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Water Scarcity as a Barrier to Gender Equality and Development in Phalombe, Malawi: A Systematic Review

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Abstract
Water scarcity is a global issue affecting women's participation in development. Studies indicate that 12% of the global population lacks basic water services, with women and girls often walking long distances to fetch water. In Malawi, one of the poorest countries in sub-Saharan Africa, the responsibility of water collection predominantly falls on women and girls. This task significantly hampers their involvement in social and economic activities. While each rural community in Malawi has unique characteristics, water scarcity remains a critical issue that significantly affects the participation and inclusion of women and girls in various aspects of their social lives. This paper explores the impact of water scarcity on women and girls in three under-researched villages in Phalombe District, Malawi: Kalinde, Matawa, and Lihaka. Unlike prior studies, this work highlights specific cultural practices, governance failures, and infrastructural constraints that uniquely affect these communities, offering a grounded and intersectional perspective on gender inequality. A study involving 50 participants from these areas shows that water scarcity threatens livelihoods and restricts women and girls' effective participation in economic development due to the time spent on water collection. The findings advocate for strategic interventions to remove barriers to women's inclusion and boost gender equality and empowerment. Addressing water scarcity in such communities is crucial for enabling women and girls to engage more fully in development initiatives.

Keywords: Gender, Malawi, Social-economic exclusion, Water rights, Water scarcity

Introduction
The linkage between water scarcity and gender has been acknowledged globally by many researchers as one major factor limiting rural women's inclusion and meaningful participation

in developmental activities. Water scarcity refers to any water restrictions brought on by different environmental factors, such as anthropogenic activities like water pollution from acid mine drainage and industries, as well as natural phenomena like climate change and variability with intensified seasonal droughts and flooding (Omar et al., 2020). In 2014, the United Nations report on water scarcity stated that by 2025, about 1.8 billion people would reside in areas or nations with a complete water shortage; hence, rural women and girls' participation has been the focus of intensive debates at most international forums in recent years. Among the many issues discussed during these forums were promoting women's economic independence, employment creation, the persistent and increasing burdens of poverty, malnutrition, poor health and illiteracy, access to resources and the eradication of poverty. Most importantly, members expressed that each member state was expected to improve women's access to resources such as water. Accordingly, increasing commitment towards rural women's experiences is one of the key factors that may help to eliminate restrictions on women's and girls' participation and inclusion in socio-economic activities and could enhance gender equality advances (Ray & Crider, 2007).

Problem Statement

While water scarcity is a global phenomenon, and not only a problem for Africa, there is also little doubt that the extent of the challenge persists more severely in rural areas than in urban areas. The phenomenon also varies from context to context because of different historical, political, and traditional perspectives, as well as the level of development in different areas. According to the latest World Bank report, Malawi remains one of the poorest countries in sub-Saharan Africa despite significant economic and structural reforms to sustain economic growth (World Bank, 2022). Malawi's economy heavily depends on agriculture, which employs over 80% of the population, and is vulnerable to external shocks, particularly climatic shocks. This also affects research activities in the country. Reading through literature, limited empirical studies have been done about water scarcity in the villages of Kalinde, Matawa and Lihaka. The paucity is an unambiguous indication that women's problems are not taken into consideration when member states sign various gender declarations and adopt national policies, especially given that women are primarily responsible for collecting water and make up just over half of Malawi's population, which is currently estimated to be 20.4 million (NSO, 2022). Growing up in Lihaka- Phalombe district, from the late 60s up to date, the area seems to receive insufficient attention in the government development agenda. The scarcity of water has been a long-standing challenge since the colonial period.

Literature Review

The relationship between water scarcity and gender inequality has been widely documented in global, regional, and national academic literature. The relationship between water scarcity and gender inequality has been widely documented in global, regional, and national academic literature. Existing research in Malawi consistently shows that water scarcity is a gendered issue; however, many of these studies either focus on infrastructural analysis or treat rural communities as a homogeneous category, thereby overlooking the particularities of place, identity, and lived experience. Chikapa and Kamchedzera (2021) examine how gender-based inequalities manifest in water governance, arguing that weak institutional accountability at the local government level exacerbates exclusion. Similarly, Chinsinga and Nyasulu (2020) analysed the challenges of decentralisation in rural service delivery, including water. The scholars critique the decentralisation of public service delivery in Malawi, including water, pointing out that while decentralisation policies promise increased equity and participation,

implementation has often faltered due to political interference and limited technical capacity. These studies provide important insight into systemic weaknesses in water governance. However, they stop short of offering micro-level analyses that consider how these failures play out in the everyday lives of rural women and girls.

Globally, studies such as those by Cassivi et al. (2018) and Geere, Hunter & Jagals (2010) draw attention to the physical burdens of water carrying and its health consequences. These works demonstrate how the time, energy, and bodily strain associated with carrying water—often across long distances—can lead to chronic health conditions, lost educational opportunities, and entrenched gender disparities. However, applying these international insights to the Malawian context remains limited. There is a need for empirical research that acknowledges these burdens and situates them within the specific socio-economic and cultural contexts of rural Malawi. Mnisi (2020) and Nicol (2002) also critique the sustainability of gravity-fed schemes and gendered participation in water point governance, noting that these models often underperform due to weak community ownership and maintenance structures.

Although national policy frameworks such as the Malawi Gender Equality Act (2013) and the National Water Policy (2005) support women's inclusion in water governance, their practical implementation has lagged. A study by Kondowe (2015) on the Livingstonia Gravity-Fed Water Supply Scheme found significant gaps in community awareness of water rights and poor coordination between local authorities and water users. Meanwhile, Vunain et al. (2019) conducted water quality assessments in Phalombe and identified several parameters that failed to meet national and WHO standards, thereby exposing communities to serious health risks. These findings are particularly troubling in light of data from FinScope (2019) and the National Statistical Office (2022), which confirm that rural access to safe water remains persistently low, especially in poorer and geographically isolated districts.

