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FOREWORD

The 2025 Midlands State University Law Review (MSULR) Special Issue brings together timely and topical research on climate change, environment and human rights. This Issue is a compilation of eight research papers that address the triple planetary crisis within the Zimbabwean context. These papers are the final, peer reviewed papers from the National Symposium on Climate Change, Environment and Human Rights, held at Cresta Lodge, Harare, Zimbabwe, 2 - 4 November 2024.

The series of research symposia forms part of the Raoul Wallenberg Institute Zimbabwe Human Rights Capacity Development Programme. The overall objective of the Programme is: to contribute a just and inclusive society in Zimbabwe through strengthening and deepening existing partnerships to help institutions better promote, protect and respect human rights in accordance with their respective mandates. Its main implementing partners at the time of writing are: Raoul Wallenberg Institute of Human Rights and Humanitarian Law (hereinafter 'RWI') at Lund University, Sweden; Centre for Applied Legal Research (hereinafter 'CALR') in Harare, Zimbabwe; College of Business, Peace, Leadership and Governance at Africa University in Mutare, Zimbabwe; Faculty of Law at Midlands State University in Gweru, Zimbabwe; Herbert Chitepo School of Law at Great Zimbabwe University in Masvingo, Zimbabwe; Faculty of Law at University of Zimbabwe in Harare, Zimbabwe; Faculty of Law at Ezekiel Guti University in Bindura, Zimbabwe; Council for Legal Education in Zimbabwe; Zimbabwe Human Rights Commission; Zimbabwe Prisons and Correctional Services; Zimbabwe Anti-Corruption Commission; and the National Prosecuting Authority of Zimbabwe. The Zimbabwe Programme is funded by the Embassy of Sweden in Zimbabwe.

The national symposium, which was the tenth in the series, is an annual event under the RWI Zimbabwe Human Rights Capacity Development and is organised by RWI in cooperation with its academic partner institutions. It is a forum where research funded and conducted during the year is packaged and presented before an audience representing diverse sectors of Zimbabwean society, thereby allowing the presenters and participants to in plenary engage in vibrant discussions around the topics at hand and together deliberate on the way forward with regard to critical human rights reform issues. This time around, the participation of government officials from the line ministries, including among others, the land and forestry

departments, and the Gender Commission, as well as traditional and political leaders enriched the engagement process remarkably. The feedback and experiences shared during the national symposium are incorporated into the preparation of the final papers for publication and dissemination.

MSU would like to extend heartfelt gratitude to the Embassy of Sweden in Zimbabwe for their continued support through RWI in making the publication of this special issue a reality. A lot of gratitude is extended to the academic partners and to all the researchers for their hard work and determination, which resulted in this special issue of the MSULR. This is a proud moment in the history of the MSULR and we wish stakeholders an exciting read!!!

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Empowering Women in Communal Farming on Environmental Conservation and Climate Change Mitigation in Old Mutare

Talent Sithole[1*]

Abstract

This article examines the crossroads of environmental protection, human rights, and climate change mitigation in Premier Estates in Old Mutare, Zimbabwe. The area is vulnerable to extensive environmental damage through Chinese investor unregulated unsustainable mining activities like Xu Zhong Jin Investments, Sino Africa Hui Jin Holdings and artisanal mining. All such activities continue promoting deforestation, loss of biodiversity, siltation of rivers, and heavy degradation of the environment through water pollution. The women in small-scale agriculture become disproportionately exposed to these problems since they rely heavily on natural resources, including water, land, and wood, to meet necessities of life. Environmental contamination of the Mutare River and agricultural land through mining just serves to increase their risks with severe threats to their health, harmful exposure, and household problems. The study investigates how gendered social roles, limited access to land and decision-making constrain the capacity of rural women to adapt to these challenges, emphasizing on the need for gender-sensitive interventions to empower rural women in environmental conservation and climate resilience. Legislation such as Zimbabwe's Environmental Management Act, the Mines and Minerals Act, and international commitments, including the Sustainable Development Goals (Goals 5[2] and 13), among others, offer opportunities to address these issues. The results align with contextual and holistic strategies, including women's leadership in countering environmental degradation and climate change impacts.

[1] Talent Sithole, Bsc Forest Resources Management.

[2] SDG 5 focuses on achieving gender equality and empowering all women and girls by addressing discrimination, violence, ensuring equal access to education, healthcare, and leadership opportunities. SDG 13 urges immediate action to combat climate change by reducing greenhouse gas emissions, promoting sustainable practices, and enhancing resilience to climate-related disasters.

1. Introduction

Environmental degradation from unsustainable mining activities is a genuine issue in most of the Global South. It is often exacerbated by the general impacts of climate change, which enhance vulnerabilities for resource-dependent communities. Premier Estates in Old Mutare, Manicaland, Zimbabwe, is an example where exploitative mining practices, including by firms like Xu Zhong Jin Investments and Sino Africa Hui Jin Holdings, and the under regulated artisanal mining, are degrading environments, contributing to climate change and undermining local livelihoods. Artisanal and commercial mining activities have led to deforestation, loss of biodiversity, river siltation, and chemical contamination, especially for the Mutare River. This has impacted agriculture and the accessibility of basic resources, such as water and wood, hindering successful subsistence farming. Women are the worst hit, as their survival and roles within households and their communities are closely linked with natural resources.

Women's vulnerability is mainly due to their gender roles and structural disparities that constrain their access to land, productive resources, and decision-making processes.[3] Shortages of water because of altered river courses and pollution also puts the health of women at risk, who have the responsibility to supply safe water for their homes.[4] Environmental degradation also disrupts livelihoods and reinforces inequalities since women are often not included in any compensation or stake in issues affecting mining activities and the use of land.[5] Mining is also predominantly a masculine pursuit, offering little economic livelihood to women.[6] The ensuing economic insecurity undermines the autonomy and stability of the farmers. Artisanal and small-scale gold mining operations, for instance, utilize hazardous chemicals such as mercury and cyanide, which contaminate water bodies and result in severe health hazards to communities. Gender, environmental protection, and human rights converge at the nexus of this conversation. While women are central to food production, management of resources, and community well-being, they remain poorly represented in environmental management and policy and decision-making regarding

[3] Evelyn Namubiru-Mwaura PHD- Land tenure and gender: Approaches and challenges for strengthening rural women's Land rights.

[4] July 2023 new UNICEF-WHO report Women and girls bear the brunt of the water and sanitation crisis.

[5] Khulekani Sibindi-Case study report and analysis: the impact of mining on gender, climate, and economic livelihoods in Zeleka town (2024).

[6] Georege Ofosu, D Sarpong, M Tarbor & S Asante (2024): Mining women' and livelihoods: Examining the dominant and emerging issues in the ASM gendered economic space.

mining.[7] Their underrepresentation limits their ability to address their specific issues and leverage their specific knowledge base to create sustainable solutions. These institutionalized impediments can be addressed with gender-sensitive measures and broad-based policies allowing women to participate in environmental protection and climate resilience.

Zimbabwe's legislation, such as the Environmental Management Act (Chapter 20:27)[8] and the Mines and Minerals Act (Chapter 21:05),[9] aim to regulate mineral resource use and protect the environment. However, enforcement gaps and the complexity of mining rights on communal lands exacerbate challenges for rural communities, particularly women. Global targets like the Sustainable Development Goals (Goals 5 and 13) target gender equality and climate action and provide an opportunity to include women's leadership in addressing them. Based on the specific roles and vulnerabilities of women, this article argues for holistic and place-specific strategies to respond to environmental degradation and foster community resilience in Premier Estates and other comparable contexts.

2. Research problem

This article focuses on environmental degradation and climate change impacts on women in the Eastern Highlands of Zimbabwe, with reference to Premier Estates in Old Mutare. In this region of the country, women experience the largest share of unsustainable natural resource use and environmental challenges. The study area is affected by deforestation, biodiversity loss, water pollution, and land degradation driven by mining activities. Some of the activities by businesses such as Xu Zhong Jin Investments and Sino Africa Hui Jin Holdings, according to the Centre for Natural Resource Governance (CNRG),[10] include altering the course of rivers, storage of hazardous materials without a permit, and siltation in the Mutare River. These experiences are documented in the CNRG study, "Investments or Plunder? An

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7 Debra T Mwase (2016) 'boom or gloom?' An examination of the impact of mining activities on the Livelihoods of female small holder farmers in Zvishavane District, Zimbabwe.

8 The Environmental Management Act (Chapter 20:27) establishes a framework for sustainable natural resource management and environmental protection in Zimbabwe, including pollution prevention and the creation of the Environmental Management Agency (EMA).

9 The Mines and Minerals Act (Chapter 21:05) regulates mining activities in Zimbabwe, covering licensing, exploration, and extraction, with provisions for environmentally responsible practices.

10 The Centre for Natural Resource Governance (CNRG) is a Zimbabwean non-governmental organization dedicated to promoting the sustainable management of natural resources. It aims at addressing environmental effects that arise from extractive operations, campaigns against biodiversity threats like trade in wildlife and habitat loss, and advocates for inclusivity in natural resource governance.

Assessment of the Impacts of Chinese Investments in Zimbabwe's Extractive Sector," citing environmental degradation, desecration of cultural norms, and labour exploitation. Mining falls under the projects in section 97 of the Environmental Management Act, requiring Environmental Impact Assessments (EIAs) before engaging in operations.

Figure 1: Mutare River course destroyed due to alluvial mining

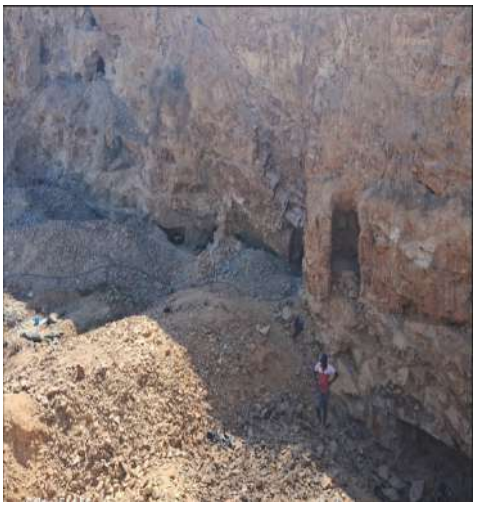

Figure 2: Artisanal mining activities in mountains

3. Literature and Law Review: Past, Present, and Future

Climate change is a major threat to the food security and livelihood of developing nations, particularly in Africa, where economies rely on agriculture yet are highly vulnerable to climatic conditions.[11] In Zimbabwe, the 2013 Draft Response to Climate Change acknowledges that climate change undermines the achievement of Sustainable Development Goals (SDGs) on reduction of hunger and poverty. Even though the overall impact of climate change is universal, environmental degradation is the primary concern and climate change is a compounding factor. Within the study area, climate change is interpreted through experience-based observation of changed weather patterns. Respondents identified late rainfall onset, shortened seasons, unreliable planting times, and erratic extreme weather events such as floods, droughts, and strong winds, which cumulatively alter agricultural output. These changes are attributed to anthropogenic activities like unsustainable alluvial

[11] Evermore Magwegwe, T Zivengwa & M Zenda (2024)- Adaptation and Coping Strategies of Women to Reduce Food Insecurity in an Era of Climate Change: A Case of Chireya District, Zimbabwe.

gold mining, mountain blasting and forest clearance. Yet, there were some participants who questioned the reality of climate change, referring to perceived scientific evidence gaps. The scientific world confirms the anthropogenic forces behind altered weather patterns and the increased frequency of climatic risks. The Intergovernmental Panel on Climate Change[12] confirms the way human-produced greenhouse gas emissions have driven global warming, triggering erratic rains as well as elevated climatic stresses. Waha[13] also confirm the uneven impacts on the vulnerable populations in Africa by such climatic acts in addition to science, cultural and traditional perceptions influence thoughts about climate change among African societies. Tanzanian academic Paul Dotto Kuhenga reveals that poor weather is blamed on the anger of ancestral spirits or supernatural forces. Similarly, Tabona Shoko documents Shona traditions in Zimbabwe where floods are understood as God's punishment or drought is viewed as a spiritual imbalance in society.[14] This elucidates the interactions between socio-cultural narratives and environmental processes and highlights the importance of integrating socio-cultural models in climate adaptation strategies.

Land tenure in Zimbabwe has undergone monumental changes since the 2001 Fast Track Land Reform Programme (FTLRP), whose aim was to rectify past injustices via land redistribution from the minority white farmers to black Zimbabweans. This reform established a twin system of freehold tenure for large commercial farms and customary tenure for communal land. Women's access to land remains constrained by economic disparities and patriarchal cultural attitudes, despite legal protection under Sections 56 and 80 of the Constitution of Zimbabwe, 2013. Communal lands are governed under the Communal Land Act (Chapter 20:04), while resettlement areas are governed by other regulatory frameworks. This ambiguity is evident in the need to define the tenure regime governing the land in the Premier Estates to address the issue of equitable allocation and sustainable use of resources.

Climate change affects the poor, particularly women, who rely heavily on natural resources to earn their living.[15] Women have unique challenges such as unequal access to land,

12 The Intergovernmental Panel on Climate Change (IPCC, 2021) report.

13 Waha, K.; Müller, C.; Bondeau, A.; Dietrich, J.P.; Kurukulasuriya, P.; Heinke, J.; Lotze-Campen, H. Adaptation to climate change through the choice of cropping system and sowing date in sub-Saharan Africa. Glob. Environ. Chang. 2012, 23, 130–143.

14 Tabona Shoko (2022) African Traditional Religion and climate change.

15 Waha, K.; Müller, C.; Bondeau, A.; Dietrich, J.P.; Kurukulasuriya, P.; Heinke, J.; Lotze-Campen, H. Adaptation to climate change through the choice of cropping system and sowing date in sub-Saharan Africa. Glob. Environ. Chang. 2012, 23, 130–143.

agricultural inputs, technology, finance, and training.[16] Social roles also limit women, whose central role is to provide food, water, and energy for cooking and heating.[17] All these issues limit women's ability to adapt to environmental challenges, necessitating policy responses that are inclusive. Environmental degradation in Premier Estates is compounded by environmentally unsustainable mining by companies such as Xu Zhong Jin Investments and local artisanal miners. These activities have resulted in the destruction of river courses, contamination of water, deforestation, and soil erosion all of which affect women's livelihoods and those of their dependents. CNRG calls for more stringent implementation of environmental legislation to compel mining companies to answer for their harmful activities.[18]

While the communal land system offers a framework of governance under the Communal Land Act, the exercise of powers of the state over mining in communal lands is not defined, adding to the complexity of managing resources. Tackling environmental issues in Premier Estates requires the coordination of local and international obligations. The constitutional provisions in Zimbabwe, including Sections 17 and 73, are founded on gender equality and environmental rights. Mining regulations under the Mines and Minerals Act and Environmental Management Act attempt to balance mineral resource use with environmental protection.

4. Justification of the study

This article underscores the vital role of women in environmental conservation and climate change mitigation, a perspective frequently overlooked in Zimbabwe's policies. By focusing on women's involvement and empowerment, it ensures that local knowledge and experiences are incorporated into strategies for environmental preservation and climate change mitigation. The intersections between environmental conservation, climate change mitigation, and human rights, particularly for women, are examined, highlighting the essential connections between these issues. In the Old Mutare area, especially Premier Estate, environmental challenges such as unsustainable mining practices, riverbed mining, deforestation, land degradation, and climate change urgently require effective strategies.

16 Duru, J.; Aro, J & Ebunoluwa, RO (2022) The effects of climate change on the livelihood of rural women: a case study of Ilorin South, Nigeria.

17 Tigabie, A.; Teferra, B.; Abe, A. Access and control of resources by rural women in north Shewa zone, Amhara region, Ethiopia. Res. World Agric. Econ. 2022, 3, 36.

18 Centre for Natural Resource Governance (CNRG) report; cite.org.zw.

Communities here are particularly vulnerable to environmental degradation with climate change exacerbating the impacts, including poor harvests, droughts, floods, and rising temperatures, necessitating targeted mitigation efforts. Chinese mining companies take advantage of existing regulatory gaps, depriving local communities of their constitutional rights to live in a healthy environment, as outlined in Section 73 of the Constitution of Zimbabwe.

5. Methodology

Study Area

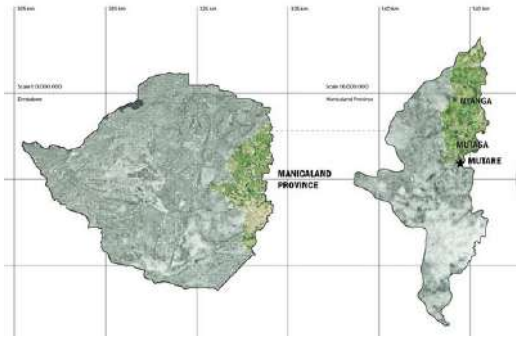

Figure 3: Location of study area Zimbabwe Manicaland

Figure 4: Premier Estate, in Mutasa in District, Manicaland

Premier Estate is characterized by sparse vegetation, thorn bushes, and acacia trees. The area is divided into Premier North, Southeast and Central, with Premier Central as the focal study area. This area typically receives low rainfall, influencing the types of sustainable economic activities that can be conducted there. The key economic activities currently being conducted include commercial alluvial and artisanal mining, which significantly contribute to the local economy. Subsistence farming is prevalent, with crops such as maize and wheat commonly grown. The area also features large commercial crop and dairy farms that play a crucial role in the local economy by providing employment and contributing to agricultural output. During the Fast Track Land Reform Program (FTLRP) initiated in 2000, the area had a mixed experience on land redistribution from white commercial farmers to black Zimbabweans where some farms were not invaded and others were redistributed to Zimbabweans. While this process aimed to address historical land imbalances, it also led to

challenges such as violence, lack of legitimacy in land ownership, and weakened agricultural infrastructure. The redistribution involved issuing offer letters without formal legal backing, resulting in disputes and uncertainties over land ownership.

The community consists of about ninety households. A total of 30 respondents were selected using a simple random sample. One respondent was selected per household to participate either in the in-depth interviews or focus group discussions to help describe the changes in weather patterns over the last ten years, the impact on food, water, and energy, and the policy and program interventions addressing these effects.

5.1. Research Instruments

Data collection methods included focus group discussions, in-depth interviews, and observations during field surveys to identify environmental degradation, river obstruction, and ongoing mining activities. Structured interview guides were used to gather information from key informants within the community. These key informant interviews aimed to collect data from community leaders, professionals, or residents, particularly the elderly, who have a historical perspective on the commencement of mining activities, weather patterns, and climate change, and possess first-hand knowledge of the community. Observation guides were also designed to help gather information based on visible indicators identifying issues that might not be evident during in-depth interviews and focus group discussions. Pilot interviews were conducted to assess the usability of the research instruments before actual data collection. Questionnaires were randomly tested, and pilot interviews were administered in the area before data collection.

5.2. Ethical Considerations and Methods in Data Collection

Confidentiality and anonymity were prioritised, while also considering cultural sensitivity and respect for indigenous knowledge and practices. Permission and approval from community leaders were sought and granted after clearly explaining the study's objectives and aims. In-depth interviews followed. The fieldwork took place from 23-27 September 2024, focusing on assessing local women's involvement in environmental initiatives and the community's environmental challenges. Three focus group discussions were held, involving a total of 24 participants, with each group consisting of 8 people, including men, women, and local community leaders. Recruiting eligible women proved challenging, as men were

more willing to participate, while women were more reluctant. Women's refusal can also be linked to other intersecting factors such as unfamiliarity with the purpose of the research, past experiences, or even perceived irrelevance of the study to their daily lives. One female said, "I would like to go, but I don't have anyone to leave my children with and there is no other person who can take care of them." A fellow neighbour, Mai Wadza said; "The timing overlaps with the time I visit to bring water and firewood. Unless I do that, there won't be water for cooking and washing." Another respondent, Sheilla reiterated that "Being in the study doesn't seem to be of any benefit to me or my family, so this is time that could be better spent doing something else." Other female respondents felt that the men in the family and the community make most of the decisions thus, their input might not even be counted. This highlights the challenge brought by patriarchal tendencies, household responsibilities, and socio-economic demands.

Transcripts from interviews were analysed using the participants' own words without preconceived classification. The language and phrases used by participants were examined, categorized, and recurring themes were identified. Recurrent themes reflect the similar and consistent ways people think about and describe issues. For open-ended questions, themes were identified as they emerged from the data, which were then coded and grouped into conceptual categories for description. Data collected was analysed using Microsoft Excel and the Statistical Package for Social Scientists (SPSS), with simple descriptive statistics presented as tables, graphs, and pie charts for discussion. Quantitative data from the questionnaires was analysed using SPSS and Microsoft Excel and then analysed thematically. Responses collected from the various instruments were sorted into categories including climate change adaptation strategies, mitigation strategies, impacts of climate change on livelihoods, challenges to climate change mitigation and adaptation, and the impacts of mitigation strategies. The initial analysis involved identifying and assessing the effectiveness of climate change adaptation strategies, recording the percentages of participants who viewed each technique as effective or not. The second analysis identified climate change mitigation strategies in use and the number of people who mentioned each strategy. Another analysis identified challenges faced in adapting to and mitigating climate change, along with the number of people who highlighted each challenge.

6. Discussion of Findings

The research indicates widespread environmental degradation, driven by irresponsible mining activities that impose greater stresses on women due to their dependency on natural resources. River course destruction arising from illegal alluvial gold mining activities ranked at the top of the respondents' environmental concerns. The mining process has diverted the Mutare River, causing heavy siltation, contamination by mercury and other toxic chemical poisoning even in violation of the prohibitions in Statutory Instrument 188 of 2024[19]. Women are now forced to travel longer distances to draw clean water for domestic and agricultural use, at times even two kilometres to the nearest local school or clinics. Health risks such as cholera, diarrhoea, and potential mercury poisoning from contaminated water sources were highlighted by respondents. Mountaintop mining-related deforestation has reduced grazing land substantially, and artisanal mining activities have rendered fertile agricultural land agriculturally worthless. Women, who are predominantly subsistence farmers, are suffering most from this, with some totally abandoning farming because of the loss of land and vegetation cover. Soil erosion and loss of species were also indicated as being key follow-up effects of this land degradation, complicating agricultural recovery further. The mining at Premier Estates is male dominated, with women excluded from related economic opportunities. This exclusion increases women's reliance on men for survival, added to the use of dangerous chemicals like mercury and cyanide that reduce agricultural viability. Respondents highlighted the need for alternative economic opportunities to disengage the reliance on the deprived agricultural land. Mining activities also continue surreptitiously, with blasting causing ground shocks and risks of airborne debris and road obstruction to essential facilities such as the local clinics and school. Abandoned open pits are left behind by artisanal miners, which are hazards to children and livestock. Increased traffic on the roads has led to dust pollution, which causes respiratory diseases that have impacted women disproportionately, as they also act as caregivers for the family. Women are not well represented in the local decision-making forums and local environmental management, thus restricting them from advocating for their needs as they make arguments on mining-related issues. Cultural patriarchal practices also restrain them from getting involved in the issues

[19] Statutory Instrument 188 of 2024. Environmental Management (Control of Alluvial Mining) (Amendment) Regulations, 2024 (No. 3) Which effectively bans alluvial mining activities or carries out prospecting for alluvial deposits in or along any river or public stream (as thet is defined in section 2(1) of the Water Act [Chapter 20:24]).

of resource management and preservation, leaving them at the fringes of community planning and policymaking. Despite severe environmental degradation, none of the respondents knew of current conservation activities to reverse land degradation, deforestation, or water pollution. Women were eager to participate but attributed the lack of relevant platforms, equipment, and training as the reason they could not help making a difference.

6.1. Main Environmental Challenges Facing the Community

Human activities are also a critical issue in exacerbating vulnerability to climate change, ranging from anthropogenic climate change at one extreme to local deforestation on the other.[20] Chinese mining operations in Zimbabwe predominantly use open-cast methods, which cover large areas of land. This has significant environmental implications, including the destruction of forests, displacement of agricultural fields, and severe pollution of the nearby river. As a result, Chinese investments have a massive environmental footprint, leading to ecological crises that threaten local ecosystems and biodiversity.

Figure 5: River course disturbed by mining activities along Mutare River

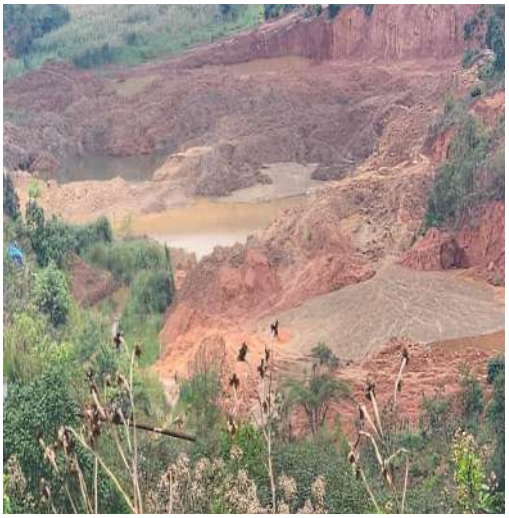

Figure 6: Artisanal miners

[20] Donald Brown, Rabecca Rance Chanakira, Kudzai Chatiza, Mutuso Dhliwayo, David Dodman, Medicine Masiiwa, Davison Muchadenyika, Prisca Mugabe and Sherpard Zvigadza (2019) :Climate change impacts, vulnerability and adaptation in Zimbabwe: IIED Climate change Workinmg paper number 3.

To address these challenges accordingly, it is necessary to focus on the agency and resilience of women in adapting to environmental degradation. It is necessary to emphasize the need for inclusive policy that empowers women through resources, education, and leadership opportunities in environmental policymaking. By focusing on the lived experiences of women and gender-sensitive interventions, sustainable solutions can be developed to address the combined impacts of environmental degradation and climate-related stresses.

Figure7: Mountain debris from activities

Figure 8: Degradation on once blasting productive land

6.2. Impact on Women's Livelihoods

The loss of land to unsustainable mining activities has severely affected the ability to conduct agricultural activities. Environmental changes have impacted livelihoods through livestock loss, reduction in grazing land, deterioration of pasture quality, and a shift to unsustainable income-generating activities. Women's efforts are still limited by structural barriers like exclusion from decision-making processes, limited access to land tenure, and poor support networks. For example, a respondent spoke about her personal experience of trying to obtain water for her family despite mercury poisoning, expressing dismay at government inaction. Another looked at the challenges of losing pasture for cattle, which illustrates the cascading effects on food security and income.

Over the past 5-10 years, participants observed a decline in the number of livestock, increased domestic violence, child abuse and family disputes. The research participants frequently cited changes in social behaviour as a significant issue. Stress from food insecurity triggers antisocial behaviour among household members, resulting in frequent fights, quarrels and theft. Women and children were more exposed to socially unacceptable behaviours such as prostitution to raise money. Young girls engaged in premarital sex to support their siblings, exposing themselves to health risks and unwanted pregnancies. Additionally, young men form relationships with widows and older women to secure food.

6.3. Local Insights on Traditional Knowledge and Environmental Conservation

Among the participants interviewed, 25 percent highlighted that biodiversity conservation and cultural heritage play a significant role in environmental conservation. Twenty percent of respondents emphasized the importance of traditional knowledge, as it fosters community engagement and encourages sustainable resource use, benefiting the community through a sense of ownership. Additionally, 15 percent of the total respondents mentioned that traditional knowledge on sustainable practices and climate resilience contributes to environmental conservation.

Respondents acknowledged the value of traditional knowledge in environmental conservation as considerable if implemented effectively. Practices such as crop rotation and fallowing improve soil health and aid in carbon sequestration. Controlled burning helps manage landscapes and promotes the growth of important plant species. Agroforestry, which integrates trees and shrubs into agricultural landscapes, enhances soil health and carbon sequestration. Indigenous water management techniques, like using canals for field irrigation, ensure efficient water use and prevent erosion. Cultural elements like local beliefs, taboos, myths, and totems[21] deter hunting and preserve native species. Sacred forests[22] and groves protect biodiversity, crucial for ecosystem resilience and carbon sequestration. Respondents noted that respect for totems protects certain forests, plants and animals as sacred, helping to prevent exploitation and contributing to biodiversity conservation.

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21 Totems make conservation possible as most animals, like porcupine, pangolin, snakes (e.g., pythons) etc, are totems. They are not killed or injured, which helps maintain their numbers and ecological roles, like controlling rodent populations.

22 Clan totem-related fishing taboos prevent overfishing, particularly at times of reproduction, so that fish populations will recover and aquatic diversity is preserved.

Sustainable craftsmanship and agro forestry maintain natural resource availability and carbon storage capacity. Cultural taboos[23] and myths serve as conservation tools by embedding environmental protection within cultural and spiritual beliefs, leading to sustainable community-driven efforts. Traditional leadership and enforcement ensure community compliance and foster responsibility towards the environment, enhancing the effectiveness of climate change mitigation strategies. Traditional techniques like terrace farming conserve water and prevent soil erosion, improving agricultural resilience to climate change[24]. Controlled burns reduce the risk of larger wildfires, preventing large carbon dioxide releases and promoting the growth of fire-adapted species[25]. Integrating these traditional practices with modern conservation and climate strategies can create more holistic and effective approaches to mitigating climate change and enhancing community and ecosystem resilience. However, the general perception in the Premier Estate area is that the knowledge and experience of community members, particularly women, are not valued in decision-making processes about resource management. These practices are unfortunately no longer fully applied as productive farming land has been converted to large holes and mining shafts for artisanal miners, making it unsafe for women and children to work in the affected fields.

Strategies employed by households to mitigate food insecurity amid climate change include actions such as selling assets, borrowing food, altering planting schedules, and selling livestock to alleviate food scarcity. Engaging in illegal mining activities in the fields and alluvial gold mining was one of the primary income-earning methods for respondents.

6.4. Barriers to Women's Participation

In Zimbabwe women are underrepresented in decision making bodies at all levels despite constitutional provisions for gender equality. For instance, women's participation in politics remains low. After the 2023 elections, women comprised only 11% of the National Assembly and 15% of local government positions.[26] Culturally, women in Zimbabwe are often

23 Sacred forests and groves in Zimbabwe, including the Chirinda Forest in Manicaland, are conserved through cultural taboos that bar activities such as tree felling, hunting, and cultivation, maintaining biodiversity and endangered species such as the Big Tree (mahogany).

24 Juan D Rivera (2023); How Does Terrace Farming Reduce Soil Erosion and Preserving the Land?

25 Abigail R. Croker, Jeremy Woods & Yiannis Kountouris (2023);Changing fire regimes in East and Southern Africa's savanna-protected areas: opportunities and challenges for indigenous-led savanna burning emissions abatement schemes.

26 Zimbabwe Gender Commission (ZGC) 2023 Gender Observatory Report.

confined to traditional gender roles that limit their opportunities and participation in public life. While efforts exist to promote gender equality, deeply rooted cultural norms and practices continue to pose challenges. Gender roles and cultural norms limit women's participation in public decision-making, as women's roles are mainly confined to household chores, childbearing and rearing.[27] Limited access to education and training opportunities, coupled with less access to financial resources, land and other assets, hinders women's effective participation.[28] Women are underrepresented in leadership positions within local governance and environmental organizations.[29] Section 17 of the Zimbabwean Constitution mandates gender balance as a national objective, ensuring equal representation of men and women in all government institutions and agencies at every level. This provision is crucial for promoting gender equality and empowering women in local governance and decision-making processes. Additionally, Section 56 of the Constitution guarantees that all persons are equal before the law and have the right to equal protection and benefit of the law, including the right of every woman to vote and contest elections as a candidate. The Zimbabwe Electoral Act [Chapter 2:13] in section 3 squarely criminalizes political campaign discrimination based on gender. These constitutional provisions aim to ensure that women have a fair and equal opportunity to participate in governance and decision-making, essential for addressing issues such as environmental conservation, climate change and sustainable resource use. The dual burden of domestic responsibilities and income-generating activities also hinder women's participation, as does the absence of strong networks or organizations advocating for women's participation.

6.5. Opportunities for Women's Involvement

Enhancing opportunities for women to engage in structured conservation efforts and decision-making processes in Premier Estate, Old Mutare, can be achieved through several avenues. Organizations like Environmental Buddies[30] and the Zimbabwe Environmental

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27 Madhavi Venkatesan (2020); Gender Roles, Cultural Norms, and Role of Income in Perceived Value: Women and Unpaid Work.

28 Samuel Tarinda, Deputy Director, Economic Policy & Research Division Gender (2019), Women's Economic Empowerment And Financial Inclusion In Zimbabwe.

29 UN Women: Data on share of women in local government as of 1 January 2023. UN Women report on women in local government in Zimbabwe.

30 Environmental Buddies Zimbabwe (EBZ), founded in 2017, is an NGO focusing on waste management and sustainable forest management. It gives top priority to afforestation, reforestation, community empowerment, and the 3Rs (Reduce, Reuse, Recycle) to combat deforestation, pollution, and biodiversity conservation in the direction of Sustainable Development Goals.

Law Association (ZELA)[31] can provide platforms for local women to participate in environmental conservation and advocacy. Initiatives offering training and education in environmental management, leadership, and sustainable practices, can empower women to take on more active roles. Engaging women in community projects, such as afforestation and reforestation, can provide hands-on experience and leadership opportunities. Supporting women to advocate for policies that promote gender equality and environmental sustainability can help create a more inclusive environment. Collaborating with NGOs focused on women's empowerment and environmental conservation can provide additional resources and support. By leveraging these opportunities, women in Premier Estate can play a more significant role in environmental conservation and decision-making, contributing to a more sustainable and equitable community.

6.6. Why Women Can Be Better Preservers of the Natural Environment

Women often possess qualities and roles that make them uniquely positioned to be effective preservers and caregivers of the natural environment, particularly in mining areas. Women often have a deep understanding of local ecosystems, traditional agricultural practices and natural resource management passed down through generations. This knowledge is invaluable for sustainable conservation efforts. In many communities, women are primarily responsible for managing household resources such as water, food and fuel.[32] This role gives them a practical understanding of resource scarcity and sustainable use, essential for climate change mitigation and environmental conservation. Women are often central to community networks and can mobilize local populations for collective action. Their ability to engage and organize communities is crucial for implementing conservation initiatives and fostering environmental stewardship. Women often demonstrate adaptability and resilience in the face of environmental changes. Their experiences with managing households under changing conditions provide insights into effective adaptation strategies for climate resilience.

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31 Zimbabwe Environmental Law Association (ZELA) is a Zimbabwe public interest environmental law association, established in 2000 and registered as a Trust in 2001. It operates to promote environmental justice and sustainable management of natural resources such as mining, land, water, wildlife, and energy. ZELA is focused on legal research, advocacy, civic education, and impact litigation, among other activities like the Publish What You Pay (PWYP) coalition and the Zimbabwe Alternative Mining Indaba.

32 Perch, L. & Tandon, N. "Farming, Mining and Caring for the Land: Why a Critical Feminist Gender Discourse on Rights and Resources is More Important Now than Ever Before." *Open Society Initiative for Southern Africa*. (2015).

Women's traditional roles as caregivers extend to their approach to the environment. Their nurturing nature and emphasis on the well-being of future generations drive a long-term perspective on environmental sustainability. Increasingly, women are taking on leadership roles in environmental and conservation movements. Their advocacy for inclusive and equitable policies ensures that environmental solutions are holistic and consider the needs of the entire community. Women often take a holistic approach to problem-solving, integrating social, economic and environmental aspects.

7. Recommendations

Primary priorities should include mitigating environmental degradation, preventing social dislocation, and reducing economic inequality due to climate change related causes through environmental restoration, water conservation and ensuring that a fair share of mining revenues are invested in local development projects. "One common challenge when it comes to cross-cutting issues such as gender and climate change is that they are not given priority or sufficient budget allocations in national, sectoral (e.g. energy) or district policies and budget frameworks resulting in limited implementation."[33] "Influencing the national budget guidelines that inform national and sector budgeting to include poverty, environment or gender, and climate linked priorities is thus essential".[34] The government should ensure that gender considerations are integrated into all climate change policies and programs to encourage investment in other sectors, such as agriculture, manufacturing, and tourism, to create alternative livelihoods and reduce reliance on mining revenues. The government needs to invest in constructing deeper boreholes to tap into rich underground water sources and train women in water resource maintenance. Providing water treatment kits will improve water quality and minimize disease outbreaks from possible contamination of drinking water. Government environmental bodies need to enforce stringent measures to regulate waste and pesticide disposal into Mutare River, which expose community members to health risks. Such bodies should also introduce mandatory environmental restoration and land rehabilitation obligations for mining companies to ensure sustainable practices, for example, infrastructure improvements, resurfacing of the link road with tar to improve air quality and enhanced women's access to markets for the community.

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33 UNDP-UNEP PEI Africa. Empowering women for sustainable energy Solutions to address Climate change Experiences from UN Women and UNDP-UNEP PEI Africa (December 2015).

34 UNDP-UNEP Poverty-Environment Initiative (PEI) 2015 Report.

Environmental negotiations should include women with traditional knowledge in community consultations and decision-making processes and at the same time support for community-based organizations led by women. This also includes programs that utilize women's traditional knowledge in corporate social responsibility initiatives while ensuring support to women-led enterprises. Sustainable resource use and climate action should also encourage the use of traditional media (music, dance, drama, folklore) and ICT to raise awareness of women's roles. By integrating women's unique perspectives and traditional knowledge, these recommendations aim to enhance community and ecosystem resilience significantly enhancing the effectiveness of environmental conservation and climate change mitigation policies.

Forums for women who hold traditional knowledge and educational roles in community consultations to ensure their input shapes mining decisions are needed. Awareness campaigns should focus on the importance of women's traditional knowledge and roles in environmental conservation and climate action is important. Corporate social responsibility initiatives must include programs that utilize women's traditional knowledge and practices, as a basis for assessing environmental impacts and necessary corrective actions. Diversified economic investments to support women-led enterprises that use traditional knowledge in sustainable ways are encouraged. Community members need training to ensure allocation of resources to support the sharing and application of traditional knowledge in climate education and adaptation strategies.

