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A Review of Literature on Theological Perspectives and Discourse Regarding Domestic Water Scarcity with a Reflection of the Tigania West Constituency, Kenya

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Abstract

Domestic water scarcity remains a critical global challenge, disproportionately affecting vulnerable communities and raising profound socio-economic, environmental, and theological concerns. Despite biblical and ethical principles advocating for responsible water stewardship, many regions, including Tigania West Constituency, Kenya, continue to experience severe domestic water stress due to inadequate governance, pollution, and climate variability. This study explores theological perspectives on domestic water scarcity, examining biblical, ethical, and faith-based contributions to sustainable water governance, with a specific reflection on Tigania West Constituency, Kenya. Through a systematic literature review, the paper focuses on hydro-theological principles, highlighting water as both a sacred and essential resource. The review discusses biblical accounts of water stress, including conflicts over wells, divine interventions, and stewardship responsibilities, demonstrating the intersection between theology and sustainable water management. It also examines contemporary water challenges, such as pollution, access disparities, and water-related conflicts. The paper involved a qualitative synthesis of theological, environmental, and governance-related literature, integrating scriptural analysis with empirical data on water scarcity. The findings indicate that theological ethics advocate for water justice, emphasizing equitable access, conservation, and responsible governance. Furthermore, the study reveals gaps in integrating faith-based approaches into formal water management policies, particularly in regions experiencing severe water stress such as Tigania West Constituency, Kenya. The paper concludes that addressing water scarcity requires a multi-stakeholder approach, incorporating theological insights into policy frameworks to enhance sustainable water stewardship. It recommends the strengthening of faith-based advocacy, improving governance structures, and fostering interdisciplinary research on hydro-theology and water sustainability. The paper contributes significantly to holistic solutions that integrate moral, ethical, hydro-theological perspectives and practical dimensions of water management.

Keywords: *Hydro-theology, water scarcity, biblical water-related stewardship, water governance, Tigania West*

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1. Introduction

Domestic water scarcity remains a critical global challenge, affecting both developed and developing nations. It is characterized by aspects that include water-resource stress, poor quality, long access distances, unaffordability, inadequate daily supply, inefficient usage, and conflicts. This systematic review evaluates the hydro-theological perspectives on domestic water scarcity aspects by examining biblical literature, theological reflections and scholarly discourse contributions to offer a comprehensive understanding of the subject. Hydro-theology is an emerging theological perspective that covers water scarcity within biblical and theological contexts, emphasizing ethical stewardship, justice, and sustainability. This review integrates theological insights with contemporary scientific findings to advance a holistic understanding of domestic water scarcity and propose faith-based solutions for mitigation.

Notably, water scarcity is a critical global issue, affecting billions of people worldwide. Factors contributing to this problem include poor water governance, inadequate training, poor project initiation, and lack of advocacy (Kima, 2005). Religious perspectives suggest that water scarcity results from moral and spiritual failings, as reflected in Hosea 4:1, 3 (Kima, 2005).

Undoubtedly, water is a fundamental resource for human survival and well-being. However, despite significant advancements in water management, access to clean and sufficient water remains a pressing global concern. Theological discussions have increasingly engaged with water scarcity issues, recognizing their moral, ethical, and spiritual dimensions.

Water-resource stress is one of the earliest recorded environmental challenges in biblical history. Genesis 26:12-33 highlights Isaac's struggles over water wells, underscoring the significance of water access in ancient societies (DidamAudu & Ojewole, 2013). Similarly, water scarcity in Canaan led to migration (Genesis 12:10), reflecting the interconnection between water availability and socio-economic stability. Exodus 17:1-7 and Numbers 20:1-5 depict instances of acute water stress, where divine intervention was sought to alleviate scarcity. Theologically, these narratives suggest that water stress is not merely a physical crisis but also a test of faith and communal responsibility.