Taken together, these studies highlight two key gaps in the literature. First, there is a lack of fine-grained, place-based research that explores the lived experiences of water insecurity in specific Malawian communities. Second, much of the existing work lacks an intersectional lens, which is necessary to understand how gender, poverty, geography, and governance failures interact to shape differentiated outcomes. This study seeks to address these gaps by offering a localised, empirically grounded, and theoretically engaged account of water scarcity experienced by women and girls in the Kalinde, Matawa, and Lihaka villages in Phalombe District. In doing so, it contributes to broader debates on gender justice, social inclusion, and the operationalisation of the right to water in low-resource settings.

Theoretical and Legal Framework

The Right to Water: An Overview

Despite the lack of explicit recognition of water as a separate human right in international instruments, access to safe drinking water is subject to special obligations under international human rights law. International human rights law provides a strong foundation for the right to water, as this obligation is enshrined in both universal and regional human rights instruments. In 1977, at the United Nations Water Conference in Mar del Plata, Argentina, the idea of basic water requirements to satisfy fundamental human needs was first introduced. In its Action Plan, it was stated that every person had the right to access drinking water in quantities and of a quality that matched their fundamental needs, regardless of their level of development or social or economic circumstances. This was later confirmed in 1992 by Agenda 21, adopted at the United Nations Conference on Environment and Development.

Subsequently, sanitation and access to safe drinking water have been described as human rights in a number of other plans of action (Knipe, 2020; United Nations, 1996).
The Committee on Economic, Social, and Cultural Rights (CESCR) implicitly recognises the right to water under General Comment No.15, stating that everyone is entitled to adequate, safe, acceptable, accessible, and affordable water for personal and domestic use (Article 1.1). The human right to water is indispensable for leading a life of human dignity. The Committee on Economic, Social, and Cultural Rights (CESCR) implicitly recognises the right to water under General Comment No.15, stating that everyone is entitled to adequate, safe, acceptable, accessible, and affordable water for personal and domestic use. This human right is crucial for maintaining human dignity. While the International Covenant on Economic, Social, and Cultural Rights (ICESCR) does not explicitly mention the right to water, the Committee considers it part of the right to an adequate standard of living under Article 11 which outlines states' commitment to ensure a decent standard of living for all, highlighting the role of international cooperation (ICESCR, 1976).

Remarkably, in 2007, the High Commissioner for Human Rights concluded that it was time to acknowledge access to clean water and sanitary facilities as a fundamental human right. In its General Comment No. 15, the CESCR clarified the scope and content of the right to water. The Committee stated that:

> …the elements of the right to water must be adequate for human dignity, life and health […]. The adequacy of water should not be interpreted narrowly, by mere reference to volumetric quantities and technologies. Water should be treated as a social and cultural good, and not primarily as an economic good. The manner of the realisation of the right to water must also be sustainable, ensuring that the right can be realised for present and future generations (CESCR, 2002).

Furthermore, while the quantity of water needed to satisfy the right to water may vary depending on the situation, the following elements must be satisfied: sufficient availability, quality, physical accessibility, economic accessibility, and non-discrimination (CESCR, 2002). This entails that the water supply for each person must be sufficient and continuous for personal and domestic uses, it must be safe and free from hazards and affordable for all. Such water facilities must also be accessible to everyone without discrimination and must be within safe physical reach for all sections of the population. Therefore, one can discern two facets to the right to water —freedoms and entitlements. The right to water contains freedoms such as protection against arbitrary disconnections, non-interference with access to existing water supplies, and ensuring that personal security is not threatened when accessing water or sanitation outside the home. Similarly, one is entitled to a minimum amount of safe drinking water to sustain life and health.

Under the African regional human rights framework, the right to water is also implicitly provided for under Article 14(2)(c) of the African Charter on the Rights and Welfare of the Child. It states that 'every child shall have the right to enjoy the best attainable state … health … and in particular shall take measures: to ensure the provision of adequate nutrition and safe drinking water' (African Union, 1999). In providing for the right food security, the Charter on Human and Peoples' Rights on the Rights of Women in Africa also enjoins states to provide women with access to clean drinking water (African Union, 2005). What is important to note is that Malawi has ratified the foregoing human rights treaties.

It is important to note that the right to water has risen to the centre of international discussions over the decades, and progress has been measurable towards a more comprehensive implementation of this right. For instance, the aim of one of the Millennium Development Goals (MDGs) (WHO, 2000) was to halve, by 2015, the share of the population without

sustainable access to safe drinking water and basic sanitation. This was to be achieved through improved water supply and sanitation services. Target 7C's water-related target was substantially met, while sanitation made only minimal advancements. According to reports from 2015, 41% of the population had access to improved sanitation facilities, including ventilated improved pit latrines, composting toilets, or pit latrines with slabs, while 87% of the population had access to improved water sources, such as piped water, boreholes, or tube wells, protected dug wells, protected springs, rainwater, or packaged or delivered water (WHO/UNICEF Joint Monitoring Programme (2018)).

As such, the United Nations Sustainable Development Goals (SDGs), with a 2030 horizon, were established to continue making progress after the MDGs were completed. The SDGs seek to ensure that everyone has access to equitable, safe, and affordable drinking water and adequate and equitable sanitation and hygiene. Accordingly, enshrined in Goal 6 of the SDGs is a recognition of the importance of equitable access to water for everyone. Under Targets 6.1 and 6.2, much emphasis is placed on clean water and sanitation and sustainability. The SDGs and targets are focused on ensuring that every human being has access to sustainable water to address shortages that are common in low- and middle-income countries (LMIC) and among populations living in rural and vulnerable areas (WHO/UNICEF Joint Monitoring Programme (2018).

In Africa, the African Union Agenda 2063 and the Africa Water Vision for 2025 underscore the ongoing water scarcity challenges in sub-Saharan Africa. These frameworks reveal that 40% of the 783 million people globally lacking access to clean water are in sub-Saharan Africa (UN-Water, n.d). Most of this population relies on often polluted and unreliable surface water. The high costs of infrastructure for clean water sources and drilling make these regions resort to unhygienic alternatives. Mnisi (2020) notes that South African regions at the highest risk of severe water scarcity are semi-arid areas with high populations and low freshwater availability. Vision 2025 aims to mitigate water scarcity threats and enhance the region's development and welfare by ensuring sustainable access to safe and sufficient water and sanitation for all.