Environmental laws to protect, promote, and engage women in using traditional approaches to regulate waste disposal, protect water sources, and use resources sustainably are vital. Introduce incentives for chiefs who support women's involvement and traditional practices in environmental management and consecration. Initiatives for soil conservation and restoration of biodiversity by women must be promoted through community training workshops and incentives. Collaboration with the Forestry Commission of Zimbabwe can strengthen these efforts. Providing microloans and grants to women at Premier Estate can enable them to begin ecologically sustainable ventures, such as organic farming and small-scale crafts production. Environmental care and gender equality should be emphasized by educational initiatives like curriculum-based curricula in local schools. There is a need to explore possible ways in which institutions like Africa University, Forestry Commission Zimbabwe and National Museums and Monuments of Zimbabwe may provide research

training and facilities to support conservation. Community resource facilities, like local seed banks, can enhance vulnerability to environmental adversity.

8. Conclusion

As a cross-cutting issue, climate change intersects with population growth, human mobility, urbanization, and food, water, and energy insecurity, all of which increase the vulnerability of women.[35] Factors like women's limited participation in decision-making processes, pervasive patriarchal structures, and inadequate access to land and resources significantly hinder their ability to contribute effectively to environmental conservation and climate change mitigation efforts. To reduce the likelihood of reinforcing existing inequalities, it is important that policies and programs targeting climate change mitigation consider the power dynamics between men and women at national and international levels, as well as their differential access to resources within communities.[36]

Existing legislation, such as the Environmental Management Act and the Mines and Minerals Act, play a vital role in regulating sustainable resource use and safeguarding environmental standards. However, the enforcement of these laws needs to be strengthened to ensure they effectively prevent environmental degradation and promote sustainable development. To address these issues, the article recommends enhancing resource availability for key institutions like AGRITEX and EMA, implementing afforestation and reforestation programs, and promoting awareness and access to information on environmental conservation.

Empowering women through education, training, and access to financial resources is essential. Establishing women's groups, promoting community-wide support, and ensuring their representation in local governance structures are critical steps towards fostering a more resilient and equitable community. Additionally, integrating indigenous knowledge and promoting sustainable practices can enhance community resilience and environmental stewardship. Ultimately, addressing the challenges faced by women in Old Mutare requires a multifaceted approach that includes policy reform, community engagement, and capacity building. By prioritizing women's involvement in environmental conservation and climate

35 Alam, G. M., K. Alam, and S. Mushtaq. 2017. "Climate Change Perceptions and Local Adaptation Strategies of Hazard-Prone Rural Households in Bangladesh." Climate Risk Management 17: 52–63.

36 Alam, G. M., K. Alam, and S. Mushtaq. 2017. "Climate Change Perceptions and Local Adaptation Strategies of Hazard-Prone Rural Households in Bangladesh." Climate Risk Management 17: 52–63.

change mitigation, it is possible to create a more sustainable and equitable future for all stakeholders in the community.

Challenges and opportunities for traditional leadership in confronting climate change and environmental protection in Mashonaland Central Zimbabwe: Case of two selected districts

Enock Musara and Takudzwa Chidembo[1*]

Abstract

This study explores the challenges and opportunities for traditional leaders in addressing climate change and environmental protection in Zimbabwe's Shamva and Mazowe districts, selected for their agricultural livelihoods. Using a qualitative case study approach, the research purposively sampled 20 participants. Data was collected through desktop research, field visits, in-depth interviews, unstructured interviews and focus group discussions (FGDs), and analysed through thematic analysis. Findings revealed key opportunities: traditional leaders participate in decentralized development committees, preserve local culture, enforce bylaws, and oversee food-for-work environmental initiatives. However, they face significant challenges including divergent community views on the causes of climate change (some attributing it to ancestral anger), limited enforcement powers, youth disengagement from indigenous knowledge, land-use conflicts with local authorities, and inadequate livelihood diversification. The study concludes with recommendations to strengthen traditional leadership's role in climate action.

1. Introduction

Climate change and environmental degradation are two interlocking and interwoven issues that pose global human insecurity in the contemporary era. There is therefore a need for a concerted effort towards proper sustainable natural environment use and climate action. In rural areas, climate change has affected the food security situations of most families as well as destroying infrastructure when disasters hit. Climate change has resulted in erratic rainfall patterns that affect agriculture, leading to alternative survival means such as sand poaching

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and tree cutting for the urban market.[2] Climate change and environmental degradation pose a serious threat to human rights, especially the right to food, the right to health, the right to a clean, healthy and sustainable environment, the right to water and sanitation, and the right to housing. All these rights are protected in the Constitution of Zimbabwe, 2013.[3] Key to these efforts is the institution of traditional leadership in rural areas.

Traditional authorities are largely considered the custodians of indigenous knowledge systems and are expected to stand with their constituencies in times of need especially in the face of climate change.[4] In much of Africa, traditional leaders have the power to allocate rights to communal land and ensure that their members use the natural resources on a sustainable basis and in a manner that conserves the environment and maintains natural ecosystems for the benefit of all persons.[5] Despite their importance, traditional leaders are often overlooked and understated.[6] Such a gap then warrants an analysis of the challenges and opportunities that the traditional leaders face in environmental management and climate action, with a focus on rural areas of Zimbabwe.

This research is conducted in the Shamva and Mazowe districts of Zimbabwe's Mashonaland Central Province, areas which are highly known for crop agriculture. To understand the challenges and opportunities of traditional leaders in the two identified themes (climate change and environmental protection), the research is guided by the following research questions: (a) *how do traditional leaders in Zimbabwe perceive and exercise their powers in addressing climate change and environmental management within their communities?* (b) *In what ways do traditional leaders view their role as offering unique opportunities to confront climate change and protect the environment in Zimbabwe?* (c) *What are the key challenges experienced by traditional leaders when responding to climate change and environmental*

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2 D. Makwerere et al, 'Accessing Good Quality Water In Hazardous Mining Environments: Coping Mechanisms For Young Women In Selected Districts Of Mashonaland Central, Zimbabwe,' *Global Journal Of Pure And Applied Sciences* Vol. 24, 2018: pp181-189 <www.dx.doi.org/10.4314/gjpas.v24i2.8> visited on 23 May 2024.

3 Constitution of Zimbabwe, 2013 recognises right to life (Section 48), right to food and water (Section 77), right to healthcare (Section 76), environmental rights (Section 73) and rights of children (Section 81).

4 M. Siukuta, et al, 'The Role of Traditional Authorities in Promoting Sustainable Climate Strategies in Namibia' <www.fig.net/resources/proceedings/fig_proceedings/fig2024/papers/ts05e/TS05E_siukuta_ricardo_et_al_12637.pdf> visited on 23 May 2024.

5 Ibid.

6 E. Knoetze, 'Legislative regulation of the developmental functions of traditional leadership–in conflict or cohesion with municipal councils?' *Speculum Juris* 28 (2014), pp161–195.

degradation, and how do these constraints shape their actions? (d) *How might traditional leaders and stakeholders envision effective strategies to strengthen the capacity of traditional leadership in climate action and environmental stewardship?* To provide a logical flow to the discussion and understanding, this research is organised into the following main sections: context of the research problem, literature analysis, materials and methods, results and discussion, and conclusion.

2. Context of the research problem

Zimbabwe's economy remains heavily reliant on agriculture, despite other livelihood sources. As of June 2024, the World Bank projected a 3.3% GDP growth, down from an earlier 3.5% forecast, while the African Development Bank revised estimates to just 2%, citing severe El Niño-induced drought.[7] Climate change-driven weather disruptions have severely strained the economy, worsening food insecurity. Real GDP growth slowed from 6.1% (2022) to 5.0% (2023), hampered by droughts, floods, and rising fuel and import costs.[8] By 2020, over 4.3 million rural and 2.2 million urban residents faced acute food shortages, highlighting persistent vulnerabilities.[9] All this serves as evidence of the impact of climate change induced food insecurity with the effects being mostly felt by those in the rural areas. The area under study is largely rural farming and highly prone to the devastating effects of climate change, hence the need to assess the role of traditional leadership in climate action and sustainable environmental management.

3. Literature analysis

Conceptual framework

3.1.1. Climate Change

Africa is at the forefront of the global climate change crisis. It is the continent most vulnerable to the effects of climate change and the least capable of mitigation and

[7] AFDB, 'Zimbabwe Economic Outlook' accessible at <www.afdb.org/en/countries/southern-africa/zimbabwe/zimbabwe-economic-outlook> visited on 14 November 2024.

[8] Ibid.

[9] FAO, 'Zimbabwe at a glance' accessible at <www.fao.org/zimbabwe/fao-in-zimbabwe/zimbabwe-at-a-glance/en/ > visited on 14 November 2024.

adaptation.[10] Climate change has been defined as a profound alteration in weather patterns from the Tropics to the Poles.[11] The IPCC offers its interpretation of climate change as "a change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties and that persists for an extended period."[12] Given its complexity and impact, climate change has become a global policy priority. As such, addressing the impact of climate change necessitates sustainable environmental management and collaborative efforts in climate adaptation strategies.

3.1.2. Environmental protection

Environmental protection is one of the most pressing global issues of our time, as evidenced by the immense and far-reaching impacts of environmental degradation that are already occurring due to unsustainable human activities.[13] Von Stein defines environmental protection as "the prevention of unwanted changes to ecosystems and their constituent parts."[14] Environmental protection also involves actions to maintain ecological balance and conserve resources by minimizing pollution and using natural resources sustainably.[15] It is an ongoing effort to ensure the survival and sustainable development of humanity and other species on Earth. Human rights and environmental rights are interdependent and interrelated.[16] Acts leading to environmental degradation may, therefore, constitute an immediate violation of internationally recognized human rights. This positions the locus of this study and further highlights the need to document the role of traditional leadership for the context under review.

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10 C. Ray, 'The impact of climate change on Africa's economies' (2021) available at <www.fpri.org/article/2021/10/theimpact-of-climate-change-on-africas-economies/ > visited 14 November 2024.

11 C. Schuurmans, 'The world heat budget: Expected changes,' *Climate Change*. (2021). pp. 1–15. CRC Press

12 V. Masson-Delmotte, et al. 'Global warming of 1.5°C: Summary for policymakers.' *IPCC - The Intergovernmental Panel on Climate Change* (2018).

13 J. Von Stein, 'Democracy, autocracy, and everything in between: how domestic institutions affect environmental protection.' *British Journal of Political Science* (2022), 52(1), p339-357 visited at <www.cambridge.org/core/product/identifier/S000712342000054X/type/journal_article> on 14 July 2024.

14 Ibid.

15 D. M Pallagyo, 'Environmental law in Tanzania; How far have we gone.' *Law Env't & Dev.* (2007). J., 3, p26.

16 J. Von Stein, *supra note* 13.

3.2. Climate change and environmental degradation in Africa: focus on Zimbabwe

Rural communities worldwide face growing threats from climate change and environmental degradation. In Africa, shifting climate patterns have altered temperatures, rainfall, and the frequency of extreme weather events including droughts, floods, cyclones, and heatwaves.[17] Zimbabwe exemplifies these challenges, grappling with deforestation, soil erosion, desertification, wetland destruction, and pest outbreaks. A significant driver of environmental decline was the Fast Track Land Reform Programme (FTLRP), initiated in 2000, which allowed unregulated settlement and land use. It is claimed that this policy led to the destruction of protected forests, contour ridges, and wetlands, which were illegally converted into farmland.[18] Some scholars argue that resettlement occurred on previously unused land, others emphasize the environmental costs including weakened regulations and deforestation as settlers cleared virgin land for housing and agriculture.[19]

The current El Niño-induced drought sweeping Southern Africa underscores climate change's devastating consequences. El Niño triggers prolonged dry spells, reduced rainfall, and higher temperatures, exacerbating droughts, water scarcity, and crop failures. In Zimbabwe, this has severely impacted food security and health, prompting a $429 million emergency appeal in May 2024 to assist over 3 million people. The 2023–2024 drought has also devastated livestock, with 9,875 cattle deaths reported and numbers rising due to shortages of grazing land and water.[20] These crises highlight the urgent need for sustainable solutions to mitigate climate change and environmental degradation's escalating toll on rural livelihoods.

This study's premise is from a standpoint that efforts to deal with the problems associated with climate change and environmental degradation have been handicapped by a real failure

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17 M. Call and C. Gray, 'Climate anomalies, land degradation, and rural out-migration in Uganda.' *Popul Environ* (2020) 41, pp507–528.

18 F. Mangena, 'The ethics behind the fast-track land reform programme in Zimbabwe.' InC.G. Mararike (ed.) Land: an empowerment asset for Africa: the human factor perspective. Harare: *UZ Publication*, (2014) pp. 82-95.

19 J. Mapira, 'Land degradation and sustainable development in Zimbabwe: An historical perspective.' *European Journal of Social Sciences Studies*, (2017) 2, pp119–185. <http://dx.doi.org/10.46827/ejsss.v0i0.283> visited on 16 October 2024.

20 C. Chivuraise, T. Chamboko, & G. Chagwiza, (2016). An assessment of factors influencing forest harvesting in smallholder tobacco production in Hurungwe District, Zimbabwe: An application of binary logistic regression model. *Advances in Agriculture*, (2016) <https://doi.org/10.1155/2016/4186089> visited 16 October 2024.

to understand their nature and possible remedies. Conventional wisdom views the people of the African continent and Zimbabwe in particular as highly irresponsible towards the environment and looks to the international community to save them from themselves.[21] It tends to blame all of the continent's climate change and environmental problems on rapid population growth and poverty yet there is no conclusive evidence that Africans have been particularly oblivious to the quality of the environment and climate change, nor has the international community shown any genuine concern for it until recently.[22] Protecting the environment and advocating for climate action in Africa is an issue that needs to be examined more carefully with a focus on positioning traditional leaders into the equation. Given such a background, it is necessary to look at the challenges and opportunities that traditional leaders face in environmental management and climate action, with a focus on the rural areas of Zimbabwe where the institution exists.

3.3. Climate change action and environmental management players in rural Zimbabwe communities

In rural Zimbabwe, there are several important players actively working to promote climate resilience and sustainable environmental governance. At the community level, traditional leaders such as village heads, headmen and local chiefs still play an influential cultural role in local land use and natural resource management practices through customary governance approaches.[23] Matunhu, Mago and Matunhu state that international non-governmental organizations (NGOs) form another key stakeholder group through numerous agricultural, food security, water and sanitation projects implemented across rural districts in Zimbabwe.[24] Major international NGOs including CARE International, World Vision and Plan International carry out various local initiatives focused on climate change adaptation.[25] Despite the scale of activities, coordination among NGO programs and synergies with other stakeholders remains limited. At the grassroots, farmers groups, community-based

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21 R. P. Neumann, '*Imposing Wilderness: Struggles Over Livelihood and Nature Preservation in Africa.'* (University of California Press -Los Angeles and Berkeley, 1998). p268.

22 S. Moyo and P. Yeros, *Reclaiming Land: The Resurgence of Rural Movements in Africa, Asia and Latin America* (Zed Books, London, 2005) pp.

23 S. Kavu, C. Kajongwe, & E.E. Ebhuoma, 'Climate change experts' perspective on the role of indigenous knowledge systems in climate change adaptation in Southern Africa.' in *Indigenous Knowledge and Climate Governance: A Sub-Saharan African Perspective* (2022) (pp. 67-80). Cham: Springer International Publishing.

24 J. Matunhu, S. Mago, & V. Matunhu, 'Initiatives to boost resilience towards El Niño in Zimbabwe's rural communities.' *Jàmbá-Journal of Disaster Risk Studies*, (2022) 14(1), 1194.

25 Ibid.

associations and women's cooperatives are highly engaged in community-led environmental conservation efforts like reforestation, soil conservation and livelihood diversification.[26] However, these local community-based organizations face constraints to sustainability due to lack of long-term funding, technical capacity building and representation in wider policy spaces.

At the national policy level, government agencies such as the Environmental Management Agency and Ministry of Lands, Agriculture, Fisheries, Water and Rural Development are responsible for implementing high-level environmental laws, land use reforms and climate strategies.[27] The government implements environmental management through the Environment Management Act [Chapter 20:27]. Ironically, decentralized governance and data gaps impede effective implementation of frameworks at the local scale. Thus, greater harmonization remains necessary between top-down national policies and participatory community-driven actions on the ground.

3.4. Powers of traditional leadership in community affairs

Traditional leadership has long been central to community governance in Zimbabwe, as in much of Africa. While structures vary among the Ndebele, Shona, Kalanga, Tonga, and Venda ethnic groups, they share a common role in environmental stewardship. Historically, traditional leaders protected forests, water sources and wildlife through cultural norms and spiritual beliefs, as violating these was thought to invite ancestral wrath manifesting as droughts, illness or death.

However, colonialism eroded these practices, dismissing them as superstition. Laws such as the 1930 Land Apportionment Act and the 1951 Land Husbandry Act disrupted indigenous conservation, framing it as oppressive. Christianity further alienated communities from traditional ecological knowledge, despite Africans having well-established natural resource management systems long before Western influence. Post-independence, Zimbabwe has sought to restore the authority of traditional leadership. The Constitution of Zimbabwe, 2013

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[26] M. Tembani et al., 'Institutional arrangements and collective action: evidence from forest management in Zimbabwe,' *Forests, Trees and Livelihoods*, (2021) DOI:10.1080/14728028.2021.1985625. visited at <www.forestry.co.zw/wp-content/uploads/2021/11/Institutional-arrangements-and-collective-action-evidence-from-forest-management-in-Zimbabwe.pdf> visited on 16 October 2024.

[27] T.P. Muringa, & G.T. Zvaita, 'Land resettlement in post-colonial Zimbabwe: a look into the government land resettlement approaches.' *Journal of Inclusive Cities and Built Environment*, (2022) 2(4), pp53-66.

and the Traditional Leaders Act [Chapter 29:17] formally recognize chiefs, headmen, and village heads (sabhuku) as key governance figures, particularly in rural areas. They oversee land use, mediate disputes, and promote sustainable practices, such as water conservation and soil-enhancing farming techniques. Yet, governance remains complex, with overlapping authority between traditional leaders, District Development Committees (DDCs) and local governments. This raises questions about their effectiveness in climate adaptation and environmental protection especially as climate change intensifies droughts, floods, and food insecurity.

3.5. Human rights, climate change, environmental and land use management

When the Universal Declaration of Human Rights (UDHR) was adopted in 1948, environmental degradation was not a global concern.[28] Today, however, the UN Human Rights Council (OHCHR) and civil society recognize climate change as a critical human rights issue. Extreme weather events and slow-onset disasters like rising temperatures and land degradation threaten rights to life, health, food, water, and self-determination, particularly for indigenous and rural communities.

In Zimbabwe, vulnerable groups, including farmers and pastoralists, face heightened risks from shifting weather patterns and biodiversity loss. Many criticize climate policies for excluding local participation, undermining democratic governance and cultural rights.[29] For instance, top-down conservation programs or invasive species introductions can restrict access to sacred lands and traditional livelihoods. Balancing environmental protection with human rights demands inclusive, rights-based approaches that respect indigenous knowledge and local autonomy.

While traditional leaders offer valuable ecological knowledge and governance structures, their role must be harmonized with modern climate strategies to ensure equitable and sustainable solutions. This study explores these tensions, assessing how traditional institutions can effectively contribute to climate resilience while upholding human rights.

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28 S.S. Ryder, 'A bridge to challenging environmental inequality: intersectionality, environmental justice, and disaster vulnerability.' Social Thought and Research. (2017) < https://kuscholarworks.ku.edu/server/api/core/bitstreams/633c4a03-76bb-4ad5-84e4-14531311ab11/content> visited 16 October 2024.

29 E. Yıldız, 'Postcolonial Approaches to International Human Rights Law: The TWAIL Case.' Public and Private International Law Bulletin. (2023) 43. 353-369. 10.26650/ppil.2023.43.1181972.

This involves strengthening representation of vulnerable groups on decision-making bodies, providing disaggregated climate vulnerability data, accessible remedy mechanisms for grievances, and integrating traditional knowledge with scientific assessments. It also calls for reviewing customary land systems to ensure women and marginalized groups are not left out through legislation recognizing joint or individual titles. Climate resilience building in Zimbabwe's rural sector will only succeed if human rights and community self-determination are placed at the heart of integrated land use, environmental management and climate policy frameworks.

4. Materials and Methods

4.1. Study Setting

The study was carried out in Zimbabwe's Mashonaland Central Province in two districts of Shamva and Mazowe (Figure 1). Shamva district, originally known as Abercorn during the colonial period, is a well-known farming area located in the Mazowe valley about 70 km northeast of Harare, the Capital.[30] The other district is Mazowe, which is about 40 km north of Harare and was commonly known for its citrus estates and reliable rainfall patterns. The area has huge farms for A1 and A2[31] farmers as well as communal areas under traditional leadership jurisdiction.[32]

Mazowe and Shamva were specifically chosen for their communities' high dependence on the natural environment for livelihood through farming. Though there are farms in the two districts, there are also communal rural areas which are under the jurisdiction of traditional leadership. Climate change hits hard on the rural populace and once these people's livelihoods are affected, they venture into anything that gives them something regardless of the need for sustainable use. Because traditional leadership is entrusted with natural resource

30 https://www.britannica.com/place/Shamva

31 In Zimbabwe's land reform programme, A1 were the small sized model scheme that was meant for poor resourced families who were provided with permits, land for cropping and shared grazing land while the A2 were the middle-sized scheme that was meant for resourceful farmers meant to produce on a commercial basis under long lease agreements. Communal land was land set aside under an Act of Parliament and held in accordance with customary law by members of a community under the leadership of a Chief.

32 N. T. Muzeza, A. Taruvinga & P. Mukarumbwa, 'Analysis of factors affecting technical efficiency of A1 smallholder maize farmers under command agriculture scheme in Zimbabwe: The case of Chegutu and Zvimba Districts', *Cogent Economics & Finance*, 11:1, 2163543, (2023) DOI: <https://doi.org/10.1080/23322039.2022.2163543%0A> visited on 16 October 2024.

governance and land use in the rural areas, it is therefore important to check on their role in these matters.

4.2. Research questions

The research unpacks the challenges and opportunities of traditional leadership in confronting climate change and environmental degradation. Its specific research questions are:

- How do traditional leaders in Zimbabwe perceive and exercise their powers in addressing climate change and environmental management within their communities?
- In what ways do traditional leaders view their role as offering unique opportunities to confront climate change and protect the environment in Zimbabwe?
- What are the key challenges experienced by traditional leaders when responding to climate change and environmental degradation, and how do these constraints shape their actions?
- How might traditional leaders and stakeholders envision effective strategies to strengthen the capacity of traditional leadership in climate action and environmental stewardship?

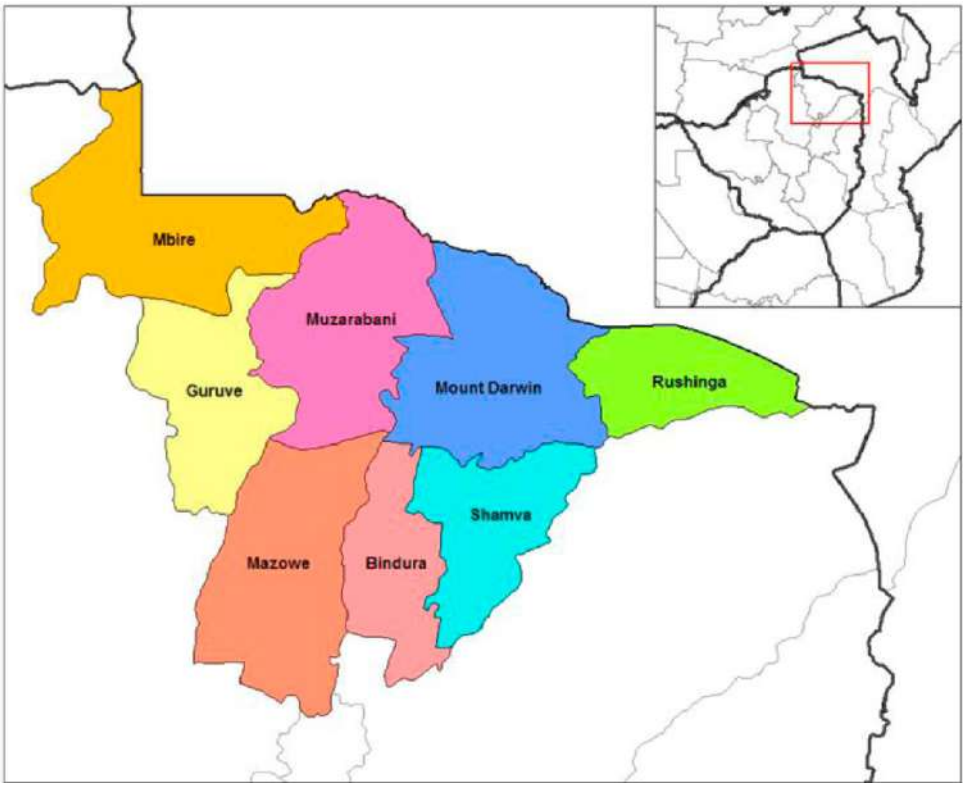

Figure 1. *Geographical map showing Mashonaland Central Province and its 8 districts including Shamva and Mazowe districts in North Zimbabwe. Source: Google maps.*

Since the study sought to understand the challenges and opportunities of traditional leadership in climate change action and environmental protection from the communities and traditional leaders, the research approach adopted was qualitative in nature and informed through a case study of the Shamva and Mazowe Districts.

The research was based on purposive sampling of 20 research participants, since the main focus was to learn from the experiences of the traditional leaders and community members. The purposive sample helped the researchers to focus on the participants who are knowledgeable and have experience of the issues under investigation. In the words of Palys, "this sampling method allows the research to have direct control over elements included in the study."[33] The researchers identified the details of traditional leadership in the two districts from the District Development Coordinator's Office. The researchers purposively selected

[33] T. Palys, 'Purposive sampling.' in L. M. Given (Ed.), *The Sage encyclopedia of qualitative research methods* (2008) (pp. 697–698). Los Angeles: Sage.

study participants depending on the DDC's office knowledge of level of environmental deterioration and harshness of climate change impacts. From the 35 wards of Mazowe, 15 traditional leaders in the form of headmen and village heads were selected. For Shamva with its 29 wards, 10 traditional leaders made up the study selection for the District. Four focus group discussions were held from the 2 districts.

Data was gathered through desktop research, field research and field visits. The study administered unstructured interviews to the traditional leaders (15 for Mazowe and 10 for Shamva) and used focus-group discussions with community members. In-depth interviews were used to complement the data collected from the unstructured interviews and the focus group discussions. The in-depth interviews were conducted with the DDC's office, rural district council environmental health officers and Environmental Management Agency (EMA). The Focus Group Discussions (FGDs) allowed the community members to digest and share their views and experiences, whilst the unstructured interviews allowed the traditional leaders to respond in detail to the questions without being confined or limited.

Data collected from the study participants was analysed using qualitative thematic analysis to analyse the corpus of data gathered through the in-depth interviews, unstructured interviews and FGDs. The research adopted the Braun and Clarke's six stages of thematic analyses that talks of:

i. familiarising with the data,
ii. generating initial codes,
iii. searching for themes,
iv. reviewing themes,
v. naming and defining themes, and
vi. writing the research report.[34]

The research was guided by several ethical considerations with the first one being informed consent obtained after the research objectives were explained to the participants. All the approached study participants consented. Respect for each respondents' view(s) was maintained even while probing to clarify ambiguous responses. Confidentiality was adhered

[34] V. Braun, and V. Clarke, (2006) 'Using thematic analysis in psychology', *Qualitative Research in Psychology*, (2006) 3(2), pp. 77–101. doi: 10.1191/1478088706qp063oa.

to by not disclosing any data provided by the participants. Anonymity and confidentiality of responses were also guaranteed.

5. Results and discussion

5.1. Opportunities for traditional leadership in confronting climate change and environmental degradation

Traditional leadership in Zimbabwe as an important institution in local governance and development is presented with several opportunities which can empower it or give it leverage to tackle the challenges presented by climate change and environmental degradation. By its nature, traditional leadership has a community development mandate, is the custodian of land and the natural environment in the rural areas, commands respect and is closer to the grassroots. This makes traditional leaders' indispensable players in the local natural resource use. Their proximity to the community members and determination of land use in the rural areas, works hand in glove with government partners like EMA, the District Development Coordinator's office, the Zimbabwe Republic Police and Rural District Councils, and form part of the district Civil Protection Unit. This section explores the wider opportunities available for traditional leadership to confront climate change and environmental degradation.

5.1.1. Traditional leadership involvement in decentralised development committees

The post-independence government of Zimbabwe has been making efforts to decentralise power to give communities autonomy to run their own development initiatives according to their various needs, situations and contexts.[35] This has seen the powers of the state cascading down from the central government to the provincial authorities down to district level.[36] At the district level are the District Development Coordinators (DDC) formerly known as the District Administrators (DA) and these strongly push the decentralisation–devolution agenda to spearhead local community development efforts together with the institution of traditional leadership. The need for decentralisation is supported by the Economic Commission for

[35] D. Conyers, 'Decentralisation in Zimbabwe: a local perspective', Vol.23 John Wiley and Sons Ltd, (2003) pp115-124 visited at www.gsdrc.org/docs/open/sd12.pdf on 14 November 2024

[36] Ibid

Africa which avers that the highly centralised governance system generated administrative pathologies, including communication overload, slow response times, filtering and distortion of information, and a failure to grasp spatial connections in sectoral programming.[37] These decentralised communities work closely with the institution of traditional leadership to spearhead local development efforts and confront local community challenges associated with climate change impacts and land degradation. One local chief claimed that "we always come together with the DDCs' office, Rural District Council, EMA staff, Zimbabwe National Water Authority and the Police to discuss solutions to problems affecting our area. Putting our heads together is necessary as it also prevents conflicts especially on issues such as land allocation where a certain authority might feel it improper to use or allocate land."

Dziva and Kabonga also buttress the opportunity provided by decentralisation by claiming that:

> *"[in]as much as many laws and policies in Zimbabwe are made by the central government, by-laws and development plans are made at local level and traditional leaders sit in various committees and together draw development plans for implementation while taking into cognisance the prevailing geopolitical environment in their respective communities."*[38]

This study revealed that traditional leadership is also involved and participates in the Civil Protection Unit which was established through the Civil Protection Act (CAP 10:06) of 1989 which provides for the operation of civil protection services in times of disaster.[39] Though the Act does not include traditional leadership within its membership, a local chief from Mazowe claimed that "most times, we are invited to plan, discuss and provide solutions to disasters before, during and after as we are the ones who live in the areas where disasters strike the most and it is our people who bear the brunt of these disasters."

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37 Economic Commission for Africa (ECA), 'Public sector management reforms in Africa,' *ECA* (2003), Addis Ababa.

38 C. Dziva and I. Kabonga, 'Opportunities and Challenges for Local Government Institutions in Localising Sustainable Development Goals in Zimbabwe.' in: G. Nhamo, M. Togo, K. Dube, K. (eds) *Sustainable Development Goals for Society* (2021) Vol. 1. Sustainable Development Goals Series. Springer, Cham. <https://doi.org/10.1007/978-3-030-70948-8_15> visited 16 October 2024.

39 Civil Protection Act of 1989 accessible at <www.jsc.org.zw/upload/Acts/2001/1006updated.pdf> visited 16 October 2024.

5.1.2. Enforcement of by-laws and policies

In practice, local authorities involve traditional leaders in the local development plans and initiatives as such by-laws and policies are mostly enforced and implemented through the institution of traditional leadership. Under-tree local courts are common for settling disputes, punishing and rebuking offenders and violators of people who would have broken local laws, written or unwritten. Village heads mostly deal with those who cause environmental harm like wanton cutting down of trees, starting veld fires, streambank cultivation, erosion promoting land use like use of sledges, land disputes and other small disputes.

Fines vary with the gravity of the offense ranging from livestock like chicken, goats and cows, while restitution is required for offenses involving fellow villagers. The traditional leader may impose other measures to compel the offender to pay or even evict that person and his or her family out of the area. This has seen most people respecting the authority of the traditional leadership. One villager claimed that,

> *"If you are summoned through the village head's police, you are in hot soup unless you are able to defend yourself. I was once fined two goats for a veld fire that I failed to control. It had to take other villagers to put it off. But what worries me is that our traditional leadership doesn't say anything when gold panners from outside our areas start destroying our land for gold."*

From such sentiments, it seems the powers of traditional leadership apply only to local villagers, not gold panners from outside the area.

5.1.3. Custodians of local culture, tradition and indigenous knowledge systems

Traditional leaders are considered the custodians of the local culture and tradition of an area under their jurisdiction. They are commonly believed to have an intangible attachment with their local areas and the environment. As such traditional leadership control, oversee and ensure the sustainable utilisation of ecological resources by their communities.[40] Using cultural and traditional norms and values, communities are often encouraged to practise sound utilisation of 'sacred places' within their areas including ancestral lands, heritage,

[40] C. Dziva and I. Kabonga, *supra* note 90

mountains, rivers and forests.[41] Dziva and Kabonga aver that traditional leaders often instil fear in their communities by telling them that vandalising 'sacred places' comes with severe punishment from ancestors or the gods. In most instances, the punishment manifests itself in different ways as the accused can, for instance, get lost, confused or stranded for hours, if not days in such forests, mountains or other sacred places.[42] As such, all the land use practices have to be approved by the traditional leadership, failure which will result in a negative situation. This allows the local traditional leadership to raise awareness on the need to preserve and respect their environment, especially sacred places and trees.

Although traditional leaders may have the power to determine land use practises in their areas, an interview with one villager revealed that:

> *"[m]ost of what our traditional leaders threaten us with, so as to use the land sustainably only applies to us, the locals. They stammer when someone comes with stamped papers claiming rights to some land. I don't know whether they would have been corrupted or its fear. And as mere villagers, we don't know where the game would have been played by Harare, the rural district councils, DDC or its chief."* [43]

5.1.4. Food for work initiatives

Social development initiatives come through the institution of traditional leadership. For instance, most social development initiatives like the "Food for Work" (FFW) are supervised by the village heads. The FFW is a programme where local beneficiaries in an area receive handouts after providing their labour, which may include building or repairing bridges, roads, filling up gulleys among other critical rural infrastructure. In Zimbabwe, the FFW was introduced in 1989, and it was designed to supplant large-scale distribution of free food that had taken place annually since the 1981/8 drought.[44] The government had realised that much money had been spent on feeding people who were doing nothing productive. As supervision of such important community development initiatives are under

41 H. Musarandega, W. Chingombe, & R. Pillay, *supra* note 10
42 C. Dziva and I. Kabonga, *supra* note 90
43 Interview with villager.
44 The Chronicle newspaper, 'Food for work programme instils spirit of responsibility' 27 April 2016 accessible <www.chronicle.co.zw/editorial-comment-food-for-work-programme-instils-spirit-of-responsibility/> visited on 16 October 2024.

the traditional leadership especially village heads, it is an opportunity for traditional leaders to focus the labour provided on areas that save or resuscitates the natural environment. Such initiatives can also be made eligible for those who practise climate smart agriculture. Though such a move would promote favouritism and segregate those who are disabled and cannot work properly, this is widely practised. One local leader claimed that:

> *"one way we promote environment reparation and climate smart agriculture is through the FFW where people work for food which we as their leaders give according to satisfactory performance on local rural development initiatives like bricklaying, building, road maintenance among other things."*

5.2. Challenges for traditional leadership in confronting climate change and environmental degradation

Despite the above opportunities for traditional leadership in confronting climate change and environmental degradation, the institution has its share of challenges in Zimbabwe. Practically, the institution has weak enforcement mechanisms. It is also compromised by fear of political heavyweights. There is evidence of confusion because of lack of coordination in land use and allocation, conflict between local authority and traditional leadership on land use and allegations of corruption. Additional challenges include incapacitation to enforce climate smart and sustainable land use practises, youths disregard and disrespect for indigenous knowledge systems, youthful traditional leadership involved in harmful land use practises, disregard of climate change by certain traditional leadership, lack of livelihoods diversification as well as lack of continued support on climate change and sustainable environmental management.

5.2.1. Weak enforcement mechanisms

Traditional leadership employ several mechanisms to enforce what they want in their respective communities. They have the power to call for community meetings to discuss and resolve any challenges in their communities. They also make use of traditional courts which impose fines and other penalties for wrongdoing like cutting down of sacred trees, wanton destruction of flora among other cases as discussed above in the discussion on opportunities. Though a threat to fundamental human rights, traditional leaders also make use of social ostracism where an offender is excluded from community activities or societal activities.

Some locals felt these platforms or measures were not deterrent enough to stop environmental harm or force communities to focus on climate smart agriculture practices. One villager claimed that,

> *"[o]ur traditional leadership do not have such punitive powers that can act as a deterrent to local community offending. They rather rely on restorative rather than retributive justice mechanisms. They are mostly concerned about preserving relationships."*

As such, offenders do not feel the pain of the wrong they would have done.

5.2.2. Resistance by communities on climate smart agriculture practises

Most of the people interviewed agreed that traditional leaders in their areas supported by Agricultural Research and Extension Services (AREX) officials have been encouraging communities to focus on growing traditional grains in response to climate change. The government of Zimbabwe has been giving inputs towards Pfumvudza but the programme has been accepted by some while others view it as something that would shorten their lifespan, going to the extent of labelling it as "dhiga ufe" implying that the idea of digging holes is labour intensive and will lead to death. One youthful villager claimed, "I personally don't mind being denied the Pfumvudza inputs. They want us to farm manually yet they use modern equipment like tractors on their farms. I don't want their input. They can give to others as I do not want to be told how I do my farming. Above all, the inputs are being distributed on a partisan basis so I will do my things my own way." The climate smart agriculture technique of Pfumvudza, though not new, is being resisted by some youths in the communities "as something meant to make them blind from what the top politicians are using in their farms."

