboundary Diagnostic Analysis, including identifying hotspot transboundary areas for groundwater development to improve water security, livelihoods, resilience, and human-wildlife coexistence.
- strengthen the policy attention to groundwater through a Transboundary Groundwater Management Framework for the KAZA TFCA, piloted for the KRWDA, and as a pre-cursor for a joint Strategic Action Plan on freshwater for the KAZA TFCA and a Southern African Development Community (SADC)-wide TFCA Policy for Groundwater for continued benefits for humans and biodiversity and sustainable economic development.

This Gender Equality and Social Inclusion (GESI) analysis aims to inform and support sustainable groundwater development and management for sustainable livelihoods, natural resource, and wildlife management in the KAZA TFCA. In addition, this GESI analysis seeks to develop an in-depth understanding on the differential needs and priorities for women, children, PWDs, youth, and indigenous people in the context of the broader KAZA-GROW project. The GESI analysis was carried out concurrently with the broader Transboundary Diagnostic Analysis (TDA) of the Kwando River Basin, and Wildlife Dispersal Area. Consequently, just as the TDA, the GESI analysis was carried out in eight research sites of the Western Province of Zambia and the Eastern areas of Angola which fall under the KAZA TFCA in the Kwando River Basin, namely Shangombo, Sioma and Sesheke (Zambia) and Ruvungo (Boafe, Jamba, Kasuma, Katara, Lumbo, Showana and Ouze) (Angola) (Figure 1). These areas were identified in the water scarcity vulnerability mapping exercise which identified hotspot areas requiring extensive groundwater development to ensure access to water. In each site respondents were purposively sampled and provided key information for GESI analysis into how children, women, youth, and PWDs experience water scarcity vulnerability, their different uses of water and roles they played in water resources management.