A Malawian Perspective on Water Rights

In Malawi, the Constitution is the supreme law, yet it does not explicitly recognise the right to water. However, this right can be inferred from sections guaranteeing the right to life (Section 16) and the right to development (Section 30). Section 30(2) mandates the state to ensure access to basic resources for development, which implicitly includes water due to its essential role in life. Additionally, section 211 acknowledges international law, stating that treaties in effect before the Constitution and those formally adopted thereafter become part of domestic law, integrating international water rights into Malawian law (Malawi Government, 1994). Accordingly, Mwaungulu J in the case of Kalinda v Limbe Leaf Limited (Malawi Government, 1995) held that:

> *The implication of this is that those international agreements that came into being prior to 1994 (the year the new Constitution came into being) were automatically binding, whereas those international agreements that came after 1994 become law only upon being domesticated through a specific act of parliament (Malawi Government, 1995).*

Accordingly, the right to water has been recognised under international human rights law since the early 1970s and is implicitly part of Malawian law, despite not being explicitly stated in the Constitution. However, the lack of explicit mention in domestic laws may leave many unaware of their rights, affecting enforceability. Additionally, the nature of Malawi's legal system and the scarcity of pro-poor jurisprudence on socio-economic rights, as noted by

Gloppen and Kanyongolo (2007), pose significant barriers to legalizing these rights, including the right to water.

In 2013, Malawi enacted the Water Resources Act to regulate activities affecting water resources in terms of quantity, quality, and distribution (Malawi Government, 2013). Alongside, Malawi has a National Water Policy (2005) aimed at sustainably managing water resources to provide quality water in sufficient quantities, ensuring efficient water and sanitation services for all Malawians, and improving natural ecosystems. The Ministry for Water Development oversees water management, with the National Water Resources Authority (NWRA) coordinating and regulating water resource development (COMWASH, 2003). The policy promotes demand-responsive strategies for rural water and sanitation, emphasising the inclusion of women and vulnerable groups in water access and encouraging their participation in water and sanitation projects (Malawi Government, 2005). The NWRA works with local governments to plan and implement these programs.

At the village level, several village-level institutions, such as water point committees, have been set up to manage water points to reinforce the community-based management strategy. The water point committees (WPCs) aim to ensure that communities, instead of the local government, manage their water resources. In the case of taps, WPCs are created and trained before the water point is set, but individuals in charge of a borehole are often trained following the drilling and fixing of the borehole. In all these training activities, the Water Monitoring Assistants and Health Surveillance Assistants collaborate closely with the WPCs (COMWASH, 2003).

The Malawian government, with donor support, initiated the Sustainable Rural Water Infrastructure for Improved Health and Livelihoods (SRWIHL) project in five districts—Rumphi, Nkhotakota, Ntcheu, Mangochi, and Phalombe—chosen due to their water supply coverage being below 70% (Kondowe, 2015). The project includes rehabilitating gravity-fed water schemes to transport water from high-altitude sources to lower settlements, involving the installation of raw water pipelines, building water treatment facilities, laying distribution lines, and constructing water kiosks. Water for People supports local governments in improving access to safe water, enhancing gravity-fed systems, and drilling new boreholes. Although Phalombe district has seen some benefits, it needs more technical and resource support for effective implementation. Nicol (2002) argues that increased water coverage does not necessarily improve accessibility in rural areas due to factors like distance, cost, inadequate facilities, gender, terrain, and water quality.

How Does the Right to Water Apply to Women in Rural Areas?

Section 30 of Malawi's Constitution guarantees the right to development, emphasising that all individuals should enjoy economic, social, cultural, and political development, with special consideration for women and children (Malawi Government, 1994). Similarly, the Convention on the Elimination of All Forms of Discrimination against Women mandates member states to end discrimination against women in rural areas, promoting their involvement in rural development and access to adequate living conditions, including sanitation and water (United Nations, 2009).

These discussions underscore the crucial role of clean water in upholding other rights like education and women's empowerment. The WHO and UNICEF Joint Monitoring Program Report highlights that 35% of people in the least developed countries lack access to basic water supplies, such as taps and boreholes, within a 15-minute round trip. Women and girls, primarily responsible for water collection, face significant challenges when water is

unavailable on their property, leading to time-consuming and arduous efforts. In extreme cases, women and girls risk their safety by travelling long distances through unsafe areas to fetch water, sometimes paying high prices for it. This issue is not isolated to Africa; similar conditions exist in India and Bangladesh, where women spend countless hours collecting water, sometimes up to 23 times a day during peak seasons, totalling about 200 million hours annually (Graham, Hirai & Kim, 2016).

In Africa, the time rural women spend fetching water varies significantly. A study across 17 developing countries found that up to 40% of the population spends over 30 minutes collecting water, regardless of the source type. For instance, it takes about 65 minutes in Somalia, 44 minutes in Uganda, and 54 minutes in Malawi to fetch water. In Guinea and Tanzania, women spend an average of 20 minutes per trip, twice the time men spend (UNICEF, 2016). Specifically, women and girls in sub-Saharan Africa typically spend over half an hour per trip collecting water. The number of trips and the total time spent can increase significantly based on household size, water demand, and carrying methods. Examples include Ethiopia, South Sudan, Zimbabwe, Namibia, and Mozambique (Geere, Hunter & Jagals, 2010). This calls for a need to enhance access to safe drinking water to ensure women and girls focus on their development, such as education and acquiring new skills, which ultimately leads to financial independence, increased status, and improved bargaining power within their households.

The Study Area

The village under study lies north-east, approximately 20 km from Phalombe central district. The district lies 40km north-west of Mulanje in southern Malawi (Malawi Plus, 2022). Our efforts to source the specific population information of the villages under study were futile. The available data from the Malawi National Population census reports that the district covers an area of 1,323 km², with a population of 429,450 and a population density of 325/km² (NSO, 2022). The report shows a population of 2.8%, 65.8% and 3.1% of the people who still use unprotected wells, boreholes, and river/streams, respectively, as their main sources of drinking water during the wet season. The statistics, however, do not reflect the situation in the three villages of Lihaka, Matawa, and Kalinde; they are compiled from all the villages within the Phalombe district.