Traditional grains like sorghum, rapoko and millet provide the breakthrough to Africa in this 21st century of climate change and drought.[45] They have been noted by experts to be better performers in drought-prone areas and are considered to have better nutritional value than

[45] M. Svodziwa, 'The feasibility of small grains as an adaptive strategy to climate change' *Russian Journal of Agricultural and Socio-Economic Sciences* (2015) 41. 40-55 visited at <https://rjoas.com/issue-2015-05/article_04.pdf> visited on 16 October 2024.

maize, which is viewed as under attack from climate change.[46] Although traditional grains have been highly praised as important for climate change adaptation, some youths do not enjoy eating traditional grains meals in their homes, hence don't produce them. They claim they are not used to it. Traditional leaders also claimed that only a small number of villagers grow traditional grains and this leads to loss. One leader averred that,

> *"traditional grains need communities to grow them in numbers. This will reduce losses due to birds and other insects. As it is, because small grains are produced by a small number of community members, others are chickening out claiming that they can't grow crops to feed nature's birds alone."*

This presents a big challenge to the traditional leaders as they advocate climate smart agriculture in the areas under study. Other scholars claim that there are a number of barriers that threaten the adoption of climate change adaptive crops like traditional grains.[47] They identified high labour demand associated with traditional grain production, the challenge posed by the quelea birds, food preferences, low markets, and low extension services and government support.[48] This supports the resistance that the traditional leaders face in communities, trying to address climate change in their areas.

5.2.3. Conflict on land use and allocation

Traditional leadership is also faced with the challenge of lack of proper coordination and consultation between their offices and that of the local authorities. On the one hand, local authorities may offer sale of land under the jurisdiction of a traditional leader, and on the other, the land may be traditionally designated for something best known to traditional leadership. This conflict was echoed by one village head who claimed that:

> *"[o]ur rural councils want money to sustain their operations and selling land is one of their fundraising methods. However, we are ever in conflict with them*

46 C.B. Barrett, and D.G. Maxwell, 'Food Aid after Fifty Years: Recasting Its Role.' *Routledge* (2005), New York.

47 T. Nciizah, E. Nciizah, E., C. Mubekaphi, A.D. Nciizah, 'Role of Small Grains in Adapting to Climate Change: Zvishavane District, Zimbabwe. in N. Oguge, D. Ayal, L. Adeleke, I. da Silva, (eds) *African Handbook of Climate Change Adaptation*.(2021) Springer, Cham. <https://doi.org/10.1007/978-3-030-45106-6_254>visited on 16 October 2024.

48 Ibid.

> *especially when we are not consulted because some of the land they would put on sale will be sacred to our area. People in offices do not know the respect we attach to our land. I don't know whether they would have been corrupted or if it's something else."*

This conflict has been in existence for long in Zimbabwe. Communal and resettlement areas in Zimbabwe have been characterised by conflicts, with the major areas of contestation being on the control of land and other natural resources. The enactment of the Traditional Leaders Act [Chapter 29:17] was meant to re-empower traditional leaders in judicial and land issues in the communal areas. However, it has been seen as a mere political courtship of traditional leaders by the ZANU-PF led government, without giving them 'real power' in land matters.[49] Section 26 (1) of the Traditional Leaders Act states that 'no land shall be allocated except with the approval of the appropriate District Council'. Section 26 (4) of the Traditional Leaders Act states that 'no inhabitant shall dispose of communal land used by him without the approval of the village head'. Section 9 (19) of the Traditional Leaders Act provides for the chiefs and headmen to have a role in land allocation. This lack of clarity on the duties of the two institutions makes land ownership and allocation a contentious issue. This creates confusion as to who controls what and where in the rural areas of Zimbabwe.

5.2.4. Youths disregard and respect of indigenous knowledge system

The study found out that some youths in the rural areas under study disregard and disrespect indigenous knowledge as too backward:

> *"[t]imes have changed and we can't rely on knowledge that isn't scientifically proven. Things have changed and we need to keep pace with modern developments. Some of the indigenous knowledge being pushed for by traditional leadership are things meant to scare us."*

In response to climate change, the marginalisation of Indigenous Knowledge System (IKS) has resulted in rapid loss of traditional seed varieties best suited to the prevailing agro-

[49] Ibid.

economic conditions of specific regions.[50] It has also led to the cultivation of unsuitable crops for marginal farming areas.[51] As such, traditional methods of production, processing, preservation and storage have been ignored. This is another challenge which the custodians of indigenous knowledge systems face in trying to address the consequences of climate change in Zimbabwe.

5.2.5. Disqualification of climate change existence

Climate change in most societies manifests itself through droughts and floods. For some traditional leaders, climate change does not exist but are misfortunes resulting from wrong natural resource use, disrespect of local cultural values and customs, disrespect and destruction of sacred places and resources. One traditional leader had this to say:

> *"[w]e can't continue talking of climate change in Zimbabwe. No, no, no. I don't agree. The mantra 'ine vene' means each and every place has its own forces whether visible or invisible that controls and owns it. If someone just comes and disturbs our respected spaces then the ancestors will punish us. And this is exactly what is happening. We can't have people with papers coming to destroy our mountains. How can a mining company come and claim ownership of our mountains? Do they know who stays in those mountains? Right now our ancestors who stayed in those places are wandering everywhere. Yet it's known they are the ones who give us protection and security. This is why we are wallowing in poverty and hunger."*

This was corroborated by some of the interviewed traditional leaders who claimed that what is seen as climate change effects is a result of disrespect for what is sacred in our communities. For example, people nowadays no longer do rituals for the rains, and wild animals are becoming extinct due to human disregard of what is sacred.

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50 C. Madebwe, V. Madebwe and J. Kabeta, 'Back to Basics: The role of Indigenous Knowledge Systems (IKS) in Agro-Biodiveristy and Household Food Security in the Small Holder Agricultural Sector: The Case of Chipinge Zimbabwe.' *Pak. J. Surviv. Strategies* (2005)3(6) pp868-872.

51 W. Matsa and M. Mukoni, 'Traditional Science of Seed and Crop Yield Preservation: Exploring the Contributions of Women to Indigenous Knowledge Systems in Zimbabwe.' *World Academy of Science, Engineering and Technology* (2013).

5.2.6. Lack of livelihoods diversification

Traditional leadership is also grappling with the challenge that some of their people lack livelihood diversification strategies as they rely on farming, especially tobacco. One youth from Shamva claimed that: *"[I] am a tobacco farmer and my farming relies on rainfed water. I don't grow any food items except for tobacco every season."* From such sentiments, youths do not have diversity in their livelihood strategies. However, their livelihood sources do serious harm to the environment. For instance, tobacco curing cutting down trees for the tobacco barns. Novotny et al supports this as evidenced by the claim that deforestation for tobacco growing has many serious environmental consequences including loss of biodiversity, soil erosion and degradation, water pollution and increases in atmospheric carbon dioxide.[52]

6. Conclusion

Traditional leaders, due to their close connection with rural communities that are most affected by climate change and environmental degradation, possess unique opportunities to safeguard community rights and security. Their involvement in decentralized development committees enables direct participation in local planning and implementation of sustainable initiatives. However, the institution faces significant challenges in addressing these environmental crises. Research reveals divergent views among leaders about climate change causes, with some attributing it to ancestral displeasure rather than human activity. Additional obstacles include limited enforcement authority, youth disengagement from indigenous knowledge systems, land-use conflicts with local authorities and insufficient livelihood diversification. These constraints hinder effective climate action and environmental protection.

Addressing these challenges is critical for successful climate adaptation and sustainable resource management. Key recommendations include:

- Continuous community education on sustainable land practices and climate adaptation,

[52] T.E. Novotny, S.A. Bialous, L. Burt, C. Curtis,V.L. da Costa, S.U. Iqtidar, Y. Liu, S. Pujari, & E. Tursan d'Espaignet, 'The environmental and health impacts of tobacco agriculture, cigarette manufacture and consumption.' *Bulletin of the World Health Organization*, (2015) 93(12), pp877–880. <https://doi.org/10.2471/BLT.15.152744> visited on 16 October 2024.

beginning at primary school level,

- Implementing tree replanting initiatives alongside firewood harvesting, and
- Clarifying roles between traditional leaders and local authorities to resolve jurisdictional conflicts.

Since climate change and environmental degradation are deeply interconnected, resolving these issues will help protect the rights and wellbeing of rural populations. Strengthening traditional leadership's capacity while addressing systemic challenges can enhance community resilience against environmental threats.

Climate Change and Child Marriage in Poor Communities: A Case Study of Marange Community in Rural Manicaland Province

Memory Kadau[1*]

Abstract

This paper explores the intersection between climate change-induced challenges and the persistence of child marriages in vulnerable communities, using the case of Marange in Zimbabwe as a focal point. It demonstrates how climate-change related droughts and economic hardships exacerbate child marriages, driven by poverty, food insecurity, entrenched patriarchal norms and religious beliefs. The analysis reveals that climate change is not only an environmental issue but also a significant socio-economic challenge that deepens gender inequalities and exposes girls to sexual exploitation. The paper underscores the urgency of addressing child marriages through a multi-pronged approach that involves the implementation of legal reforms and changing societal attitudes. Key recommendations include strengthening the enforcement of protective laws, expanding social protection and climate resilience programs, engaging community and religious leaders to challenge harmful practices, and implementing initiatives to keep girls in school. It calls on government, civil society, and stakeholders to collaborate in tackling child marriage and climate adaptation strategies to mitigate the socio-economic drivers of the problem. With climate disasters set to increase, this paper argues for integrated, rights-based solutions to safeguard vulnerable girls and build resilient communities.

1. Introduction

Child marriage and gender inequality remain critical challenges in Zimbabwe, deeply rooted in patriarchal cultural norms and religious practices. Despite progressive legal frameworks, these issues persist. According to the United Nations Population Fund[2] child marriage is any formal or customary marriage or informal union where one or both spouses or partners are under 18. This is the working definition that this study will utilise throughout this article.

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[2] United National Population Fund. 2021. Frequently asked questions on child marriages.

2. The law and child marriages

The Constitution of Zimbabwe, 2013 defines a child as any boy or girl under 18, and provides some comprehensive rights for children, protecting them from sexual exploitation. Rights in Section 81 of the Constitution of Zimbabwe include protection against sexual exploitation but does not explicitly cover child marriages. In the landmark case of *Mudzuru & Anor v The Minister of Justice & Ors* 2016 (2) ZLR 45 (CC), the Constitutional Court of Zimbabwe ruled that Section 78(1) of the Constitution of Zimbabwe, 2013 set 18 years as the minimum legal age for marriage. This ruling was reinforced by the introduction of the Marriages Act [Chapter 5:15], which amended several key pieces of legislation related to minors, including the Child Abduction Act [Chapter 5:05], the Children Rights Act [Chapter 5:06], and the Guardianship of Minors Act [Chapter 5:08]. More importantly, it repealed the Marriage Act [Chapter 5:11] and Customary Marriages Act [Chapter 5:07], becoming the single law governing all marriages and civil partnerships in Zimbabwe.

The new Marriages Act [Chapter 5:15] explicitly prohibits any marriage involving individuals under 18 years of age. Section 3(1) - (2) clearly states that child marriages are outlawed, and no person may "contract, solemnise, promote, permit, allow, or coerce" such marriages.[3] This legal framework empowers communities, civil society, and law enforcement officers to act against child marriages. Section 9 of the Marriages Act [Chapter 5:15] also grants chiefs, like Chief Marange, the authority to serve as marriage officers, allowing them to solemnise and register all unions under their jurisdiction, helping curb child marriages that occur under customary law. Importantly, sections 3 and 9 of the Marriages Act [Chapter 5:15], place emphasis on compliance with the law. Failure to comply on the part of parties to the marriage other than the minor, attracts penalties.

The Marriages Act [Chapter 5:15] also addresses *lobola/roora* (translated as consideration in the Act), which is often a driving force behind child marriages. Section 16(2) of this Act requires marriage officers in customary law unions to inquire about marriage considerations, including lobola/roora[4] agreements, ensuring that these practices do not facilitate unlawful

[3] Section 3(1)-(2) of the Marriages Act [Chapter 5:15].

[4] Lobola/roora is a traditional marriage ritual where the family of the man pay an agreed upon bride price to the woman. According to Section 2 of the Marriages Act [CAP 5:15], "marriage

marriages. It is important to note that the new Marriages Act [Chapter 5:15], makes lobola/roora agreements optional based on what families would have agreed to. Despite these significant legal changes, child marriages persist in poor, drought-prone areas like Marange. Economic hardships, exacerbated by climate change-induced droughts, increase pressure on families to marry off their daughters early, often as a survival strategy.[5] Although the law now criminalises child marriage, it cannot fully address the socio-economic drivers behind this practice hence the clandestine continuation of the problem. The country has also aligned with key international conventions, including the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), the International Convention on the Rights of the Child (ICRC), the SADC Protocol on Gender and Development, the African Charter on the Rights and Welfare of the Child and the African Youth Charter. These further bolster domestic efforts to combat child marriage and promote gender equality. However, there remains a significant gap between the policy framework and the practical realisation of rights for women and girls. Entrenched cultural beliefs, inadequate enforcement of laws, and limited access to resources impede progress toward true gender equality.[6]

Furthermore, establishing the Zimbabwe Gender Commission under Section 245 of the Constitution of Zimbabwe, 2013 and putting in place the National Action Plan on Ending Child Marriages underscores the state's commitment to addressing gender-based issues. Civil Society Organisations (CSOs) have also collaborated with government efforts under campaigns like 'Girls not Brides.' This is part of a global campaign against child marriages, which in Zimbabwe has 44 CSO members and works with various government departments, including the judiciary.[7]

The issues of child marriage and gender inequality in Zimbabwe have been exacerbated by climate-related disasters like droughts and floods, which have devastated homes, destroyed livelihoods, and reduced family incomes, leaving families increasingly reliant on harmful

consideration" means the consideration, by whatever name known at customary law, given or to be given by any person in respect of a marriage in terms of customary law, whether such marriage is contracted according to customary law or the general law.

5 UNICEF. (2020) Child marriage: Latest trends and efforts to combat the practice in Zimbabwe. Available at: https://www.unicef.org.

6 Human Rights Watch. (2019) Ending child marriage in Zimbabwe: Challenges and progress. Available at: https://www.hrw.org.

7 Girls Not Brides Zimbabwe (2015) https://www.girlsnotbrides.org/learning-resources/child-marriage-atlas/regions-and-countries/zimbabwe/

coping mechanisms. In some cases, this has led to a rise in child marriages, as impoverished families view early marriage as a survival strategy to lessen economic burdens.[8] Although the effects of climate change on income, food security, and health have been well-documented,[9] the intersection between climate-induced hardships and the perpetuation of child marriages and gender inequality remains underexplored. This critical nexus is often overlooked in research and policy discussions, leaving a significant gap in our understanding of the broader social impacts of climate change.

3. Marange profile and climate

Marange is situated within the Mutare Rural District Council of Manicaland Province, located in the Eastern Highlands of Zimbabwe, near the border with Mozambique. This community is famous for diamond mining and related challenges, which have attracted much media attention since the discovery of this precious mineral in 2003. The community spans three constituencies: Mutare North, South, and West, and falls under the leadership of Chief Marange. Political representation has been dominated by the ruling Zimbabwe African National Union-Patriotic Front (ZANU PF) party over the years. However, the opposition has had significant political support in diamond mining in peri-urban areas wards[10]. It is divided into seven headmen jurisdictions, encompassing 254 villages spread across wards 1, 2, 3, 4, 8, 9, 10, 11, 12, 16, 17, 18, 19, 23, 24, 25, 28, 29, 30, 31, and 34. Marange is rich in natural resources, including gold, diamonds, diverse wildlife, and water bodies.[11] The area's landscape is characterised by high relief, with elevations ranging from 1,000 to 2,000 meters above sea level and highly prone to droughts.[12] The northeast to southwest mountain ranges in Mutare District form part of the core of the Eastern Highlands. This rugged terrain, interspersed with plateaus and valleys, significantly shapes the district's climate, human activities, transportation, and tourism. However, climate change has increasingly impacted the Marange community. Over the past 10 seasons, the region's annual rainfall has fluctuated

8 Plan International. (2020) Tackling child marriage in Southern Africa: The role of traditional and community leaders. Available at: https://www.plan-international.org.
9 UNICEF 2020, Zimbabwe Gender Commission, 2022.
10 Zimbabwe Election Commission Ward Results for 2018 and 2023.
11 Government of Zimbabwe 2022. Mutare District Food and Nutrition Profile.
12 Ibid

unpredictably.[13] While some seasons experienced heavier rainfall, they were often accompanied by destructive cyclones, contributing to food insecurity.

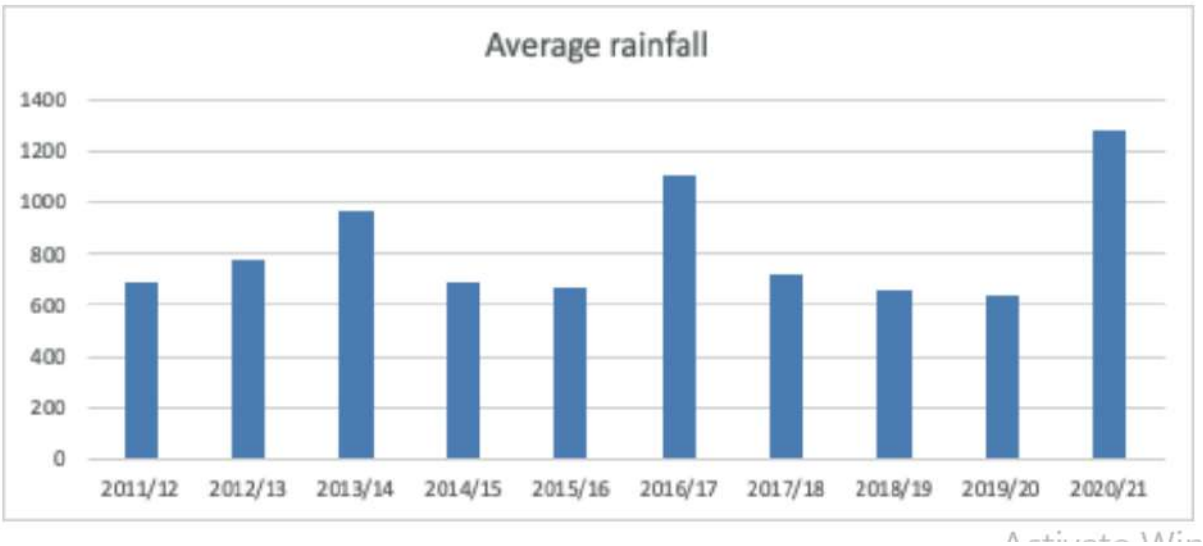

Figure 1: Mutare district average rainfall in millilitres over 10 years[14]

3.1 **Droughts and social challenges**

The Marange community has a high incidence of poverty, with most families classified as living in extreme poverty.[15] Further, the community faces significant food insecurity due to persistent droughts. The most drought-prone wards include 5, 8, 9, 10, 11, 12, 16, 17, 18, 19, 23, 24, 25, 28, 29, 30, and 35.[16] Ward 9 has the highest poverty prevalence in the Mutare Rural District. With minimal rainfall and limited livelihood opportunities, this ward is especially vulnerable. A recent reclassification of natural regions based on rainfall patterns has altered the categorisation of several wards in Marange, the entire area now averages around 450 mm of annual rainfall.[17] For example, Ward 7 has been downgraded from Region 1 to Region 2, while Ward 2 has improved from Region 3 to Region 2. Region 5, the driest classification, now includes five wards, up from just two in 2016. This reclassification

13 Ibid.
14 Ibid.
15 Zimbabwe Demographic Health Survey, 2018.
16 Government of Zimbabwe 2022. Mutare District Food and Nutrition Profile.
17 Ministry of Lands, Agriculture, Fisheries, Water and Rural Development, 2021.

confirms that the area has been getting less rainfall, which exacerbates the vulnerability of families in the community to food insecurity and poverty.

In addition to environmental challenges, Marange also experiences high rates of child marriages. According to the 2022 Census Report,[18] 18.9% of women aged 20-24 in Zimbabwe were married or in a marital-like union before turning the age of 18 years. This rate is significantly higher in rural areas (27.4%) compared to urban areas (10.2%), with 1% of women in this age group entering marriage or unions before age 15.[19] This figure rises to 1.6% in rural areas, compared to 0.5% in urban areas.[20] Marange is one of the communities where child marriage rates are alarmingly high because of many factors including the religious beliefs of the Johanne Marange Apostolic Sect like their doctrine on girls reaching puberty being considered ready for marriage.[21] While child marriage is a complex issue, this research seeks to explore the connection between climate-induced disasters, and the prevalence of child marriages in the Marange. This is informed by the noticeable increase in incidences of child marriages during drought years over the last ten years in the community.

4. Research problem

This research examines the complex issue of child marriage in the context of climate-induced challenges like droughts in rural Zimbabwe, with a focus on the Marange community. Resource scarcity emerges as a critical driver, as girls from low-income families are more than twice as likely to marry before 18 compared to those from wealthier households.[22] Climate change exacerbates these vulnerabilities by intensifying resource inequalities and limiting educational opportunities. The Marange community, characterized by vulnerability to droughts and cyclones, experiences food insecurity and economic hardship, compelling families to view child marriage as a coping mechanism.[23] This practice reinforces gender inequality by curtailing girls' education and future opportunities. Similar patterns are evident in Zimbabwe and neighbouring countries like Malawi and Mozambique, where droughts

18 Zimbabwe Census Report. (2022). https://zimbabwe.unfpa.org/en/publications/2022-population-and-housing-census-preliminary-results

19 Ibid.

20 Ibid.

21 Mashonganyika, N. (2019). *Church teachings, gender relations and women's agency: A study of women in apostolic churches in Harare* (Doctoral dissertation, University of Zimbabwe).

22 Government of Zimbabwe 2022. Mutare District Food and Nutrition Profile.

23 Government of Zimbabwe 2022. Mutare District Food and Nutrition Profile.

force families to consider child marriage as a survival strategy.[24] [25] Research from other regions, such as Bangladesh, confirms a link between environmental crises and child marriage, with droughts and extreme heat events depleting household resources and driving early marriages.[26] The Government of Zimbabwe has responded through the new Marriages Act that provides legal safeguards for children. However, resource scarcity limits the implementation of these safeguards in remote rural communities. Insights from this study will contribute to understanding how climate-induced disasters perpetuate child marriage and gender inequality despite legal protections.

5. Research questions

- How do climate change-induced disasters, such as drought influence the prevalence of child marriages in vulnerable communities like Marange?
- How do patriarchal cultural practices, such as lobola/roora, arranged marriages, and the belief in male dominance over marriage partner choices, contribute to the perpetuation of child marriages in rural Zimbabwe, and how are these practices shaped or intensified by climate change pressures?
- What are the primary barriers to community awareness and intervention in cases of child marriages, and how can these barriers be addressed to protect vulnerable girls?
- How do institutional weaknesses, particularly in social welfare services and Victim Friendly Systems, affect the ability to provide support for survivors of child marriages and sexual exploitation in rural areas?
- What role can legal reforms, improved enforcement, and community-based strategies play in reducing the incidence of child marriages exacerbated by climate change pressures?

[24] Asadullah, M. N., Islam, K. M. M., & Wahhaj, Z. (2021). Child marriage, climate vulnerability and natural disasters in coastal Bangladesh. *Journal of biosocial science*, *53*(6), 948-967.

[25] Mudavanhu, C. (2014). The impact of flood disasters on child education in Muzarabani District, Zimbabwe.

[26] Asadullah, M. N., Islam, K. M. M., & Wahhaj, Z. (2021). Child marriage, climate vulnerability and natural disasters in coastal Bangladesh. *Journal of biosocial science*, *53*(6), 948-967.

6. Literature review

6.1. Theoretical framework

This research is grounded in several theoretical perspectives that help explain the persistence of gender inequality and child marriage in the context of Zimbabwe, particularly in the Marange community. Key theories include patriarchy and gender inequality, intersectionality, and structural violence. Patriarchy, a system of male dominance and power, plays a central role in perpetuating gender inequality, especially in traditional societies.[27] Feminist theory and gender theory argue that cultural norms and socially constructed gender roles position women and girls as subordinate to men, limiting their access to resources, education, and opportunities.[28] In patriarchal structures, harmful practices like child marriage are often justified as maintaining cultural traditions or protecting family honour, further reinforcing unequal power dynamics between men and women.[29] Social constructivism highlights how these gender norms are maintained and perpetuated through social institutions, making it difficult for women and girls to break free from the cycle of inequality.[30] Intersectionality, introduced by Kimberlé Crenshaw[31], is crucial for understanding how different forms of inequality intersect and compound one another.[32] In Zimbabwe, gender inequality often intersects with other factors, such as poverty, climate change, and social status, exacerbating the vulnerabilities of women and girls. For instance, in rural communities like Marange, where climate-induced economic pressures are high, the likelihood of child marriages increases as families use it as a survival strategy.

6.1.1. Structural violence and rights violations

Structural violence refers to the social structures and institutions that systematically harm or disadvantage individuals or groups.[33] Child marriage, as a practice embedded in patriarchal

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27 Ade, N. P. (2021). Rethinking the Implications of the Patriarchy System of Male Dominance and Female Subordination in the Twenty First Century. *International Journal of Sustainability Management and Information Technologies*, *5*(1), 1-6.

28 Connell, R. W. (1987) Gender and power: Society, the person, and sexual politics. Stanford: Stanford University Press.

29 Kandiyoti, D. (1988) 'Bargaining with patriarchy', Gender & Society, 2(3), pp. 274–290. Available at: https://doi.org/10.1177/089124388002003004.

30 Lorber, J. (1994) Paradoxes of gender. New Haven: Yale University Press.

31 Crenshaw, K. (1989) 'Demarginalizing the intersection of race and sex: A Black feminist critique of antidiscrimination doctrine, feminist theory, and antiracist politics', University of Chicago Legal Forum, pp. 139–167.

32 Collins, P. H., & Bilge, S. (2020). *Intersectionality*. John Wiley & Sons.

33 Galtung, J. (1990). Cultural violence. *Journal of peace research*, *27*(3), 291-305.

and socio-economic structures, can be seen as a form of structural violence that deprives girls of their fundamental rights, including the right to education, health, and freedom from exploitation. Patriarchy refers to a social system where men predominantly hold power in political, economic and familial spheres, and where societal norms, laws and traditions are structured to prioritise male authority.[34] Women and girls are often marginalised and some of the practices violate international human rights instruments, such as the CRC and CEDAW. Both Conventions underscore the need for states to set the legal marriage age at 18 years, linking child marriage to broader issues of human rights violations and gender discrimination. However, the passing of the Marriage Act has addressed the key considerations for dealing with child marriages as demanded by these international instruments. Despite these legal protections, structural barriers often prevent girls from accessing justice, perpetuating cycles of violence and inequality.[35] These theoretical perspectives provide a comprehensive lens through which to analyse the deeply embedded cultural, social, and institutional factors contributing to child marriage in Zimbabwe.

6.2. Climate change and poverty

Studies have shown that climate change significantly exacerbates poverty and vulnerability in rural communities, particularly in countries like Zimbabwe, where communal land livelihoods are heavily reliant on agriculture. The Zimbabwe Gender Commission[36] (ZGC) national study on child marriages show that climate change disasters exacerbate the vulnerabilities of girls under 18 years to be married in return for marriage consideration. In Uganda, environmental crises leading to famine have incentivised families to marry off their daughters to secure bride price.[37] Similar trends have been observed in other African countries, where droughts and floods have led to increased child marriage due to bride price practices.[38] A 2016 report by Care International highlights the significant increase in child marriage in Mozambique after a drought, as families sought to secure income or reduce the

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34 Lerner, G. (1986). The Creation of Patriarchy. Oxford University Press.

35 UNICEF. (2020) Child marriage: Latest trends and efforts to combat the practice in Zimbabwe. Available at: https://www.unicef.org.

36 Zimbabwe Gender Commission. (2022). National Inquiry On Child Marriage, Sexual Exploitation And Abuse Of Young Girls, Including Girls with Disabilities https://zgc.co.zw/wp-content/uploads/2024/07/ZGC-NATIONAL-INQUIRY-Report.pdf.

37 Government of Uganda (GoU). (2007) National Adaptation Programme of Action (NAPA). Kampala: Government of Uganda.

38 Corno, L. and Voena, A. (2016) 'Climate change, rainfall shocks, and child marriage in rural Africa', American Economic Journal: Applied Economics, 8(2), pp. 206–241; Camey, E. (2020) 'Climate change and child marriage: A review of the evidence', Climate Policy, 20(1), pp. 1–20.

number of dependents by receiving marriage consideration.[39] As climate disasters become more frequent and intense, child marriage is likely to persist as a coping mechanism for families facing economic hardship and food insecurity.

A study by Plan International in Zimbabwe and Zambia further supports this connection, identifying school dropouts and child, early, and forced marriages as common impacts of climate change.[40] While child marriage is a global issue with various socioeconomic causes, climate change exacerbates this trend, particularly in vulnerable communities. Climate shocks, such as droughts, floods, and erratic rainfall, disrupt food production, leading to loss of income and food insecurity.[41] Research highlights that when families face extreme poverty due to climate-induced losses, marrying off daughters can be viewed as ways to reduce household expenses or gain financial support through lobola/roora. This creates a direct link between climate change and the perpetuation of child marriage, particularly in marginalised communities like Marange.

6.3. Climate change and child marriage

The relationship between climate change and child marriages is an emerging area of research. While there is growing recognition of the link between climate shocks and harmful practices like child marriage, the body of research on this nexus remains limited. Existing studies suggest that families in climate-vulnerable areas may resort to child marriage as a survival mechanism when faced with food insecurity or the loss of livelihood.[42] This study aims to close this gap by exploring how climate-induced economic stress is driving child marriage in rural Zimbabwe, with a focus on the Marange community.

6.3.1. Responses to child marriage

Child marriage has deep cultural roots in many rural communities in Zimbabwe and the Global South. Traditional leaders, faith-based organisations, and local NGOs have played varying roles in perpetuating or mitigating the practice. Some traditional leaders have

39 Care. (2016) Climate change and child marriage in Mozambique. Maputo: Care.

40 Plan International. (2023). Real choices, real lives: Climate change and girls' education: Barriers, gender norms and pathways to resilience. Plan International.

41 Brown, C., Chan, P. and Huq, S. (2020) 'Climate change and rural livelihoods in Zimbabwe: Impacts and adaptation strategies', Journal of Climate and Development, 12(3), pp. 145–158. Available at: https://doi.org/10.1080/17565529.2019.1581604.

42 Plan International 2023.

reinforced the custom, viewing child marriage as a cultural norm or economic necessity.[43] However, there are also examples where these leaders have acted as agents of change, promoting the abandonment of harmful practices through education and community outreach. Religious organisations have similarly varied roles: while some support the practice as part of conservative values, others, predominantly Christian and Muslim reform groups, have worked to raise awareness about the negative consequences of child marriage. Non-Governmental Organisations, (NGOs) particularly those focused on women's and children's rights, have played a critical role in providing education, resources, and legal assistance to vulnerable girls and families, helping to shift attitudes toward child marriage.[44]

6.3.1.1 Legal responses

Despite progressive laws and policies, the implementation of measures to reduce child marriage in Zimbabwe faces significant challenges. Cultural resistance remains a major barrier, with deep-rooted beliefs about gender roles and the economic advantages of early marriage, impeding change.[45] Additionally, enforcement of existing laws, such as the Marriages Act and the Children's Act, is often weak due to insufficient resources and lack of political will. Rural areas, where child marriage is most prevalent, frequently suffer from a lack of legal infrastructure, meaning that even when laws are in place, they are rarely enforced effectively.[46] Limited coordination between government agencies and local communities further complicates efforts to address child marriage holistically.

6.4. Limited literature

Although the impacts of climate change on poverty and livelihood vulnerability are well-documented, there is limited research exploring the intersection of climate change, child marriage, and gender inequality, particularly in Zimbabwe. While some studies acknowledge that climate-induced economic hardships can lead to harmful coping mechanisms, including child marriage,[47] there is little in-depth analysis of how climate change explicitly drives this

43 Chiweshe, M. K. (2024). Unlocking the Potential of Traditional Chiefs as Catalysts for Ending Child Marriages in Zimbabwe. In Marriage in Contemporary Zimbabwe (pp. 69-88). Routledge.
44 UNICEF 2020.
45 Chiweshe 2024.
46 UNICEF 2020.
47 Doyle, J. (2020) 'Climate change and child marriage: Investigating the link in vulnerable communities', International Journal of Environmental Research and Public Health, 17(12), p. 4205. Available at: https://doi.org/10.3390/ijerph17124205

practice. This gap highlights the need for more research that connects environmental, social, and gendered factors to understand these issues comprehensively.

The reviewed literature above reveals a complex interplay between cultural norms, socio-economic vulnerability, and the law in perpetuating child marriage and gender inequality in Zimbabwe. This research departs from the recognition that existing studies often overlook the climate change drivers of child marriages. It specifically focuses on the nexus between climate change and child marriage in poor rural communities like Marange, aiming to enhance understanding of how climate-induced vulnerabilities intersect with entrenched social and cultural norms to perpetuate the practice.

7. Methodology

The research utilised a qualitative methodology, combining diverse data collection methods to ensure a comprehensive and nuanced understanding of the subject matter. Key approaches included document review, interviews, community discussions and focus group discussion (FDG).

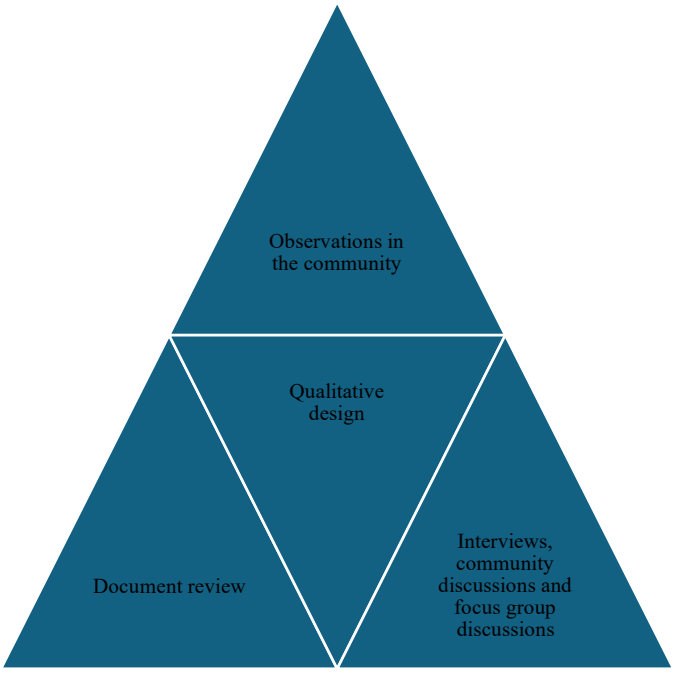

Figure 2 Illustration of the theoretical framework for this study

Document reviews were conducted in parallel with the fieldwork to enhance the credibility of the findings further. These reviews helped to triangulate the qualitative data with document review and provided additional context for the study. Documents included climate and weather reports, local reports on child marriages, gender inequality, climate change impacts in the region, national policy frameworks, and international legal instruments relevant to the research questions. The fieldwork lasted four days, during which the researchers worked closely with two local assistants with intimate knowledge of the community. The following table provides a breakdown of the sample of 73 participants for this study.

Table 1: Sample of participants

Method	**Profession**	**Ward (s)**	**Gender**		**Number**
			Male	**Female**	
Community discussions	N/A	5, 8, 11 and 16	36	12	48
Focus group discussion	- 4 heads of CSOs, 4 journalists & 2 church reps (Anglican & Johanne Marange)	N/A	5	5	10
Interviews	- 2 teachers, 2 nurses, 3 CSO members (HRDs), 2 church representatives, 2 journalists & 2 headmen, 2 child marriage	5, 8, 11 and 16	7	8	15

	survivors (all female)				
TOTAL			**48**	**25**	**73**

These individuals had experience working on child marriage prevention, gender equality projects, and climate-related programming in Marange. The majority were men because of the position of power they occupy within families making their views and actions on child marriages important.

7.1. Data analysis

Thematic analysis was applied to the data, which enabled the researchers to identify recurring patterns, themes, and insights related to child marriages, gender inequality, and the impact of climate change in the Marange community. Data from interviews and FDGS was transcribed, and emergent themes were categorised to provide a detailed understanding of the complex dynamics at play. The findings were triangulated from these qualitative sources with document reviews, ensuring that insights were comprehensive and corroborated by secondary data. Combining primary data from participants and secondary data from policy documents and reports enabled us to draw more robust conclusions, providing a multi-layered analysis of the key issues.

7.2. Ethical considerations

Ethical standards were rigorously adhered to throughout the research process, ensuring the protection and respect of human subjects. All participants in the study were fully informed about the purpose of the study, and their voluntary consent was obtained. Confidentiality and anonymity were maintained to protect participants' identities, particularly given the sensitive nature of the topics discussed. Care was taken to ensure that participants, especially those discussing experiences related to child marriages and gender inequality, felt comfortable and safe during the data collection process. Children and existing child brides were not interviewed, acknowledging the ethical and psychological complexities that such interviews would entail. However, two survivors of child marriages were interviewed. The researchers

focused on collecting data from community members and key informants who could offer knowledgeable perspectives without causing harm or distress to vulnerable populations.[48]

7.3. Limitations

This study faced some limitations in accessing children because of the limited time in the field, and the several clearances needed to do so. To mitigate these limitations, the primary data was supplemented with extensive document reviews, drawing on reports, laws, and research studies to enhance the breadth and depth of our findings. Moreover, while the insights from purposively selected key informants and FGD participants such as journalists, teachers, church leaders, and healthcare professionals are invaluable, they represent an indirect understanding of the issue. The researchers were able to obtain two interviews with survivors of child marriages from the area and bolstered the understanding of the issue. They offered insights that could not be obtained from current victims of child marriages. Both survivors dropped out of school before writing their Ordinary Level examinations and were married off to older men. They ended their marriages in their early twenties when they had matured enough to stand up to their abusers and resist pressure from their families.