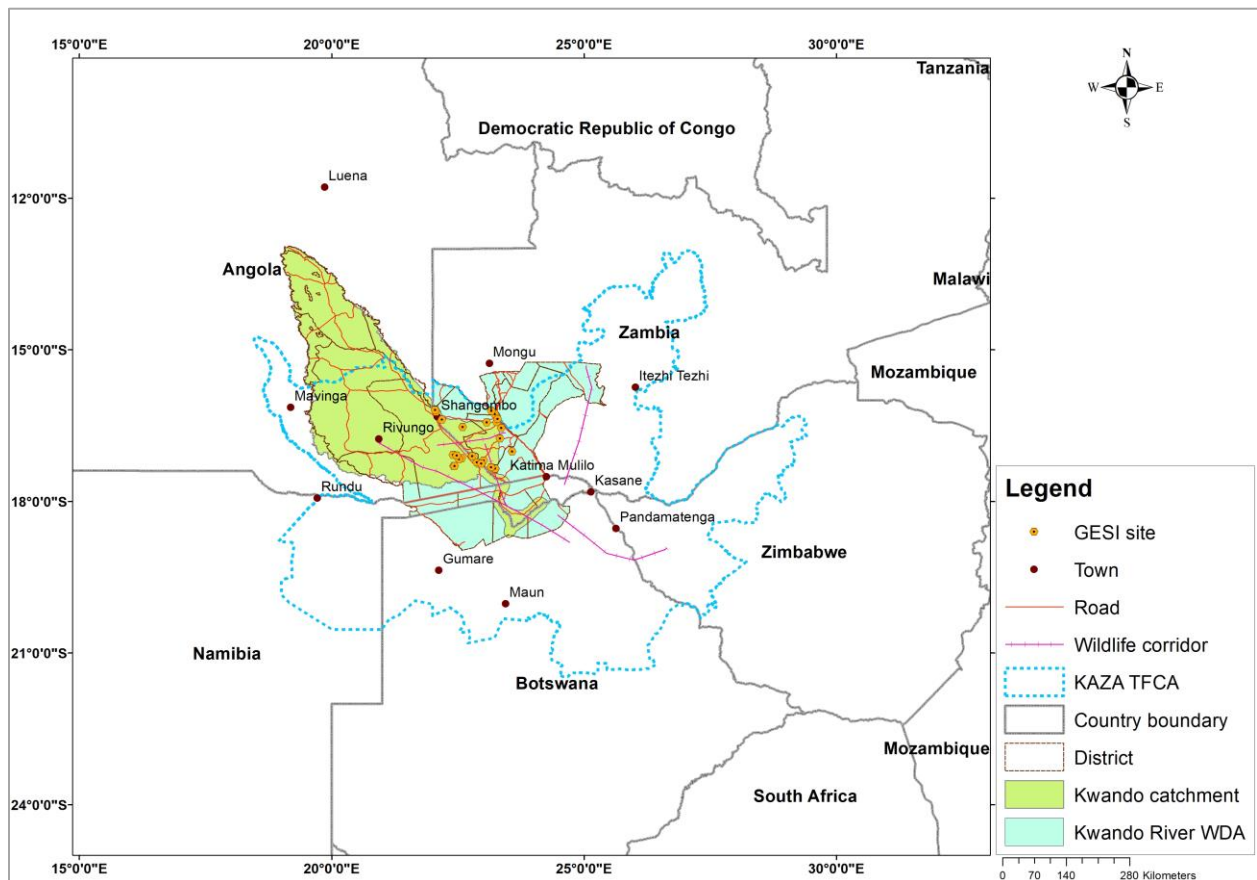


Figure 1: Study area and sites

Gender, equality, social inclusion (GESI) analysis and women empowerment, youth engagement and PWDs are critical processes of ensuring equitable access to water in communities. Through the appreciation of the intersectional<sup>5</sup>, varied needs and experiences of children, women, youth and PWDS that the KAZA-GROW project can attain its objectives<sup>6</sup>. This entails having meaningful participation of women, youth and PWDs at all levels of the project. Research by Dahlerup and Drude (2006), shows that a minimum of 30% women’s participation is required to be meaningful for developmental projects to attain impact and change in communities. For the KAZA-GROW project, this GESI analysis is a crucial part of its assessment and sets the framework for gender equality and social inclusion in the project.

## 2. METHODOLOGY

### 2.1. Research approach

The research approach is guided by the USAID Six Domain Framework (Figure 2), this GESI analysis (Annex I – Questionnaires) explored these six thematic areas.