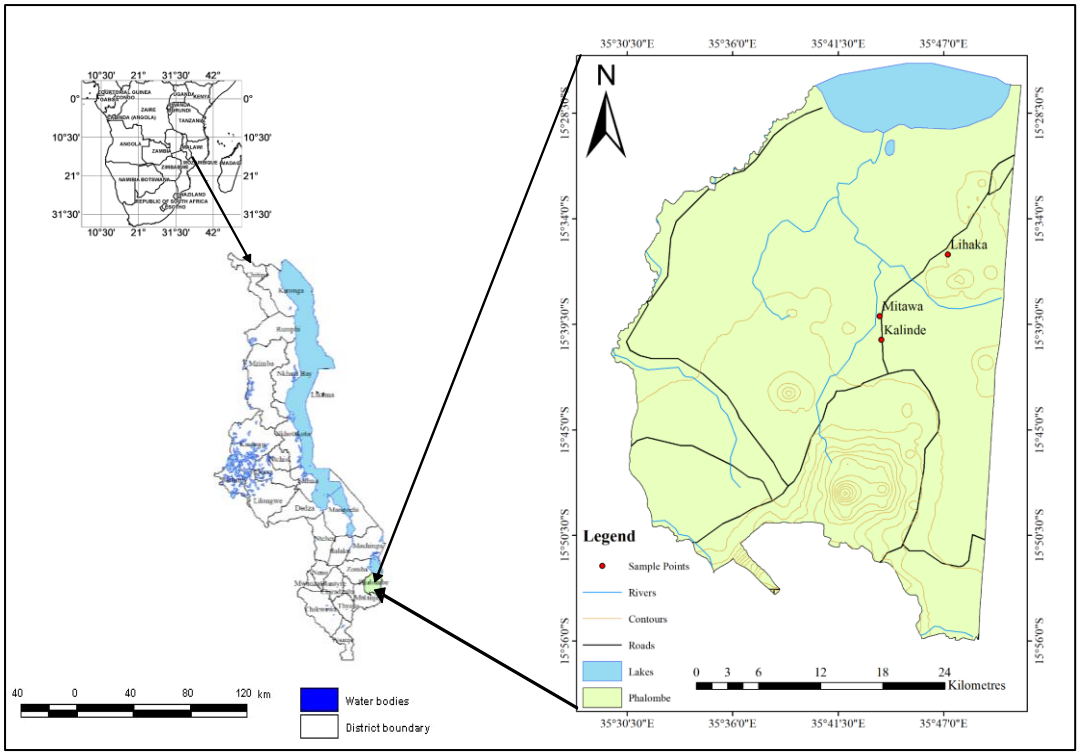

Figure 1: Cross-section Map of Phalombe showing Kalinde, Matawa and Lihaka villages

Theoretical Framework

The study adopted an intersectional framework introduced by Kimberle Crenshaw in 1989, as well as the Legal framework and the Right to water. Intersectionality framework is grounded on a multi-dimensional lens to examine how overlapping social, economic, and political identities such as gender, class, age, geography and socioeconomic status create unique and compounded experiences of marginalisation. This approach enables us to move beyond binary analyses and instead consider how simultaneous systems of oppression shape women's water-related burdens in diverse and unequal ways. In the context of Phalombe, this framework helps to analyse how women and girls are disproportionately burdened, not just because of their gender but due to intersecting factors such as poverty, rural locations, age, education and governance failures.

This current study found it necessary to explore how water scarcity exacerbates social inequalities, restricting women and girls' access to education, economic participation, health and dignity. Rather than treating gender as a singular category, intersectionality helps understand how different identity factors combine to shape lived experiences in water-insecure environments. This theoretical lens is complemented by a rights-based legal framework, drawing from international and regional commitments that enshrine access to water as a component of human dignity and gender justice. The integration of these frameworks allows the analysis to connect lived experiences of water scarcity to broader systems of legal recognition and exclusion. Water is recognised as a fundamental human right under international, regional and national legal frameworks. The United Nations General Assembly, through Resolution 64/292 (2010), explicitly acknowledges the right to safe and clean drinking water and sanitation. Domestically, Malawi has ratified international treaties that uphold the right to water, including the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) and the International Covenant on Economic,

Social and Cultural Rights (ICESCR). This implies that member states are obligated to ensure that water is available, accessible, safe and affordable so that women and girls are not excluded from developmental social activities due to water scarcity, as it is their primary responsibility to fetch water.

The integration of intersectionality with legal and rights-based frameworks provides a critical lens through which to interpret the lived experiences of rural women and girls. It enables a more nuanced understanding of how structural inequalities and socio-legal norms operate in tandem to produce exclusion. These frameworks also guide the interpretation of field data throughout this paper. As the findings will show, water scarcity in Phalombe is not only a question of infrastructure but of overlapping disadvantages that disproportionately burden women and girls. With this conceptual grounding in place, the next section outlines the methodology used to explore these dynamics in the context of Phalombe District.

Methodology

Although some descriptive data analysis has been utilised in this paper to illustrate some phenomena, this does not qualify the paper for a mixed model approach. This paper is mainly qualitative in its approach, situated within a critical research paradigm whose purpose is to document women's and girls' experiences regarding the extent of water scarcity in the area under study and what implications there are towards socio-economic participation and exclusion, as well as girls' education. Semi-structured interviews were conducted, which enabled the researchers to gain deeper insights into the phenomenon. Additionally, three schools in the selected villages were used as case studies to examine the impact of water scarcity on girls' education.
While the primary data were qualitative, a few structured items using Likert-scale responses were administered to learners to complement the interview data. These questions focused on perceptions of lateness, absenteeism, and academic performance regarding water scarcity. This limited use of quantitative indicators was a triangulation tool, intended to support rather than replace the thematic insights gained through interviews. The results were used descriptively and were not subjected to statistical analysis. The study maintains a qualitative dominant design with minor descriptive elements to reinforce interpretive findings. Furthermore, the data was analysed using thematic analysis. Transcripts were coded manually, and patterns were grouped into themes based on recurring interview issues. Coding continued until thematic saturation was achieved, meaning no new themes emerged from additional data.