This focus on knowledge still gathers meaningful and informed perspectives on the nature and extent of the problem in Marange. Future research should address these limitations by employing methods that allow the safe inclusion of more vulnerable participants and children to capture their experiences.[49] However, the findings still reveal deep insights towards potential law and policy interventions. In addition, the methodology can be transferable to other areas to get a better overview of what is happening elsewhere under specific local pressures and influences.

8. Findings

The research paper makes the following findings: correlation of drought and child marriages, age-old cultural practices, food insecurity, limited capacity of the Social Welfare

[48] Creswell, J. W., & Poth, C. N. (2016). Qualitative inquiry and research design: Choosing among five approaches. Sage publications.

[49] Bryman, A. (2016) Social research methods. 5th end. Oxford: Oxford University Press.

Department, vicious cycle of vulnerabilities, victim manipulation and secrecy, limited community agency and protection mechanisms and gaps in law and practice.

8.1. Correlation of drought and child marriages

The findings reveal a strong correlation between drought conditions and the rise in child marriages over the past decade. As rainfall patterns (Figure 2) have shifted and annual rainfall has significantly decreased, wards 5, 8, 9, 10, 11, 12, 16, 17, 18, 19, 23, 24, 25, 28, 29, 30, and 35 have experienced recurrent droughts. These climatic changes have coincided with a noticeable increase in child marriages. In Ward 16, for instance, a local teacher reported that over 20 girls dropped out of school in 2020 and 2021 due to pregnancies, with many entering early marriages. This confirms the statistics from the Ministry of Primary and Secondary Education, which indicated that 12.5% of the 57,500 learners who dropped out of school in 2018 did so because of pregnancy or marriage, with a further 7,000 learners leaving school for the same reasons in 2019. Manicaland Province was noted as a hotspot for these cases, corroborating the teacher's observations in Ward 16. It is essential to highlight that the period 2020 to 2021 also coincided with severe drought and the COVID-19 pandemic, which intensified families' economic struggles in the country as well as in Marange. The teacher remarked that the lack of resources drove many families to marry off their daughters, often as a survival strategy, with some girls becoming second or third wives to older men.

> "Pupils who were due to write examinations dropped out and went to get married. Young men took some of them, but a majority became second or third wives to older men. This has been happening since I started teaching here in 2018." Interview, Teacher, Female, Ward 16."

This reflects a disturbing trend in which economic hardship, exacerbated by climate change-induced drought, pushes families to marry off their daughters as a coping strategy. FGD participants indicated that resources become scarcer, and child marriage becomes a survival mechanism, with girls being seen as a source of economic relief. *"When families are starving, they tend to marry off their daughters,"* observed a *CSO Participant, Female 31 years*.

8.2. Age-old cultural practices

Child marriages, exacerbated by droughts, have long been embedded in the Marange society. In the last decade, there has been an increase in droughts in 17 semi-arid wards in the Marange community, which receive between 500-600mm in an average rain year. This worsens the impact of droughts, with the interviews indicating that there has been a noticeable increase in child marriages during droughts over this period. The practice of child marriage in this community reflects broader patriarchal traditions and follows the process known as *kuroodza* (arranged marriage). Historically, *kuroodza* involved agreements between families for their girl children to be married into a specific family, often strengthening familial bonds, appeasing avenging spirits, or securing grain during the famine. Such marriages were also prevalent when families with young daughters faced food shortages during droughts.

Though less overt today, these practices persist, often cloaked in secrecy or disguised under familial arrangements because those involved know it is unlawful. Discussions with community members revealed that child marriages continue to occur, sometimes hidden under the pretence of daughters being adopted or working as domestic helpers. A survivor of child marriages shared this account:

> "I was married off in 2008, at the height of a severe drought, it was a tough time for me, but I had no choice. At the time I was 15 and my husband was 42, he had made money in the diamond field, and he quickly paid for my lobola. He already had four other wives, and I became his fifth. I left after four years, with two children, a girl and a boy. I was helped by my sister who was in Mozambique to take my kids and run." — Child Marriage Survivor, Female, Age 31."

To further illustrate the persistence of these practices, a journalist participating in a focus group discussion (FGD) highlighted his experiences covering child marriage stories in Marange and other parts of Manicaland province:

> "It is disheartening that these practices continue despite the advocacy for human rights and gender equality. Wealthy men in the community exploit these traditions, preying on girls, especially during droughts. In cases I have covered, girls below the age of 18 are often sent to work for local businessmen, and before long, they have children, with the family quietly compensated." — FGD Participant, Journalist, Age 28."

This is statutory rape according to the law and families often turn it into a customary marriage after receiving damages as *lobola*/*roora*. Within a few years, most of the girls return to their homes with children, revealing their ordeals when they are applying for child support in the courts.

8.3. Food insecurity

The study found that drought exposes families in Marange to severe food insecurity, which pushes underage girls into marriage as a coping mechanism. This situation is worsened by some beliefs of the Marange Apostolic sect which defines womanhood based on the onset of puberty, making girls as young as nine or ten eligible for marriage under its doctrine. The Marange Apostolic Sect is a deeply conservative African Christian grouping whose beliefs are deeply patriarchal and clandestinely authorises inter-sect child marriages. The institutionalisation of such practices has led to a widespread child marriage community, putting the cases way above the provincial proportion of 24.5%.[50] This constitutes a form of systemic sexual abuse, as highlighted by the ZGC report[51] and provisions of the Domestic Violence Act.[52]

Discussions with community members and interviews demonstrate a strong link between food-insecure families in wards 5, 7 and 16 with high incidences of child marriages. A participant observed, ". Girls from the poorest families are often married off to those who are better off during droughts because they will be struggling to feed the family." Many of the families belonging to this sect, and the community in general, are impoverished, often with more children than they can financially support. The Apostolic sect is more pronounced

50 Census Report, 2022.
51 ZGC Report, 2022.
52 Domestic Violence Act [Chapter 5:16]

in wards 9 and 16, where the average household has eight children, above the district average of five children per household. Discussants in community discussions and interviews indicated that "wards 9 and 16 also have the highest number of child marriages in the Marange community." These wards are also the poorest and most vulnerable to droughts.[53] Food insecurity during droughts, combined with deeply rooted religious beliefs, perpetuates the cycle of intra-church child marriages. The case of 14-year-old Memory Machaya, who died during childbirth in 2021, brought national attention to the issue.[54] She died after being denied medical treatment and was taken to a shrine instead of a hospital for medical care.[55] Her death prompted an official inquiry by the ZGC, which revealed a disturbing pattern of abuse within the church. This inquiry later expanded into a national investigation, culminating in a report titled: "National Inquiry into Child Marriage, Sexual Exploitation, and Abuse of Young Girls, Including Girls with Disabilities", released in 2022.[56] One community member emphasised the difficulty of addressing these issues within the church and connected this to food insecurity during droughts:

> "These mapostori (sect members) beliefs about girls' sexuality make it difficult to address the issue within the church. During droughts, like this year, the cases tend to rise as food-insecure families push their daughters to marry. It is very sad." — Community Discussion Participant, Female, Ward 11, Age Unknown.

8.4. Limited capacity of the Social Welfare Department

The Department of Social Services, under the Ministry of Labour and Social Services, is tasked with supporting vulnerable populations during droughts, including survivors of child marriage and sexual exploitation. In Marange, the department has Community Case Care workers and volunteers who have been employed since implementing the National Case Management Strategy (2017) to prevent and respond to child protection issues. The Child Protection Council and Child Welfare Fund, created in Section 2A of the Children's Rights Act, lacks full operationalisation and financial resources to reach remote areas like Marange. While these departments collaborate with other government agencies and civil society

53 Ministry of Lands, Agriculture, Fisheries, Water and Rural Development, 2021.
54 ZGC Report, 2022.
55 Ibid.
56 Ibid.

organisations, they still lack the budget and capacity to service the Marange community adequately. Civil society informants indicated that while volunteers were recruited, they could not cover their areas of jurisdiction, and some have since dropped out of the programme without replacement. In addition, during droughts, food relief is inadequate to meet the needs of all low-income families. This leaves many families vulnerable, driving the problem of child marriage. An FDG participant noted that:

> "The case management volunteer programme is good on paper, but its implementation is affected by a lack of resources. The government must prioritise budgetary allocation to make these structures functional. Drought relief must also be adequate and reach all families on the ground," FDG participant, CSO member, Male, Age unknown."

This leaves many victims and survivors unable to access essential protection services, counselling or legal assistance to reclaim their lives. Similarly, the ZGC, which is mandated to promote gender equality, faces resource constraints that prevent it from raising sufficient awareness or offering support to vulnerable girls and survivors in rural areas. The Commission has a provincial office and sometimes undertakes outreach work with civil society and development partners. However, there are still significant gaps in reaching communities at the grassroots in Marange.

8.5. Vicious cycle of vulnerabilities

The intersection of child marriage and drought creates a vicious cycle of poverty and vulnerability that affects multiple generations in Marange. Findings show that the area is one of the poorest in the country with 86% of the families classified as living in extreme poverty.[57] The area also has very limited employment and livelihood opportunities, which exacerbates the impact of drought on vulnerable families driving up the scourge of child marriages. Children born from child marriages or situations of sexual exploitation are often left in precarious circumstances. FDGs revealed that many survivors' children are left in the care of extended family members while their mothers, fathers and guardians work in towns, Mozambique, South Africa or have remarried. These children are at heightened risk of falling

[57] Zimbabwe Demographic Health Survey (2018). https://dhsprogram.com/pubs/pdf/FR322/FR322.pdf

into the same pattern of child marriage, continuing the cycle of exploitation and poverty. An investigative journalist shared a perspective:

> "Children become mothers while in these abusive relationships. Most of them leave after their first or second child. At that time, they will be young enough to want to start another family or seek employment opportunities to care for their kids. These kids are left in the care of either the mother's parents or relatives. Often, if they are girls, they are at risk of becoming victims of being sexually exploited or ending up in the same situation as their mother." Journalist, Interview, Male, Age 52."

8.6. Victim manipulation and secrecy

Child marriages linked to drought are often shrouded in secrecy, falsehoods and manipulation. This is because most families and individuals know it is illegal under the existing law. Young girls are pressured into believing that marriage is the only way to save their families from hunger, with the decision framed as a sacrifice for the well-being of their siblings. This coercion is compounded by strict instructions not to speak about the marriage, reinforcing a culture of silence. FGDs revealed that most of these marriages are conducted in secrecy, with victims afraid to speak out. Even when they escape the marriages, many girls remain silent, fearing ostracism and rejection from their families. This manipulation ensures compliance and perpetuates a cycle of secrecy, making it harder for authorities and support systems to intervene. However, the new Marriages Act (5:15), in section 9, empowers Chiefs to register marriages in their jurisdiction and should assist in curbing unlawful customary child marriages. An FGD participant shared their observation:

> "These young girls (victims and survivors of child marriages) are between a rock and a hard place. The family pressures on them are unbearable; they must keep the whole affair secret, and when they do get out, they are afraid to speak about it because of shame." – FDG participant, CSO member, Female, Age 31.

This participant observed that when girls leave these marriages, they are afraid to speak out about their experiences because of stigma and shame.

8.7. Limited community agency and protection mechanisms

The Marange community exhibits limited awareness regarding available avenues for addressing child marriages. Many community members are unaware of the responsible government departments to approach or how to seek help. Furthermore, children drop out of school and thus get out of the schooling system's protection. This is particularly rampant during droughts when most families cannot afford to pay school fees and associated costs for learning. Community discussions revealed that exercising agency is difficult due to complex kinship ties extending beyond the immediate family. These extended relationships create a reluctance to report cases, as families fear social repercussions. Cases of child marriage often only gain attention when tragedy strikes, such as a death during childbirth or miscarriage. Until then, families frequently hide the issue, making it nearly impossible for authorities to intervene. CSOs in the area confirmed this, noting that victims are often sent into hiding to avoid detection.

> "Children can even be sent away to distant relatives until they have delivered their babies. If you have reported that the child has been forced into marriage, the family will simply deny it and say their child left for work in Mozambique or South Africa. It is difficult to detect until a major problem like death occurs." – Interview, CSO leader, Female, Age 37."

8.8. Gaps in law and practice

Zimbabwe has a solid legal framework designed to combat child marriages and sexual exploitation, which is relevant in the context of climate change-induced vulnerabilities. As part of enhancing child protection through criminal law, the government passed the Criminal Laws Amendment (Protection of Children and Young Persons) Act, 2024. This law aligns the age of sexual consent with the legal age for marriage, 18 years, as set out in the Constitution of Zimbabwe, 2013 and the Marriages Act [Chapter 5:15]. This legal position was in response to the landmark ruling by the Constitutional Court in 2022 in the case of *Kwenda v Ministry of Justice & Ors*.[58] The decision declared sections 61,70, 76, 83, and 86

[58] *Diana E. Kawenda V Minister of Justice and Parliamentary Affairs and Others* CCZ 3/22.

of the Criminal Law Code unconstitutional and ordered that a law be enacted that protected children from sexual exploitation. The Amendment repeals and substitutes section 70 of the Criminal Law Code, criminalising inappropriate touch and actual sexual intercourse with a minor.

While this legal gap has been addressed, significant challenges remain in enforcing these laws. For instance, the Victim Friendly Systems (VFS), supports survivors of statutory rape (sexual intercourse with a child) but suffer from a lack of resources, particularly in rural areas like Marange. Community members and key informants indicated that the Victim Friendly Unit, a part of the VFS, in Marange, is understaffed and lacks specialised skills to handle cases sensitively and effectively. The police station has a disproportionate focus on protecting diamond mining and enforcing curfew than they focus on VFU work. Survivors also face inadequate protection, often being exposed to their perpetrators after reporting cases. Furthermore, even when perpetrators are convicted, they may be released after serving only a few years due to health reasons or amnesties. This sends a negative message to the community, implying that justice is fleeting while victims are left to bear the burden of their trauma for life.

Overall, findings show that climate change is not just a backdrop but an active accelerator of child marriage in Marange as illustrated below.

Table 2: demonstrating the nexus of climate change and child marriage in Marange

Climate Factor	**Impact on Child Marriage**	**Supporting Data**
Drought → Food insecurity	Families marry off girls for survival	20+ school dropouts in Ward 16 (2020–2021)
Recurrent droughts	Revival of *kuroodza* (drought-era arranged marriages)	Survivor testimony (2008 drought marriage at age 15)

Climate Factor	Impact on Child Marriage	Supporting Data
Poor rainfall in 17 wards	Higher child marriage rates in these areas	Ministry of Agriculture (2022)
Weak drought response	Social welfare gaps increase vulnerability	CSO reports on inadequate relief programs

9. Conclusion and recommendations

This paper concludes that climate change-related disasters, particularly droughts, correlate strongly with the increase and persistence of child marriages in poor and vulnerable communities, as demonstrated in Marange.

Based on the findings, we give the following recommendations:

- Government social welfare and child protection departments and development partners should strengthen economic resilience interventions to reduce families' reliance on child marriage as a coping strategy when faced with climate-induced disasters. This could include cash transfers, drought-resistant agricultural support, and alternative livelihood projects for vulnerable households.
- The Ministry of Primary and Secondary Education and Development partners should enhance school retention initiatives for girls through targeted scholarships, school feeding programmes, and community awareness campaigns to discourage child marriages, particularly during periods of economic hardship.
- Government and local CSOs should proactively engage with traditional leaders in advocacy campaigns to challenge harmful interpretations of *kuroodza* and other customs that facilitate child marriage, emphasising legal consequences and the rights of girls.
- Local authorities, government departments and CSOs should improve monitoring and reporting mechanisms for hidden child marriages by training local authorities, teachers, and social workers to identify cases where girls are disguised as domestic workers 'adopted' to evade legal scrutiny.
- Local authorities, Development Partners and CSOs should implement targeted food security and livelihood programmes in high-risk wards (5,7,9, & 16) to reduce economic

desperation driving child marriages, including drought-resistant farming support and conditional cash transfers for families with underage girls. In addition, CSOs, Government Departments and community leaders should engage Apostolic sect leaders in legal and rights-based dialogues, working with religious authorities to reform harmful doctrines while ensuring child protection laws are enforced within these communities.

- The Ministry of Finance and Economic Development must increase funding and staffing of social welfare services, particularly in rural districts like Marange, to ensure effective case management, survivor support, and child protection interventions. Further, there is a need to strengthen partnerships between government and CSOs to expand outreach, training, and resource allocation for community-based volunteers and child protection committees.
- Government social welfare and child protection departments should develop intergenerational poverty alleviation programmes focusing on education, vocational training, and economic opportunities for survivors and their children to break the cycle of exploitation. It is also crucial to establish community-based childcare support systems for children of survivors, reducing their risk of falling into child marriages by providing safe housing, education, and mentorship.
- Government departments, CSOs and development partners should launch confidential reporting mechanisms like hotlines and trusted community advocates to encourage survivors and witnesses to report child marriages without fear of retaliation. These actors should also conduct awareness campaigns to debunk myths framing child marriage as a 'sacrifice,' placing emphasis on legal rights and alternative support systems for families in hardships.
- The Ministry of Primary and Secondary Education, CSOs and Development Partners should strengthen school-based protection systems by integrating child marriage prevention into curricula, training teachers as first responders, and providing scholarships for at risk girls.
- The Ministry of Justice and Parliamentary Affairs should capacitate chiefs and village heads to exercise their power in terms of the Marriages Act [Chapter 5:15] to register all marriages in their jurisdiction and monitor and report child marriages.
- The Judicial Service Commission and Development Partners should enhance training and resources for VFUs, ensuring that police in Marange prioritise child protection over mining security and handle cases with sensitivity. Further, monitor judicial enforcement

of child marriage laws, advocating for stricter sentencing, survivor protection, and transparency to deter perpetrators and build community trust in the justice system.

Climate change and the Indigenous Communities in Tsholotsho, Matabeleland North, Zimbabwe: Identifying Vulnerabilities and Resilience Mechanisms

Mbongeni Nhliziyo and Inomusa Ndlovu[1*]

Abstract

Climate change disproportionately affects vulnerable and marginalized communities, including indigenous groups like the San in Tsholotsho, Matabeleland North, Zimbabwe. Their traditional lifestyle, deeply intertwined with the natural environment, has been disrupted by colonial and post-colonial state policies, which violate their rights, further exacerbating their vulnerability to climate change impacts. This study investigated the impacts of climate change on the San community's environment and livelihoods, assessed the effectiveness of government policies and examined indigenous climate resilience strategies. A mixed-methods approach, combining quantitative and qualitative techniques, including surveys, interviews, documentary analysis, and oral history, was employed. Key findings reveal that climate change is significantly impacting the San's livelihoods and cultural practices. The study highlights the importance of addressing underlying issues such as human rights, recognition, and empowerment to enhance their resilience. While the government has implemented certain measures such as employment opportunities and social welfare programs, these have had limited impact. The San community has demonstrated resilience through diversification strategies, including labor migration, informal trade, and adapting traditional practices. To effectively address the challenges faced by the San community, it is imperative to adopt a holistic approach that combines policy interventions, community-based initiatives and capacity-building programs. By empowering the San community and recognizing their rights, it is possible to build their resilience and ensure their long-term survival in the face of climate change.

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1. Introduction

In recent years, climate change has emerged as one of the most pressing global challenges facing humanity. The climate change crisis not only affects economies, especially those that are agro-based, but it also disrupts and upends social, political, economic, and cultural structures. The Sustainable Development Goals move with the theme of 'leaving no one behind.' However, such goals appears unattainable as climate change threatens to push more than 130 million people living in the most vulnerable countries and the majority from sub-Saharan Africa into extreme poverty due to climate change by 2030.[2] Vulnerable and marginalized communities like the indigenous communities are more disproportionately at risk of being significantly affected by the climate change effects. A complex interplay of factors, including the lack of recognition of their rights as indigenous people and the disruption of their traditional lifestyle, has contributed to their challenges. Colonial and post-colonial states imposed a sedentary lifestyle, incompatible with their existence. Contemporary scholarship characterizes their situation as a 'failed transition' to modernity.[3] However, this transition should be on their own terms and not imposed on them. The United Nations Declaration on the Rights of Indigenous Peoples[4] and the International Labour Organisation's Indigenous and Tribal Peoples Convention, 1989 (No. 169) support this principle.

Climate change has emerged as a global challenge, and its impact is undermining development gains made, especially in developing countries. Sub-Saharan Africa is experiencing more intense and unpredictable weather patterns as a result of global climate change. The region is characterised by arid and semi-arid agro-ecological regions that are vulnerable to natural disasters like drought and flash flooding and punctuated with low and

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2 MC LEAN, J. (2024). 'The role of social protection policies in enhancing climate resilience',*South African Institute of International Affairs, June 2024, <saiia.org.za/wp-content/uploads/2024/07/SAIIA_PB_296_SocialProtectionPolicies.pdf>*visited on 21 December 2024.

3 Dube, T., Ncube, C., Moyo, P., Phiri, K., & Moyo, N. 'Marginal communities and livelihoods: San communities' failed transition to a modern economy in Tsholotsho, Zimbabwe', *38:*6, *Development Southern Africa*, (2021) pp. 1031-1045.

4 GA Res. 61/295, 13 Sept. 2007

erratic rainfall.[5] Subsequently, the climate variability leads to food insecurity. Indigenous communities in sub-Saharan Africa, particularly those in Zimbabwe, face increasing threats from climate change, characterized by erratic rainfall and declining livelihoods.[6] Coupled with inadequate climate resilience strategies and a lack of resources, livelihood assets, and alternative food security options, these communities find themselves in a precarious position regarding climate resilience.[7] Indigenous groups are particularly vulnerable to climate variability, especially as they already face significant challenges in building sustainable livelihoods. The San people's current situation is largely a consequence of historical injustices, such as colonization and dispossession of their lands, territories and resources.[8] These processes prevent them from exercising their right to development according to their own terms and interests.

The indigenous community in Zimbabwe is a microcosm of Africa's macrocosm status, as it is disproportionately in danger of experiencing major impacts from the unpredictability of climate change due to the unstable nature of their socio-economic situation.[9] The indigenous community households make less than US dollars 5 per month on average, against the US dollars 107 average household income for other ethnic groups in Matabeleland North Province of Zimbabwe, due to their seasonal activities.[10] This stark disparity highlights the indigenous people's lack of capital assets, such as employment, livestock, and non-subsistence agriculture, which are not only important for increasing households' livelihood asset base but also for building household resilience against climate change. Additionally, the indigenous communities are not acknowledged by politicians as genuine and active

5 Tanyanyiwa, V. I. 'Indigenous knowledge systems and the teaching of climate change in Zimbabwean Secondary Schools', *9:*4, SAGE *Open*, (2019) pp. 1–11.

6 Ibid

7 Hitchcock, R. K., Begbie-Clench, B., & Murwira, A. 'The San in Zimbabwe: Livelihoods, land and human rights*'. International Work Group for Indigenous Affairs,* 20 January 2016, <www.iwgia.org/en/resources/publications/3208-the-san-in-zimbabwe-livelihoods-land-and-human-rights.html>, visited on 20 October 2024.

8 Dube, T., Ncube, C., Moyo, P., Phiri, K., & Moyo, N. 'Marginal communities and livelihoods: San communities' failed transition to a modern economy in Tsholotsho, Zimbabwe', *38:*6, *Development Southern Africa*, (2021) pp. 1031-1045.

9 Hitchcock, R. K., Sapignoli, M., & Babchuk, W. A. 'Settler colonialism, conflicts, and genocide: interactions between hunter-gatherers and settlers in Kenya, and Zimbabwe and northern Botswana', *5:*1, *Settler Colonial Studies*, (2015) pp 40-65.

10 Hitchcock, R. K., Begbie-Clench, B., & Murwira, A. 'The San in Zimbabwe: Livelihoods, land and human rights*'. International Work Group for Indigenous Affairs,* 20 January 2016, <www.iwgia.org/en/resources/publications/3208-the-san-in-zimbabwe-livelihoods-land-and-human-rights.html>, visited on 20 October 2024.

participants in local and national politics and public administration. As such, their concerns are seen as peripheral, not requiring immediate attention, which worsens their plight.[11]

Moreover, the colonial and post-colonial state in Zimbabwe brought in legal developments that expropriated the lands of traditional indigenous communities, making them national parks while simultaneously criminalizing hunting and gathering,[12] stripped them of a crucial economic and livelihood pathway.[13] Thus, climate change, the land tenure system, and the institutional framework lead to further marginalization of indigenous communities by limiting access to the resources necessary for building their livelihood asset base, particularly natural and financial assets. Despite the current situation, limited evidence indicates that the indigenous communities in Zimbabwe have been coping with the climate crisis. They have managed to adapt by utilizing their traditional knowledge systems and enhancing their climate resilience by incorporating various climate resilience mechanisms and diversifying their economy.[14]

Cognisant of the scholarly lacunae, this research identifies climate vulnerability and climate resilience mechanisms of the San indigenous community in Tsholotsho District, Zimbabwe. It is guided by the following questions: What are the effects of climate change in Tsholotsho and the effects on the environment? How does climate change affect the San community in Tsholotsho? What are the government strategies and policies implemented to address climate change amongst the indigenous people in Tsholotsho? and what are the San's climate resilience strategies in Tsholotsho? To answer these questions, the paper proceeds as follows: The first section discusses the historical background of the indigenous communities in Zimbabwe, followed by a section that outlines climate change, institutions, and the indigenous communities in Zimbabwe. The third section discusses the indigenous knowledge systems and climate change resilience. The fourth section discusses the

11 Hitchcock, R. K., Sapignoli, M., & Babchuk, W. A. 'Settler colonialism, conflicts, and genocide: interactions between hunter-gatherers and settlers in Kenya, and Zimbabwe and northern Botswana', *5:*1, *Settler Colonial Studies*, (2015) pp 40-65.

12 The introduction of the Forestry Commission meant that some trees were regarded as endangered, hence.

13 Hitchcock, R. K., Sapignoli, M., & Babchuk, W. A. 'Settler colonialism, conflicts, and genocide: interactions between hunter-gatherers and settlers in Kenya, and Zimbabwe and northern Botswana', *5:*1, *Settler Colonial Studies*, (2015) pp 40-65.

14 Dube, T., Ncube, C., Moyo, P., Phiri, K., & Moyo, N. 'Marginal communities and livelihoods: San communities' failed transition to a modern economy in Tsholotsho, Zimbabwe', *38:*6, *Development Southern Africa*, (2021) pp. 1031-1045.

methodology for this study and the materials used. The fifth section discusses the findings of the study, and the last section concludes the discussion.

2. Historical background of the indigenous Communities in Zimbabwe

The indigenous community in Zimbabwe referred to in this study are the San. The San are considered indigenous to Southern Africa and are presently residing in or close to the Kalahari Desert, in Botswana, Lesotho, Namibia, Angola, South Africa, Zimbabwe, and Zambia (see Fig.1).[15] According to archaeological data, the indigenous people's ancestors may have lived in Southern Africa for 20,000 years or longer.[16] The indigenous population in Southern Africa is estimated to number 113,000 in Botswana, Namibia, Angola, South Africa, Zimbabwe, and Zambia.[17] In Zimbabwe, the San are found in the western region, which numbers 2500.[18] They are mainly found in the Tsholotsho District of Matabeleland North Province and in Bulilima-Mangwe and Plumtree Districts of Matabeleland South Province.[19]

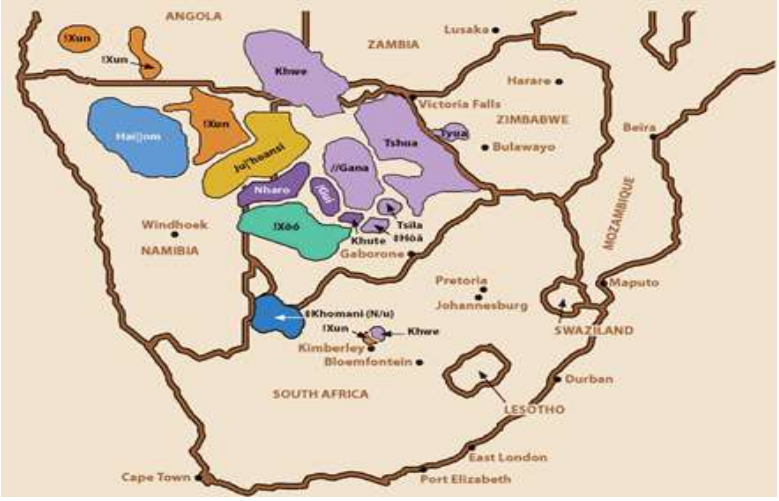

Fig. 1 Map of San distribution in Southern Africa.[20]

15 Hitchcock, R. K., Sapignoli, M., & Babchuk, W. A. 'Settler colonialism, conflicts, and genocide: interactions between hunter-gatherers and settlers in Kenya, and Zimbabwe and northern Botswana', *5:*1, *Settler Colonial Studies*, (2015) pp 40-65.

16 Phiri, K., Ndlovu, S., Dube, T., Nyathi, D., Ncube, C., & Tshuma, N. 'Access to formal education for the San community in Tsholotsho, Zimbabwe: challenges and prospects', *6:*7, *Heliyon*, (2020).

17 Hitchcock, R. K. "The impacts of conservation and militarization on indigenous peoples: A southern African San perspective." *Human nature* 30, no. 2 (2019): 217-241.

18 Ibid

19 Robins, S., Madzudzo, E., & Brenzinger, M. *An assessment of the status of the San in South Africa, Angola, Zambia and Zimbabwe* (Legal Assistance Centre, Windhoek, 2001).

20 Hitchcock, R. K. "The impacts of conservation and militarization on indigenous peoples: A southern African San perspective." *Human nature* 30, no. 2 (2019): 217-241.

It has long been believed that the indigenous people live primarily by hunting and harvesting edible wild fruits.[21]However, due to forced relocations and the land tenure system that encourage permanent settlements and criminalize wildlife hunting and gathering, their traditional, nomadic way of life has been reconfigured.[22] It is important to note that land is an important resource to indigenous communities, in particular. Report of the Special Rapporteur on the rights of indigenous peoples on her mission to Brazil, Mrs. Dae, cited in Fuentes[23] stated that:

> *"[i]t is difficult to separate the concept of indigenous peoples' relationship with their lands, territories, and resources from that of their cultural differences and values. The relationship with the land and all living things is at the core of indigenous societies," without which "they would be deprived of practicing, conserving, and revitalizing their cultural habits, which give meaning to their own existence, both individual and communitarian."* [24]

The indigenous community in Zimbabwe are characterized as:

> *"[a] minority group in Zimbabwe both nationally and locally. They are socially and economically marginalized by national policies and by their neighbors. Economically, they do not have sufficient resources to ensure food security. This insecurity leads to their political invisibility and the subordination of their interests to those of the dominant ethnic groups."*[25]

Thus, a majority of indigenous people, whose economic and cultural systems are regarded as landless because they do not own any land, poverty and relocation are the two main issues

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21 Hübschle, A. M. 'The social economy of rhino poaching: Of economic freedom fighters, professional hunters and marginalized local people', *65:*3, *Current Sociology*, (2017) pp 427-447.

22 Kangira, J., & Nhemachena, A. (Eds.), *Displacement, elimination and replacement of indigenous people: putting into perspective land ownership and ancestry in decolonising contemporary Zimbabwe (*African Books Collective: Cameroon, 2019).

23 Fuentes, A. (2021). 'Indigenous Peoples land rights: A culturally sensitive strategy for poverty eradication and sustainable development', In Davis, M. F., Kjaerum, M., & Lyons, A. (Eds.). (2021). *Research handbook on human rights and poverty*. (Edward Elgar Publishing, 2001) (pp. 323-336).

24 Ibid

25 Robins, S., Madzudzo, E., & Brenzinger, M. *An assessment of the status of the San in South Africa, Angola, Zambia and Zimbabwe* (Legal Assistance Centre, Windhoek, 2001).

affecting the indigenous people of Zimbabwe and elsewhere.[26] The forced removal of the indigenous people from the Hwange National Park during the colonial relocation process stands as a profound injustice in Zimbabwe's history.[27] Inclusive of land, the natural resources found in the lost territory, which had been traditionally used and were necessary for the very survival, economic development, and continuation of the San's way of life, were lost. As the resettlement policies lack the appreciation of the indigenous communities, their social structures, economics, and well-being were all significantly impacted by evictions.[28] Since then, the resettlement initiatives and the unpredictable land tenure system, including in post-colonial Zimbabwe, have continued to threaten the indigenous community's means of survival.[29]

While indigenous people have adopted off-ecosystem-based adaptation mechanisms like trading, exchanging, and working for others, these strategies are not sustainable for them in the long term.[30] Natural resources remain crucial to the livelihoods and revenue of indigenous households. However, many of the needed natural resources are found in protected areas like Hwange National Park or forest areas regulated by Zimbabwe's Forest Act [Chapter 19:05] and Parks and WildLife Act [Chapter 20:14], which criminalize the use of such trees and shrub species.[31] As such, the resettlement processes have a number of negative effects, such as loss of access to common property assets, social dis-articulation,

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26 Fuentes, A. (2021). 'Indigenous Peoples land rights: A culturally sensitive strategy for poverty eradication and sustainable development', In Davis, M. F., Kjaerum, M., & Lyons, A. (Eds.). (2021). *Research handbook on human rights and poverty*. (Edward Elgar Publishing, 2001) (pp. 323-336).

27 Hitchcock, R. K., Sapignoli, M., & Babchuk, W. A. 'Settler colonialism, conflicts, and genocide: interactions between hunter-gatherers and settlers in Kenya, and Zimbabwe and northern Botswana', *5:*1, *Settler Colonial Studies*, (2015) pp 40-65.

28 Hitchcock, R. K., Begbie-Clench, B., & Murwira, A. 'The San in Zimbabwe: Livelihoods, land and human rights*'. International Work Group for Indigenous Affairs,* 20 January 2016, <www.iwgia.org/en/resources/publications/3208-the-san-in-zimbabwe-livelihoods-land-and-human-rights.html>, visited on 20 October 2024.

29 Bhebhe, S., & Chirume, A. . 'The role of archives in the documentation of oral traditions, a case of the San people in Tsholotsho and Plumtree', *2:*1, *Oral history journal of South Africa*,(2014) 56-69.

30 Hitchcock, R. K., Begbie-Clench, B., & Murwira, A. 'The San in Zimbabwe: Livelihoods, land and human rights*'. International Work Group for Indigenous Affairs,* 20 January 2016, <www.iwgia.org/en/resources/publications/3208-the-san-in-zimbabwe-livelihoods-land-and-human-rights.html>, visited on 20 October 2024.

31 Kangira, J., & Nhemachena, A. (Eds.), *Displacement, elimination and replacement of indigenous people: putting into perspective land ownership and ancestry in decolonising contemporary Zimbabwe (*African Books Collective: Cameroon, 2019).

marginalization, food insecurity, joblessness, homelessness, and increased morbidity and mortality.[32] In modern Zimbabwe, the indigenous people continue to face these challenges.

3. Climate change, Institutions and the Indigenous Communities in Zimbabwe

The previous section noted that the indigenous community lacks access and control over land in Zimbabwe due to the country's land tenure system, which apparently does not accommodate their unique way of life into policy processes and implementation. Consequently, the indigenous people are severely vulnerable to the effects and impacts of climate change and variability.[33] Zimbabwe's rural economy is primarily agro based, with rural populations, including indigenous communities, relying on agriculture for their livelihoods. As climate change increasingly impacts these communities, there is a pressing need to mechanize agricultural systems and diversify rural economies. However, indigenous groups, such as the San community in Tsholotsho, face significant constraints in pursuing their own development paths. Key factors like vocational skills, essential for economic self-reliance, are often inaccessible to them. Moreover, the complex and bureaucratic processes involved in obtaining permits from organizations such as the Parks and Wildlife Management Authority and the Forestry Commission hinder indigenous peoples' participation in economic activities.[34]

In this status quo, most indigenous households in western Zimbabwe form partnerships with their capable neighbours who own farming equipment. However, the problematic nature of this partnership arrangement is that the indigenous people's fields are tilled on the condition that they manage their partner's cattle for the duration of the ploughing season and help in the fencing or clearing their partners' fields before the planting season.[35] Consequently, the indigenous people spend less time on their own fields during the agricultural season, which

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32 Fuentes, A. (2021). 'Indigenous Peoples land rights: A culturally sensitive strategy for poverty eradication and sustainable development', In Davis, M. F., Kjaerum, M., & Lyons, A. (Eds.). (2021). *Research handbook on human rights and poverty*. (Edward Elgar Publishing, 2001) (pp. 323-336).

33 Kangira, J., & Nhemachena, A. (Eds.), *Displacement, elimination and replacement of indigenous people: putting into perspective land ownership and ancestry in decolonising contemporary Zimbabwe (*African Books Collective: Cameroon, 2019).

34 Dube, T., Ncube, C., Moyo, P., Phiri, K., & Moyo, N. 'Marginal communities and livelihoods: San communities' failed transition to a modern economy in Tsholotsho, Zimbabwe', *38:*6, *Development Southern Africa*, (2021) pp. 1031-104.