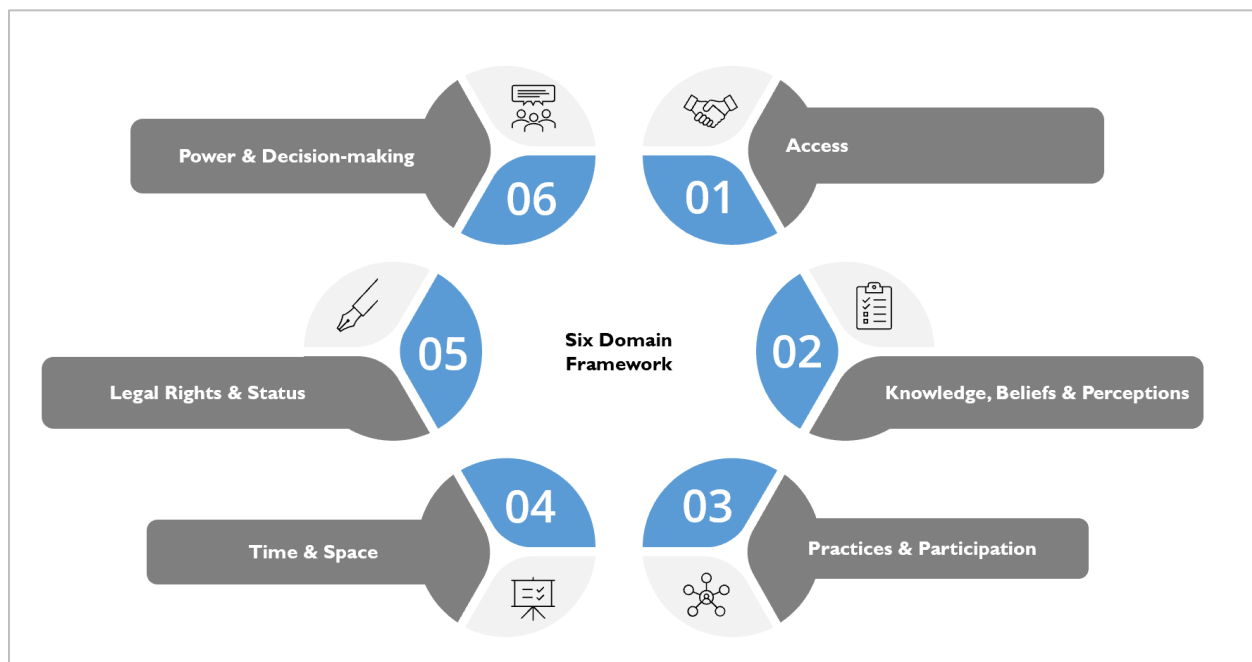


Figure 2: USAID 6 domain framework / study thematic areas of analysis

<sup>5</sup> Intersectionality describes the influences of multiple identities (influenced by sex, age, race, physical and mental abilities) in a person and how these interact with marginalizing and empowering structures, norms, and narratives (Colfer et. al, 2018. Making Sense of 'Intersectionality': A Manual for Lovers of People and Forests).

<sup>6</sup> The objective is to conduct a GESI baseline assessment for Tuli-Karoo Aquifer Transboundary Diagnostic Analysis and share lessons learnt with KAZA-GROW and or SADC-GMI networks.

### Thematic area 1: Access

The questions sought to establish how readily accessible the water for domestic use and agricultural production and sanitation for children, women, youth and PWDs is throughout the year in the research sites. In addition, the thematic area also inquired about Human-Wildlife Conflict given that it impacts on access to water in areas around wildlife sanctuaries for the target groups.

### Thematic area 2: Knowledge, Beliefs and Perception

This thematic area unpacks commonly held views, perceptions, and perspectives in the research sites about use and access to sanitation and water by children, women, youth and PWDs. Further, it explored the levels of knowledge pertaining to availability of water and its quality throughout the year for the target groups. In addition, the thematic area also had an aspect of sanitation as beliefs/culture also informs use of toilets.

### Thematic area 3: Practices and Participation

This thematic area evaluates the most prevalent and effective traditional ways of conserving water within the communities and how it satisfies the water needs for children, women, youth and PWDs in the research areas. The approach seeks to establish the extent to which positive community norms, values and practices are used to promote water conservation for the target groups. In addition, the thematic area also inquired on the percentage distribution of sources of water in the research areas as part of establishing a baseline of water sources available to the target groups.

### Thematic area 4: Time and Space

The thematic area focused on understanding the amount of time spent in search of water and the distance covered by, women, children, youth and PWDs to the nearest and furthest water source in the research sites. This is a key issue given that fetching water constitutes a large portion of the domestic work done mainly by women and girls. Furthermore, the thematic area also sought to establish the monthly income and sources for each household, and amount of time spent on unpaid domestic and care work. This information is crucial in understanding the differential uses of water for children, women, youth and PWDs as it reveals their sources of livelihood.

### Thematic area 5: Power and Decision-Making

The crux of the thematic area is to establish the different leadership and decision-making roles which women, youth and PWDs play in decision-making processes on water use and management, and water infrastructure development.

## Thematic area 6: Legal Rights and Status

This thematic area focuses on various water related laws, policies, regulations and local norms and traditions that facilitate or prohibit women, youth and PWDs to participate in decision-making on water use and management. This GESI analysis is important in informing the interventions which would be implemented as part of the KAZA GROW project.

### 2.1.2 Research guiding principles

The GESI analysis data gathering was informed by the following research guiding principles:

- i. Do no harm – avoiding exposing respondents to undue risk of harm or deceiving them to participate.
- ii. Informant confidentiality – using all the information collected for purposes of this research only.
- iii. Non-discrimination and respect of informants – treating all respondents with dignity and equally.
- iv. Ethical data collection – using methods and tools which comply with best research practices.
- v. Intersectional appreciation of issues – understanding that each human being is impacted differently by development activities due to different socio-economic, political and environmental factors.
- vi. Informed consent – obtaining express consent from respondents and giving them full information regarding the research.
- vii. Cultural sensitivity and co-learning – being aware and respecting cultural context of respondents and appreciating the knowledge they possess.
- viii. Protection of information – safeguarding the information collected from the respondents.