Population

It is imperative to acknowledge that traditionally and predominantly fetching water is the responsibility of women and girls. While this is relevant to the research focus, the study found it critical to engage with men and boys as well to broaden perspectives of understanding. To explore water scarcity, this study involved interviews with 50 respondents. These included 20 women, 10 from each of the three villages under study, and 30 participants from selected schools—10 girls, 10 boys, and 6 teachers (3 male and 3 female). Additionally, 4 local leaders were interviewed. Figure 2 provides an overview of the participant distribution.

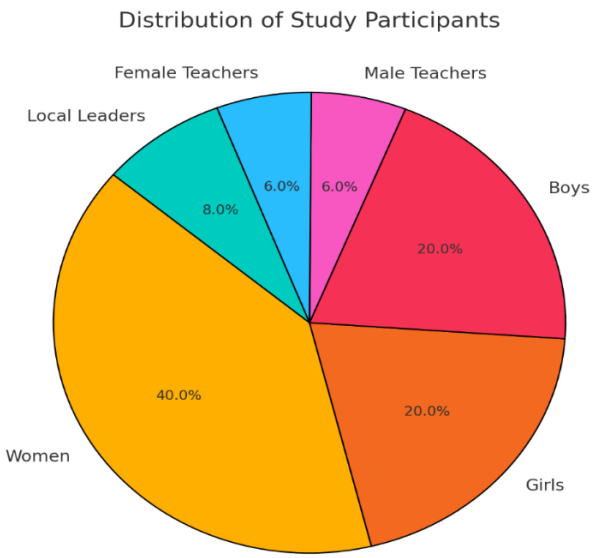

Figure 2: Pie chart illustrating the distribution of study participants

Sampling Technique

The study deployed three sampling techniques, namely purposive sampling, snowball and convenience sampling of participants. Purposive sampling procedure is well known as judgmental, selective, or subjective sampling, and a form of non-probability sampling in which researchers rely on their own judgment when choosing members of the population to participate in their study (Creswell & Creswell, 2018). Thus, the technique is well-suited for this study, as participants were chosen for their knowledge of the area and personal living experiences. The researchers initially consulted community leaders, including local chiefs, village heads, and elders, to identify and mobilise participants for the study. They explained the study's purpose and used convenience sampling at water points. Additionally, a snowball sampling method was employed, where participants referred others with experiences of water scarcity, diversifying the sample. On the other hand, some participants were recruited at boreholes, wells and rivers, capturing the real-time perspectives of women collecting water. This was done carefully while observing all the ethical considerations and voluntary participation. Participants were informed about the study's objectives, and verbal consent was obtained before conducting the interviews. Pseudonyms were used to ensure anonymity and confidentiality.

Despite its small sample size of 50 participants, the study's sample was diverse and representative of Phalombe's larger population. The inclusion of women, girls, men, and boys enhanced the range of perspectives on household responsibilities and policy interventions. As interviews progressed, responses consistently echoed previous ones, indicating data saturation—no new information emerged, suggesting that the primary themes were thoroughly explored. This redundancy in responses across multiple participants (highlighting issues like long walking distances, health risks, and school absences due to water shortages) confirms that increasing the sample size likely would not have altered the findings.

Reflexivity and Positionality

In conducting this study, we recognised the importance of reflexivity and positionality in shaping the research process, interpretation of data and overall findings. Reflexivity requires examining how the researchers' background experiences and assumptions influence the

study. Positionality acknowledges the relationship to the research, participants and broader social-political context. As researchers in this context, we bring academic knowledge and personal awareness of socioeconomic and cultural dynamics affecting women and girls in rural Malawi. To mitigate potential biases, the authors engaged in critical self-reflection throughout the writing, and participants' voices remained central by prioritising their narratives and lived experiences over our own.

Ethical Considerations

Ethical approval was obtained from the Phalombe District office, and participants' informed consent was provided in writing, with the purpose of the research explained verbally.

Presentation of Results

The study effectively captured perspectives of women, girls and other community members. From the findings, it was certain that women and girls bear the greatest burden of water scarcity in Phalombe. The participants' lived experiences resonated with the broader population.

Long Distances to Fetch Water and Unreliable Water Sources

The responses from women who were interviewed reveal that women walk long distances to get to the water sources. One woman (Anaphiri, not her real name) explains that 'on average, women *and girls in our area walk approximately 2-5 km daily to fetch water*.' These distances can be doubled depending on the size of the family, where two to three trips are required. The weight the African woman bears on her head by carrying water is substantial. As a result, the negative health effects of routine water carrying are becoming more and more evident. In addition to being challenging, carrying water can result in lifelong neck or back pain, occasionally leading to major health issues (Geere, 2015). Anaphiri continues to say "*nthawi yolima ndiye zimavuta kuti uthamangile kumadzi komanso kumunda kukufuna iwe*" - meaning- it is hard during the farming season to concentrate on the fields and to make sure you have water at home. Women spend more time on water issues than on other issues, such as attending to their fields or doing business like their male counterparts. Another woman said, '*nthawi zina umayenela kudzuka mmamawa kwambili mwina cha mma fili koloko kuti utunge madzi usiye pakhomo nanga pobwela kumunda umakhala utatopa ndiye kuti uuyambe wakumuadzi zimakhala zovuta*, ' meaning sometimes women must compromise their sleep. Women wake up around 3 am to fetch water before going to the farm. This corresponds to Geere and Cortobius' contentions that while men are engaged in more profitable activities, rural women spend more than 30 minutes to fetch water (Geere & Cortobius, 2017).

Responses from Students and Teachers

Table 1 shows the responses by students regarding the impact of water scarcity in the study area. A short, structured questionnaire using Likert-scale responses with 15 students from three schools was included to support the narrative accounts provided by students and teachers. While this does not represent a full quantitative analysis, it provides useful context for understanding the frequency and impact of water-related challenges on education.