35 Ibid

means that even in a favourable wet season they do not harvest much.[36] Furthermore, the primary sources of income for the indigenous people are unsustainable with most being highly informal or take on piece jobs.[37]

From this perspective, the livelihoods of the indigenous community are threatened by several key institutional and environmental factors. Efforts to integrate and force the San community into modern society have not been successful. Yet, their right to development should be in accordance with their own needs and interests. The ownership of development processes affecting them and their lands, territories, and resources will enable them to maintain and strengthen their institutions, cultures, economies and traditions.[38] Colonization and capitalism introduced borders, national parks, and game reserves, confining indigenous people to specific territories. This transition from a nomadic to a sedentary lifestyle was enforced by outlawing hunting and imposing national borders. Despite the introduction of citizenship, indigenous people often remain undocumented, excluding them from participation in modern capitalist systems.[39] Compounded by the loss of their traditional lands and livelihoods, indigenous people face additional challenges due to the land tenure system.[40] This displacement often did not meet the standards outlined in the United Nations Declaration on the Rights of Indigenous Peoples, which requires free consent, fair compensation, and the preservation of land rights. To date, Zimbabwe has failed to recognize the San people's rights to ownership and possession of their traditional lands, as stipulated by the International Labour Organisation's Indigenous and Tribal Peoples Convention, 1989 (No. 169).

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36 Dube, T., Ncube, C., Moyo, P., Phiri, K., & Moyo, N. 'Marginal communities and livelihoods: San communities' failed transition to a modern economy in Tsholotsho, Zimbabwe', *38:*6, *Development Southern Africa*, (2021) pp. 1031-1045.

37 Kangira, J., & Nhemachena, A. (Eds.), *Displacement, elimination and replacement of indigenous people: putting into perspective land ownership and ancestry in decolonising contemporary Zimbabwe (*African Books Collective: Cameroon, 2019).

38 UNDP. 'United Nations declaration on the rights of indigenous peoples', United Nations, 13 September 2007, <www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf>

39 Ibid

40 Ibid

3.1. Indigenous Peoples Rights and Participation in Development and Policy Processes

The San people in Tsholotsho are widely recognized as one of Zimbabwe's most marginalized groups, facing poverty, disempowerment and stigma. A significant challenge stems from the lack of recognition as indigenous people, hindering their participation in development and policy processes. Zimbabwean laws and policies often overlook the San people's unique needs and aspirations, violating international human rights standards that mandate equal treatment. While Sections 14(1) and 33 of the Constitution (Amendment [No. 20] Act) of 2013 includes a section on indigenous peoples, its implementation remains unclear, leaving the San community's rights and participation in decision-making uncertain.

Studies[41] highlight the limited participation of the San community in governance. However, recent government initiatives, such as the appointment of a San Chief and the provision of identification documents, aim to empower the community.[42] Despite these efforts, including Section 6(1) of the Constitution which recognises Koisan as an official language in Zimbabwe, the San community continues to face significant challenges, particularly in education. The lack of access to primary and secondary education in their native language, as mandated by the Constitution and the international conventions, has led to low literacy rates and further marginalization. This lack of recognition and limited access to education exacerbate the San people's exclusion from development and policymaking processes. To address these challenges, it is crucial to recognize the San people as indigenous, implement policies that respect their rights, and provide culturally appropriate education and support.

3.2. Indigenous knowledge systems and climate change resilience

Climate Change is the contemporary global challenge confronting humanity, which is not only reversing the gains of development made, but it is also worsening the already dire

41 Hitchcock, R. K., Begbie-Clench, B., & Murwira, A. 'The San in Zimbabwe: Livelihoods, land and human rights'. *International Work Group for Indigenous Affairs,* 20 January 2016, <www.iwgia.org/en/resources/publications/3208-the-san-in-zimbabwe-livelihoods-land-and-human-rights.html>, visited on 20 October 2024.

42 Moyo, N. (2023). Govt appoints substantive Chief Goledema. *The Independent,* 01 April 2023,

situations of vulnerable groups, including the indigenous people in Zimbabwe.[43] It is important to note that Zimbabwe is grappling with the heightened effects of climate change, including floods and drought brought on by the El Niño phenomenon, which exacerbate the already severe food shortages coupled with the lack of effective climate adaptation, which puts the indigenous people at further risk of food insecurity and diminishes the already scarce livelihood assets.[44] Variations in erratic seasonal rains result in mistimed plantings, reduced harvests, decreased agricultural productivity, diminished grazing fields, animal welfare, increased livestock farming expenses, and unreliable water sources that have historically been dependable are some of the notable effects of climate change.[45]

The indigenous peoples of Zimbabwe, for instance, are disproportionately vulnerable to the impact of climate change. As a result of the inaccessibility of key resources for a sustainable livelihood, including natural and financial capital, weak organisational, procedural, and institutional frameworks that are not sensitive to the plights of minority groups like the indigenous people, the San have not been able to support and provide the necessary quantity of resources to sustain their livelihoods in an economy that is continuously modernizing.[46] The "failed transition" hypothesis,[47] explains the challenges in their adjustment under the prevailing circumstances. Yet, indigenous knowledge systems have made it possible for people to comprehend changes and events in their surroundings.[48]

Sustainable natural resource conservation and context-specific climate change resilience mechanisms rely heavily on indigenous knowledge. Furthermore, indigenous knowledge

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43 Gukurume, S. 'Climate change, variability and sustainable agriculture in Zimbabwe" s rural communities', 14:2, *Russian Journal of Agricultural and Socio-Economic Sciences*, (2013) pp 89-100.

44 Kangira, J., & Nhemachena, A. (Eds.), *Displacement, elimination and replacement of indigenous people: putting into perspective land ownership and ancestry in decolonising contemporary Zimbabwe (*African Books Collective: Cameroon, 2019).

45 Phiri, K., Nhliziyo, M., Madzivire, S. I., Sithole, M., & Nyathi, D. 'Understanding climate smart agriculture and the resilience of smallholder farmers in Umguza district, Zimbabwe', *7:*1, *Cogent Social Sciences*, (2021) p 1970425.

46 Hitchcock, R. K., Sapignoli, M., & Babchuk, W. A. 'Settler colonialism, conflicts, and genocide: interactions between hunter-gatherers and settlers in Kenya, and Zimbabwe and northern Botswana', *5:*1, *Settler Colonial Studies*, (2015) pp 40-65.

47 Dube, T., Ncube, C., Moyo, P., Phiri, K., & Moyo, N. 'Marginal communities and livelihoods: San communities' failed transition to a modern economy in Tsholotsho, Zimbabwe', *38:*6, *Development Southern Africa*, (2021) pp. 1031-1045.

48 Acharya, S., Subedi, R., & Shrestha, H. 'Need of recognition of traditional institution and use of indigenous knowledge in climate change adaptation: A case-study in Mustang district, Nepal', *4*, *Nepal Journal of Environmental Science*, (2016) pp 53-62.

aids in building climate resilience and serves as the basis for contemporary adjustments.[49] Indigenous knowledge is understood as "knowledge, know-how, skills, and practices that are developed, sustained, and passed on from generation to generation within a community, often forming part of its cultural or spiritual identity."[50] Thus, the indigenous knowledge is unique to a certain environment and society and is dynamic by nature. Indigenous knowledge systems are a good starting point for comprehending variations in the climate by exploring local meanings of space and time, how people and places relate to each other, and how local knowledge is appropriated and transmitted over space and time.[51]

Indigenous knowledge and practices are administered by traditional institutions, which allow individuals to put the knowledge and practices into actual practice daily.[52] Traditional institutions are highly effective at managing natural resources.[53] These traditional institutions have a wealth of indigenous knowledge that is useful for adjusting to unpredictable climatic circumstances. The knowledge system is empirical and symbolic, practical and intellectual, therapeutic and resilient, and diverse due to the interplay of people and place.[54] The cutting-edge technologies they have created thus far have demonstrated ecological sustainability and climate change adaptability.[55] An innate connection to one's surroundings and environment, including climate change, is provided by this information. It is possible, therefore, for indigenous people to modify their behaviour in response to climatic shifts.[56] Therefore, in response to climate invariability, indigenous knowledge systems are a vital cog for building climate-resilient communities.

The utilization of indigenous knowledge may be beneficial in the development of some affordable, participatory, and sustainable climate resilience strategies. The use of indigenous knowledge in climate resilience is becoming more and more popular in both study and

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49 IPCC. Summary for Policymakers. *IPCC*, 2023, <10.59327/IPCC/AR6-9789291691647.001>, visited on 20 November 2024

50 Agrawal, Arun, and Nicolas Perrin. 'Climate adaptation, local institutions and rural livelihoods', In *Ad*Adger, W. N., Lorenzoni, I., & O'Brien, K. L. (Eds.). *Adapting to climate change: Thresholds, values, governance (*Cambridge University Press, 2009). pp 350-367.

51 Ibid

52 MoSTE. 'Indigenous and local knowledge and practices for climate resilience in Nepal, mainstreaming climate change risk management in development', *Ministry of Science, Technology and Environment*, (2015) pp 44168-012

53 Ibid

54 Ibid.

55 Ibid.

56 Ibid.

practice.[57] This suggests that when considering sustainable climate change resilience and natural resource management programs, it is unwise to ignore the values of indigenous knowledge and practices.[58] To achieve sustainable resilience to the effects of climate change, it is important to consider the integration of traditional knowledge with scientific information. This also suggests that the value of combining scientific knowledge with indigenous knowledge to counteract environmental hazards and disasters is being increasingly recognised.[59]

4. Location and Geography

Data for this study was collected from August to November 2024 in Tsholotsho District, Zimbabwe. A peri-urban district, Tsholotsho's rural population primarily relies on rain-fed agriculture, informal trading, and migration to neighbouring countries such as Botswana and South Africa. The district is home to the San people. Numbering between 2,000 and 2,800,[60] the San are concentrated in parts of Tsholotsho District and Plumtree in the Bulilimangwe District. Identifying themselves as the *Tjwa*, they speak IsiNdebele and Kalanga; only the older generation speaks *Tjwa*, a language officially recognized in the Constitution of Zimbabwe, 2013.

57 MoSTE. 'Indigenous and local knowledge and practices for climate resilience in Nepal, mainstreaming climate change risk management in development', *Ministry of Science, Technology and Environment*, (2015) pp 44168-012.

58 Agrawal, Arun, and Nicolas Perrin. 'Climate adaptation, local institutions and rural livelihoods', In *Ad*Adger, W. N., Lorenzoni, I., & O'Brien, K. L. (Eds.). *Adapting to climate change: Thresholds, values, governance (*Cambridge University Press, 2009). pp 350-367.

59 Ibid.

60 Hitchcock, R. K., Sapignoli, M., & Babchuk, W. A. 'Settler colonialism, conflicts, and genocide: interactions between hunter-gatherers and settlers in Kenya, and Zimbabwe and northern Botswana', *5:*1, *Settler Colonial Studies*, (2015) pp 40-65

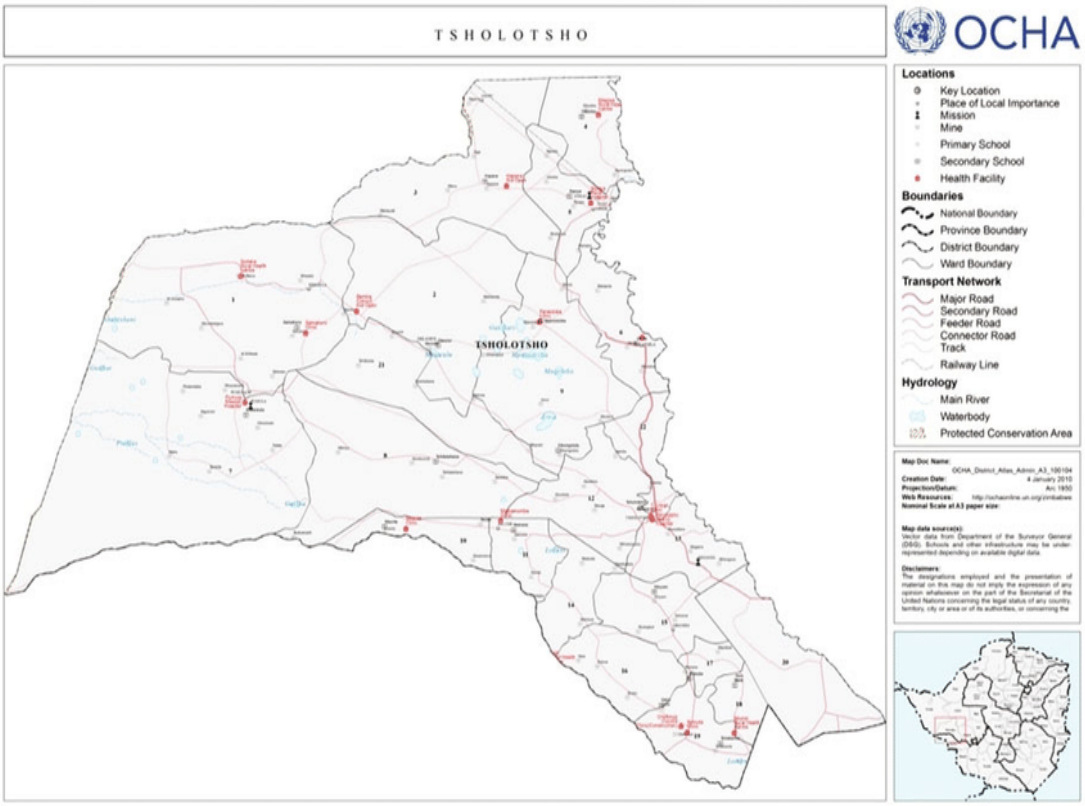

Fig. 2 Map of Tsholotsho in Zimbabwe.[61]

4.1. Materials and Methods

This study employed a mixed research method, which is a combination of qualitative and quantitative research methods. Mixed methods research is the type of research that "combines elements of qualitative and quantitative research approaches for the broad purposes of breadth and depth of understanding and corroboration."[62] The study incorporates qualitative and quantitative data collection tools. These included surveys and interviews to ensure there's a rich, in-depth, broad spectrum of data representing different individuals within the San community. These were used for key informants and focused on their views concerning the vulnerabilities of the San and what they have done to empower the community's climate resilience.

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61 Phiri, K., Ndlovu, S., Mpofu, M., & Moyo, P. 'Climate change adaptation and resilience building through small grains production in Tsholotsho, Zimbabwe', In Leal Filho, W., Luetz, J., & Ayal, D. *Handbook of climate change management* (Springer Nature Switzerland, 2021) pp. 231-250.

62 Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. 'Toward a definition of mixed methods research', *1*:2, *Journal of mixed methods research*, (2007) pp 112-133.

Data was also collected from key informants that included the Chief of the San community in Tsholotsho, 10 organisations that interact with the San communities including the Tsoro-o-tso San Development Trust, 2 local government officials in the Tsholotsho Rural Development Council (RDC), and 2 Agritex officials. The research incorporated oral history from the 30 custodians of San history, the older members of the San people. The study also utilised documentary analysis and made use of government policy documents and reports from various NGOs working with the San community and online peer-reviewed articles.

The study employed a purposive sampling technique. Purposeful sampling strategies "move away from any random form of sampling and are strategies to make sure that specific kinds of cases of those that could possibly be included are part of the final sample in the research study."[63] Furthermore, purposive sampling is ''used to select respondents that are most likely to yield appropriate and useful information."[64] Guided by the above assessments, purposive sampling was appropriate for this study, as relevant information on the San community's livelihoods and the role of their indigenous knowledge in their adaptation and resilience in the face of climate change cannot be obtained from anyone else but those directly linked to the community.

Thematic data analysis was utilised for data analysis. Thematic data analysis is defined as a qualitative analytic method for "identifying, analysing, and reporting patterns."[65] Thematic analysis is broadly cited by researchers as a generic and accessible analytic approach with applicability across disciplines and qualitative traditions. The cross-sectional applicability of thematic data analysis makes it the most convenient analysis tool for this research as it uses mixed research methodology. In addition to that, identifying themes will allow for a systematic analysis of the collected data.

63 Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., ... & Walker, K.. Purposive sampling: complex or simple? Research case examples, *25:*8, *Journal of research in Nursing*, (2020) pp 652-661.

64 Kelly, B. C. 'Sampling and recruitment issues in qualitative drugs research: Reflections on the study of club drug users in metro New York', *45:*5, *Substance Use & Misuse*, (2010) pp 671-683.

65 Braun, V., & Clarke, V. 'Using thematic analysis in psychology',*3:*2 *Qualitative research in psychology*, (2006) pp 77-101.

5. Results

5.1. The effects of climate change in Tsholotsho and the effects on the environment

Tsholotsho, one of Zimbabwe's driest districts, is acutely vulnerable to the effects of climate change. Located in agro-ecological region 4, the district receives an annual rainfall of 400-650 mm, characterized by erratic patterns and high temperatures ranging from 30°C to 38°C. This semi-arid environment, devoid of perennial rivers, has historically presented significant challenges for inhabitants, making agro-based activities and ecosystem-based livelihoods difficult to sustain. The district's increasingly arid conditions have resulted in the decline of vegetation and wildlife, directly impacting the livelihoods of the San people, who heavily rely on forestry and ecosystem-based resources. Rain-fed agriculture has become increasingly unsustainable, while dwindling water bodies and pastures have intensified human-wildlife conflict, placing a significant burden on the San community. A consulted Key Informant for the study stated that:

> *"The name Tsholotsho is derived from the Tjwao word tsoro-o-tso meaning 'rotten tubers.' The San people which are also called the Tjwa are hunters and gatherers-gathering of wild fruits/wild plant discovered that most of the roots they dug were rotten, hence they called it a place of rotten tubers. It is upon this revelation that the first generation of the San then declared that Tsholotsho a dry place. Unfortunately, the settler colonial government intentionally relocated the Tjwa to Tsholotsho- a dry and infertile areas, just as they did with the Bantu groups' forced displacement to reserves" (Key informant 1, Tsholotsho).*

Regardless of the relocation, the *Tjwa* continue to practice their traditional way of gathering wild fruits, but the worsening climate conditions in Tsholotsho District have made some of the wild fruits scarce and extinct. The profiling of the San people and the place that they are now inhabiting is critical in understanding their vulnerability. A consulted informant stated that:

> *"The Tjwa are known by the Ndebele as Amasili (Abantu abasila ngabanye abantu), translated in English as people who survive through other people. This derogatory term was adopted after the displacement of the Tjwa to pave way for Hwange National Park and placed them in areas predominantly Ndebele and Kalanga. This forced them into a sedentary lifestyle, and they became dependent on the neighbouring ethnic groups as a source of livelihood by working as domestic labour and tilling their fields to earn a wage for their upkeep." (Key informant 6, Tsholotsho).*

Sedentary lifestyles can weaken the San community's adaptive capacity to climate change. Additionally, their reliance on rural and community-based industries, subsistence economies, and traditional activities like hunting, fishing, trapping, and gathering, while rooted in indigenous rights, is crucial for cultural preservation and economic self-reliance. However, historical factors such as colonization, modernization, globalization, and displacement have disrupted these traditional systems. Climate change has further exacerbated these challenges, making it imperative to develop effective adaptation strategies to protect the San community's livelihoods and cultural heritage.

5.2. Climate change affects the indigenous community in Tsholotsho

The indigenous community in Tsholotsho still relies on a hunter-gatherer economy, which is vulnerable to climate change. The indigenous community in Zimbabwe is not yet officially recognised as an indigenous community in any of the country's laws, including the Constitution.[66] The Constitution, specifically section 6 (recognizing the Koisan language), section 16 (mandating the promotion and preservation of cultural values, practices, national heritage, and respect for traditional institutions), and section 33 (mandating the preservation of traditional knowledge), offers potential leverage despite being located within the National Objectives. These provisions could be used to pressure the government and provide a basis for strong interpretation and even legal action. To this end, the country's agrarian system, including the land tenure system, is problematic, effectively rendering the indigenous

[66] Chibememe,G.,Dhliwayo,M.,Gandiwa,E.,Mutisi,S.,Muboko,N., & Kupika,O.L. . 'Review of National Laws and Policies that Support or Undermine Indigenous Peoples and Local Communities in Zimbabwe'. *Natural Justice: Ford Foundation*. December 2014, <Zimbabwe-Legal-Review.pdf>visited on 20 November 2024.

community landless and consequently impoverished. The lack of demarcated and tenured land leaves the indigenous community susceptible to possible further displacements that may further disrupt the newly adopted sedentary lifestyle. Thus, the legal lacuna places an extra burden on the San community, exposing them to exploitation and weakening their ability to adapt to climate change.

Evidence shows that people do not invest in land they do not own, and investment in land is a crucial component of building climate resilience.[67] Recurrent droughts, including meteorological, hydrological, agricultural, and ecological droughts, have plagued Tsholotsho, affecting food security and the survival of indigenous people who are unable to respond effectively. The point of entry to understanding how the San community is affected by climate change is to understand their vulnerability context. In particular, the fact that they do not own land. It is argued that:

> *"... the cultural identity of Indigenous Peoples is intimately connected with the special relationship that they have with their traditional lands and territories. When they are prevented from having access to their traditional lands and territories, their-right to collective property and cultural identity will be affected. As their culture and cultural identity is affected, their right to have access to dignified conditions of life will suffer too."*[68]

Similarly, land is an important livelihoods resource. It is argued that:

> *"Land is the foundation of the lives and cultures of Indigenous peoples all over the world... Without access to and respect for their rights over their lands, territories and natural resources, the survival of Indigenous peoples' particular distinct cultures is threatened."*[69]

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67 Phiri, K., Nhliziyo, M., Madzivire, S. I., Sithole, M., & Nyathi, D. 'Understanding climate smart agriculture and the resilience of smallholder farmers in Umguza district, Zimbabwe', *7:*1, *Cogent Social Sciences*, (2021) p 1970425.

68 Fuentes, A. (2021). 'Indigenous Peoples land rights: A culturally sensitive strategy for poverty eradication and sustainable development', In Davis, M. F., Kjaerum, M., & Lyons, A. (Eds.). (2021). *Research handbook on human rights and poverty*. (Edward Elgar Publishing, 2001) (pp. 323-336)

69 Chibememe,G.,Dhliwayo,M.,Gandiwa,E.,Mutisi,S.,Muboko,N., & Kupika,O.L. 'Review of National Laws and Policies that Support or Undermine Indigenous Peoples and Local Communities in

Without access, control, and ownership of their land, the indigenous community cannot build sustainable livelihoods. Regrettably, the strained livelihoods of the San people have been subjected to climate change shocks, as Tsholotsho district has been receiving erratic rainfalls leading to all forms of drought and extreme weather conditions. The impact of climate change was broadly acknowledged by the consulted respondents. Increased temperatures and reduced precipitation was cited as notable climatic changes contributing to reduced harvests. A consulted key informant respondent stated that:

> *"I have noticed climate changes; there are fewer rains now and high temperatures. When we arrived here, we used to do rituals and our Boro dance and ask for rains from our gods and receive them. In most cases, we will leave the sacred places wet as we would have received rains. However, that is no longer the case; the rituals we used to do for the rains are now of no use" (Respondent 3, Tsholotsho district).*

Interviewees who have attended these rainmaking ceremonies claim that indeed the ceremonies were usually followed by rain falling and observe that over the years the ceremony has become more of an entertainment than a respected cultural ceremony. While these attendees believe in climate-induced rain scarcity and that it has greatly affected the *Tjwa* community, they however acknowledged the view by the *Tjwa* as culturally valid. The scarcity of rainfall in Tsholotsho has led to a district-wide shortage of water. A member of the *Tjwa* stated that they drink the same water as animals but purify it using ash, a process of purification passed down by their ancestors. However, the sharing of water sources with animals has led to a rise in human-wildlife conflict, with several incidents of animals encroaching into homesteads in search of water, leading to the destruction of homes. The same respondent state that:

> *"I have seen the effects of climate change in the last 10 years. We did not receive adequate rains, and this affected our harvests and pastures for our animals. A lot of us have lost the few cattle we had due to hunger, and we had*

Zimbabwe'. *Natural Justice: Ford Foundation*. December 2014, <Zimbabwe-Legal-Review.pdf>visited on 20 November 2024.

to sell the few assets we have acquired food" (Respondent food 6, Tsholotsho district).

Apart from the direct effects of climate change on the indigenous community, the study showed that some of the indirect effects of climate change included early child marriages, anti-social activities such as theft, and loss of identity.

5.3. Government strategies and policies implemented to address climate change amongst the indigenous people in Tsholotsho

The San people do benefit from occasional culling of elephants and buffalos as part of the government's quota to help boost their livelihoods. However, this is problematic as hunting is a right and considered a cultural practice for the San, a way to pass down generational knowledge. Replacing this with government actions amounts to trampling on the San's rights, particularly cultural rights. Article 23 of the International Labour Organisation Indigenous and Tribal Peoples Convention states that:

> "Handicrafts, rural and community-based industries, and subsistence economies and traditional activities of the peoples concerned, such as hunting, fishing, trapping and gathering, shall be recognised as important factors in the maintenance of their cultures and in their economic self-reliance and development. Governments shall, with the participation of these peoples and whenever appropriate, ensure that these activities are strengthened and promoted."[70]

This means that the strategies implemented by the Government of Zimbabwe are contrary to the rights of the indigenous people. Despite this, the community has received special recognition in the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) through employment opportunities and the provision of basic services like water through borehole drilling. One respondent stated that:

[70] International Labour Organisation Indigenous and Tribal Peoples Convention, 1989 (No. 169)

> *"The government has scaled up programs like water harvesting (drilling boreholes), employment quarters in central government departments, and local government agencies, such as the Zimbabwe Prisons and Correctional Services as well as Zimbabwe Parks and Wildlife. Qualification requirements have been waived to facilitate their integration. This has had a positive impact on household and community incomes, consequently broadening the livelihood assert base, which is central to climate resilience. Without these interventions, we would have experienced casualties in the community, as the end of the drought is not in sight" (Key informant 1, Tsholotsho District).*

To address the challenges of the San community, in November 2022, the Zimbabwean government installed a Chief of the San people in Tsholotsho, Chief Goledema of Garia Village, as their representative - a position they previously lacked. The installation of the chief signifies a broader government policy to address the San's challenges, including climate change. This ensures their visibility and gives the community a voice in decision-making and representation in government.

The non-recognition of the *Tjwa* as indigenous to the country has left them existing in Zimbabwe as stateless for a long period of time due to a lack of documentation. Consequently, they could not access the same privileges and rights as citizens. They were unable to access climate adaptation inputs, employment, voting rights or participation in political processes and right to education, among others. However, in the past few years the government has been regularising their status through a mobile documentation drive in 2022, which was supported by UNICEF and funded by the government of Sweden.[71] This drive has helped the *Tjwa* community in Tsholotsho district to access birth certificates and National Identification cards (IDs), thereby allowing them to be able to benefit from national programs.

Development stakeholders like the Plan International have been aiming for sustainable livelihoods for the *Tjwa* through building schools to ensure that they have access to

[71] UNICEF: The San Community in Tsholotsho Sees a Bright Future After Birth Certificate and IDs Blitz. 06 June 2023 < https://www.unicef.org/zimbabwe/stories/san-community-tsholotsho-sees-bright-future-after-birth-certificates-ids-blitz > visited on 15 September 2024.

education that might enable them to seek better-paying formal jobs and in turn provide for themselves as well as their families (Key Informant Interview 2). This is a fundamental initiative, as the literacy rate in the *Tjwa* community is very low due to past exclusion that made it impossible for them to access schools. The inability to read and write has greatly affected their employment opportunities, professional growth, and the ability to diversify their livelihoods. In a conversation with Plan International representatives, they stated that:

> *"The organisation has introduced projects such as goat projects and solar-powered gardens [Solar powered boreholes] in projects aimed at empowering the community to be food secure and to diversify their livelihoods in the face of climate change-induced drought, but these projects have failed to yield expected results. We have also empowered some members of the community with practical skills in fixing and maintaining community resources and the provision of full toolboxes to do so" (Key informant 2, Tsholotsho District).*

5.4. The indigenous community's climate resilience strategies in Tsholotsho

The interviewed key informants all concurred that the San community of Tsholotsho Zimbabwe are still largely hunters and gatherers. However, their source of livelihood is steadily diversified through selling their labour to the neighbouring communities in Zimbabwe and Botswana, vending, and exchange of goods with other communities:

> *"The San do not till the land themselves, but they work in neighboring community fields to earn a living. This may be traced back to their cultural orientation—that they are hunter-gatherers. In particular, they never believed in the cutting down of trees" (Key informant 4, Tsholotsho District).*

Additionally, while migration has been a result of climate change, it has also been a resilience-building strategy:

> *"I migrated with my family to Beitbridge, where my father had found work. There I received my primary and secondary education. I did pass both my ordinary and advanced level, which enabled me to get employed in one of the state security organisations" (Respondent 1, Tsholotsho District).*

This case highlights how migration, often driven by climate change, can lead to better outcomes and a transition to a more modern lifestyle for individuals and families. Yet, the *Tjwa's* diversification of their livelihoods has been met with challenges, with most of them choosing to remain in the community rather than move away to find jobs. A consulted informant observed that the *Tjwa's* attempt at social adaptation has been met with 'discrimination, inhuman treatment, and bullying at school'; this has contributed to further self-isolation.

5.5. The San community's Indigenous Knowledge Systems in Managing Climate Change

Indigenous knowledge still plays a vital role in the livelihoods of the *Tjwa*, although they're quickly losing it due to their integration and adoption of the culture as well as traditions of the Kalanga and Ndebele neighbouring groups. The *Tjwa*'s understanding of the drastic changes in their environment is that it is not linked to climate change, but to the gods and their ancestors distancing themselves from them for mixing and adopting neighbouring cultures.

The *Tjwa* use their indigenous knowledge to predict underground water, identify roots for contraceptives and other medical conditions. It is therefore paramount that in adopting climate change resilience mechanisms in this community there should be room for a mixture of scientific knowledge and indigenous knowledge. This will not only lead to the *Tjwa* actively participating in policies that directly affect them, but it will also foster trust between the community and the government or organisations working to alleviate climate-induced drought in that community.

6. Discussion

This study reveals that climate change has significantly impacted indigenous communities in Tsholotsho, Matabeleland North, and Zimbabwe. A notable challenge is the lack of recognition of these communities' special rights within the domestic legal framework despite its recognition of their specific needs such as language, culture, and indigenous knowledge

systems. This oversight has increased their vulnerability to climate change and hindered their ability to develop resilience mechanisms.[72] Historical marginalization has further worsened their poverty, making them particularly susceptible to the impacts of climate change.[73]

The study findings reveal that climate change has compounded the already precarious situation of the San community, compelling their adoption of an unfamiliar sedentary lifestyle. Consequently, their traditional hunting practices, which once provided income, livelihood, and a vital means of cultural education and the transmission of tribal values, have been largely discontinued, with any remaining instances likely undertaken cautiously due to legal prohibitions. Their difficulties with agriculture are therefore unsurprising. This shift, rooted in human rights violations, undermines their ability to build strong, resilient livelihoods. Human rights are essential for fostering robust economic, social, and political structures capable of withstanding various shocks, including those related to climate change. Furthermore, the study highlights the top-down nature of current adaptation strategies and development programs. These initiatives often fail to meaningfully impact the San community as they do not align with their specific needs and cultural practices. It is imperative to adopt a bottom-up approach that empowers the San community to shape their own development trajectory. By addressing the underlying issues of human rights, recognition, and empowerment, it is possible to build the resilience of the San community and enable them to adapt to the challenges posed by climate change.

7. Conclusion

The results of this study complement the existing literature, highlighting the urgent need to support indigenous communities in leading dignified lives. A crucial step is for the government to develop a comprehensive legal and policy framework that protects, promotes, and preserves the rights of indigenous communities. A key challenge faced by the San

[72] Dube, T., Ncube, C., Moyo, P., Phiri, K., & Moyo, N. 'Marginal communities and livelihoods: San communities' failed transition to a modern economy in Tsholotsho, Zimbabwe', *38:*6, *Development Southern Africa*,(2021) pp. 1031-1045

[73] Hitchcock, R. K., Begbie-Clench, B., & Murwira, A. 'The San in Zimbabwe: Livelihoods, land and human rights*'. International Work Group for Indigenous Affairs,* 20 January 2016, <www.iwgia.org/en/resources/publications/3208-the-san-in-zimbabwe-livelihoods-land-and-human-rights.html>, visited on 20 October 2024.

community is their lack of recognition as indigenous people within Zimbabwe's legal and policy framework. This lack of recognition exacerbates their vulnerability to the effects of climate change. To address this issue, policymakers should consider enacting progressive legislation that safeguards indigenous peoples' rights, particularly in relation to the exploitation of natural resources on their lands. This legislation should also demarcate traditionally occupied indigenous lands, ensuring their protection and respect. Ratifying the International Labour Organisation Indigenous, the Tribal Peoples Convention, 1989 (No. 169) and the United Nations Declaration on the Rights of Indigenous Peoples would be significant steps towards this goal. To support the San community's economic diversification, government agencies should leverage their rich cultural heritage. Cultural tourism offers a promising avenue for sustainable livelihoods, allowing the San to utilize their traditional knowledge and skills as park rangers, guides, conservationists, wildlife monitors, and more. The Government of Zimbabwe through the Ministry of Tourism should prioritize supporting community-based cultural tourism projects in Tsholotsho and surrounding areas, where rock paintings serve as major tourist attractions. Additionally, creating inventory and registering the San community's artwork with the National Museums and Monuments of Zimbabwe would contribute to its preservation and promotion.

Investigating the Role of Women in Securing the Right to Water for Climate Change Resilience and Adaptation Strategies in Epworth Informal Settlement

Lynthia White[1] and Chivandire Christine[2*]

Abstract

This research investigates the significant role of women in securing the right to water for climate change resilience and adaptation strategies within the Epworth informal settlement. As climate change exacerbates vulnerabilities and affects the right to water in the informal settlements, women often emerge as key agents in community-based adaptation efforts, particularly regarding water management. The study adopted a mixed methods research approach. A mixed-methods research approach incorporated both qualitative and quantitative approaches to collect data from women in Epworth Ward 1, the Local Authorities, and government parastatals. In-depth interviews, focus group discussions, observations and document review were used to acquire qualitative data. Household surveys were also administered to a representative sample of women in Epworth Ward 1. Observations were also used to examine the situation in Ward 1. The findings reveal that women's involvement in decision-making processes not only enhances community resilience but also highlights the necessity of integrating gender perspectives into climate policies. By linking women's rights to water access with broader climate adaptation strategies, this research underscores the importance of empowering women as essential contributors to climate resilience. This work advocates for inclusive policy frameworks that recognize and support women's rights to water and roles in climate resilience efforts, ultimately fostering equitable and sustainable climate adaptation.

1. Introduction

Climate change is one of the most pressing global challenges of the 21st century, affecting various aspects of human life, including food security, water availability, and overall socio-

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[2] Chivandire Christine: University of Zimbabwe, Department of Architecture and Real Estate, Ministry of Lands, Agriculture, Water, Fisheries and Rural Development.

economic well-being.[3] Climate change poses a significant threat to vulnerable communities in informal urban settlements, with women often experiencing disproportionate impacts due to existing gender inequalities and socioeconomic marginalization.[4] The right to water is recognized as a human right by international law and is regarded as a significant right that applies to all human beings, regardless of the political, economic or social background.[5] The United Nations Development Programme[6] argues that 1.2 billion people reside in regions of water scarcity while 1.6 billion people are located in regions of economic water shortage and due to rapid population growth, it can be argued that the population has increased. The Food and Agriculture Organisation[7] notes that the scarcity of water is increasing more than twice the rate of population growth.

Epworth is an informal settlement located on the outskirts of Harare, the capital city of Zimbabwe which is impacted by the effects of climate change manifesting in its water challenges. The settlement is characterized by lack of basic services, such as clean water, sanitation, and reliable electricity supply.[8] Climate change has had a profound impact on Epworth, with the community experiencing an increase in the frequency and intensity of extreme weather events, such as droughts and heatwaves. These climatic changes have adversely affected the livelihoods, food security, and overall well-being of the residents, particularly women, who are often responsible for household tasks and care of their families whose reliance on water is higher than the other gender.[9]

This study intends to analyse the ways in which women in Epworth community are responding to and coping with the effects of climate change in response to water crisis and how the issue of water scarcity has become a gender issue and a human rights matter. The

3 Dietz, T., Shwom, R.L. & Whitley, C.T., (2020) 'Climate change and society', *Annual Review of Sociology*, 46, 135–158, https://doi.org/10.1146/annurev-soc-121919-054614.

4 Dankelman, I. (ed.), (2010) Gender and Climate Change: An Introduction (1st ed.). Routledge, https://doi.org/10.4324/9781849775274.

5 Palmer, R.C., Short, D. and Auch, W.E.T., (2018) 'The human right to water and unconventional energy', *International Journal of Environmental Research and Public Health (IJERPH)* 15(9), 1858, https://doi.org/10.3390/ijerph15091858.

6 United Nations Development Programme (2006) Human Development Report 2006, United Nations Development Programme, New York, USA.

7 Food and Agriculture Organisation (2007) The State of Food and Agriculture, Food and Agriculture Organization of the United Nations Rome.

8 Brown, H., et al. (2021) 'Biomass burning aerosols in most climate models are too absorbing', *Nature Communications*, 12, 277, https://doi.org/10.1038/s41467-020-20482-9.

9 Nyathi, D. et al. (2024) 'Women's vulnerability and adaptive capacity to climate change in agrarian settings of Zimbabwe', in Mukhopadhyay et al. (eds) Climate Crisis, Social Responses and Sustainability. Climate Change Management. Springer, https://doi.org/10.1007/978-3-031-58261-5_23.

research seeks to address the interconnections between environment, climate change and gender equality, with a specific focus on the experiences and contributions of women in Epworth informal settlement to the right to sufficient water. It explores the community level adaptation strategies developed by women to address these climate-related risks and stresses in making water available for daily use in their households. The research recognizes that the impacts of climate change on vulnerable communities, such as informal settlements, are fundamentally a human rights issue. By dwelling on the experiences and agency of women, the study aims to highlight how gender-based discrimination and inequalities exacerbate the human rights implications of climate change. Therefore, the study seeks to investigate the role of women in climate change resilience and adaptation strategies in Epworth informal settlement.