### 2.1.3 Primary data collection

As this was an explorative study, a purposive sampling method<sup>7</sup> (Homogeneous sampling technique, identifying members of the sample who have a shared characteristic specifically women, youth and PWDs) were used. The GESI analysis interview guide was administered to the community (74 respondents), water engineers (one respondent) and water development officers (one respondent) in Sesheke, Sioma, Shangombo and Rivungo districts.

Table 2 shows the purpose of the different interview guides and the disaggregated data between respondents.

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<sup>7</sup> Sample size was determined when the field team stopped obtaining additional understandings/themes by continuing i.e., “no new substantive information is acquired” by adding more respondents (Miles & Huberman, 1994)

Table 2: Primary data collection method

Stakeholders	Purpose	Zambia	Angola	Total No.
Women, youth, PWDs <sup>8</sup> and men <sup>9</sup>	Gather lived realities and experiences regarding the subject matter.	50 Men:28 Women: 22	24 Men:18 Women: 6	68 Men: 41 Women: 28
Water engineer and water development officers	Obtain expert opinion on specific aspects relating to the subject matter.	N/A	N/A	2 Men: 2 Women: 0
Area Induna and community leaders (police officer and local NGO Director)	Gather informed and broad views from respondents who have knowledge of the area.	N/A	N/A	3 Men: 3 Women: 0
<b>Total respondents</b>		<b>50</b>	<b>24</b>	<b>74</b>

#### 2.1.4. Protection of respondent information

Members of the research team obtained free and prior informed consent<sup>10</sup> from all respondents before conducting semi-structured interviews. The following steps were taken for all respondents:

- **Explaining aims and objectives** of the study, how long the interview would take and procedures which would be followed.
- **Describing relevant risks** to the respondent.
- **Describing benefits** that the respondent or their community would obtain by participating in the project.
- Providing assurance that all **data collected will be anonymous and confidential** and will be used only for this study.
- **Sharing contact details** to get in touch with the researcher in case the respondent has questions regarding the research.
- Indicating that **participation is voluntary**, with no penalties for refusal, and that the respondent may stop participating at any time during the interview.

#### 2.1.5. Limitations of the GESI Analysis

The major limitation of this GESI analysis is that it required a thorough stakeholder mapping and more extensive stakeholder consultations (beyond the community) to include both government<sup>11</sup> and non-governmental organizations, and international organizations/cooperating partners working in provision of

<sup>8</sup> During the fieldwork, researchers did not have an opportunity to interview PWDs, but some respondents spoke on their behalf.

<sup>9</sup> Men were interviewed because majority are the community leaders and seat in water committees.

<sup>10</sup> Informed consent is an ethical and legal requirement for research involving human respondents (Nijhawan et.al, 2018. Informed consent: Issues and challenges) to ensure that the respondents and the community are safeguarded against any unintended consequences for responding to the questions and they know that they can stop the interview at any time.

<sup>11</sup> Ministry of Water Development Services, Ministry of Community Development, and Ministry of Health

water supply services in the research area and sites. Such stakeholder interviews are needed to strengthen and validate findings and recommendations. This is also important to avoid duplication of suggested interventions/recommendations. However, due to limited time in the field this was not possible. Furthermore, the research team tried to address this through desktop research using online resources. However, there are no GESI analyses documented in the area online and very limited research on water resource management and depicting differential needs and challenges of the target groups studied. The analysis also found that there was lack of data related to indigenous people from the target sites of the research.

### **3. KEY FINDINGS**

#### **3.1 Demographic information**

The average household size across the research sites in the KAZA area across the two countries, Angola and Zambia, is eight with majority (65%) of households being male headed. Of the 6 men interviewed (Table 2) of this GESI analysis, 12 were below 35 years, thus falling in the bracket of youths according to the African Union definition. The fact that most households are male headed means that men enjoy greater status and decision-making powers in the households than women because they are the breadwinners in the family, hence, hence make most major family decisions. On the other hand, 28 women were interviewed which satisfied the threshold of a minimum of (30%) women required for effective participation in this GESI analysis (Dahlerup & Drude; 2006). Three girls<sup>12</sup> were also interviewed which was important in capturing the differential needs and uses of water for young women.