The quality of water has been threatened by continuous contamination and pollution. Water pollution is classified into four categories: physical, chemical, microbiological, and radiological contaminants (WHO, 2017). The physical contaminants include total dissolved solids (TDS), turbidity, and color variations. High turbidity can shield bacteria from disinfectants, leading to increased health risks (WHO, 2017). Common chemical Contaminants /pollutants include nitrates, ammonia, chlorine, heavy metals, and organic chemicals from industrial waste. Excessive exposure to these chemicals can cause diseases such as methaemoglobinemia, cancer, and kidney damage. Next is microbiological contaminants, where pathogens such as bacteria, viruses, protozoa, and helminths cause diseases like cholera, giardiasis, cryptosporidiosis, and schistosomiasis (WHO, 2017; Wutich et al., 2019). Lastly, we have radiological contaminants which include elements like uranium, strontium-90, and radium pose health risks, including bone cancer, when present in excessive amounts.

Water quality issues are also evident in biblical texts. The Israelites faced challenges with undrinkable water, such as the bitter waters of Marah, which were divinely purified (Exodus 15:22-25). Prophet Elisha's intervention in Jericho (II Kings 2:18-22) further emphasizes the theological importance of maintaining clean water sources (Hornby, 2015). Ezekiel 34:17-19 highlights the ethical dimension of water quality, condemning contamination and advocating

for responsible stewardship. These biblical principles align with contemporary concerns over water pollution and inadequate water treatment systems.

The burden of long distances in accessing water is a recurrent theme in both ancient and modern contexts. King Hezekiah's construction of the Gihon-Siloam water project (II Kings 20:20; II Chronicles 32:30) illustrates proactive water infrastructure development aimed at improving accessibility (Wiemer, 2012). Theological interpretations suggest that reducing water-fetching distances aligns with social justice principles, advocating for equitable resource distribution. In many regions today, women and children bear the burden of walking long distances for water, a situation that contradicts biblical calls for compassionate governance (Ringler, 2013; Demie et al., 2016).

Affordability is also a critical dimension of water access. The Bible emphasizes the provision of basic needs, including water, as a divine mandate (Isaiah 55:1; Matthew 25:35). Ezekiel 4:11 alludes to water rationing during the siege of Jerusalem, indicating historical instances of water scarcity pricing. Contemporary theological reflections argue that water should not be commodified to the extent that it becomes inaccessible to marginalized communities (Ruden, 2020; World Vision, 2021). Faith-based organizations play a pivotal role in advocating for affordable and equitable water distribution (Christian-Smith et al., 2013; Shen, 2019).

1.1 Problem Statement

Water is essential for human survival, economic development, and environmental sustainability. The United Nations Sustainable Development Goal 6 (United Nations General Assembly, 2015) emphasizes universal and equitable access to safe and affordable drinking water by 2030. Theological perspectives also advocate for water stewardship as a moral responsibility (Sauter, 2021). Effective water governance is expected to ensure efficient management, fair distribution, and adequate infrastructure to mitigate scarcity and quality issues (Kelly, 2018).

However, water scarcity remains a critical challenge in Tigania West Constituency, Kenya, where 97% of residents lack reliable access to clean water (KNBS, 2019). Women and children travel over 8 km daily to fetch water, facing socio-economic and health burdens. Environmental degradation, weak policy implementation, and inadequate infrastructure worsen water-related conflicts (Marete & Muchui, 2019). Poor water quality, with contamination from physical, chemical, and microbiological pollutants, has led to increased cases of waterborne diseases such as cholera and schistosomiasis (WHO, 2019; Ndahi & Maitho, 2017). Notably, Kenya's per capita water availability has declined from 1,112 m^3 in 1977 to a projected 235 m^3 by 2025, far below the UN-recommended 1,000 m^3 threshold (Vision 2030, 2018). The economic burden is significant, reducing productivity and deepening poverty (Agesa & Agesa, 2019). Weak water-use policies further hinder sustainable resource management (Essendi, 2014).

Despite growing recognition of water scarcity as an ethical concern, research gaps exist in understanding the role of faith-based organizations and hydro-theological perspectives in addressing the crisis. Existing studies such as Kelly (2018) and Liu et al. (2017) focus on governance and policy but lack insights into integrating biblical principles into sustainable water management. This study bridges these gaps by examining hydro-theological perspectives, governance challenges, and community-led interventions and proposes holistic faith-informed strategies for sustainable water access in Tigania West.