2. Theoretical framework

Maslow's hierarchy of needs theory is one of the most used theories in dealing with human rights and their needs. Marx and Engels[10] emphasise that human needs are divided into three levels which are survival, enjoyment and development. Maslow[11] identifies five levels of human needs which are physiological, safety, social, respect and self-realization needs. In this regard, water falls under the survival level which are the needs human beings cannot proceed without.[12] According to the hierarchy of needs by Maslow it can be argued that the availability of sufficient water is a physiological need which is a biological requirement for the survival of human beings.[13] Cullet[14] is of the view that water is the second most important resource for human survival after air. Hou et al.[15] argue that water is not only a basic need for the survival of humans but also the demand directly related to water. Palmer, Short and [16] mention that freshwater resources are important for the mental and physical health of the people as it covers various socioeconomic needs of the people. In other words, water is one

10 Marx, K. & Engels, F. (1940) Marx & Engels Collected Works, Volume 49 Letters 1890-92, Lawrence & Wishart Electric Book.

11 Maslow, A.H. (1943) 'A theory of human motivation', *Psychological Review*, 50(4), 370– 96, doi:10.1037/h0054346.

12 Ibid.

13 Ibid.

14 Cullet, P. (2012) 'Right to water in India – plugging conceptual and practical gaps', *The International Journal of Human Rights*, 17(1), 56–78, https://doi.org/10.1080/13642987.2012.700454.

15 Hou et al. (2019) 'Pollution characteristics, sources, and health risk assessment of human exposure to Cu, Zn, Cd and Pb pollution in urban street dust across China between 2009 and 2018', *Environment International* 128, 430–437, https://doi.org/10.1016/j.envint.2019.04.046.

16 Palmer, R.C., Short, D. & Auch, W. E. T. (2018) 'The human right to water and unconventional energy', *Int. J. Environ. Res. Public Health*, 15, 1-28, doi:10.3390/ijerph15091858.

of the basic needs in which a person's body cannot function without. Regardless of water being a physiological need that human beings cannot live without, it can be noted that its availability among the urban areas in Harare remains scarce. Human Rights Council Resolution 7/22 recognizes the human right to safe drinking water.[17] The right consists of key indicators such as availability, accessibility, quality, non-discrimination and participation.

3. Conceptual framework

The notion of this study is centred on the right to water for the female citizens residing in the informal urban settlements. Human Rights Council Resolution 7/22 recognizes the human right to safe drinking water and establishes that the right to water has five standards that includes its availability, accessibility, affordability, acceptability and its quality.[18] The availability of water is referred to as the sufficiency of water, its adequate infrastructure and financial resources to fulfil its requirements of the human rights to water. In this case this study will focus on investigating the available water infrastructure in Epworth informal settlement. It is also crucial to investigate the accessibility of water. Moreover, it can be argued that its quality is essential as contaminated water may become a health hazard and lead to disease outbreaks. It is argued that the quality and safety of water services must be ensured for the protection of health of the people and the general public.[19] Thus it is important to analyse the quality of water available for use in Epworth which is an informal settlement characterized by inadequate provision of basic infrastructure and services.

These marginalized communities face compounded vulnerabilities due to lack of infrastructure, insecure land tenure, and high poverty levels. At a local level, within the specific context of Zimbabwe and the Epworth informal settlement, the research on women's role in climate change adaptation is limited. A review by Mapfumo,[20] on climate change adaptation strategies in Zimbabwe identified several studies, but none focused on the gender

17 McMahon, E., & Ascherio, M. (2012) 'A step ahead in promoting human rights? The Universal Periodic Review of the UN Human Rights Council',*Global Governance*, 18(2), 231–248, http://www.jstor.org/stable/23269951.

18 Ibid.

19 SWA (2021) SWA Partnership Strategy 2020-2030 Regional Roadmaps 2021-2025, Sanitation and Water for All (SWA) New York, USA.

20 Mapfumo, P., Mtambanengwe, F., & Chikowo, R. (2015) 'Building on indigenous knowledge to strengthen the capacity of smallholder farming communities to adapt to climate change and variability in southern Africa', *Climate and Development* 8(1), 72-82, http://dx.doi.org/10.1080/17565529.2014.998604.

dimensions, or the unique challenges faced by women in informal settlements. Similarly, a study by Chirisa,[21] on climate change resilience in Epworth highlighted the vulnerabilities of the community but did not delve into the role of women in developing and implementing adaptation measures. This study aims to address this gap and contribute to new empirical evidence in the field.

Climate change impacts women disproportionately, particularly in developing regions and informal settlements, due to existing gender inequalities and vulnerabilities.[22] Informal settlements like Epworth are home to some of the most marginalized and climate vulnerable populations. These communities often lack access to critical infrastructure, services, and resources needed to effectively cope with climate change impacts such as floods, droughts and heat waves. Understanding how women navigate these challenges is crucial and how their rights are represented in dealing with the issue of water is vital for policy formulation and its implementation by various government ministries and local authorities. The research seeks to understand the unique contributions, challenges, and opportunities women face in the context of climate change adaptation in this particular informal settlement community with regards to the right to water.

4. Literature review

Climate change is attributed to anthropogenic activities around the globe. UN-HABITAT,[23] argues that urbanization is increasing rapidly in regions such as Asia and sub-Saharan Africa leading to the growth of unplanned informal settlements and the physical manifestation of urban poverty and inequality. It is argued that a total of one billion urban residents reside in informal settlements where the effects of climate change are most acute.[24] It is noted that, 59 percent of the urban population in Sub-Saharan Africa resided in slum settlements, while 21 percent of urban population in Latin America and the Caribbean and 28 percent in the Asian region.[25] It is mentioned that informal settlements residents are already living in deprivation of basic facilities and services such as clean water, sanitation and housing among

21 Chirisa, I. et al. (2016) 'Building resilient infrastructure in the face of climate change in African cities: Scope, potentiality and challenges', *Development Southern Africa*, 33(1), 113–127, https://doi.org/10.1080/0376835X.2015.1113122.
22 Ibid.
23 United Nations Human Settlements Programme (UN-Habitat) (2018) Addressing the Most Vulnerable First – Pro-Poor Climate Action in Informal Settlements, (UN-Habitat, Nairobi, Kenya.
24 Ibid.
25 Ibid.

other critical services.[26] It can be argued that, given the existing situation in informal settlements, climate change exacerbates the situation in these areas, making them more vulnerable to its effects. Prolonged periods of drought often lead to severe water shortages, affecting both drinking water supplies, agricultural productivity and health.[27] Informal residents have low income; hence, they struggle to buy water from water suppliers. This exacerbates the health situation and food shortages within informal settlements.

On a global scale, several actions have been taken to ensure that the water right is met in every country and community, thereby formulating guidelines for its achievement. The United Nations Water Conference was the first to introduce the notion of basic water requirements to meet fundamental human needs in 1977, in Mae del Plata, Argentina. It is argued that all people regardless of their stage of development, socioeconomic condition are obliged to have access to water as their basic need in equal quantities and quality.[28] The United Nations Committee on Economic, Social and Cultural Rights (UNCESCR) mentions that access to water is one of the conditions for the enjoyment of the right to an adequate standard of living. The UNCESCR argues that the right to water simply means the right of everyone to have sufficient, safe, acceptable, physically accessible and affordable water for domestic and personal use.[29] Apart from that, the United Nations Sub-Commission on the Promotion and Protection of Human rights[30] realizes the importance of the right to water through its adoption of the guidelines for promoting the right to drinking water and sanitation. The UNDP,[31] recognizes the crucial role of water and identifies it as a basic human right. Agenda 21 also stipulates the right to water as an essential component for human life. Millennium Goal 7 emphasised the need for access to clean, safe drinking water as one of the most important components for the achievement of environmental

26 New Climate Economy (2018) Unlocking the Inclusive Growth Story of the 21st Century: Accelerating Climate Action in Urgent Times. Available at: https://newclimateeconomy.net/sites/default/files/2023-11/NCE_2018_ExecutiveSummary_FINAL_8.pdf

27 Mapfumo, P., Mtambanengwe, F., & Chikowo, R. (2015) 'Building on indigenous knowledge to strengthen the capacity of smallholder farming communities to adapt to climate change and variability in southern Africa', 8(1), 72-82, http://dx.doi.org/10.1080/17565529.2014.998604.

28 UNWC (1977) Report of the United Nations Water Conference Mar del Plata, 14-25 March 1977, United Nations New York, USA.

29 United Nations Committee on Economic, Social and Cultural Rights (2003) General Comment No 15. The Right to Water (E/C.12/2002/11)

30 United Nations Sub-Commission on the Promotion and Protection of Human rights (2006) Report of the Sub-Commission on the Promotion and Protection of Human Rights on its 58th session, Geneva, 7-25 August 2006, United Nations, Geneva.

31 UNDP (2008) Human Development Report 2007/2008, United Nations Development Programme, New York, New York, USA.

sustainability.[32] It can be argued that the water right has been a matter of concern in the implementation of the Millennium Goals in Zimbabwe, which has been the responsibility of the Ministry of Environment, Water and Climate. With the SDGs more focused on human rights, it can be noted that the right to water is one of the goals of the 2030 Development Agenda (Sanitation and Water for All 2021).

It is argued that informal settlements are particularly vulnerable to climate change due to its physical location, political and institutional marginalization and the socioeconomic characteristics of its residents as they are high poverty rates.[33] African Development Bank,[34] note that women and girls in Africa are the most vulnerable people to the effects of climate change. It is noted that the heads of states in Africa declared that they would ensure the right of citizens to clean and safe water access in the Abuja Declaration which was adopted in 2006.[35]

Modise[36] assert that climate change and environmental degradation has increased gender inequalities and this has posed some threats on the livelihoods, health and safety of women and girls thus affecting their ability to build resilience. It is argued that girls and women across the globe have less access to natural resources which they depend more on and continuously bear a disproportionate responsibility for water, fuel and securing of food due to socially constructed gender roles.[37] It can be noted that climate change has negative impacts on fresh water supply for domestic use which exert pressure on the women and girls who are responsible for various chores. UN Women[38] discovered that more than a quarter of

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32 UN (2015) The Millennium Development Goals, UN Department of Public Information' United Nations, New York, USA.

33 Dodman, D., Archer, D., & Mayr, M. (2018) Addressing the Most Vulnerable First — Pro-poor Climate Action in Informal Settlements, UN Human Settlements Progamme (UN-Habitat). Available at: https://unhabitat.org/sites/default/files/2019/05/pro-poor_climate_action_in_informal_settlements-.pdf.

34 African Development Bank (2020) The African Development Bank Group Gender Strategy 2021 – 2025: Investing in Africa's Women to Accelerate Inclusive Growth. Available at: https://www.afdb.org/sites/default/files/documents/strategy-documents/african_development_bank_group_gender_strategy_-_2021-2025.pdf.

35 Africa-South America Summit (2006) First Africa-South America Summit 26 – 30 November 2006 Abuja, Nigeria.

36 Modise et al. (2024) 'Increasing community involvement in law enforcement through procedural justice to improve ties with the community', *Advances in Social Sciences and Management*, 2(1), 50-75.

37 Ibid.

38 UN Women and UNIDO (2023) Gender Equality and the Sustainable Energy Transition. New York and Vienna.

women globally, which is over one billion women, lacked access to safely managed drinking water in 2022.

Water is one of the essential resources whose availability and accessibility have since been affected by climate change hence due to traditional gender roles, high rate of unemployment and substantial gender pay gap, accessing water is one of the responsibility of women and it has become harder for them to acquire water. UN,[39] mention that in poor communities, women and girls are most affected by the changes brought by climate change as they are responsible for gathering water, spending an average of 2 to 20 hours per week thus reducing time for them to focus on other responsibilities such as paid jobs and education.

Bryan,[40] argues that the effects of climate change on women vary from men hence they require unique needs and preferences in considering climate change policies and making investments decisions regarding this matter. UNFCCC,[41] is of the view that women have traditional knowledge that they apply to cope with the effects of climate change in crop resilience and water management as way as their ability to respond to disaster warnings thus prioritizing their families. Modise et al.[42] applauds the central role of women in using their indigenous knowledge systems in their adaptation in agro-ecology practices. It is argued that due to the frontline role played by women in climate change issues, they have unique experiences and adaptive strategies that are valuable for adaptation efforts. Therefore, it can be argued that women are not only victims of climate change but agents of change with the capacity of making a difference in the development of climate resilient communities.

FAO and ARC,[43] stipulates that women and children are 14 times more likely to die during natural disasters and they are 80 percent of the people that are displaced by climate change. In this regard it can be argued that the effects of climate change are more intense on women as compared to other genders hence the need to investigate how they are coping with climate

39 Bryan, E., et al., (2024) 'Addressing gender inequalities and strengthening women's agency to create more climate resilient and sustainable food systems', *Global Food Security*, 40, 100731, https://doi.org/10.1016/j.gfs.2023.100731.

40 Ibid.

41 UNFCCC (2022) United Nations Climate Change Annual Report 2022, United Nations Framework Convention, Bonn, Germany.

42 Modise et al. (2024) 'Increasing community involvement in law enforcement through procedural justice to improve ties with the community', *Advances in Social Sciences and Management*, 2(1), 50-75

43 FAO and ARC (2021) Women's Leadership and Gender Equality in Climate Action and Disaster Risk Reduction in Africa, Food and Agriculture Organization of the United Nations Accra, Ghana.

change and its impact as a way of adapting and mitigating the intensity of the issues. FAO and ARC,[44] blames traditional norms and low literacy and education levels to be the reasons that limits the adaptation mechanisms of women to climate change related shocks. Modise et al.[45] agree with this sentiment as they argue that women and girls are disproportionately affected by climate change due to traditional gender roles where they are responsible for household chores. PAFP,[46] also note the reliance of women on natural resources as they mention that women have higher reliance on natural resources and have vital roles to play in the management of these resources as their source of employment in agriculture. The vulnerability of agriculture to climate change reflects the increased intensity of challenges on the women whose livelihoods are immensely affected, thus leading to food insecurity, high rates of unemployment and several difficulties imposed on women. It is argued that 70 percent of women work in the agricultural sector hence with the effects of climate change their production is heavily affected.[47] FAO,[48] mentions that agriculture is a major employer of women and very important for their livelihoods.[49] This means that women exhibit stronger connections with nature and are more sensitive to environmental issues. Therefore, putting women at the forefront on climate adaptation efforts creates long lasting solutions to climate change.

While numerous studies have explored the roles of women in climate change resilience, particularly in rural and agricultural contexts, there is still a significant gap in understanding their adaptation efforts in informal settlements, specifically in securing the right to water.

5. Research Methodology

An exploratory research design was adopted for the investigation of the role of women in climate change resilience and adaptation strategies in the Epworth informal settlement, with specific attention on Ward 1, as a way of gaining an in-depth understanding of women 's

44 Ibid.

45 Modise et al. (2024) 'Increasing community involvement in law enforcement through procedural justice to improve ties with the community', *Advances in Social Sciences and Management*, 2(1), 50-75

46 EU (nd) Thematic Brief: Gender and Natural Resources Management, Available at: https://eugender.itcilo.org/toolkit/online/story_content/external_files/TA_NaturalResources.pdf.

47 African Development Bank Group (2020) Annual Report 2020, African Development Bank Group, Abidjan, Côte d'Ivoire. Available at: https://www.afdb.org/en/documents/annual-report-2020

48 FAO (2023) The Status of Women in Agrifood Systems. Rome, Italy. Available at: https://openknowledge.fao.org/items/adc0741f-9de2-4d09-ae68-b19cc871601a

49 Ibid.

lived experiences, perceptions, and roles in climate change adaptation. A mixed-methods research approach incorporating both qualitative and quantitative approaches to collect data from women in Epworth Ward 1, the Local Authorities, and government parastatals was used. In-depth interviews, focus group discussions, observations and document review were used to acquire qualitative data. Household surveys were also administered to a representative sample of women in Epworth Ward 1. Observations were also used to examine the situation in Ward 1, including the physical location, the physical and infrastructure development. For the integration of the data obtained, triangulation was used to validate the reliability of the data. Purposive and random sampling was used to select participants. The choice of this group of women was based on the assumption that due to traditional norms these are the most active people in the accomplishment of household duties hence they are the most affected group. Data analysis was done through thematic analysis, descriptive statistics and correlation analysis. It can be noted that informed consent for all participants was obtained to ensure confidentiality and anonymity in data collection and reporting.

5.1. Research objectives

1. To investigate the impacts of climate change on women's right to water in Epworth and their coping mechanisms.

2. To analyse the available legal framework and policies for climate change mitigation and adaptation.

3. To explore the role of women in dealing with climate change, accessing water needs and their participation and engagement.

5.2. Research questions

1. What challenges are faced by women in Epworth in accessing water due to climate change and how they are coping?

2. What legal framework or policies initiate mitigating and adapting to climate change?

3. What is the role of women in coping with climate change water-induced issues and how are they advocated and engaged to promote their participation?

5.3.Target Population

It can be noted that this study was centred on women hence the target group were women and young girls from the age of 12- 65 years. It has been noted that women and girls are the most affected by climate change in the informal settlements and due to cultural beliefs, house chores are mostly done by women. Therefore, it was important for this research to focus on this group for reliable information. Apart from that, the other key targets for this study were NGOs and Ministries that work to represent women and their rights to explore how the rights of women in the informal settlements are being met and their response to challenges they face towards climate change adaptation. Ministries include the Ministry of Women Affairs, Community, and Small and Medium Enterprise Development, The Ministry of Environment Climate and Wildlife, Ministry of Higher and Tertiary Education, Innovation Science and Technology Development and Ministry of Health and Child Care among others. Lastly the Epworth Local Board is also included as it has the knowledge of the daily business of Epworth hence information on women participation and ways of adapting to climate change is contained in its various departments.

5.4.Population Sampling

The sample size represents the actual figure of respondents participating in the study. A total of 90 respondents were selected to participate in the data collection process. Ward 1 of Epworth is an informal settlement that is located within the Methodist Farm. Chirisa,[50] notes that Epworth was established as a mission farm by the Methodist Church in the 19th century and allocated an acre of land to each family rather than evicting them. The area has a total population 45 323 people making it 21.96 percent of the total population of Epworth, with a total number of 22 848 women making a percentage of 50.4 of the total population in ward 1.[51] In other words, women make up the highest population in the district. Calculations were done to determine the number of people required to produce valid data in which 96 participants were considered to be the preferred sample in which confidence level is achieved. Though 96 participants were supposed to be selected, this study used convenient sampling in which a round figure of 90 people participated in the study.

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50 Chirisa, I., (2010) 'An analysis of the environmental stewardship concept and its applicability in peri-urban towns: Lessons from Epworth in Zimbabwe', *Journal of Sustainable Development in Africa* 12(4), 41-57.

51 ZIMSTATS (2022) Census Report, Government of Zimbabwe.

The formula for calculating Sample size:

Necessary Sample Size= ((Z-score) ^2×StdDev ×(1-StdDev))/ (margin of error) ^2

$$n= ((1.96)^2 \times 0.5 \times (1-0.5))/ ((0.1)^2)$$

$$n = 96$$

when (Z-score) = Confidence Level

StdDev = Standard Deviation

Margin Error = Confidence Interval

6. Results

The study found that climate change is the major cause of the water challenges being faced in Epworth Ward 1. Climate change has led to significant alterations in rainfall patterns, resulting in prolonged dry spells. It is said that water was available in the area during the time of occupation, as noted by the occupants. It is argued that as a settlement that evolved as a rural settlement, there was no access to reticulated water, hence most of the residents had deep wells on their yards measuring 8 to 10 meters deep. This was the first initiative of the communities in ensuring that water is available for various uses for the households. However, it is discovered that due to climate change, the wells relied on could not sustain the household year-round. The results indicate that water challenges continued to affect the communities, followed by the continued reduction of the months during which the deep wells would dry out in the winter season. This is because of the decrease in water table and underground water depletion emanating from inefficient recharge of the underground water system. The finding indicates that there has been deforestation in the area due to a lack of clean energy, with people using firewood as their source of energy. This resulted in the clearance of the area, potentially affecting evaporation and the annual rainfall in the area. Besides, the unavailability of vegetation has led to the bareness of the ground, making it hard to absorb rainwater, thus leading to high volumes of runoff instead of underground water recharge. It has been discovered that in the last rainy season, the deep wells only lasted to March as there was very little rainfall received to recharge them. The prolonged periods of drought have worsened the water challenge in Epworth. The challenge of water became

intensive in the years between 2017 and 2019, with the community having limited access to water. It can be noted that with the variations in weather and climate, the challenge of water has gradually taken shape in Epworth and continues to affect women.

The findings indicate that women have a significant role to play in the provision of water for household use in Epworth. Fetching water is one of the daily activities of women and children. Their participation in water collection has been observed, at it was noted that in every 2 minutes, there would be a woman or girl passing carrying a bucket or more, going to fetch water or coming back. High traffic volumes of women moving from one point to the other in search of water have been identified in Epworth Ward 1. Upon checking household responsibilities, it has been discovered that accessing water is a role of women and children, mostly the girl child. Water is a daily need that is required by women and the rest of the household for various uses. It is noted that 95 percent of the women indicated that the maximum amount of water they use per day amounts to 6 buckets, giving a total of 120 litres. One participant argued that,

'*... due to the scarcity of water, 6 buckets become the maximum amount of water that we use, as there is no means to acquire more water daily. We can only afford those, but having it available and affordable, we require more than 120 litres per day.'*

The results indicate that 85% of the participants agree that due to the continued water challenges, the community was privileged to have two boreholes drilled for them by the Pungsunghan Church of South Korea in 2022 and another by the Chinese. It has been observed that both boreholes are no longer functional, as there is a lack of maintenance and servicing of these boreholes. One participant noted that, *"...though we have two boreholes in our community, the challenge is that both of them are no longer functional and there are no representatives to help us fix them."*

On the other hand, it is argued that the other borehole has become a health hazard to the community as its water is rusty. Another participant mentioned that,

> *"... I have stopped fetching water from the borehole long since it was abandoned by the community as the water has rust and these can affect the health of my family hence l prefers to buy from reliable sources."*

Figure 2Unfunctional Community borehole

Source: Author (2024)

It has also been discovered that due to fewer boreholes in the area, conflicts have been arising as a few people would access them while the rest do not get a chance of fetching water from them.

Apart from that, the study noted that there is tension arising in the community due to the water crisis. It is noted that due to the failure of some families to access water from the boreholes, tension has arisen as some families fail to get the chance to utilise the borehole. 60 percent of the women testified to the existence of tensions among the community due to the water crisis. Another participant in their explanation said that,

> *"... these boreholes seem like there are families that are meant to use them, as they used to bring more than 10 buckets, and others would wait until they are done. This has made us lose patience in utilising these boreholes."*

On another note, another respondent noted that,

> *"... since these are community boreholes, there are public goods which everyone should make use of. However, it can be noted that one has to spend time in long queues that are not controlled, with some not giving others a chance to get even a bucket of water."*

The results note that there is much havoc created due to the shortage of water in Epworth as relationships among the women are being strained. For such a big community with fewer water sources and with everyone in need of it, misunderstandings pop up, leading to some giving up. Apart from the two boreholes in the ward, the women also access water from a borehole located at the corner St Patricks and Chiremba road, which is also at a distance of around 4-5km or even more from their residential premises. This is a burden for the women as they walk long distances carrying water on top. The results indicate that women also make use of shallow wells (*mufuku),* which they dig along the wetland. However, it can be noted that the water is not safe for drinking and these quickly dries up due to the lowering water table. Water harvesting was also identified as a strategy during the rainy season, and this has been recorded to save money spent on purchasing water.

Furthermore, the study noted that 98 percent of the women in Ward 1 also rely on busted water pipes where they fetch water on Mondays and Tuesdays when the council water is opened. However, though this is being made use of, it can be noted that the location of these pipes is around 5km from the residential area, hence women have to walk a distance to access water. It has been discovered that most women take advantage of these days when they can access water from these pipes and take their laundry to the place. It can be noted that this is not an advantage to the women, as the burden of carrying wet laundry for 5km has posed some health issues, as some complain of chest and back pain. It is discovered that some hire hand carts to get the water delivered at their doorsteps for an amount of USD 3 per 100 litres. Due to constraints, the most available option for the women is to carry their laundry to the bursting pipes, while others carry 20-litre buckets on their heads. The results also noted that 60 percent of the women only use the water for laundry purposes as it is not safe for drinking or the preparation of meals, but for others, the source is not a big deal once the water is available.

Figure 3: Women and children walking to the water source

Source: Author (2024)

It was found that there are well-wishers who have noted the water challenge in Ward 1, hence they supply them. One of them is the Ward Councillor who delivers water with a water tank to some parts of the area once a week or in two weeks. Nevertheless, the women argue that the water provided by the councillor is only received by a few people, while others continue to source it for themselves. In an interview with one of the women, she noted that,

> *"... We are grateful to the councillor who sometimes delivers water for the community. The only challenge is that his tank is too small, hence the water cannot serve everyone. To provide for a reasonable number of people, he does four trips and only allows 40 litres per person."*

While the councillor tries to be proactive and provide water for the community, some of the women described his gesture as a campaigning strategy, arguing that he is taking advantage of the challenges women are facing to earn votes. Though this is a gesture of kindness, most women regard it as blackmail for his benefits, thus suggesting that he represent them and ensure that boreholes are provided for the community. Apart from the councillor, the results also noted that water is being acquired from one nearby pastor's homestead. One of the participants noted that,

> *"... There is a pastor residing in Hatfield who allows people to fetch water from his residence. The place is 3-4km from here and there are long queues, hence one has to wake up early to catch the queue."*

Another added saying, *'... we are allowed to fetch water from 5 am till 8 am, with each person allowed to get 40 litres; however, due to lack of control, some fetch more than the accepted amount.'*

It is discovered that during the COVID-19 season, the community used to get water from Econet Wireless, which used to send tanks of water for the community, but later on stopped for unknown reasons. Apart from these, the findings indicate that there are no NGOs or any other organisations that are helping the community in acquiring water for various uses.

The results found that women participate in ensuring the availability of water through various mitigation and adaptation strategies, which include the purchase of water. As a way of adapting to climate change challenges and water provision, it has been found that women in Epworth have started purchasing water. Water is bought at a price of one dollar for 4 to 5 twenty-litre buckets. This can be calculated to be 80 to 100 litres of water for every dollar. In this case, it can be noted that most women spend a minimum of USD 30 per month to buy water for domestic use. While purchasing water has become a burden for the women in Epworth, it has become a form of business for others who sell water to the community. The results indicate that 90% of women are unemployed and some rely on their husbands' income, which is not enough to cater for their household needs, thus leading to supplementing some of the needs. It is the role of most women within the society to raise the required money for water purchase through various livelihoods such as vending and piece jobs. It is the role of women to budget and ensure that the available income meets the required household needs, as well as the water needs.

Figure 4: Area where water is purchased

Source: Author (2024)

The findings note that women are playing a significant role in water saving in Epworth. It was found that water-saving initiatives have been adopted by the community through the re-use of water as a way of saving it. It has been noted that water used for laundry and washing

the dishes is reserved for flushing the toilet. One participant argued that, "*I make use of the water that l use to wash plates and do laundry for the toilet as l cannot afford to buy fresh water to be used for flushing.*"

The findings indicate that water challenges have resulted in the reduction of water use in Epworth as a way of saving water. It is noted that 10 litres of water are shared among 2 people and used for bathing. It is noted that in some instances, due to the absence of water and income to purchase it, women are no longer able to afford to bathe twice a day, with some skipping some days and taking a sponge bath. In most households, people only bathe once a day with a very small amount of water. However, laundry has been noted to be a challenge for nursing mothers who are obliged to do it every day, thus requiring plenty of water to keep their children healthy. It has been discovered that some women have resolved to do laundry once in two weeks as a way of saving water and reducing the water bill per month. Apart from that, it has been noted that water recycling is a strategy that is used by women as an adaptation option. This harvested water is used for household chores, irrigation and sanitation. The findings also indicate that 40% of the women practice mulching and use organic compost as a way of retaining soil moisture in gardens. These practices help preserve water in the soil and enhance agricultural productivity

Figure 5: Water scarcity determines the amount of water used

Source: Author (2024)

It has been discovered that the duty of providing water is mainly done by women, with men assisting sometimes during their presence. Fetching water is a mandate for women and girls who carry buckets on their heads, walking a distance to get it. The results indicate that women pass through a busy road to buy water, thus putting their lives at risk due to fast-moving traffic on the road. Though a crossing place was indicated for pedestrians, the mushika-shika and minibus drivers do not take into consideration the right of the people to utilise this crossing area and as well as the luggage they will be carrying. It is also noted that men from the community have taken advantage of the water crisis and managed to create employment for themselves through pushing handcarts for those who cannot carry buckets on their own, especially the nursing mothers who pay them an amount of USD3 per every trip of 100 litres.

Figure 6: Water transportation to end-users

Source: Author (2024)

The findings indicate that Epworth Local Board relies on City of Harare water, which usually comes twice a week. The council does not have the capacity and resources to build their dam that supplies water to the residents. Interviews revealed that the Council is also making combined efforts with the Ruwa Local Board in extracting water from the Marondera dam. However, due to the high costs of extraction, Epworth is finding it expensive to supply adequate water to its growing population.

The results note that there are no organisations that represent women within the community. It has been noted that there is an absence of community leadership associated with women and there is no track of women's participation in various decision-making processes. Upon asking the women, it was found out that none of them had participated in any program that considered women's rights. It has been noted that there are no initiatives that have been taken to promote the right to water by the representatives, such as the local authorities and their members of parliament. The women argue that they do not pay any form of levy to the local board, hence the reason why they are not trying in providing water for the community and addressing the issues of gender inequality that are noted in the responsibility of water among the families. The women also indicated their unawareness of climate change, as there are no programs or training that have engaged women and promote their knowledge on how to

adapt and mitigate the effects of climate change. The results note that there is an absence of community leadership associated with women and Climate change. Upon asking several women, it was found out that none of them had participated in any program that considered women's rights.

The results indicate that several legal frameworks govern the provision of water and its management in various settlements, initiate women's participation and engagement, as well as climate change mitigation and adaptation. Among them, The Urban Councils Act [Chapter 29:15] is a vital tool for the planning of urban areas, giving regulations on development and service provision, including water provision for urban residents. The results indicate that the Water Act [Chapter 20:24] is one of the legal frameworks that was put in place by the government to deal with issues of water management in Zimbabwe. Section 3 of the Water Act [Chapter 20:24] takes into consideration the importance of water to human survival and how water resources ought to be conserved around the country. The Climate Change Gender Action was also noted to be one of the essential legal provisions, with the narrations on how climate change issues are to be handled from a gender perspective.[52] In this regard, it can be applauded that the issues of gender representation in climate change mitigation are well documented and available for use in Zimbabwe. The results indicate less integration of these acts.

7. Discussion

The findings of the study illuminate the critical role of women in securing their right to water within the context of climate change resilience in the Epworth informal settlement. Women in the community employ a variety of adaptation strategies, including water re-use, rainwater harvesting, mulching and organic compost and digging of shallow wells. These strategies align with existing literature that highlights women's adaptative capacity and resource management skills in the face of climate challenges.[53],[54] However, unlike many other studies that primarily focused on rural context and agricultural settings, this research underscored

[52] Government of Zimbabwe (2022) Zimbabwe Climate Change Gender Action Plan, Government Gazette.

[53] Bina Agarwal (2010) 'Gender and green governance: The political economy of women's presence within and beyond community forestry', *South Asia Economic Journal*, 12, 349-354 DOI: 10.1177/139156141101200211.

[54] Nelson et al., (2010) 'Climate change effects on agriculture: Economic responses to biophysical shocks', *Proceedings of the National Academy of Sciences, Agricultural Economics* 45 (2014) 1–17. DOI: 10.1111/agec.12091.

the unique challenges and innovative responses of women in urban informal settlements, thus addressing a significant gap in the literature.

Moreover, while previous studies have acknowledged the importance of women's roles in climate adaptation, they often fail to connect these roles to the critical issue of water rights. The study linked women's adaptation strategies to their ongoing struggle for access to clean water, emphasizing how these efforts are not only about survival but also about asserting their rights. Upon asking several women it was found out that none of them had participated in any program that considered women's rights. The Urban Councils Act [Chapter 29:15] provides a framework for urban management. Section 4 of the Act encourages public participation in local governance, this provides a platform for women inclusion. Section 25 and 77 of the Urban Councils Act ([Chapter 29:15] emphasize on planning, development, health and sanitation. Despite the strengths in service provision, the Urban Councils Act ([Chapter 29:15] does not explicitly address gender issues or unique challenges women face in urban settings. The absence of specific provisions related to women's roles affects their adaptation strategies.

In addition, the Water Act [Chapter 20:24] provides a legal framework for the management and allocation of water resources in the country. Section 3 of the Water Act [Chapter 20:24] declares water as a human right essential for life and livelihoods. The Water Act [Chapter 20:24] does not contain specific provisions that address gender disparities in water access and management. Without gender considerations, women's unique needs and roles in water management are overlooked in policy implementation. The Action Plan specifically addresses the intersection of gender and climate change but has limited implementation at the local level, particularly in informal settlements. Epworth is still under regularization. Regularization efforts are often hampered by insufficient government resources. The challenges of regularization in Epworth are creating a continuous influx of new informal residents in the settlement. This is increasing population density and severely straining water provision systems. The findings highlighted the need for more inclusive research that considers the specific contexts of marginalized groups. Ultimately, this research reinforced the importance of integrating women's voices and adaptation strategies into broader climate change policies, ensuring rights to water are recognized and upheld in both local and national frameworks.

8. Conclusion and Recommendation

Despite Epworth being an informal settlement, it still requires water services. The settlement requires integrated service provision. This involves holistic approach and cross-sector collaboration that addresses regularization challenges in service provision. Integrating gender in legal frameworks is a major solution that can help in climate change adaptation in Epworth. Revising legislation such as Urban Councils Act [Chapter 29:15] and Water Act [Chapter 20:24] is vital for the frameworks to incorporate gender considerations. This should include women's roles in water management and ensuring that their needs are addressed in the Acts. Government departments that are responsible for gender should ensure that national water and climate policies are gender sensitive by participating fully in their development, updating and operationalizing. Currently there are no NGOs and donors that are supporting climate adaptation strategies led by women in Epworth. Therefore, Epworth Local Board should embark on awareness raising programmes targeted on water and climate adaptation in collaboration with diverse stakeholders but putting women in the forefront of the programmes. Women's participation needs to be strengthened through including them in decision making bodies related to water management and climate adaptation strategies at all levels. Training and improving access to financial resources for women led initiatives in water conservation and management is necessary to enable them to implement sustainable practices. There is also a need for facilitating community education through educational programs that raise awareness about the importance of women's roles in climate resilience, empowering communities to support women initiatives. All in all, the findings exposed the importance of recognizing women in addressing climate resilience. Strengthening legal frameworks to be more gender sensitive and ensuring effective implementation of existing laws are crucial steps towards empowering women and enhancing their contributions to sustainable water management.

Examining The Effects of Climate Change on the Rights of Elderly Female Household Heads in Kariba's Fishing Community, Zimbabwe

Ignatius Gutsa and Naume Zorodzai Choguya[1*]

Abstract

In this study, we investigated the impacts of climate change on the rights of elderly female household heads in Kariba's fishing community in Zimbabwe. Using Kimberlé Crenshaw's (1989) intersectionality framework, we examine the intersection of gender, age, and economic marginalisation to analyse the compounded effects of climate-related changes, which include shifts in temperature, rainfall, and extreme weather events on this population group's rights to health, food security, water access, housing, and livelihood. Data from surveys, focus group discussions with elderly female household heads in Kariba's fishing community and from key informant interviews reveals that climate-change-induced declines in Lake Kariba's fish stocks have significantly reduced these elderly women's income. This economic stress, combined with their unique social and economic vulnerabilities, has intensified food and water insecurity while compromising their access to adequate housing and healthcare services. These findings demonstrate the urgent need for targeted policies aimed at addressing the specific challenges faced by this marginalised population group. Consequently, a gender-sensitive, rights-based approach is essential, incorporating three key elements: financial assistance, improved healthcare access, and tailored livelihood diversification strategies. There is no doubt that such interventions are crucial for enhancing the resilience and safeguarding the well-being of elderly women in Kariba's fishing community. This study makes a timely contribution to climate adaptation policy discourse by demonstrating how intersecting social identities, particularly age and gender, shape

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climate vulnerability and adaptation needs among elderly female-headed households in marginalised communities.

Keywords: Adaptation, Climate change, Elderly women, Human rights, Intersectionality, Fishing community, Vulnerability

1. Introduction and Background

In this paper, we investigated how climate change, in the form of rising temperatures, changing precipitation patterns, and more extreme weather events[2], threatens the rights of elderly female household heads in Kariba's fishing community. We focus on examining how climate change is affecting the fundamental rights of elderly female household heads as provided for in the Constitution of Zimbabwe, 2013 and international frameworks. The human rights considered here include health, food security, water access, adequate housing, and participation in decision-making processes. This research is important, as climate change is altering weather patterns, increasing severe weather events, and disrupting ecosystems and societies, posing a multidimensional threat to human rights and access to essential resources.[3] Furthermore, this study is unique due to its specific focus on elderly female household heads, a group particularly vulnerable to the compounded effects of climate change due to their gender, age, and socio-economic status.[4] For the elderly female household heads living in Kariba, their reliance on subsistence fishing from the lake and limited access to resources often leave them disproportionately affected by climate-induced challenges such as declining fish stocks, water scarcity, and food insecurity.

We carried out our study in the town of Kariba, located in Mashonaland West province in Zimbabwe, close to the border with Zambia. Lake Kariba (one of the largest man-made lakes in the world) was completed in 1960 and the last population census of 2022 indicated that the area had 27 600 inhabitants. The lake is not only a major hydroelectric power source but is also an essential economic and ecological system. The livelihoods of Kariba's residents

2 IPCC (2018) *Global Warming of 1.5°C* (Intergovernmental Panel on Climate Change).

3 UNHRC (2009) *Report of the Office of the United Nations High Commissioner for Human Rights on the Relationship Between Climate Change and Human Rights* (United Nations Human Rights Council).