Table 1: Perceptions of respondents about the impact of water scarcity

Item	**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
There is an acute water problem in our area	12	3	0	0	0
Sometimes we are late to school, looking for water	8	2	1	3	1
Water problems affect my studies	10	1	0	3	1
If the water challenge is improved, I will do better in my studies	8	4	0	2	1
I have been absent from school because of the water	1	8	2	2	2

Table 1 reveals that 12 out of 15 students recognised water scarcity as a serious issue, with the rest agreeing. Regarding tardiness linked to water problems, eight strongly agreed, three agreed, 4 had reservations, and one was neutral. Additionally, 10 students strongly felt that water issues adversely affected their studies, with one agreeing, three disagreeing, and one strongly disagreeing. On absenteeism, one strongly felt it was water-related, eight agreed, two were neutral, and four disagreed, although some absences were due to illness. Overall, water scarcity influenced both attendance and academic performance. These responses reinforce the qualitative interview data, showing that lateness, absenteeism, and poor academic performance due to water scarcity are widely experienced among students, particularly girls. Rather than offering statistical generalisation, the findings serve to illustrate recurring experiences and perceptions captured through the broader qualitative methodology.

A 15-year-old student from one of the schools noted that water scarcity disproportionately affects girls, as fetching water is often seen as their responsibility. She explained that while there is a local source where water can be purchased for 100 Kwacha per container from private wells, the cost drives many girls to collect water from streams instead. This situation, she added, sometimes leads to girls being tempted by men who offer them money to buy water. Another participant, a 19-year-old Form Four student, skips classes during her menstrual periods due to water shortages at her school, which leave the toilets in poor condition. She stays home until her period ends, as there is no clean water to wash with when changing pads. Similarly, a student from Matawa Community Day Secondary School reported contracting a Urinary Tract Infection (UTI) from using river water to wash menstrual cloths. She explains and we quote 'Our parents cannot afford pads, so we use cloth during menstruation. *The lack of water worsens the situation, as we cannot change or wash often, leading to infections*.'

Teachers unanimously reported that water scarcity adversely affects girls' education, hindering their academic performance and future prospects. Mr. Banda (a pseudonym) observed that girls often arrive late or miss school entirely, leading to poor grades and increased dropout rates, often resulting in early marriage. This undermines Malawi Vision 2063's goal of eradicating gender inequality to foster national development. As Malawi is dedicated to various gender equality protocols, addressing the water crisis is essential for allowing girls to achieve their aspirations unimpeded.

Unreliable Water Sources

The study highlights the unreliability of water sources, with boreholes often drying up during critical dry seasons, forcing people to seek alternative sources, sometimes kilometres away. For women and girls, water is essential, and the scarcity often leads to conflicts at these sources as they wait for their turn. This study aligns with previous research, showing that the time spent fetching water reduces opportunities for income generation (Pickering & Davis, 2012). If less time were devoted to this task, women and girls could contribute more to productive activities and economic growth (Li et al., 2019).

Unprotected and Contaminated Water Sources

While some areas in the district have access to tap water, the study villages still depend heavily on wells and rivers. These wells are dug in dambo areas or along riverbanks, especially during the dry season when the water table drops. In the rainy season, the rivers flood, forcing people to use the river water, despite the dangers, such as one incident where a girl drowned. The water sources are often contaminated by animal waste, as shared by an elderly woman who explained that they have no choice but to use these polluted sources when boreholes fail.

A Ward Councillor explained that taps were installed in Phalombe district during the 1970s-1980s under Dr. Hastings Kamuzu Banda's regime. The project, funded by Norway, initially provided tap water to rural areas but eventually failed due to technical issues, leading to low pressure and eventual drying up of taps. NGOs have tried to restore some taps since 2020 under Dr. Chakwera's leadership. However, many people still lack access to this clean water because the new taps were placed in the exact locations as the old ones, requiring residents to pay for installation. Due to poverty, only a few could afford these services, leaving most to continue relying on wells, streams, and rivers, which are more accessible to them.

Limited Participation in Rural Governance Structures

The study revealed a concerning lack of awareness among most women in the study areas regarding government regulations and policies on water access and use. Specifically, 92% of respondents were unaware of any legal frameworks, while 8% knew of some policies but not their details. Interviewees mentioned that Water Point Committees (WPC) manage water points like wells, boreholes, and communal taps. However, open access sources like rivers and streams are difficult to regulate, as no one claims ownership. A study in Phalombe noted that chiefs and village headmen previously enforced bylaws for managing these resources, but their effectiveness depended on individual leadership (Kondowe, 2015). Women's participation in rural governance was limited, with less than half holding positions in WPCs, and even those with roles were not always active.

Discussion of Findings

The study found that water scarcity remains a significant threat to livelihoods in Malawi. A major source of concern noted in this study is that fifty-eight years after independence, the study area appears to be stagnating in terms of development. Malawi is challenged by the fast-growing population, which, according to 2019 census results, is approximately 20.4 million (NSO, 2022). Phalombe ranks number 17 out of the 28 districts in Malawi with a population density of 325km^2. The area is characterised by low electrification, with 3.02% and ranks 28/28 districts in Malawi; water pipe stands at 6.17% ranking 15/28 (Malawi Plus, 2022). The data indicate that there is what we call 'developmental stagnation'.

The findings show that poor water accessibility in Phalombe significantly hampers women's ability to engage in meaningful economic activities compared to men. Gender roles, shaped by social constructs, assign men to tasks like construction, fishing, and small-scale businesses. At the same time, women are primarily responsible for drawing water, gathering firewood, and managing household chores. Although some tasks like cultivation are shared, most roles are rigidly divided, with men rarely assisting in women's duties due to cultural norms. Improving water access is crucial for economic growth by allowing women to engage in more profitable activities, thus potentially alleviating poverty. This aligns with the United Nations General Assembly Resolution 64/292(2010), which recognises safe drinking water and sanitation as fundamental human rights for life and well-being. Similarly, General Comment No.15(2002) from the CESCR highlights water as indispensable for human dignity and a precondition for other human rights like health, education, and gender equality. Although the African Charter on Human and Peoples Rights (ACHPR) does not explicitly mention water rights, it implies the need for clean water access under its health and development rights articles. Additionally, the Maputo Protocol emphasises women's rights to water and sanitation.