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2. The Concept of Water Scarcity and Conflicts

The issue of inadequate water quantities per person per day is biblically acknowledged. In Exodus 16:4, God provided daily sustenance, emphasizing the sufficiency principle. Proverbs 21:20 warns against wastefulness, indirectly advocating for efficient water use (Swaggart, 2013). Theologically, water conservation aligns with the biblical mandate of responsible resource management (Sandowich, 2016). Scientific studies estimate that sustainable water use requires balancing consumption with natural replenishment (FAO, 2011; Time for Change, 2019).

Globally, approximately 58% of the population experiences water stress (Strong & Kuzma, 2020). About 33% consume polluted water, leading to severe health implications (UNESCO, 2019). Waterborne diseases account for 80% of all reported illnesses (Wutich et al., 2019). A staggering 1.1 billion people suffer from water-related illnesses at any given time (Kummu et al., 2016). Specific bacterial infections affect 1 billion people annually, with 2.9 million cholera cases reported worldwide (WHO, 2019). Moreover, helminth infections, including roundworm, whipworm, and hookworm, affect 819 million, 464 million, and 438 million people, respectively (Kummu et al., 2016). Schistosomiasis impacts over 200 million individuals, causing disabilities in 3.3 million cases (Kummu et al., 2016).

The mortality rate associated with water-related diseases is alarming, with approximately 238 million deaths annually (Mohsin & Jamal, 2013). Additionally, about 9.9 million children suffer from visual impairments due to poor water quality (Mohsin & Jamal, 2013). Given these statistics, the classification of water contaminants and associated diseases is imperative for understanding and mitigating water scarcity's impact.

Water scarcity affects both developed and developing nations. In high-income countries, affordability is a growing concern. One-third of U.S. households may struggle to pay water bills within five years (Erbentraut, 2017). Even countries like Canada, Germany, and Japan experience declining water reserves (Ritchie & Roser, 2018).

In developing nations, the situation is even more dire. Africa is particularly affected, with 60% of its countries experiencing severe water stress (Strong & Kuzma, 2020). Nigeria records approximately 70,000 child deaths annually due to diarrhea (UNICEF, 2018). Additionally, Africa reports 112 water-related deaths per hour (Obi & Omulo, 2018). In Ethiopia, individuals walk an average of 2.78 km and spend over five hours daily fetching water (Demie et al., 2016).

Kenya's per capita water availability has declined from 1,112 m^3 in 1977 to a projected 235 m^3 by 2025, far below the UN-recommended 1,000 m^3 (Vision 2030, 2018). Currently, 41% of Kenyans rely on unimproved water sources, contributing to widespread waterborne diseases (Water.org, 2020). Women and children bear the brunt of this crisis, with 80% of households depending on distant water sources (Agesa & Agesa, 2019). Moreover, weak water-use efficiency (WUE) policies result in significant economic losses (Essendi, 2014).

In Meru County, 92% of the population experiences water stress. Rivers such as Thingithu and Mariara are drying up, exacerbating conflicts over dwindling resources (Dibondo, 2019). Water fetching distances average 4.6 km annually, with rates soaring to 5.4 km during dry seasons (Kimanthi, 2016; KNBS, 2019). Poor water governance leads to unaffordable tariffs, making clean water inaccessible to many residents (Kiugu & Wanjohi, 2017).

Tigania West Constituency faces significant water stress, with 97% of its population lacking reliable access to water (KNBS, 2019). This region, characterized by arid and semi-arid

conditions, suffers from low precipitation levels. Water quality is compromised due to pollution, leading to waterborne diseases (Ndahi & Maitho, 2017). Households must travel up to 8 km daily to fetch water, imposing physical and economic burdens (KNBS, 2019). The region also experiences frequent water-related conflicts, further complicating efforts to provide sustainable solutions (Marete & Muchui, 2019). Water inefficiency stems from poor training, governance, and policy implementation (Essendi, 2014; Health, 2017). The Bible discourages excesses and mismanagement, advocating for prudent resource use (Luke 16:10-12). Faith-based organizations have increasingly focused on promoting efficient water use through awareness campaigns and sustainable practices (Zhang et al., 2019). The integration of theological principles with contemporary policy frameworks enhances holistic water governance.