4 M. Prina et al. (2024) 'Climate change and healthy ageing: An assessment of the impact of climate hazards on older people' *Journal of Global Health* 14, 04101.

are inextricably tied to the lake, which supports subsistence, small-scale and large-scale commercial fishing. As a result, most households in Kariba town rely on fishing activities for income generation, harvesting popular fish species such as kapenta, bream, and tiger fish. Both men and women participate in on-water fishing activities; however, there are many women who are also involved in post-harvest fish processing activities, which include drying, smoking, and marketing the catch. Though there are several fishing communities scattered across multiple locations on both shores of the lake that rely on the lake for sustenance, in this study we only included participants who were from the fishing camps of Nyaodza, Ndombo, Fodderdale, Chawara, Croc Farm, Harbours and Nyamhunga Township. This decision was primarily influenced by our desire not to travel by boat to reach the other shoreline of Lake Kariba, owing to concerns about the safety of available transport.

Kariba was chosen as the study site because it represents a unique intersection of environmental fragility and socio-economic vulnerability. The town is heavily reliant on Lake Kariba for livelihoods, particularly fishing, which is being severely impacted by climate change. Additionally, Kariba's remote location and limited infrastructure exacerbate challenges for marginalised groups such as elderly women, making it an ideal context to explore the intersection of climate impacts, gender, and age. By integrating a human rights perspective and examining multidimensional vulnerabilities through an intersectional and interdisciplinary approach, this research provides a comprehensive analysis that bridges environmental, social, and legal disciplines.

It cannot be denied that elderly female household heads in fishing communities face unique vulnerabilities such as mobility limitations, restricted income, social isolation, and reduced resource access which hinder their climate adaptation.[5] Their specific needs are further neglected by cultural norms that restrict their decision-making power in climate responses.[6] Furthermore, climate change also threatens traditional fishing practices in the process directly undermining the livelihoods of elderly women-headed households in Kariba's fishing community. These elderly women depend on fishing as their primary source of income and food security. However, climate-induced shifts in fish migration patterns,

[5] HelpAge International (2012) *Ageing in the Twenty-First Century: A Celebration and A Challenge* (United Nations Population Fund).

[6] UN Women (2018) *Turning Promises into Action: Gender Equality in the 2030 Agenda for Sustainable Development* (United Nations Entity for Gender Equality and the Empowerment of Women).

declining stocks, and increased shoreline hazards such as crocodile attacks severely limit their ability to fish sustainably. This disruption not only impacts household sustenance but also weakens critical social networks that are central to adaptation and resource sharing.[7,8] By identifying these challenges, the findings from this research offer a compelling foundation for advocating for targeted policies and interventions that address the unique vulnerabilities of elderly female household heads, particularly in Kariba's fishing community. These efforts are crucial for enhancing their resilience and capacity to adapt to climate-induced disruptions while safeguarding their well-being and fundamental rights. Such targeted interventions are essential to ensure that this marginalized group can navigate the compounded impacts of climate change effectively.

2. Main Research Questions

This study was guided by the following research questions namely:

- How does climate change threaten the human rights to health, food security, water access, and adequate housing of elderly female household heads in Kariba's fishing community?
- What unique vulnerabilities do elderly female household heads in Kariba face in the context of climate change?
- How does limited decision-making power arising from cultural norms affect the participation of elderly female household heads in Kariba in climate change responses?
- How does the disruption of traditional fishing practices due to climate change affect the livelihoods, traditional knowledge, and adaptation strategies of elderly female household heads and their families in Kariba?
- What policies and targeted interventions can be designed to address the specific challenges and vulnerabilities of elderly female household heads in Kariba's fishing community, ensuring their well-being and rights in the face of a changing climate?

[7] W. N. Adger et al. (2005) 'Successful adaptation to climate change across scales' *Global Environmental Change* 15(2), 77.

[8] S. Arora-Jonsson (2011) 'Virtue and vulnerability: Discourses on women, gender and climate change' *Global Environmental Change* 21(2), 744.

3. Literature Review

3.1. Human rights framework: Rights-based approaches and duty bearers

Constitution of Zimbabwe, 2013 provides a robust legal framework for the protection of the human rights of its citizens. For example, Chapter 17 (Rights of the Elderly), mandates the state to adopt policies that ensure that the elderly are cared for and able to fully participate in society.[9] Section 73 (Environmental Rights) of the constitution guarantees the right to a safe and sustainable environment which here, in this paper,[10] we do consider as very critical for the livelihoods of the elderly women heading households in the fishing communities in Kariba. In addition, Section 44 obligates all state institutions in Zimbabwe to respect, protect, promote, and fulfil citizens' human rights. We therefore argue that the Constitution of Zimbabwe, 2013 provides a strong basis for recognizing and addressing the intersecting vulnerabilities of elderly women in Kariba. However, despite these constitutional guarantees, gaps remain in implementation, particularly in aligning sectoral policies to account for the specific vulnerabilities faced by the elderly in climate-vulnerable communities like Kariba. As a result, in this research, we adopted a rights-based approach to examine how climate change disproportionately impacts elderly female household heads in Kariba's fishing communities.

We argue that a rights-based approach is central to ensuring that affected individuals are recognized not only as system beneficiaries but as holders of rights with full entitlements. In this context the state, its agencies, and various actors are positioned as duty bearers who are accountable for fulfilling these rights.[11] We also consider the elderly female household heads as the rights holders who are entitled to the enjoyment, protection, promotion, and fulfillment of their fundamental rights. These fundamental rights include the right to health, social security, an adequate standard of living, food security, and the right to participation in community and public affairs.[12] The duty bearers in this case include the state and its

9 Constitution of Zimbabwe, 2013.

10 Section 73 of the Constitution of Zimbabwe, 2013.

11 S. Jodoin et al. (2021) 'Rights-based approaches to climate decision-making' *Current Opinion In Environmental Sustainability* 52, 45.

12 L. Prouchet et al. (2023) 'Rights-based approaches in climate change, conservation and development initiatives: Preliminary analysis and recommendations from a review of the scholarly literature' *Occasional Paper 6. Center for International Forestry Research* (ICRAF).

institutions, such as Zimbabwean government ministries responsible for health, labour, social welfare, climate change, environmental management, fisheries, and the finance ministry responsible for providing allocations to these ministries. For example, the Ministry of Public Service, Labour, and Social Welfare is responsible for elderly welfare programs, including social protection and support schemes. The Environmental Management Authority (EMA) is responsible for addressing climate-related vulnerabilities and supports resilience-building strategies for communities dependent on natural resources. The Ministry of Women Affairs, Community, Small and Medium Enterprises Development is also responsible for developing gender-sensitive policies and provides support to marginalized women. In this space also exists the non-governmental actors who include entities such as Non-Governmental Organisations, local traditional leadership, and community-based organizations that also share responsibilities in advocating for and protecting these rights.

3.2. Human rights implications of climate change

Climate change is a significant threat to human rights, with this threat becoming more significant among marginalized groups in society such as the elderly and women.[13] Climate change directly threatens fundamental human rights such as the right to food, water, housing, and health.[14,15] A comprehensive overview of how climate change intersects with human rights law and practice is provided by Humphreys.[16] For example, the right to food, as enshrined in international human rights law is particularly at risk due to extreme weather events such as floods and storms, which disproportionately affect low-income communities.[17] Food security is closely tied to social and economic entitlements, which are often undermined in marginalized groups which here includes elderly female household heads.[18] Studies in other fishing communities show that declining fish stocks due to climate

13 United Nations Human Rights Council (2015) *Human Rights and Climate Change: Resolution 29/15* (United Nations).
14 J. H. Knox (2019) 'Human rights and climate change: A review of the international legal framework' *Journal of Environmental Law* 31(3), 577.
15 S. Atapattu (2013) 'Climate change, human rights, and forced migration: Implications for international law' *Wisconsin International Law Journal* 27(3), 607.
16 S. Humphreys (ed.) (2010) *Human Rights and Climate Change* (Cambridge University Press).
17 UN Habitat (2014) *The Right to Adequate Housing* (UN Habitat).
18 A. Sen (1981) *Poverty and Famines: An Essay on Entitlement and Deprivation* (Oxford University Press).

change jeopardize both food security and income.[19] These vulnerabilities necessitate the development of effective coping mechanisms and community-based adaptation strategies as explored in the following section.

3.3. Vulnerable populations and climate change impacts

There is no doubt that the impacts of climate change are disproportionately felt by vulnerable populations, particularly in developing countries with limited adaptive capacity. These populations often face greater exposure to climate hazards and have fewer resources to mitigate their effects, in the process exacerbating existing socio-economic inequalities while highlighting the heightened vulnerability of women to climate change.[20,21,22] There is increasing concern with how the world is turning a blind eye to the need to address the profound link between the rapidly ageing population and climate change – leaving older people invisible in debates about how to address the crisis.'[23] Those communities that are heavily dependent on natural resources such as fishing or agriculture for sustenance have to grapple with significant disruptions to their livelihoods caused by changing climate patterns.[24] Within these communities, the elderly, women, and children are often the most affected due to their limited access to financial, social, and physical capital necessary to guarantee their adaptive capacity. Natural disasters, often compounded by climate change, have more severe impacts on women's life expectancy as compared to men.[25] Furthermore, elderly women as a group, face compounded vulnerabilities to the impact of climate change due to the intersection of gender, age, and socio-economic factors.[26] Consequently, this

19 R. W. Lunduka et al. (2013) 'Could farmer interest in diversity of seed access benefits smallholders in Malawi?' *Food Security* 5(4), 475.

20 IPCC (2014) *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects* (Intergovernmental Panel on Climate Change).

21 W. N. Adger et al. (2005) 'Successful adaptation to climate change across scales' *Global Environmental Change* 15(2), 77.

22 E. Neumayer & T. Plümper (2007) 'The gendered nature of natural disasters: The impact of catastrophic events on the gender gap in life expectancy, 1981–2002' *Annals of the Association of American Geographers* 97(3), 551.

23 HelpAge International (2023) *Climate Justice In An Ageing World*. Available at: https://www.helpage.org/wp-content/uploads/2023/11/Climate-justice-in-an-ageing-world.pdf.

24 C. Béné (2006) 'Small-scale fisheries: Assessing their contribution to rural livelihoods in developing countries', *FAO Fisheries Circular* No. 1008 (FAO).

25 E. Neumayer & T. Plümper (2007) 'The gendered nature of natural disasters: The impact of catastrophic events on the gender gap in life expectancy, 1981–2002' *Annals of the Association of American Geographers* 97(3), 551.

26 G. Terry (2009) *Climate Change and Gender Justice* (Practical Action Publishing).

intersection and marginalisation reduces the resilience of elderly women to climate change effects and undermines their human rights to food, water, and shelter.

Given that women often outlive men it therefore means that elderly women heading households are likely to face climate-related challenges for a longer duration thereby placing them at an increased risk of long-term socio-economic hardship. [27;28] This extended vulnerability makes it imperative to develop targeted coping strategies particularly for issues such as food security which they often face with limited resources and support. Since these women are typically responsible for both income generation and household care their capacity to adapt is constrained by economic and social factors. [29]

3.4. Climate change and food security in sub-Saharan Africa

At present the connection between climate change and food security is well-documented with scholars having reviewed the potential global impacts of climate change on food systems.[30] Findings highlight that developing countries are particularly vulnerable as they experience more severe consequences due to their limited adaptive capacity and reliance on climate-sensitive agriculture. Other studies, further show how climate change exacerbates food insecurity especially in regions already facing socio-economic challenges.[31,32] Reports indicate that climate change negatively impacts agricultural productivity, leading to food shortages and increased prices of food with rural communities, especially those reliant on agriculture and fishing deeply affected by these changes.[33] In Sub-Saharan Africa, the frequent experiences of recurrent droughts, irregular rainfall patterns, and rising temperatures compound this problem by affecting agricultural productivity and natural

27 E. Neumayer & T. Plümper (2007) 'The gendered nature of natural disasters: The impact of catastrophic events on the gender gap in life expectancy, 1981–2002' Annals of the Association of American Geographers 97(3), 551.

28 R. Heltberg et al. (2009) 'Addressing human vulnerability to climate change: Toward a "no-regrets" approach' *Global Environmental Change* 19(1), 89.

29 W. N. Adger et al. (2005) 'Successful adaptation to climate change across scales' *Global Environmental Change* 15(2), 77.

30 T. Wheeler & J. von Braun (2013) 'Climate change impacts on global food security' *Science* 341(6145), 508.

31 E. Neumayer & T. Plümper (2007) 'The gendered nature of natural disasters: The impact of catastrophic events on the gender gap in life expectancy, 1981–2002' Annals of the Association of American Geographers 97(3), 551.

32 R. Heltberg et al. (2009) 'Addressing human vulnerability to climate change: Toward a "no-regrets" approach' Global Environmental Change 19(1), 89.

33 The Food and Agriculture Organization (2018) *The State of Food Security and Nutrition in the World 2018: Building Climate Resilience for Food Security and Nutrition* (FAO).

ecosystems.[34] In the case of Zimbabwe where many communities rely on subsistence farming, climate variability poses a direct threat to food security. Changing rainfall patterns and extreme weather events have led to decreased crop yields and increased food insecurity in rural Zimbabwe.[35] In addition, shifting water temperatures and overfishing reduce fish stocks, undermining both food security and income generation.[36,37] In their study which examined how climate change affects food security in sub-Saharan Africa, placed emphasis on the importance of understanding the local context and local adaptive capacities.[38] This is also consistent with this study's focus on understanding community specific experiences and elderly female households' approaches in Kariba's fishing community. As fishing becomes less reliable due to erratic weather patterns, there is an urgent need to integrate gender-sensitive and age-specific adaptation strategies into community planning.[39]

3.5. Gender, age, and climate change adaptation

Analysis of the intersection of gender and age in climate change adaptation strategies is increasingly becoming prominent in research. The tendency to women as uniformly vulnerable to climate change is difficult since factors such as age and social status lead to differentiated vulnerability among women.[40] Such a perspective aligns with this study's current focus on the specific demographic category of elderly female household heads. Female household heads often bear the brunt of climate change impacts, as they are primarily responsible for food production and water collection.[41] Despite the burden of this load borne by elderly women, Filiberto et al. in their study explored how older people perceive and

34 I. Niang et al. (2014) 'Africa' in IPCC, *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects* (Cambridge University Press).

35 S. Moyo et al. (2018) 'Climate change and food security in Zimbabwe: A review of the evidence' *Journal of Environmental Management* 223, 1.

36 T. R. Muringai et al. (2020) 'The challenges experienced by small-scale fishing communities of Lake Kariba, Zimbabwe' *The Journal for Transdiciplinary Research in Southern Africa* 16(1), 1.

37 C. Béné (2006) 'Small-scale fisheries: Assessing their contribution to rural livelihoods in developing countries', *FAO Fisheries Circular No. 1008* (FAO).

38 L. Connolly-Boutin & B. Smit (2016) 'Climate change, food security, and livelihoods in sub-Saharan Africa' *Regional Environmental Change* 16(2), 385.

39 S. Huyer (2016) 'Closing the gender gap in agriculture' *Gender, Technology and Development* 20(2), 105.

40 S. Arora-Jonsson (2011) 'Virtue and vulnerability: Discourses on women, gender and climate change' *Global Environmental Change* 21(2), 744.

41 I. Gutsa (2022) 'Making ends meet: Experiences of older women heading households in rural Domboshava, Zimbabwe' *African Studies* 81(2), 170.

adapt to climate change.[42] Their findings suggest that the elderly often have valuable knowledge about environmental changes but may lack the resources to implement adaptation strategies effectively. This situation highlights the human rights dimension of climate change, where elderly women's access to resources, healthcare, and livelihood opportunities are compromised, further exacerbating their vulnerability.[43,44]

3.6. Coping mechanisms and community-based adaptation

Despite these climate change-induced challenges, households have developed various coping mechanisms to deal with these impacts. Most of these households rely on social networks, community support systems, and indigenous knowledge to manage risks and adapt to changes in the climate.[45] Community-based approaches to climate change adaptation have been shown to be more effective than top-down strategies, particularly in addressing local vulnerabilities.[46,47] An examination of the role of social capital in climate change adaptation suggests that strong social networks can enhance a community's resilience.[48] However, these coping mechanisms are not sufficient to ensure long-term resilience, especially given the frequency and intensity of climate-related shocks.[49] There is therefore a need for external support which should include the provision of and access to financial resources, training in alternative livelihood strategies as well as the provision of improved infrastructure in order to build resilience in marginalized communities.[50]

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42 D. Filiberto et al. (2010) 'Older people and climate change: Vulnerability and health effects' *Generations* 33(4), 19.

43 R. Heltberg et al. (2009) 'Addressing human vulnerability to climate change: Toward a "no-regrets" approach' Global Environmental Change 19(1), 89.

44 IPCC (2014) *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects* (Intergovernmental Panel on Climate Change).

45 P. Tschakert & K. A. Dietrich (2010) 'Anticipatory learning for climate change adaptation and resilience' *Ecology and Society* 15(2), 11.

46 D. Mfitumukiza et al. (2020) 'Scaling local and community-based adaptation' (Global Commission on Adaptation Background Paper).

47 J. Ayers & T. Forsyth (2009) 'Community-based adaptation to climate change' *Environment: Science and Policy for Sustainable Development* 51(4), 22.

48 W. N. Adger et al. (2013) 'Cultural dimensions of climate change impacts and adaptation' *Nature Climate Change* 3(2), 112.

49 R. Heltberg et al. (2009) 'Addressing human vulnerability to climate change: Toward a "no-regrets" approach' Global Environmental Change 19(1), 89.

50 W. N. Adger et al. (2005) 'Successful adaptation to climate change across scales' *Global Environmental Change* 15(2), 77.

3.7. Policy responses and gender-sensitive adaptation strategies

International frameworks such as the Paris Agreement and the Sustainable Development Goals (SDGs) emphasise the importance of inclusive, gender-responsive climate change adaptation strategies.[51] These frameworks align with the broader goals of climate justice by emphasizing equitable adaptation and mitigation strategies that leave no one behind. Notably, while the UNFCCC as a legal instrument did not initially address gender sensitivity, the Paris Agreement, which builds upon the UNFCCC framework, made a significant shift by incorporating rights-based and gender-responsive language. It specifically called for the consideration of the distinct needs of women and the elderly in climate action by acknowledging their heightened vulnerability and the importance of their participation in both adaptation and mitigation efforts.[52, 53] This shift marks a pivotal moment in global climate governance by ensuring that gender equality is central to climate policy and action. However, the existence of these frameworks has not led to robust implementation by states/governments at the local level.[54]

In rural communities, the implementation of climate action by states remains uneven and these inequities often limit the effectiveness of climate policies as women especially in rural contexts do face systemic barriers to participation in decision-making processes and access to resources.[55,56] In Zimbabwe, initiatives aimed at improving agricultural resilience, enhancing access to clean water, and providing social protection for vulnerable groups are critical for mitigating the impacts of climate change.[57] Therefore, gender-sensitive policies are essential in order to ensure that adaptation strategies address the specific vulnerabilities of women and the elderly.[58] Consequently, there is need to develop targeted interventions in order to protect the rights of elderly female household heads and ensure their resilience to

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51 United Nations (2015) *Transforming our World: The 2030 Agenda for Sustainable Development* (United Nations).

52 UNFCCC (2017) *Gender and Climate Change: The Role of Women in Climate Action* (United Nations Framework Convention on Climate Change).

53 United Nations (2015) Transforming our World: The 2030 Agenda for Sustainable Development (United Nations).

54 S. Arora-Jonsson (2011) 'Virtue and vulnerability: Discourses on women, gender and climate change' *Global Environmental Change* 21(2), 744.

55 Ibid.

56 S. Huyer (2016) 'Closing the gender gap in agriculture' Gender, Technology and Development 20(2), 105.

57 S. Moyo et al. (2018) 'Climate change and food security in Zimbabwe: A Review of the evidence' *Journal of Environmental Management* 223, 1.

58 L. Aguilar (2009) *Training Manual on Gender and Climate Change* (IUCN).

climate change. Such interventions can include improving access to alternative livelihoods, improving water infrastructure, strengthening housing against extreme weather as well as the provision of finance to help the elderly female household heads pursue other livelihood options.

4. Theoretical Framework

4.1. Intersectionality

Kimberlé Crenshaw's intersectionality framework (1989, 1991)[59] forms the basis of the study's approach to analysing how climate change affects elderly women in Kariba. The framework illuminates how intersecting social identities e.g. gender, age, and economic status produce unique forms of marginalization, especially under environmental stress. Using Kimberlé Crenshaw's intersectionality framework, this study's findings illuminate the multidimensional vulnerability of elderly women in the Kariba fishing community, showing how climate change exacerbates their social, economic, and environmental marginalization.

In this context, elderly women in Kariba embody layered identities that intensify their exposure to climate impacts, rendering them differently and largely more vulnerable to human rights challenges than other community members. Other scholars argue that an intersectional approach is crucial in analysing climate change impacts, as it reveals how social structures intersect to create unique vulnerabilities.[60] Crenshaw's intersectional theory thus highlights the importance of understanding climate vulnerability as both an environmental and social phenomenon, where gender, age, and regulatory structures converge to deepen the marginalization of elderly women in Kariba. Other scholars suggest that equitable climate adaptation policies should consider these intersecting identities to prevent the exclusion of vulnerable groups.[61]

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59 K. Crenshaw (1989) 'Demarginalizing the intersection of race and sex: A Black feminist critique of antidiscrimination doctrine, feminist theory, and antiracist politics', *University of Chicago Legal Forum* 1, 139.

60 A. Kaijser & A. Kronsell (2014) 'Climate change through the lens of intersectionality' *Environmental Politics* 23(3), 417.

61 M. Bunce et al. (2010) 'Policy misfits, climate change and cross-scale vulnerability in coastal Africa: How development projects undermine resilience' *Environmental Science & Policy* 13(6), 485.

5. Research Methodology

5.1. Methods

In this study we utilised a mixed-methods approach which integrated qualitative and quantitative data collection and analysis to examine how climate change is affecting the human rights of elderly female household heads in Kariba's fishing community. We conducted fieldwork for this study during the course of the month of October 2024. We first carried initial desk research which commenced with an extensive literature review on climate change impacts in Kariba, fishing practices, the human rights of elderly women in fishing communities, and pertinent legal frameworks such as the Zimbabwean Constitution and international human rights laws. This review was very crucial in order to help establish a foundational understanding of the environmental, social, and legal contexts influencing the vulnerabilities and rights of elderly female household heads in Kariba's fishing community as well as providing the framework for developing the study and interview questions for the different categories of study respondents. We then carried out a survey among elderly female household heads across various Kariba fishing sub-communities experiencing different climate impacts, Focus group discussions (FGDs) with elderly women as well as key informant interviews (KIIs) in Kariba. We conducted fieldwork across multiple fishing locations in Kariba, including Nyaodza, Ndombo, Fodderdale, Chawara, Croc Farm, Harbours and Nyamhunga Township. Each site presented a unique snapshot of life dependent on fishing, especially among elderly female respondents whose observations were informed by years of resilience and adaptation in the face of environmental challenges. Importantly, fishing camps across the lake from Nyamhunga side were avoided due to the risks associated with traveling by paddle boat, ensuring that the study focused on accessible and safe locations for field observations and interviews. Throughout our research focus was on ensuring data triangulation through:

- Structured surveys for quantitative data on health, food security, water access, housing, and decision-making while also exploring the social and cultural impacts and coping mechanisms employed by the elderly women in Kariba.

- We also conducted two focus group discussions (FGDs) with these elderly women with the two groups composed of six and eight elderly female participants respectively to discuss shared challenges, strategies, and solutions.
- We also conducted field observations where the focus was on documenting the elderly women's living conditions, fishing practices, and community interactions.
- Nine key informants drawn from government, NGOs, legal experts, fishing rig owners and department of national parks and wildlife management provided insights into the human rights challenges of elderly female household heads in Kariba. These KIs contributed their perspectives on existing policies, legal frameworks, and potential violations related to climate impacts on water, food security, and healthcare access for this group.

5.2. Sampling

Purposive sampling was adopted to select both the elderly female study participants from the various fishing sub-communities in Kariba as well as the KIs. This was meant to ensure diverse representation based on geographical location and climate impact levels. Participants were women aged 60 and above, who are primary household heads and active in the fishing community.

5.3. Data analysis and reporting

The household survey was administered using KoboToolbox, a free open-source software, while interview and focus group discussion data were transcribed and analysed using Dedoose qualitative data management software to facilitate systematic coding and extraction of key themes and sub-themes.

5.4. Ethical considerations

Before any participant was enrolled in the study, they received comprehensive information on the study's objectives, data handling procedures, and confidentiality measures prior to providing consent. To safeguard privacy, all data was anonymized and securely stored while respecting the local customs and cultural norms to ensure community acceptance and cooperation.

6. Presentation of Findings

6.1. Demographic profile of respondents

In this study we engaged 43 elderly female household heads from Kariba's fishing community, who were aged mostly between 60 to 80 years. Respondents were predominantly widowed (45 per cent) or divorced (25 per cent), reflecting a high level of social isolation coupled with economic responsibility. Education levels were generally low, with 65 per cent of the elderly female respondents having only gone to school up to primary level education and 35 per cent reporting no formal education at all. All the respondents we interviewed had lived in Kariba for over 16 years, which showed their deep-rooted connections to the town as well as the lake which is the primary source of sustenance and economic activity for these elderly women.

6.2. Observed climate change patterns

All the respondents reported having seen and experienced noticeable changes in the climate over the past decade with these changes having been more noticeable from around the year 2000. These changes were mainly in the form of increased temperatures, extreme heat waves, poor rainfall and more and more powerful winds. Elderly female respondents explained that prolonged exposure to heat was now common, with 95 per cent indicating 'always' experiencing high temperatures. This observation was reinforced by statements from women in focus groups, with one participant remarking, *"The sun now feels like it is right above us. We cannot fish comfortably as we used to"*. Furthermore, changes in rainfall patterns have led to more frequent droughts as was reported by 80 per cent of the respondents. Elderly women also agreed that storms are now more severe than before, with 70 per cent reporting greater storm intensity than in previous decades. The shifting rainfall patterns were widely attributed to changing climate conditions, and respondents noted these changes with a mix of urgency and concern. One of the elderly women explained as she highlighted the importance of good rainfall for maintaining fish stocks: *"Kana mvura ikanyatsonaya, hove dzinogona kubatika",* meaning *"If it rains well, we can catch more fish"*.

6.3. Impact of climate change on fishing-dependent livelihoods

Climate change has severely impacted the availability of fish, a resource vital to the livelihoods of Kariba's elderly women household heads. Respondents overwhelmingly noted a decline in fish stocks, with all the respondents in the survey reporting reduced availability, and 95 per cent indicating that this change had significantly affected their household income. Elderly women expressed concern that warmer temperatures had driven fish into deeper, cooler waters further limiting catches for women as they tended to fish closer to the lake's shore. In addition, traditional fishing practices are also affected, as women always avoid deep waters and nighttime fishing due to safety concerns and household obligations. One respondent emphasised that: *"We don't just fish to get food; it's to pay for school fees, water, electricity, and health costs"*. This statement clearly shows how fishing sustains these women economically as it allowed them to meet a range of household expenses as well as pay for school fees for the grandchildren in their care. However, respondents highlighted the increase in poaching as some community members, driven by economic hardship, resort to nighttime fishing. This practice often involves casting extensive nets that capture what they called "juvenile fish", further compromising fish stocks and future catches.

6.4. Food security and dietary adjustments

Climate impacts on fish availability have directly affected food security within the Kariba community. For example, 75 per cent of respondents reported 'always' worrying about having enough food, with many elderly women being forced to reduce both meal sizes and frequency multiple times per month due to food shortages in the home. One woman shared, *"I sometimes go to the lake just to keep myself busy; there is hardly any fish to catch these days"*. This sentiment really captured the sense of futility that many elderly women feel as they continue fishing despite dwindling returns. The combined impact of changes in rain patterns reported by 85 per cent of study participants and rising temperatures reported by 85 per cent of the participants were reported as the primary drivers of worsening food insecurity. Another respondent had this to say: *"All the drama you can think of plays out at home, more specifically in the kitchen. Sometimes I am forced to just prepare some porridge in the evening so that we consider ourselves having eaten and the children can go to bed. It's that bad, we have nothing"*.

As the availability of fish continues to diminish, elderly women face both nutritional and economic insecurity, as fishing no longer guarantees consistent food supplies. One respondent said: "Here in Kariba our fields are the lake, our gardens are the lake, our industry is the lake. When the lake does not give as has been the case since last year we are in trouble. We cannot even afford to eat". Despite food security concerns being universal among the respondents, it however appeared that there were no mitigation strategies in place to address this challenge. One respondent said, *"It is now three months after the Welfare Department came and created a beneficiaries' register so that we can receive food aid. They said the President had sourced maize from donors and he had made assurances that no one will starve. However, to date nothing has materialized, and we are hungry, with no other source of livelihood"*.

6.5. Access to water and health services

Despite reported access to piped water, 75 per cent of respondents experienced frequent water shortages, requiring an average of three to six hours each day for water collection during the dry season. This task is not only time-consuming but also taxing on elderly women's health, as one noted, *"Carrying water over long distances in the heat is exhausting. Sometimes, it feels like my body cannot keep up"*. These disruptions also impacted other daily activities, further exacerbating their vulnerability. Furthermore, healthcare access has also declined significantly. Fifty-five percent of respondents reported that access to healthcare has worsened, with 25 per cent stating that they either "never" or "rarely" could obtain medical assistance when they needed it. During the interviews it emerged that health facilities were often far and lacked adequate resources, with respondents reporting that, *"Sometimes, we go and find there is no medicine. It feels pointless to go"*. This health vulnerability is worsened by the physical demands of fishing and the direct health impacts of climate change, including increased exposure to extreme heat.

6.6. Housing stability and vulnerability to extreme weather

Housing stability emerged as a pressing concern, for example 60 per cent of respondents rated their housing condition as "fair" and 20 per cent as "very poor". Qualitative responses highlighted that extreme weather events, including strong winds and heavy rains, had

worsened housing stability, leading to structural damage for nearly half of the households over the past five years. Respondents shared stories of leaking roofs and deteriorating walls, which leave their homes vulnerable during storms. The inadequacy of their housing to withstand extreme weather also impacts respondents' sense of security, particularly as many of them live with young dependents who cannot help much in repairing. *"When the windstorms come, I worry that the roof will come off"*, one respondent said, expressing a common fear of displacement during extreme weather events.

6.7. Coping mechanisms and adaptation challenges

Adapting to climate change remains a considerable challenge for the elderly women in Kariba. Ninety percent rated their adaptive capacity as "very poor", and the same proportion indicated feeling unprepared to face future climate impacts. In response to worsening fishing conditions, some women have sought to diversify their income sources or rely on community support, with 70 per cent seeking assistance from family and friends. However, findings show that income diversification was limited, as alternative opportunities were scarce, particularly for elderly women with restricted mobility and limited education. Financial assistance was identified as the most urgent need, with 95 per cent of respondents highlighting its importance. Furthermore, 65 per cent called for improved healthcare access, while access to reliable water and food resources, as well as enhanced housing stability, were also noted as crucial. A participant explained, *"Without money, we can't even begin to think of adapting. Every day is just survival"*. This statement really reflects the financial constraints these elderly women face as they try to adapt to increasingly challenging climate conditions.

6.8. Cultural beliefs and environmental risks

Findings also illuminated the unique cultural beliefs surrounding environmental risks, particularly those related to crocodile encounters in Lake Kariba. Crocodiles, which are considered a serious threat, are believed by the elderly women to be both natural and, in some cases, tied to mystical practices intended to bring financial fortune to the numerous businesspeople in Kariba. Specific crocodiles, like *"Boko Horam"* and *"Machen",* are said

to be dangerous, with one participant noting, *"There are certain places we know to avoid, especially where that big crocodile Machen is seen"*.

7. Discussion

7.1. The right to health and climate-induced barriers

Access to healthcare is a foundational human right that is increasingly out of reach for these elderly women as a result of climate change.[62] Extreme heat, frequent storms, and changing rainfall patterns impose physical strains that directly affect the health and well-being of these women. Many respondents reported declines in physical health due to prolonged exposure to high temperatures during fishing activities and lengthy hours spent collecting water, consistent with findings on the increased health risks climate change poses to the elderly.[63] Further, inadequate access to healthcare services compounds these risks: over half of the respondents reported that health service access had worsened in recent years. These are also the same observations which highlights that older populations affected by climate change often experience heightened health vulnerabilities, with limited resources to manage them.[64] The result is that the implications for the right to health are dire. With healthcare access, both physically and economically constrained, elderly women in Kariba are not only more susceptible to climate-related health risks but also lack the resources to seek timely medical attention when needed. This gap between health needs and available services reinforces the argument that climate change fundamentally threatens health rights, particularly in marginalized populations.[65] These findings point to a critical need for policies that address health access specifically tailored to climate-vulnerable groups such as elderly women.

62 OHCHR (2020) *Understanding Human Rights and Climate Change* (Office of the United Nations High Commissioner for Human Rights).

63 R. Heltberg et al. (2009) 'Addressing human vulnerability to climate change: Toward a "no-regrets" approach' Global Environmental Change 19(1), 89.

64 D. Filiberto et al. (2010) 'Older people and climate change: Vulnerability and health effects' *Generations* 33(4), 19.

65 J. H. Knox (2019) 'Human rights and climate change: A review of the international legal framework' *Journal of Environmental Law* 31(3), 577.

7.2. The right to food security and nutritional well-being

Respondents overwhelmingly reported frequent food insecurity due to declining fish stocks, directly related to the changing climate conditions in Kariba which is affecting the lake. These findings are consistent with observations that across the globe climate change is having a significant impact on food security.[66] Here in Kariba climate change is compromising these elderly women's fundamental right to adequate food and nutrition. Furthermore, most of the elderly female respondents described their dependency on fishing as a means of sustaining not only their nutrition but also income to meet various household needs. However, it is quite unfortunate that as climate change intensifies, fish are becoming scarce, and these elderly women struggle to find alternative sources of food. Consistent with findings by other scholars,[67] this depletion in fish stocks has jeopardized household food security, leading to regular reductions in meal frequency and sizes as respondents attempt to cope with dwindling resources. The right to food security as enshrined in international human rights frameworks is further jeopardized by social factors.[68,69] Women in this study were often prevented from accessing deeper fishing zones due to both physical limitations and social norms, which limit their participation in lucrative fishing activities dominated by men. This restriction amplifies their food insecurity and aligns with studies on the gendered impacts of climate change on food systems, which indicate that gender and age restrictions can significantly undermine food access and nutrition.[70,71] Without food security, these women's rights are being denied, leaving them more vulnerable to malnutrition and poverty-related health issues.

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66 UNHRC (2009) *Report of the Office of the United Nations High Commissioner for Human Rights on the Relationship Between Climate Change and Human Rights* (United Nations Human Rights Council).

67 T. Wheeler & J. von Braun (2013) 'Climate change impacts on global food security' Science 341(6145), 508.

68 A. Sen (1981) *Poverty and Famines: An Essay on Entitlement and Deprivation* (Oxford University Press).

69 OHCHR (2020) *Understanding Human Rights and Climate Change* (Office of the United Nations High Commissioner for Human Rights).

70 UN Women (2018) *Turning Promises into Action: Gender Equality in the 2030 Agenda for Sustainable Development* (United Nations Entity for Gender Equality and the Empowerment of Women).

71 W. N. Adger et al. (2013) 'Cultural dimensions of climate change impacts and adaptation' Nature Climate Change 3(2), 112.

7.3. Water access: An essential right under threat

The right to water is another critical area in which climate change has introduced significant challenges, with 75 per cent of respondents reporting frequent water shortages. Intersecting identities and power structures can make marginalized groups especially more vulnerable to resource scarcity,[72] and this is clearly evident among elderly women in Kariba. Respondents described the exhausting task of collecting water, often extending to several hours daily, which tended to disrupt other necessary activities while increasing exposure to extreme temperatures. Water scarcity is likely to worsen with climate change, and the implications for elderly women are severe.[73] Spending excessive hours fetching water affects their health and limits their ability to engage in other livelihood activities, violating their rights to both water and health. Moreover, respondents expressed frustration at the inconsistency and unreliability of water access, which amplifies the challenges faced by these women who rely on water for basic hygiene, health, and cooking. Water access is essential to maintain adequate living standards and dignity, and its absence exposes these women to risks of waterborne diseases and nutritional deficits, further compromising their human rights in the context of an increasingly climate-stressed environment.[74]

7.4. The right to adequate housing and safety

Climate change has compounded housing instability in Kariba for the elderly female respondents, as extreme weather events such as storms, high winds, and floods have damaged many elderly women's homes, further jeopardizing their right to adequate shelter. Adequate housing is central to human rights,[75] and the deterioration in housing conditions among elderly female respondents highlights a significant vulnerability. In this study, 50 per cent of the respondents reported that housing stability had worsened in the past five years, while 20 per cent described their current housing conditions as "very poor". These structural weaknesses, coupled with frequent extreme weather, exacerbate the risks for elderly women, exposing them to potential injury, displacement, and loss of possessions. Marginalized

72 K. Crenshaw (1991) 'Mapping the margins: Intersectionality, identity politics, and violence against women of color' *Stanford Law Review* 43(6), 1241.
73 IPCC (2018) *Global Warming of 1.5°C* (Intergovernmental Panel on Climate Change).
74 UN Habitat (2014) *The Right to Adequate Housing* (UN Habitat).
75 Ibid.

communities often live in housing that is ill-equipped to withstand environmental shocks,[76] making climate adaptation policies that address housing conditions particularly urgent. For Kariba's elderly female household heads, whose mobility and economic means are limited, the ability to seek alternative housing is practically non-existent, leaving them in a precarious position where climate impacts compromise not only their shelter but also their safety and sense of security.