Key stakeholder organisations in the research sites are churches, local NGOs, village banking associations, women's groups, and youth groups. Across the research sites, there is a lack of organized groups representing the specific interests of PWDs (only three households indicated they had a member with a disability) or indigenous groups. In the research sites, women and youth have significant opportunities to exercise their agency in decision making platforms. For example, in Liko village, Shangombo, women constitute (50%) of the borehole committee which gives them a quantitative presence, but this has not always resulted in equal and effective participation of women in making decisions on water use and management.

Leadership structures of the four research areas have an area induna or an elected councilor and the police as the topmost point of contact. Below them is a local committee composed of representatives from the village and then the community itself. Most of the area indunas are men reflecting the patriarchal nature of the communities, however, as noted above the local committees and borehole committees are

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<sup>12</sup> Informed consent was obtained from the guardians of the girls prior to the interviews.



platforms where women are taking up leadership roles which represents a significant opportunity to amplify the voices of women in water resources management decisions.

The local economy in all the research sites is driven by crop and domestic livestock production as well as fishing. In addition, some families engage in localized artisanal work such as welding, construction, thatching, operating tuck shops and beer brewing to supplement household income. Very few in the research sites depend on formal employment, where it happens its largely seasonal in sugarcane plantations, and this dependency on the informal economy also translates to a heavy burden of unpaid domestic, and care work on women and girls in the research sites.

Table 3 summarizes key demographic information of respondents from the four districts:

*Table 3: Key demographic information from the research sites*

<b>Sex of respondents</b>	<b>Household member with disability</b>	<b>Household type</b>	<b>Average household size</b>
46 male (12 youths) 28 females	3	21 male-headed 10 female-headed	8 members

### **3.2 Access**

Overall, communities in the research sites in Angola and Zambia, access water through groundwater (boreholes), shallow wells, swampy areas and from surface water (major rivers i.e., Kwando and Zambezi rivers) passing through the area.

Groundwater from boreholes and wells constitutes about 80% of domestic water use (i.e., water for drinking, cooking, and washing dishes), while surface water from rivers constitutes 16% of water used for crop production and 4% is from roof rainwater harvesting however, some of the water from the rivers is also used for domestic functions such as laundry and bathing.

Wells, in Angolan research sites are dug in swampy areas, in most communities are between 2-12 meters deep while borehole depth ranges from 20-40 meters. These depths while deep enough they characteristically do not have support structure, or they have simple support structure such as thin tree constructed into a mesh on the sides of the well which poses a safety concern. Majority of households [80%] use 20-liter buckets to fetch water with each household fetching three to four buckets of water on average for everyday use from local boreholes.

Shallow wells pose challenges as new wells have to be dug every day as they easily collapse. This poses a danger to the community and according to a respondent in Sesheke [Zambia], a child drowned in a collapsed shallow well in 2019. Furthermore, shallow wells in swampy areas dry up during the dry months of August to November leaving communities facing difficulties to access water which impacts adversely on women, youth and PWDs. Women and youth carry the burden of finding alternative sources of water

which widens inequality and men must dig deeper wells in the swampy areas. Communities along Kwando River fetch water from the river at the risk of being attacked by crocodiles and hippos.

Boreholes and wells also face challenges of water quality with some of the boreholes in the villages being saline and water from open wells having high turbidity during the flooding from January to March. This poses water quality challenges for the community.



Figure 3

Left: male child drawing water from an open/shallow well at Liwandamo Primary School

Right: Colour of water from borehole BH No. 3 at Liwandamo Primary School

Most of the communities experienced human-wildlife conflict especially those located close to the Sioma Ngwezi National Park. Animals which predominantly come into contact with communities are hippos, hyenas, warthogs, elephants and crocodiles, and the frequency of this contact peaks between January and June of each year. Hippos, warthogs, and elephants eat crops in the fields which affects community food security while hyenas, leopards, and crocodiles attack livestock. Crocodiles and hippos are also menacing to people when they go fishing or when they are fetching water (during the dry months of August-November) from Kwando and Zambezi Rivers. This human-wildlife conflict, especially at water points at the rivers disproportionately expose women, youth and PWDs since they are predominantly the ones who fetch water. Communities in the research sites ensure access to water by allowing women, and youth to fetch water from community sources without hindrance and to some extent involving them in decision-making over water resources management as observed by Shangombo District Council Water Coordinator and Director of Works [Zambia] “...everyone access water equally. There is a high proportion of women than men in water committees.”