Water-related conflicts date back to biblical times, as seen in Genesis 26:12-33, where Isaac navigated disputes over wells. Similarly, Abraham's resolution of water conflicts (Genesis 21:25-34) exemplifies the importance of peaceful negotiations. Modern water disputes often stem from policy failures and resource mismanagement (DidamAudu & Ojewole, 2013). Theological ethics promote reconciliation and equitable distribution to mitigate conflicts (Kreamer, 2013).

3. Methodology

This study adopts a qualitative research design to explore hydro-theological perspectives on domestic water scarcity, focusing on Tigania West Constituency, Kenya. A qualitative approach was appropriate as it enables an in-depth exploration of biblical, theological, and scholarly discourses on the issue (Creswell & Poth, 2018). The study therefore employed a thematic analysis of existing literature to identify key theological insights and their relevance to contemporary water governance challenges.

In this study, therefore, data collection was primarily based on secondary sources, including biblical texts, theological literature, academic research, and policy reports. Biblical texts provided foundational theological insights into water scarcity, stewardship, and governance, with passages such as Genesis 26:12-33 and Ezekiel 34:17-19 which offered scriptural precedents on water-related disputes and ethical responsibilities (New Revised Standard Version, 1991). Theological literature, including books and peer-reviewed journal articles, were reviewed to understand scholarly interpretations of hydro-theology and its application to modern water crises (Marais, 2017; Smuts, 2019). Additionally, academic research on water governance, environmental theology, and social justice contributed to the discourse, highlighting the intersection of faith and policy in addressing water scarcity (Beukes & Huffel, 2016). Policy and institutional reports from organizations such as the United Nations (UN), the World Health Organization (WHO), and Kenya's Water Services Regulatory Board (WASREB) were also examined to contextualize the study within contemporary governance frameworks (WHO, 2017; WASREB, 2008).

A thematic analysis was employed to categorize the collected data into key themes, including hydro-theological perspectives on water scarcity, governance and policy frameworks, socio-economic and health implications, and faith-based interventions. This approach facilitated a structured synthesis of literature, allowing for comparative analysis between biblical insights and contemporary water challenges (Braun & Clarke, 2006).

To ensure the credibility of sources, inclusion and exclusion criteria were applied. The study included peer-reviewed journal articles, theological texts, and policy reports published in English from reputable sources. Foundational texts published before 2000 were considered only if they provided significant historical or theological context. Conversely, non-academic sources, outdated studies, and articles lacking direct relevance to the theological discourse on water scarcity were excluded to maintain academic rigor (Machi & McEvoy, 2016).

As a literature-based study, this research does not involve human participants, thereby minimizing ethical concerns. However, academic integrity was upheld through proper citation and adherence to APA referencing guidelines (American Psychological Association [APA], 2020). This methodological approach ensured a comprehensive and interdisciplinary examination of water scarcity through theological and scholarly lenses while providing relevant insights applicable to Tigania West Constituency and beyond.

4. Discussion on Hydro-Theology and the Call for Stewardship in Addressing Water Scarcity

Hydro-theology has emerged as a framework linking water issues to theological ethics (Marais, 2017; Smuts, 2019). Scholars argue that water scarcity results from human mismanagement and sin, including overpopulation, pollution, and neglect of stewardship (Kima, 2005; Williams, 2000). The biblical narrative underscores responsible dominion over resources (Genesis 1:26, 28), aligning with contemporary calls for sustainable water governance. Water scarcity is a multidimensional issue that significantly affects global populations, particularly in developing regions. This paper explored the underlying causes, implications, and potential mitigation strategies, emphasizing governance, health impacts, and regional disparities.