Despite these frameworks, the study reveals persistent water scarcity in Malawi, threatening livelihoods and indicating a 'developmental stagnation' even 58 years post-independence. Malawi struggles with a fast-growing population of 20.4 million, with low electrification and inadequate water infrastructure in districts like Phalombe, highlighting severe developmental challenges. Poverty, while not exclusively feminised, varies by gender in its impact. Clark (2016) and Sen (1999) describe poverty as both a current tragedy and an obstacle to productive social relations, meriting economic and philosophical analysis. They note that poverty manifests as specific practices and social exclusion, which originally implied social closure but now highlights agency and measurable outcomes like those in poverty assessments. This links to "capability poverty," where exclusion and non-participation result from failed social relations, observed in study villages where women and girls are primarily occupied with fetching water.

Women and girls in the study regions often miss out on productive activities due to the significant time spent collecting water, which echoes Sen's findings on the economic disparities caused by HIV. While this paper has limitations, such as not exploring lower-class men's business involvement, a FinScope survey reveals that although women constitute 49% of Malawi's MSME owners, men own more small enterprises (30% compared to women's 15%). This suggests that educational barriers and domestic responsibilities, including water fetching, limit female entrepreneurship.

Inadequate water and sanitation in schools negatively affect girls' education. On average, girls miss 37 to 51 school days annually due to responsibilities like fetching water and lengthy commutes (WaterAid, 2011). Exhausted even before reaching school, these girls struggle with concentration and academic performance, often leading to increased absenteeism and dropout rates. The opportunity cost of water collection includes significant social and economic impacts on education, health, and emotional well-being. Without education, girls remain trapped in poverty with limited professional opportunities. A study in Malawi by Chikhungu et al. (2020) found that, besides financial barriers, factors like academic struggles, forced marriages, and parental attitudes contribute to high dropout rates among girls, exacerbated by gendered expectations that overload them with domestic tasks.

Malawi's Vision 2063 aims to provide educational equity and empower women and girls. However, in some Phalombe areas, this goal faces challenges due to limited access to drinking

water, with girls falling behind in education compared to boys. This educational disparity extends into the labour market, where men typically hold formal jobs. At the same time, women and girls are predominantly found in unstable, low-paid agricultural work or unpaid care roles. Often, women opt for early marriage due to educational frustrations (Mariotti, 2018). Binauli (2010) suggests that education should adopt a gender-sensitive approach, distributing school roles fairly. Despite women's significant presence in labour movements, they still face sex segregation in skilled jobs (Binauli, 2010). Goswami (2020) notes similar trends in Egypt, where gender role segregation restricts women to fewer job types than men. The findings underscore the urgent need for gender-inclusive policies, sustainable water infrastructure, and governance reforms. Without immediate action, women and girls will continue to bear the brunt of water scarcity, reinforcing cycles of poverty, ill-health and inequality. The paper calls for a shift in water management strategies, prioritising equity, gender justice and climate resilience to achieve sustainable water access. Not only is the distance a challenge, but water sources are also often contaminated, leading to a high prevalence of waterborne diseases, especially during the dry season when boreholes run dry, forcing reliance on unsafe river water. Under General Comment No.15, States must ensure that water is available, accessible, safe and affordable. The Malawi Water Policy (2005) aligns itself with other international and regional instruments, such as the CEDAW, Article 14(2), the Maputo Protocol Article (15), which are clear in their stipulations that States must ensure that rural women enjoy adequate living conditions, particularly in relation to water supply. Malawi Gender Equality Act (2013) calls for the elimination of gender-based discrimination, yet water access remains deeply gendered. Results from the study demonstrate failure to provide adequate, accessible water infrastructure, which is a breach of these legal obligations, and can be classified as indirect discrimination as policies and practices disproportionately harm women. Based on the results, there is a need for legal reform and policy enforcement to bridge the gap between legal commitments and actual service delivery because failing to implement policies ensuring equitable access to water, particularly for marginalised rural populations, is a complete violation of Human Rights, which the state should be accountable for.

Adverse Health Effects of Water Scarcity

Global studies, including Touma and Nabulsi's 2021 report for UNICEF Amman, highlight the severe health impacts of water scarcity. Nearly half of the population in developing countries faces health issues due to inadequate water and sanitation, leading to an annual loss of 443 million school days. In Malawi, contaminated water causes prevalent waterborne diseases such as diarrhoea, cholera, typhoid, bilharzia, and malaria, significantly contributing to morbidity and mortality rates. Binauli (2010) notes that in 2018, diarrheal diseases affected 7.5% of all outpatients, and 9.7% of patients were under five years old. Moreover, only 52% of Malawi's population had access to safe water, and 40% to adequate sanitation facilities (Musingafi & Tom, 2014).

Table 2 reveals results in a study conducted in the Phalombe area, on water quality of the borehole water, whereby some parameters are above the allowable Malawi Bureau of Standards (MBS) and World Health Organisation (WHO, 2011) drinking water standards (Vunain et al., 2019).

Table 2: Water quality in the study area

Parameter	**Lihaka**	**Matawa**	**Kalinde**	**MBS**	**WHO**
Temp °C	27.8	28.5	27.8	NS	NS
pH	7.3	7.6	7.3	6.5-8.5	6.5-8.5
EC (µS/cm)	567	647	2398	3500	1000
TDS (mg/L)	283	325	1198	NS	500
CL^-(mg/L)	17.1	2.26	13073	NS	250
F (mg/L)	2.90	1.00	0.88	NS	1.50
NO_2^- (mg/L)	50	0.34	65	NS	50
PO_4^{2-}(mg/L)	0.046	0.049	0.043	0.50	0.50
SO_4^{2-}(mg/L)	4.837	6.581	108.209	250	250
Total hardness (as mg CaCO/L)	224	523.6	562	500	800
Ca (mg/L)	28.025	140.405	82.380	100 (NS)	100 (NS)
Mg (mg/L)	19.953	83.211	68.934	55 (NS)	55 (NS)
Na (mg/L)	4.701	8.213	19.166	500	500
Fe (mg/L)	12.36	0.44	0.19	0.00-0.30	0.00-0.30
Total bacteria count (cfu/100mL)	117	3700	121	0	500
Total coliform count (cfu/100mL)	11	0	0	50	0

TDS=Total dissolved solids; MBS=Malawi Bureau of Standards; NS=No Standard

Table 2 shows that while most physicochemical parameters of borehole water are within acceptable drinking limits, total hardness, chlorine, iron, and bacteria levels exceed the MBS and WHO standards. High chlorine levels, particularly at the Kalinde borehole, can make water taste salty, potentially leading to health issues like hypertension and kidney stones (Boateng et al., 2016). Elevated iron levels pose risks such as diabetes and cardiovascular diseases, putting women and girls in these villages at health risk due to continuous exposure (Powers et al., 2003).