And the Executive Director on a local NGO, ACADIR [Angola] who stated that “...yes, they access water equally for use at home and for farming.”

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### **Disability Check**

*The study observed three participants who had disabilities. One was blind, the other with albinism and had difficulty walking. These conditions limited their ability to actively access water on their own, especially the blind. While the community indicates that there is equal access, community stereotypes about albinism may limit access to water infrastructure for this group.*

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### 3.3 Knowledge, beliefs and perception

The four research areas show high levels of knowledge about how water is utilized in their communities, the sources, and the relative costs involved. Most research sites indicated that they have no challenges of water quality for example Mukumbila and Andeleki (Sesheke) and Sinjembela (Sioma District) research sites indicated that their water quality was satisfactory. However, challenges were raised in some research sites such as Choto [Sioma District Zambia] where the water is assumed<sup>13</sup> to have high iron content which makes it difficult to prepare the staple *tshima* (thick maize meal porridge) as it “turns it brown”. Other villagers complained of salty water and high turbidity during the rainy season. All these factors affect the quality of water, which is available to women, youth, and PWDs within these specific communities. In Angola study sites like Jamba and Kasuma, during the dry season, water is available in shallow wells in swampy areas where it gets dirty because the water table will be low requiring deepening of the wells.

The communities in Liwandamo and Matevele (Sioma District) also have perceptions that children (below nine years) must not go to the water sources unaccompanied as they may contaminate and wastewater. This means that children have limited access to water in the research sites if they are not accompanied by adults. There are also prevalent local beliefs in all the four research areas that toilets cannot be shared between in-laws which has seen 91% of community members practicing open defecation (i.e., using the bush for defecation) which poses serious health challenges during the flooding period (January to April). This flooding causes contamination of water sources such as shallow wells resulting in diarrheal diseases like typhoid and cholera. This was observed by a police officer at Boafe checkpoint [Angola] “...water from the swampy plain is not clean as it causes diarrhea and stomach problems.”

During the dry months (August to November), reliance on groundwater increases and where it is not available women, youth, and PWDs travel long distances to fetch it which invariably takes away time from other economic activities, and schooling. Communities in the KAZA area also have clearly gendered allocation of duties where women are responsible for cleaning the areas around wells and boreholes while men work to dig wells and deepen them. This cooperation at community



4- Well not in use at Baironovu, Angola

<sup>13</sup> Water quality tests will confirm the elements present in the water for each research site.

level is very important for ensuring sustainability of water development projects. Alternatively, women and youth walk an average of four to five kilometers [both Angola and Zambia research sites] in search of water which adversely affects their ability to effectively participate in community affairs which deepens inequality and limit their ability to participate in water resources decision-making processes.

### 3.4 Practices and participation

All the villages in the research sites share methods of water conservation. Crop production is one of the important mainstays of livelihoods in the project areas and as part of water preservation, women, youth and PWDs mulch gardens to reduce water loss. In addition, groundwater from boreholes is rationed by allowing each family to access an average of three 20-liter buckets of water per day and in Jamba [Angola] they lock boreholes and set timetables for the community to fetch when the boreholes have filled up the overhead storage tanks. Public institutions like schools undertake water harvesting, for example Matevele Secondary School in Sioma [Zambia] have rainwater from the roofs. In terms of water use for crop production, 60% of the water comes from rivers such as Kwando and Zambezi while 40% is from shallow wells dug in swampy areas. The foregoing shows the extent to which women, youth and PWDs are concerned about water preservation through practices which enhance the same. Women youths and PWDs are not always active participants in meetings even though they are present due to cultural norms and practices which limit their participation in meetings where older men are present.

A woman in Jamba [Angola] commented on some of the practices for conserving water from boreholes during the dry season; “...there is a man who works at Administration [for Jamba] and is responsible for locking the borehole between 07:00 -12:00hrs to allow the borehole to fill up overhead storage tank before opening up for community to fetch water.”