4.1 Governance and Policy Implications

One of the primary causes of water scarcity is poor governance. Effective water management requires robust policy frameworks, but many countries lack enforcement mechanisms to regulate water usage and distribution (Kima, 2005). Weak water-use efficiency (WUE) policies exacerbate resource depletion, especially in regions with high population growth and rapid urbanization (Essendi, 2014). The role of government institutions and community-based organizations is crucial in ensuring equitable access and sustainable water practices.

4.2 Health Consequences of Water Scarcity

The health implications of water scarcity are severe and far-reaching. Polluted water sources contribute to widespread waterborne diseases, accounting for 80% of all reported illnesses worldwide (Wutich et al., 2019). Cholera, schistosomiasis, and other bacterial and parasitic infections remain prevalent, disproportionately affecting children and vulnerable populations (WHO, 2019). The high incidence of these diseases underscores the urgent need for improved sanitation and water purification systems.

4.3 Regional Disparities in Water Access

High-income and low-income countries experience water scarcity differently. While affordability concerns dominate discussions in developed nations, physical water shortages remain a pressing challenge in developing countries. For example, Kenya's per capita water availability has declined drastically, from 1,112 m^3 in 1977 to a projected 235 m^3 by 2025 (Vision 2030, 2018). In Meru County, 92% of the population faces water stress, with distances to water sources averaging 4.6 km annually (Kimanthi, 2016). Such disparities highlight the necessity for region-specific policy interventions.

4.4 Faith-Based Perspectives on Water Scarcity

Religious teachings often emphasize water stewardship, advocating for moral responsibility in water conservation (Sauter, 2021). Theological engagement in water governance, as supported by the World Council of Churches (Beukes & Huffel, 2016), suggests that faith-based organizations can play a critical role in water advocacy and community mobilization. Incorporating spiritual perspectives into policy discussions may enhance community buy-in and sustainable resource management.

4.5 Mitigation Strategies and Future Directions

Addressing water scarcity requires a multi-stakeholder approach. Strategies should include improved governance structures, investment in infrastructure, community-led conservation efforts, and public education on water-saving technologies (Sauter, 2021). Additionally, fostering partnerships between governments, NGOs, and religious institutions can enhance resource mobilization and policy implementation.

To combat water scarcity, a multi-stakeholder approach is necessary. The UN General Assembly (2015) emphasizes inclusive governance, involving governments, NGOs, and religious institutions (Liu et al., 2017; Kelly, 2018). Religious texts advocate for water stewardship, urging communities to take responsibility for water conservation (Sauter, 2021; Ruden, 2020). The World Council of Churches (WCC) supports theological engagement in water governance (Beukes & Huffel, 2016; Freeman, 2016). Practical interventions include:

- Improved water governance and policy enforcement
- Investment in water treatment and distribution infrastructure
- Community-led conservation initiatives
- Adoption of water-saving technologies and education campaigns.

5. Conclusion

The paper noted that water scarcity is a critical challenge requiring comprehensive policy responses, technological advancements, and faith-based advocacy for sustainable management. This study highlighted the hydro-theological perspectives and ethical dimensions of water as both a physical necessity and a sacred resource, emphasizing the role of faith communities in promoting stewardship, justice, and sustainability. It notes that in Tigania West and other vulnerable regions, water scarcity is not just a technical or policy issue but also a moral concern that demands faith-based engagement alongside institutional interventions. Addressing the domestic water menace requires coordinated efforts among governments, NGOs, and religious organizations. A holistic approach integrating governance reforms, infrastructure development, hydro-theological perspectives, and community participation is essential to ensure long-term water security.

6. Recommendations

To address domestic water scarcity effectively, faith-based organizations, policymakers, and local communities should collaborate in promoting sustainable water management practices. Churches and religious institutions should incorporate water stewardship teachings into their ministries, fostering awareness and advocacy for equitable distribution. Policymakers should integrate ethical and hydro-theological perspectives into water governance frameworks to ensure holistic solutions that consider both social and spiritual dimensions. Additionally, further interdisciplinary research is needed to explore the intersection of theology,

environmental ethics, and water resource management, strengthening faith-based contributions to sustainable development.

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