This contamination poses significant health risks, particularly for women and girls who collect and transport the water, increasing their exposure to waterborne diseases (Macler & Merkel, 2000). Moreover, health complications from repeated exposure -including back pain, UTIs, or infections during menstruation - reduce their ability to work, attend school, or participate in community life, perpetuating the cycle of exclusion.

Furthermore, the statistics outlined in Table 2 also extend beyond individual exposure to waterborne diseases; they have gendered implications rooted in traditional caregiving roles. Women and girls are responsible for collecting water, nursing sick family members, cleaning contaminated clothes, and maintaining hygiene within the home. When contaminated water is used, they become both primary carriers and first responders to health risks, exacerbating their physical and emotional burdens. This exposure forces women to bear the burden of the state's failure to provide adequate basic services. Overall, these health risks exacerbate socio-economic inequalities, reducing hygiene and productivity and threatening the attainment of SDG goal 6. With boreholes as the primary water source, the situation endangers lives, underscoring the need for clean water and proper waste disposal as fundamental public health rights.

Conclusions and Recommendations

Recommendations

Effective and equitable water governance must be grounded in the lived experiences and knowledge of women and girls, who are most affected by water insecurity. Despite efforts to improve participation—such as the 2021 InPATH Project, which promoted women's leadership in water services—structural barriers such as limited decision-making roles, resource constraints, and weak accountability continue to undermine sustainable water access in rural Malawi.

This study has shown that while initiatives like gravity-fed schemes have reduced water-fetching distances, the broader governance landscape remains fragmented and under-resourced. NGOs, community-based organisations, and government actors have made valuable contributions, but more targeted, coordinated, and sustainable approaches are required. Awareness of legal frameworks remains low, and socio-economic rights often lack enforceability in practice. Gender-sensitive roles and monitoring policies must be consistently enforced in schools to mitigate unequal burdens.

To address these challenges and support inclusive, community-driven water governance in Phalombe District, the following recommendations are proposed, categorised by short-term and long-term priorities, and aligned with SDG 6, Malawi Vision 2063, and the Maputo Protocol. In the short term, priority should be given to enhancing women's participation in water governance structures and increasing legal awareness within rural communities. Training programmes should be implemented at the Traditional Authority (TA) level to equip women serving in Water Point Committees (WPCs) with essential water system maintenance, water quality monitoring, leadership, and financial management skills. Ideally delivered quarterly, these training sessions should be facilitated through partnerships between the District Water Development Office and non-governmental organisations such as Water for People and World Vision. Such initiatives would strengthen women's capacity to participate meaningfully in water governance, thereby promoting more inclusive and sustainable water management practices.

In parallel, community-led legal literacy campaigns must be rolled out to improve awareness of water-related rights and responsibilities. These campaigns should utilise local radio programming, school clubs, and traditional authority forums to disseminate information about the Malawi Gender Equality Act, the Water Resources Act, and related international obligations. Particular attention must be paid to ensuring these campaigns are multilingual, culturally appropriate, and accessible to marginalised rural populations. Increasing legal awareness among community members is essential for enabling accountability and demanding equitable access to water resources.

In the medium to long term, structural investments are required to ensure the sustainability and reliability of rural water infrastructure. In collaboration with District Councils, the Ministry of Water and Sanitation should allocate dedicated budget lines for borehole maintenance and rehabilitating gravity-fed water schemes. These funds should be ring-fenced within annual budgets.

Establishing local monitoring and grievance mechanisms is also essential to address persistent technical failures in rural water projects. Community-based monitoring groups should be introduced to routinely assess the functionality and safety of water infrastructure, report

contamination cases, and mediate local water-related disputes. These groups should submit quarterly reports to the WPCs and district officials, thereby closing the feedback loop and improving the responsiveness of water governance systems.

Finally, targeted efforts are needed to improve water and sanitation infrastructure in schools. The Ministry of Education, working in partnership with the Ministry of Health, should ensure that every school in Phalombe District has access to a functional and safe water supply, as well as appropriate menstrual hygiene facilities. This may be achieved through dedicated school improvement grants and by aligning such interventions with the targets of the National Sanitation and Hygiene (WASH) strategy. These efforts would significantly improve girls' school attendance and learning outcomes, while also promoting health and dignity.
Conclusively, these recommendations respond directly to the empirical findings of this study and are tailored to the socio-economic realities of Phalombe, which is marked by chronic poverty, limited infrastructure, and weak local governance. Importantly, they also address past shortcomings in project sustainability and community ownership. By distinguishing between short- and long-term priorities and identifying responsible actors, these proposals offer a realistic and actionable roadmap for enhancing gender-equitable access to water and promoting broader social inclusion.

Conclusions

This paper has drawn attention to limited access to safe drinking water, which significantly hampers the socio-economic progress of women and girls. Often, women spend much time looking for water instead of engaging in income-generating activities. Water sources in the area are distant, unprotected, and contaminated, leading to water-borne diseases and physical ailments from carrying water over long distances. This negatively impacts women and girls' participation in education and economic activities. Gender roles contribute to social exclusion, highlighting the importance of addressing gender equality and empowerment in strategic planning. Addressing water scarcity should consider gender sensitivities to overcome patriarchal barriers that hinder women's and girls' advancement in careers, entrepreneurship, and education.

Declarations

Author Contributions: JCK conceptualised the research, collected data, performed formal analysis, wrote the original draft, and edited. LGP contributed to the draft writing and reviewed and edited the draft manuscript. TK contributed to the formal human rights and policy document analysis and reviewed and edited the draft manuscript. All authors have read and approved the published final version of the article.

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