5-Solar powered borehole in Jamba-Luana

### 3.5 Time and space

Most respondents [57%] across the four research sites walk a short distance of between 200-500 meters to access a groundwater source because the majority of boreholes are at the centre of villages which makes them easy to access and wells in swampy areas are also close to homes. At these water sources, they spend between 30 minutes to an hour per day fetching water. The furthest distance which a person has to walk to fetch water is between four to five kilometers, spending between two to four hours on this activity. This situation is more prevalent for research sites in the Shangombo district [Zambia] and in Ruvungo district [Angola] as compared to the other research sites.

The majority of households in the Sioma and Sisheke [Zambia] and Katara [Angola] research sites spend an average of 8 hours on farming activities, which are the mainstays of their local economy. Those in Shangombo [Zambia] and in Rivungo [Angola] spend an average of 4 hours per day on farming activities which may be partly due to the longer time they spend fetching water. Given the gendered dynamics of fetching water and unpaid domestic and care work, inequality between men and women in these villages is more pronounced.



6-Borehole at Likulushitu Village

The average monthly income of households in the research sites in Zambia is K150 (US\$10.00) per month which is obtained from various activities including fishing, tuck-shops, and welding among other economic activities. However, in some villages of Shangombo [Zambia], men undertake seasonal work in sugar plantations which supplements their family incomes. This extra income, from men, enhances their economic power and social capital in the household and community, further widening gender inequality. During this period when men take on seasonal work, it also means that women take up most of the household duties including ensuring maintenance of water resources infrastructure in the community. The

Water Development Local Field Officer of Shangombo council states that “...men from Shangombo go to Mazabuka to work as cane cutters in the period of November to March, during the dry spell, where they make between K500-K1000 (US\$30-US\$60) per season.”

### 3.6 Power and decision-making

The communities in the research sites are patriarchal which means men enjoy greater power in decision-making processes. However, across all the research sites, women and youth take part in borehole management just like men while PWDS do not. Community meetings ideally allow everyone to participate in decision making but even though committees have 50-50 gender representation, women tend to participate less. This is partly due to the disproportionate burden of unpaid domestic and care work which limits the amount of time they have to participate in decision-making platforms and patriarchal socialization which condition women to speak less in the presence of men.

When water infrastructure is being developed in the research sites, village committees decide the general position where boreholes must be located. Contractors are then tasked to survey and find the most suitable site for drilling and installation in the vicinity of the general sites identified by committees. Women and youth take part in the processes and also in maintenance of the infrastructure doing such tasks as cleaning around the borehole (women) and fencing it (youth). In some instances, it is women who inform men when wells, in swampy plains, dry up and there is need to change water sources and go to the river. A woman in Ouze [Angola] stated that “...women decide and inform men when the swampy areas dry up and also to ensure safety, they go to fetch water from the river they go as groups to avoid crocodile attacks.”

Men, on the other hand, are usually caretakers responsible for locking the borehole between 18:00hrs and 06:00hrs showing the power enjoyed by men in determining access to water. Though women face limitations to lead, when they take up leadership roles, they are very effective as observed by the Water Development Local Field Officer for Shangombo district “...when women are given roles, there is evidence of work and progress e.g., when there was need for monetary contributions for borehole



7-Women and children drawing water from Kasuma Village, Sioma, Zambia

*rehabilitation, K400.00 was raised almost immediately (coordinated by women).”*

### **3.7 Legal rights and status**

The majority of respondents (92%) across all the research sites indicated that men, women, youth and PWDs had the same rights and status when it comes to water resources management. The uniformity of the responses is partly reflective of the aspirational thinking of the community rather than the reality. This view is supported by the Water Coordinator of Shangombo [Zambia] who states that *“there are norms and practices which prohibit women, youth, and PWDs from participating.”* Women are traditionally not supposed to attend meetings with men and when they do, there are usually quiet and must be encouraged to contribute to meetings. Youth are generally not allowed to talk in meetings as they must defer to their elders while PWDs are rarely invited to community meetings. This is corroborated by the Water Development Local Field Officer of Shangombo [Zambia] who states, *“that women have less influence despite the 50-50 presence in committees because men dictate the agenda and process.”* This shows that while women have quantitative presence in decision-making platforms, their participation is largely selective to the task at hand; for instance, if the task is technical, women tend to allow men to make decisions, and if it is financial, they take the lead because they are good at mobilizing and managing funds. Thus, while villages are making progress in addressing inequalities and social inclusion, there are still gaps in the implementation aspect of this progress.



*8-vegetables growing using groundwater at Musa Fishponds*

#### **4. GESI RECOMMENDATIONS FOR THE KAZA-GROW PROJECT**

- To address water access concerns of reliance on open shallow wells for water, the study recommends that governments of Angola and Zambia undertake installation of boreholes in areas where they are none and construction of protected wells for improved safety, especially for children. Raw river water must be pumped to tanks where it can be treated and stored for safe domestic use. The piping of water to villages would address human-wildlife conflict which adversely affects women, children, PWDs, youth and the elderly as they try to access river water or when they move long distances to access water.
- To address knowledge, beliefs, and perception aspects where communities hold beliefs that in-laws cannot share the same toilet resulting in men getting preferential use of the toilets while women, children, PWDs, youth and the elderly using the bush for ablution. This belief adversely impacts the health of the target groups by exposing them to water borne diseases during the rainy season when shallow open wells are contaminated by run-off. This study recommends that governments of Angola and Zambia and NGOs working in the area implement water and sanitation training and awareness programs and assist with construction or materials for ventilated improved pit latrines (VIP) toilets.
- To address perceptions that create barriers for women, children, PWDs, youth and the elderly to participate in water resources management, the study recommends that local government structures and local NGOs undertake male engagement programs to increase their understanding and support for gender and inclusion. In addition, communities through water committees and other local stakeholders like NGOs should create safe spaces, such as play parks, where children (below 9 years) can safely access water for recreational purposes.
- To improve on practices of water conservation, the study recommends that communities should improve rainwater harvesting techniques to increase supply of water during the flooding season when the water quality is compromised by turbidity and contamination. This would ensure access to less compromised water quality during this period for women, children, PWDs, youth and the elderly especially during the rainy season where they spend more time engaged in agricultural activities.
- To address the issue of power and decision making in water committees so that women, youth and PWDs go beyond token participation to making meaningful contributions, the study recommends that NGOs and local government structures capacitate water committees with meeting facilitation skills to make their meetings inclusive by offering women, youth and PWDs opportunities to meaningfully contribute. The training should be anchored on male engagement



to close the gender inequality in decision-making. Men should be actively engaged to champion the genuine inclusion of women, youth and PWDs in water resources management and decision-making. Furthermore, women, youth and PWDs must be technically equipped with skills for water infrastructure planning and management.

- To promote legal rights and status of women, youth and PWDs in the decision-making process of water resources management the study recommends that NGOs undertake rights awareness programs, including the right to water, in the KAZA TFCA area. Currently, women, youth and PWDs enjoy their rights set out in national and regional legal regimes<sup>14</sup>, but only to the extent that these rights do not contradict local tradition and customs, hence the need for such a program. Awareness of rights is important in building agency of women, youth and PWDs to add their voices in developmental processes such as water resources management.
- To address the challenge of salinity of water, the study recommends that local government structures and NGOs in the KAZA TFCA deploy community and homestead technology and innovation to improve water quality challenge faced by all community members children youth and PWDs. In addition, (i) fresher (with less salinity) groundwater sources must be developed, and infrastructure installed to address water shortages in the dry months in areas where water is not available throughout the year, and (ii) proper construction of groundwater infrastructure will also greatly limit the external contamination concerns. This challenge on salinity will be addressed in the next project deliverable on hotspot mapping for potential fresh groundwater development in the Kwando River Basin and Kwando Wildlife Dispersal Area.
- The study recommends that governments and other stakeholders in the KAZA TFCA to strengthen security in areas bordering the national park and install adequate water sources within the park to limit wildlife movement and consequently prevent HWC. Further, women, youth and PWDs should have equipment such as community-shared walkie-talkies and knowledge to timeously communicate with wildlife management authorities when animals break loose from the national park. Local government structures and parks authorities must set up local committees, with a representation of women, youth and PWDs, at village and district level to come up with various contextual and localized interventions to address HWC.
- To have an in-depth understanding of indigenous people in the target areas, the study recommends a dedicated inquiry into the status of indigenous people because this research was not able to get any information on them. This would enrich the interventions of the KAZA GROW project.