7.5. Economic livelihood and alternative livelihoods

The compounded effects of climate change on fishing have also undermined the right of elderly women in Kariba to a secure livelihood. The diminished availability of fish has drastically reduced household incomes, with all respondents reporting a significant decline in income from fishing activities over the past five years. Fisheries are central to rural livelihoods,[77] and our findings here are consistent with this as well as with observations that climate change has a disproportionately negative impact on women's economic opportunities.[78] This study's respondents reported turning to marginal livelihood strategies out of necessity rather than opportunity, with many indicating that they felt "unprepared" and "poorly equipped" to adopt new livelihoods. Moreover, social norms restricting elderly women's access to the deeper fishing zones further limit their income potential and adaptive capacity, reinforcing a cycle of poverty and vulnerability that effectively denies them their right to work.[79] The intersection of age, gender, and environmental stressors creates a compounded vulnerability that makes these women highly dependent on an increasingly fragile resource, underscoring the critical need for economic diversification as part of climate resilience strategies in Kariba's fishing community.

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76 M. Bunce et al. (2010) 'Policy misfits, climate change and cross-scale vulnerability in coastal Africa: How development projects undermine resilience' *Environmental Science & Policy* 13(6), 485.

77 C. Béné (2006) 'Small-scale fisheries: Assessing their contribution to rural livelihoods in developing countries', FAO Fisheries Circular No. 1008 (FAO).

78 E. Neumayer & T. Plümper (2007) 'The gendered nature of natural disasters: The impact of catastrophic events on the gender gap in life expectancy, 1981–2002' *Annals of the Association of American Geographers* 97(3), 551.

79 UNFCCC (2017) *Gender and Climate Change: The Role of Women in Climate Action* (United Nations Framework Convention on Climate Change).

8. Recommendations

8.1. Strengthen access to healthcare tailored to climate-induced needs

To address the health vulnerabilities exposed by climate change, it is essential to improve healthcare access for elderly women in Kariba's fishing community. Here health services should be tailored to account for climate-induced health risks, particularly during periods of extreme heat and heightened climate events. Mobile health clinics and health subsidies targeting elderly populations could directly alleviate some barriers to healthcare, fulfilling their fundamental right to health. Ensuring that health workers are equipped to address climate-related conditions will also enhance service delivery.[80,81]

8.2. Enhance food security programs to support elderly women's nutritional rights

There is no doubt that food insecurity has become a critical concern due to declining fish stocks, which traditionally support both nutrition and income. Food assistance programs that provide alternative sources of nutrition should be prioritized for elderly women to reduce their dependency on fishing. Additionally, partnerships with agricultural organizations to facilitate access to food that is climate-resilient and nutritionally balanced can improve dietary sufficiency. Supporting initiatives for local food gardens or small-scale community agriculture can further stabilize food access and enhance the right to food security.[82,83]

8.3. Improve water infrastructure and access

Given the prolonged hours spent collecting water, which expose elderly women to harsh conditions, it is essential to improve water infrastructure in Kariba's fishing community. Introducing water conservation and filtration systems, such as rainwater harvesting, can alleviate the burden on these women and reduce their exposure to extreme weather. Such

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80 D. Filiberto et al. (2010) 'Older people and climate change: Vulnerability and health effects' *Generations* 33(4), 19.

81 J. H. Knox (2019) 'Human rights and climate change: A review of the international legal framework' *Journal of Environmental Law* 31(3), 577.

82 A. Sen (1981) *Poverty and Famines: An Essay on Entitlement and Deprivation* (Oxford University Press).

83 T. Wheeler & J. von Braun (2013) 'Climate change impacts on global food security' *Science* 341(6145), 508.

initiatives would protect the right to clean, accessible water.[84] Investment in reliable water sources and infrastructure would not only secure this right but also free up time for women to engage in other productive activities.

8.4. Ensure climate-resilient housing to protect safety and dignity

Housing stability is directly tied to safety, security, and dignity. Investments in strengthening housing structures, particularly roofing and flood-proofing measures, can enhance the resilience of these elderly women's homes to withstand extreme weather events. Local government support in providing low-cost construction materials or weather-proofing assistance will protect these women's right to safe and stable housing. Disaster preparedness training, focusing on strategies to secure housing during extreme weather, is also essential.[85]

8.5. Promote financial assistance and diversification of livelihoods

Climate-sensitive financial support, such as grants or microloans, is crucial for elderly women's economic resilience in Kariba. Developing alternative livelihoods, including skills training programs in crafts or community-based enterprises, would diversify income sources, alleviating dependency on the diminishing fishing industry. This approach aligns with the need for local-level adaptation solutions[86] and is integral to protecting the right to a secure livelihood.[87] Ensuring financial access is essential for these women to maintain their right to work, autonomy, and dignity.

8.6. Establish gender-sensitive climate adaptation policies

Local and national policymakers must incorporate gender-sensitive frameworks within climate adaptation strategies, recognizing that elderly women face intersecting

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84 OHCHR, *Understanding Human Rights and Climate Change* (Office of the United Nations High Commissioner for Human Rights, 2020).

85 UN Habitat (2014) *The Right to Adequate Housing* (UN Habitat); M. Bunce et al. (2010) 'Policy misfits, climate change and cross-scale vulnerability in coastal Africa: How development projects undermine resilience' *Environmental Science & Policy* 13(6), 485.

86 W. N. Adger et al. (2005) 'Successful adaptation to climate change across scales' *Global Environmental Change* 15(2), 77.

87 UNFCCC (2017) *Gender and Climate Change: The Role of Women in Climate Action* (United Nations Framework Convention on Climate Change).

vulnerabilities that heighten their exposure to climate impacts. In alignment with UN Women[88] and Crenshaw's intersectionality framework, policies should address the unique needs of elderly women by creating community feedback mechanisms to inform and shape adaptation efforts. Gender-sensitive policies that prioritize the rights of elderly women in climate-affected communities are essential for ensuring an equitable approach to climate resilience.

9. Conclusion

This study reveals that climate change is not just an environmental challenge but a multidimensional human rights issue, especially for marginalized groups like the elderly female household heads in Kariba's fishing community. Through Crenshaw's intersectional lens, the compounded vulnerabilities faced by these women reveal how climate change systematically erodes their basic human rights to health, food security, water, adequate housing, and economic livelihood. Their limited adaptive capacity is further restricted by gender and age-based social norms, which confine their access to resources and livelihood opportunities, further heightening their dependency on a resource namely fishing that is itself increasingly compromised by climate impacts. This community's experience reflects the urgent need for climate adaptation policies that are sensitive to the unique social identities and economic roles of elderly women. Protecting their human rights requires targeted, inclusive interventions that prioritize access to essential resources, while ensuring their health and housing security and supporting sustainable income diversification. In the face of heightened climate risks, such policies are not only necessary for immediate survival but are also integral to building resilience, dignity, and autonomy among these not only the elderly women in Kariba's fishing community but also communities with similar livelihood options.

[88] UN Women (2018) *Turning Promises into Action: Gender Equality in the 2030 Agenda for Sustainable Development* (United Nations Entity for Gender Equality and the Empowerment of Women).

Assessing Effects of Climate Change on Rural Female Learners with Physical Disabilities in Masvingo North Province, Zimbabwe

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Abstract

This qualitative study aims to assess effects of climate change on rural female learners with physical disabilities in Masvingo North Province, Zimbabwe. It addresses a critical gap in literature concerning the interplay of climate change, gender dynamics, and disability within educational frameworks, particularly in rural areas. Climate change affects access to education for rural female learners with physical disabilities in Masvingo North by damaging infrastructure and limiting transportation options. Additionally, increased environmental stress can divert resources and attention away from educational needs, hindering their success. Employing a purposive sampling technique, the research selected 22 participants based on their disabilities, educational levels, 1-10 years of expertise, geographical location, and gender. Ethical considerations such as confidentiality through use of pseudonyms, informed consent and others were utilized in this study. Data were gathered through two focus group discussions—one with learners with disabilities and another with adults with and without disabilities—to facilitate rich exchange of perspectives and experiences. We also employed document analysis of the policy documents which enshrine the right to education for learners with physical disabilities. Thematically analysed findings indicate that climate change significantly exacerbates educational barriers for these learners, leading to heightened dropout rates and compromised academic performance. In response to these findings, it is recommended that policymakers formulate inclusive educational strategies that specifically cater for needs of rural female learners with disabilities, incorporating climate resilience measures to ensure their sustained educational engagement.

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Key Words: climate change; disability; education; gender; Zimbabwe**.**

1. Introduction and Background

Climate change has emerged as one of most significant challenges of our time, adversely impacting various sectors, including education, health, and food security.[3] According to Beckmann et al, in Zimbabwe, particularly in rural Masvingo North Province, effects of climate change are increasingly evident, manifested through recurrent droughts, flooding, and extreme temperatures that disproportionately affect vulnerable populations.[4] Among the most impacted groups are rural female learners with physical disabilities, who face a unique set of challenges that hinder their access to education and essential resources. Physical disabilities are defined as conditions that result in physical limitations affecting a person's ability to perform activities or interact with their environment.[5] These disabilities can be caused by various factors, including congenital conditions, injuries, or illnesses, and may lead to impairments in body structure or function, resulting in difficulties with mobility and daily activities.[6] Examples of physical disabilities include cerebral palsy, which affects movement and coordination; spinal cord injuries, which can lead to paralysis; and amputations, where a limb is removed due to injury or disease. In Masvingo North Province, there are learners with various disabilities, including mental disabilities, mobility difficulties, and hearing and visual impairments, among others.

This current study specifically seeks to unpack the effects of climate change on rural female learners with physical disabilities in Masvingo North constituency. Focusing on specific subsets of disabilities, particularly physical disabilities, allows the research to provide tailored recommendations that address unique challenges faced by this group.[7] Narrowing the study to female learners with physical disabilities is crucial for several reasons. Firstly, this demographic group often experiences compounded vulnerabilities due to both their

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3 Zvamaida Murwira, 'President Mnangagwa declares drought state of disaster' *Herald Online* (3 April 2a024). Available at: https://www.herald.co.zw/president-mnangagwa-declares-drought-state-of-disater/. Accessed 28 June 2025.

4 N. Beckmann et al. (2022) 'Rituals of care: Strategies adopted by HIV testers to avoid misdiagnosis in rapid HIV testing in Zimbabwe' *Global Public Health* 17(12), 4169.

5 A. Chitiyo (2021) 'Special and inclusive education in Southern Africa' *Journal of Special Education Preparation* 1, 55.

6 E. Gudyanga, N. de Lange & M. Khau (2019) 'Zimbabwean secondary school guidance and counselling: Teachers teaching sexuality education in the HIV and AIDS education curriculum' *SAHARA-J: Journal of Social Aspects of HIV/AIDS* 16(1), 35.

7 N. Chidakwa (2023). 'Drug abuse: A hindrance to optimal functioning of the rural learner's cognitive capabilities' *Research in Social Sciences and Technology* 8(3), 155.

gender and disability status, which can significantly hinder their access to education and resources. Research shows that female learners with disabilities are disproportionately affected by climate change, as they face barriers that are both gendered and disability-specific, such as inadequate infrastructure and societal stigma.[8]

Moreover, the intersection of climate change and disability highlights the urgent need for targeted interventions. For instance, extreme weather events can exacerbate existing inequalities, making it even more challenging for female learners with physical disabilities to attend school and participate fully in educational activities. Through concentrating on this specific group, the study aims to identify the distinct impacts of climate change on their educational experiences and to propose actionable strategies that can enhance their resilience and adaptive capacity in the face of environmental challenges. Additionally, focusing on physical disabilities allows for a more nuanced understanding of barriers these learners encounter, such as lack of accessible facilities and transportation options, which are critical during climate-induced disruptions.[9] This specificity not only enriches academic discourse surrounding climate change and education but also informs policymakers and educators about necessary adjustments needed to support this vulnerable population effectively. Consequently, by narrowing scope of study to female learners with physical disabilities in Masvingo North Province, the research can provide insights and recommendations that are specifically tailored to meet the needs of this group, ultimately contributing to more inclusive and equitable educational practices in the context of climate change. In addition, a narrow focus promotes depth of insight, which can then prove relevant in similar contexts elsewhere.

Southern Africa is experiencing intensified climate variability, leading to critical food shortages and inadequate water supplies, which are essential for maintaining health and educational stability.[10] Drought conditions have become alarmingly frequent in Zimbabwe, severely affecting agricultural outputs and food security.[11] More so, Zimbabwe Vulnerability Assessment Committee, reported that, approximately 5.4 million people in Zimbabwe were

8 L. Wood (ed) (2022) Community-Based Research with Vulnerable Populations: Ethical, Inclusive and Sustainable Frameworks for Knowledge Generation (Palgrave Macmillan).

9 F. Mavasere & B. Dzawanda (2022) 'Effectiveness of Pfumvudza as a resilient strategy against drought impacts in rural communities of Zimbabwe' *GeoJournal,* 88(1), 3455.

10 Ibid.

11 E. Mavhura (2020) 'Learning from the tropical cyclones that ravaged Zimbabwe: Policy implications for effective disaster preparedness' *Natural Hazards* 104, 2261.

food insecure in 2023, with the most vulnerable groups including children and individuals with disabilities bearing the brunt of this crisis. The lack of access to adequate nutrition is particularly detrimental for rural female learners with physical disabilities, as proper nutrition is vital for their physical and cognitive development. Moreover, extreme weather events, such as floods, not only devastate local agriculture but also contaminate water sources, further jeopardizing the health of these learners.[12]

The rural context of Masvingo North Province further complicates these issues.[13] African rural areas experience inadequate infrastructure, limited access to healthcare, and insufficient educational resources, which amplify vulnerabilities of female learners with disabilities. Section 75 of the Constitution of Zimbabwe, 2013 guarantees the right to education. It provides that, "Every person has right to a basic education, including adult basic education."[14] In addition, section 83 of the Constitution of Zimbabwe, 2013 emphasizes the importance of special provisions for individuals with disabilities.[15]

Furthermore, the Ministry of Primary and Secondary Education Policy Framework stressed the need for inclusive education, aiming to provide equitable access to educational resources for all learners, regardless of their physical abilities[16]. Additionally, Ministry circulars, such as Circular Number 6 of 2020, outline strategies for enhancing educational accessibility, yet implementation remains inconsistent, particularly in rural areas like Masvingo North Province. More so, Education Amendment Act of 2020[17], the National Disability Policy[18] and the Heritage Based Curriculum emphasises on inclusive education to ensure equal access to educational resources for all learners.

Despite these constitutional and policy commitments, we observed that challenges persist for female learners with disabilities, especially in the face of climate-induced adversities. Furthermore, the Ministry of Primary and Secondary Education circulars outline strategies

12 G. Mukwada et al. (2020) 'Combating food insecurity in a rapidly changing mountain climate environment: Insights from Lesotho' *Climatic Change* 163, 989.
13 E. Mavhura, B. Manyena, & A. Collins (2017) 'An approach for measuring social vulnerability in context: The case of flood hazards in Muzarabani district, Zimbabwe' *Geoforum* 86, 103.
14 Section 75 of the Constitution of Zimbabwe, 2013.
15 Section 83 of the Constitution of Zimbabwe, 2013.
16 Ministry of Primary and Secondary Education Policy Framework of 2020.
17 Education Amendment Act, 2020.
18 The National Disability Policy of 2021.

for improving educational accessibility, but their implementation, especially in rural areas like Masvingo North, remains inconsistent. In essence, the analysis of the constitutional provisions and key policy documents related to education in Zimbabwe reveals gaps between the commitments on paper and the realities faced by marginalized learners, underscoring the need for more effective implementation strategies to ensure inclusive and equitable education for all. The lack of adequate infrastructure, including accessible school facilities and transportation, further exacerbates challenges these learners encounter during extreme weather events. The rural landscape often lacks necessary resources and adaptive measures to mitigate the impacts of climate change, leaving female learners with physical disabilities particularly vulnerable.

While there have been studies addressing impacts of climate change on education in broader contexts, there is a significant research gap concerning specific effects on female learners with physical disabilities in Zimbabwe, most existing literature focuses on general climate impacts or experiences of learners without disabilities, neglecting intersectional challenges faced by this group.[19] This study aims to fill this gap by assessing how climate change exacerbates the vulnerabilities of female learners with physical disabilities in Masvingo North, thereby contributing to the formulation of targeted interventions and inclusive policies that address the unique needs of these learners in a changing climate. Through this research, we seek to highlight the urgent need for comprehensive support mechanisms that ensure equitable educational opportunities for all, as envisioned in Zimbabwe's constitution and education policies.

This study is anchored on three research questions:

- What are specific challenges that climate change poses to educational experiences of rural female learners with physical disabilities in Masvingo North?
- How effective are existing constitutional rights and educational policies in Zimbabwe in addressing needs of rural female learners with physical disabilities, particularly in light of adverse effects of climate change? and

[19] T.P. Zinyemba, W. Groot & M. Pavlova (2023) 'Effects of parental HIV on children's education: A qualitative study at Mashambanzou Zimbabwe.' *Review of Social Economy* 83(2), 161.

- What strategies can be implemented to enhance well-being and educational attainment of rural female learners with physical disabilities, considering challenges exacerbated by climate change?

2. Literature Review

2.1. Specific challenges faced by rural female learners with physical disabilities

Climate change exacerbates educational disparities, particularly in rural areas. More so, it is submitted that climate-related disasters, such as floods and heatwaves, disrupt American schooling, disproportionately affecting learners from disadvantaged backgrounds, including those with disabilities.[20] Similarly, it is observed that rural schools in Britain face increased operational challenges due to climate change, which can hinder access for learners with physical disabilities.[21] Rural areas often lack infrastructure to adapt to climate challenges, further isolating vulnerable populations. Chinese rural female learners with disabilities face significant barriers to accessing education during climate-induced disruptions, such as landslides and severe weather. This situation mirrors findings in Nigeria, where inadequate infrastructure limits the ability of rural learners with disabilities to continue with education, particularly during climate-related emergencies.[22]

Climate change disproportionately affects Botswana female learners with disabilities. Female learners' domestic responsibilities increase during climate crises, thus limiting their educational opportunities. A similar trend is observed in South Africa, where it was observed that rural girls with disabilities often bear the brunt of climate impacts, further marginalizing their educational experiences.[23] The comparative analysis illustrates that while challenges are prevalent across countries, specific experiences of rural female learners with physical disabilities remain under-explored in Zimbabwean academic studies. In America, focus has been on policy responses to climate change impacts on education, while in Britain, research

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20 Ibid.

21 R. Ferrol & H. Novelo, 'The impact of climate change on children with disabilities', Caribbean Investigative Journalism Network (16 August 2023). Available at: https://www.cijn.org/the-impact-of-climate-change-on-children-with-disabilities/. Accessed 28 June 2025.

22 A. Chideme-Munodawafa, S.B. Manyana, & A.E. Collins (2020). HIV/AIDS in rural communities. Journal of Education.

23 M.B. Rapanyane in South African basic education system: Colonial legacies in the curriculum design and a way forward. E-Bangi: Journal of Social Sciences & Humanities.

has primarily addressed infrastructural resilience.[24] Conversely, studies in Nigeria, Botswana, and South Africa have concentrated on socio-cultural implications of gender and disability, often neglecting the compounded effects of climate change.

Despite the growing body of literature, there is notable lack of targeted studies addressing the intersection of climate change, disability, and gender specifically within rural contexts in Masvingo North. We argue that most existing research has focused on urban settings or broader national policies, failing to capture the localized experiences of rural female learners with physical disabilities. This study seeks to fill this gap by providing nuanced understanding of how climate change uniquely impacts this demographic group, thereby informing policy and educational practices tailored to their needs. Therefore, while significant research highlights challenges posed by climate change to educational experiences, specific focus on rural female learners with physical disabilities in Masvingo North remains largely unaddressed. This study aims to contribute to this critical discourse, offering insights that may help shape more equitable educational policies in the face of climate change.

2.2. Constitutional rights and educational policies on learners with disabilities

The educational landscape for rural female learners with physical disabilities in Zimbabwe presents unique challenges, particularly in the context of existing constitutional rights and educational policies. This literature review examines key policies and rights in Zimbabwe, including Education Amendment Act of 2020, the National Disability Policy and the Heritage Based Curriculum, the National Gender Policy [2013-2017], the National Development Strategy [1 NDS 1] of 2021-2025, and the Climate Change and Gender Action Plan [2020]. The National Gender Policy [2013-2017] aims to promote gender equality and empower women and girls, yet its implementation has faced significant challenges. While policy provides a framework for addressing gender disparities, its effectiveness is hindered by socio-cultural norms and inadequate resources, particularly in rural areas.[25]

[24] G. Mukwada et al. (2020). Combating food insecurity in a rapidly changing mountain climate environment: Insights from Lesotho. Climatic Change.

[25] Ibid.

Moreover, policy does not specifically address the intersectionality of gender and disability, thereby neglecting unique challenges faced by rural female learners with disabilities. The National Development Strategy 1 [NDS1] for Zimbabwe, covering 2021-2025, aims to foster sustainable economic growth and development. It emphasizes on enhancing productivity across key sectors such as agriculture, mining, and manufacturing while prioritizing infrastructure development to improve connectivity. The strategy also focuses on addressing social challenges by reducing poverty and improving healthcare and education. Strengthening governance and institutional frameworks is essential for promoting transparency and accountability.

Additionally, NDS1 integrates environmental sustainability into development planning to ensure the protection of natural resources ultimately seeking to improve the quality of life for all Zimbabweans. However, NDS1 lacks practical measures to ensure access to education for these learners, particularly in rural contexts where infrastructure is often lacking.[26] This gap indicates a disconnect between policy intentions and actual outcomes. The Climate Change and Gender Action Plan of 2020 aims to integrate gender perspectives into climate action, acknowledging that climate change disproportionately affects women. It can be noted that while the plan recognizes challenges faced by rural communities, it does not specifically address compounded effects of climate change on female learners with disabilities. Moreover, it is argued that climate-induced disruptions can hinder access to education, further marginalizing these learners.[27]

Section 73 of the Constitution of Zimbabwe, 2013, guarantees the right to an environment that is not harmful. This right to safe environment is supported by section 4 of the Environmental Management Act [Chapter 20:27]. Section 77 of the Constitution of Zimbabwe, 2013, further guarantees the right to safe, clean, and potable water and sufficient food. These provisions are critical for the holistic development of learners; however, their implementation remains inconsistent. Furthermore, while the constitutional framework is robust, practical obstacles in rural areas hinder access to these rights, particularly for

[26] A. Chideme-Munodawafa, S.B. Manyana, & A.E. Collins (2020). HIV/AIDS in rural communities. Journal of Education.

[27] Ibid.

vulnerable populations.[28] Zimbabwe is a signatory to the Convention on Rights of Persons with Disabilities [CRPD][29] Optional Protocol to the African Charter on the Rights of Persons with Disabilities, which mandates protection of rights for individuals with disabilities, ensuring their inclusion in society. However, despite this commitment, practical application of these rights is often lacking, particularly in rural areas where resources and infrastructure are limited. The CRPD emphasizes the importance of removing barriers to education, healthcare, and social services, yet many rural female learners continue to encounter physical and societal obstacles that hinder their access to these essential services[30].

Additionally, Zimbabwe's commitment to the African Charter on Rights and Welfare of the Child, specifically Article 13, underscores the right of children to education without discrimination.[31] However, cultural biases and societal stigma often prioritize education of boys over girls, particularly female learners with disabilities regarding educational opportunities. These entrenched gender norms can lead to lack of support for female learners with disabilities, further exacerbating their challenges in accessing education and opportunities for personal development. Furthermore, section 81 [1][e] of the Constitution of Zimbabwe, 2013 provide critical protections against economic and sexual exploitation, including child labour. Despite these protections, enforcement remains weak, particularly in rural communities where traditional practices may still allow for exploitation.[32] Economic pressures often compel families to prioritize work over education for their daughters, thereby perpetuating cycles of poverty and discrimination. The Disabled Persons Act aims to promote welfare of individuals with disabilities, outlining their rights and entitlements.[33] However, awareness of this act is often low in rural areas, and its provisions are not effectively enforced. Many rural families may not understand legal protections available, leaving their children with disabilities vulnerable to neglect and abuse.

The Zimbabwean Primary and Secondary Education policies such as the 2019 Education Amendment Act, 2020, the National Disability Policy and the Heritage Based Curriculum

28 S. Shava & S. Masuku (2019). Living currency: The multiple roles of livestock in livelihood sustenance and exchange in the context of rural indigenous communities in southern Africa. Southern African Journal of Environmental Education.
29 Convention on Rights of Persons with Disabilities.
30 Ibid.
31 Article 13 (1) of the African Charter on Rights and Welfare of the Child.
32 Section 81 of the Constitution of Zimbabwe, 2013.
33 Disabled Persons Act Chapter [17:01].

advocate for the right to education for all learners, regardless of disability, race, or gender. However, critics argue that these policies often fail to translate into practice. Rural schools are frequently ill-equipped to accommodate learners with disabilities, resulting in significant barriers to educational access. This inadequacy is echoed by the view that without targeted support for female learners with disabilities, these policies remain largely ineffective.[34] Studies from various countries reveal a spectrum of approaches to addressing the needs of learners with disabilities. In the United States, the Individuals with Disabilities Education Act ensures inclusive education and has led to significant advancements. In Nigeria, cultural stigmas and inadequate infrastructure continue to impede the education of female learners with disabilities.[35]

In South Africa, inclusive education policies such as White Paper 6 have created opportunities, but rural areas still experience significant challenges for their implementation. One can articulate that Botswana's policies show promise, yet they also reveal gaps in addressing needs of female learners with disabilities. In China there is growing awareness of disability rights, but regional disparities in implementation persist[36].Despite the wealth of literature on educational policies and rights for learners with disabilities globally, there is a notable gap regarding the specific needs of rural female learners with physical disabilities in Zimbabwe, particularly in the context of climate change. Most studies tend to focus on urban settings or do not adequately examine the intersectionality of gender, disability, and environmental issues. This study aims to address these gaps by providing comprehensive analysis of effectiveness of Zimbabwe's constitutional rights and educational policies, particularly in rural contexts. Therefore, while Zimbabwe has established robust constitutional rights and educational policies aimed at promoting inclusivity, significant challenges remain in addressing specific needs of rural female learners with physical disabilities. The adverse effects of climate change further complicate these issues, underscoring the need for targeted research and policy interventions.

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34 G. Charamba, T. Chikwati & M. Chidarikire (2024) 'Gender equality and women economic empowerment: An analysis of ZAOGA FIF church in Masvingo, Zimbabwe' *International Journal for Social Studies* 10(6), 14.

35 N. Lesko (2010) 'Feeling abstinent? feeling comprehensive? Touching the affects of sexuality curricula' *Sex Education* 10(3), 281.

36 K.S. Tarisayi (2023) 'Autoethnographic reflections on the survival strategies of Zimbabwean migrant teachers' *Cogent Social Sciences* 9(2), 2282788.

2.3. Strategies employed to enhance well-being of rural female learners with physical disabilities despite climate changes

Study shows that in the United States the importance of inclusive educational practices and personalized support systems for learners with physical disabilities, emphasizing the need for tailored interventions to address specific challenges faced by this population.[37] In the United Kingdom, research has focused on the role of assistive technologies in promoting learning outcomes and social inclusion among learners with disabilities, underscoring the significance of technological advancements in educational settings.[38] More so, in China, studies have explored cultural factors influencing educational experiences of learners with disabilities, emphasizing the need for culturally sensitive approaches to support their well-being and academic success.

Additionally, research in Nigeria has shed light on the policy implications for inclusive education and importance of government support in creating an enabling environment for learners with disabilities to thrive academically.[39] In contrast, studies from Botswana have emphasized the role of community engagement and grassroots initiatives in promoting the educational inclusion of learners with disabilities, highlighting the significance of local partnerships in driving positive change. Similarly, it is articulated that research from South Africa has underscored the need for teacher training programs and professional development opportunities to equip educators with the necessary skills to support learners with disabilities effectively.[40]

Despite the wealth of research in these countries, there remains a notable research gap concerning the intersection of disability, gender, and climate change in the context of Zimbabwe. Limited attention has been given to the unique challenges faced by rural female learners with physical disabilities in the wake of climate change impacts, necessitating

37 M. Sande et al. (2017) 'Progress towards malaria elimination in Zimbabwe with special reference to the period 2003-2015' *Malaria Journal* 16, 295.

38 K. Orievulu et al. (2022) 'Economic, social and demographic impacts of drought on treatment adherence among people living with HIV in rural South Africa: A qualitative analysis' *Clim Risk Manag.* 36, 100423.

39 R. Inegbedion (2023). Environment justice and persons with disabilities in Nigeria Msc in Sustainable Development. https://. www.researchgate.net/ publication/377220003

40 E. Mavhura, B. Manyena, & A. Collins (2017) 'An approach for measuring social vulnerability in context: The case of flood hazards in Muzarabani district, Zimbabwe' Geoforum 86, 103.

further exploration of innovative strategies to address these complex issues. Through examining experiences of this specific demographic group and considering environmental challenges they encounter; researchers can develop targeted interventions to enhance their well-being and educational outcomes in Zimbabwe.

3. Theoretical framework

Human Rights-Based Approach (HRBA) is a theoretical framework that emphasizes the importance of human rights in addressing social issues, including impacts of climate change and when examining the effects of climate change on vulnerable populations, such as female learners with physical disabilities in Masvingo North, Zimbabwe. Through applying HRBA, we can better understand the intersectionality of gender, disability, and environmental challenges, and advocate for rights and needs of these marginalized groups. HRBA posits that all individuals have inherent rights that must be respected and fulfilled, including the right to education, health, and an adequate standard of living. In the context of climate change, female learners with physical disabilities face compounded vulnerabilities due to systemic inequalities and discrimination. For instance, climate change exacerbates existing barriers to education, such as inaccessible school facilities and transportation challenges, which disproportionately affect girls with disabilities.[41] This aligns with findings that highlight need for inclusive policies that recognize unique challenges faced by female learners with disabilities in rural areas. More so, t the core principle of HRBA is empowerment of marginalized groups to participate in decision-making processes that affect their lives.[42]

In Masvingo North, it is crucial to involve female learners with physical disabilities in discussions about climate adaptation strategies. This can be achieved through community-based rehabilitation programs that promote their rights and enhance their capacity to advocate for themselves. The importance of community engagement in developing effective climate adaptation strategies that consider the specific needs of women and girls with disabilities. The HRBA framework recognizes the intersectionality of various forms of discrimination. Female learners with physical disabilities in Masvingo North experience

41 K.S. Tarisayi (2023) 'Autoethnographic reflections on the survival strategies of Zimbabwean migrant teachers' *Cogent Social Sciences* 9(2), 2282788.

42 F. Mavasere & B. Dzawanda (2022) 'Effectiveness of Pfumvudza as a resilient strategy against drought impacts in rural communities of Zimbabwe' *GeoJournal*, 88(1), 3455.

multiple layers of disadvantage due to their gender, disability, and socio-economic status. Climate change impacts, such as droughts and food insecurity, further exacerbate these inequalities. For example, girls are often responsible for securing food and water for their families, and climate change can increase the burden of these responsibilities, leading to heightened stress and health risks. Addressing these intersecting issues requires targeted interventions that consider unique experiences of these learners.

Additionally, applying a HRBA involves advocating for policy changes that uphold the rights of female learners with disabilities. This includes pushing for inclusive education policies that ensure accessibility in schools and promote gender equality in educational opportunities. Local governments in Zimbabwe must strengthen discussions around women's rights and enhance outreach regarding climate risks and strategies.[43] Through advocating for these changes, stakeholders can help create an environment where female learners with disabilities can thrive despite challenges posed by climate change. Finally, HRBA emphasizes the importance of monitoring and accountability mechanisms to ensure that rights of female learners with disabilities are upheld. This involves collecting disaggregated data on the impacts of climate change on this population and using it to inform policy and practice. Community-based organizations can play a crucial role in this process by conducting assessments and advocating for the rights of female learners with disabilities. Ensuring that these voices are heard in climate discussions is essential for fostering an inclusive approach to climate resilience. Resultantly, applying HRBA to assess the effects of climate change on female learners with physical disabilities in Masvingo North, Zimbabwe, provides a comprehensive framework for understanding and addressing their unique challenges.

4. Research Methodology

This qualitative study utilized a case study design to explore unique experiences of female learners with physical disabilities in Masvingo North, Zimbabwe. Participants were purposively selected based on specific criteria, including their experiences, gender, disability status, geographical location, and relevant expertise. This study included a total of 22 participants, who are 10 female learners with physical disabilities aged between 13 and 15,

[43] D.J. Hlalele (2018) 'Effects of computer-aided and blended teaching strategies on learners' achievement in civic education concepts in mountain learning ecologies' *Education and Information Ecologies* 22, 2693.

two teachers (one male and one female), four parents of learners with disabilities, two representatives from organizations advocating for rights of people with disabilities (one male and one female), two village heads (one male and one female), and two nurses (one male and one female). This diverse participant pool was essential for capturing a wide range of perspectives and insights regarding the impact of climate change on female learners with disabilities.

Data generation was conducted through two focus group discussions, observations and from different policy documents among other documents, which were strategically designed to facilitate open dialogue among participants. The first focus group consisted solely of young female learners with disabilities, while the second group included eight adult participants (four males and four females). This separation was crucial to mitigate power dynamics that could inhibit learners' ability to express themselves freely in the presence of adults, as research indicates that young individuals often feel more comfortable sharing their thoughts in peer-only settings.[44] Data collected from these discussions were then subjected to thematic analysis, a method that allows researchers to identify and analyse patterns within qualitative data, providing nuanced understanding of participants' experiences.[45] Ethical considerations were a fundamental aspect of the research process. Informed consent was obtained from both learners and adult participants, ensuring that they were fully aware of the study's purpose and their rights. Given the age range (10-15) of female learners, assent forms were also signed to confirm their voluntary participation. To protect participants' identities, pseudonyms were used in all data reporting, which is critical practice in qualitative research to maintain confidentiality and encourage honest participation[46]. Protecting the identity of participants in research is crucial to ensure their privacy, build trust and encourage honest and open responses. Additionally, researchers provided a clear explanation of the study's purpose to all participants, fostering transparency and trust throughout the research process. Ethical considerations align with best practices in qualitative research, ensuring that rights and dignity of participants is upheld. The researchers engaged a professional counsellor to help participants deal with any stress that could arise due to discussions.

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44 B. Dube (2020) 'Rural online learning in the context of COVID-19 in South Africa: Evoking an inclusive education approach' *Multidisciplinary Journal of Educational Research* 10, 135.

45 Ibid.

46 M. Chidarikire & T. Chikwati (2024) 'Unravelling causes and mitigating suicidal tendencies in male educators in Zimbabwe's rural regions: A comprehensive analysis' *Asian Journal of Education and Social Studies* 50(5), 293.

5. Findings and Discussion

5.1. Theme 1: Challenges that climate change poses to the educational experiences of rural female learners with physical disabilities

There are many challenges that are faced by rural female learners with disabilities. The following are some perspectives of the participants.

Female Learner Mary argued that,

> "*As a female learner with disabilities, I face many challenges due to climate change. When it gets too hot, classrooms can become unbearable, making it hard for me to concentrate. Also, when it rains heavily, roads become muddy and difficult to navigate, which makes it hard for me to get to school. Sometimes, schools close because of flooding, and I miss important lessons. My physical limitations make it even harder to cope with these* changes*."*

In addition, Teacher Ms. Gumbo commented that,

> *"Climate change significantly affects our educational environment. For female learners like* Mary*, changing weather patterns lead to increased absenteeism. When it rains, many learners cannot reach school, especially those with physical disabilities who need accessible paths. Additionally, lack of proper facilities for these learners means that when temperatures rise, the learning environment is not conducive for them, affecting their overall academic performance."*

More so, Nurse Male Harry explained that,

> "From a health *perspective, climate change poses serious risks to our learners' well-being. Increased heat can lead to dehydration and other health issues, particularly for vulnerable learners like those with disabilities. The stress of*

climate-related disruptions can also affect their mental health, making it harder for them to focus on their education. We need more support systems in place to help these learners cope with these challenges."

Furthermore, Village Head Mrs. Shumba narrated that,

"In our community, climate change is a significant barrier to education for girls with disabilities. Many families prioritize basic survival over education when resources become scarce due to droughts or floods. This often leads to girls being pulled out of school to help at home. We need more awareness and resources directed toward creating inclusive educational environments that consider the unique challenges posed by climate change."

Findings from the above participants' views on the challenges that climate change poses to educational experiences of rural female learners with physical disabilities are profound and multifaceted. Female learner participant Mary articulated her struggles, noting that extreme heat makes classrooms unbearable and hinders her ability to concentrate. This observation proves that high indoor temperatures can significantly impair cognitive functioning, particularly among vulnerable populations. Additionally, Mary described difficulties she faces during heavy rains, which render roads muddy and impassable. Teacher Ms. Gumbo echoed this sentiment, emphasizing that changing weather patterns lead to increased absenteeism, especially for learners with disabilities who rely on accessible pathways. Natural disasters disproportionately affect marginalized groups, making it particularly challenging for learners with physical disabilities to access educational resources.[47]

The issue of school closures due to flooding, as mentioned by Mary, exacerbates learning disruptions. Such interruptions can lead to significant educational setbacks, particularly for learners who may already be at disadvantage. Furthermore, Nurse Male Harry highlighted health risks associated with climate change, noting that increased heat can lead to dehydration and other health complications. Vulnerable learners, particularly those with disabilities, may experience heightened stress and mental health challenges, which can

[47] F. Machingura (2013) 'A woman should learn in quietness and full submission' (1 Timothy 2: 1): Empowering women in the fight against masculine readings of Biblical texts and a chauvinistic African culture in the face of HIV and AIDS' *Studies in World Christianity* 19(3), 233.

further detract from their educational engagement. Finally, Village Head Mrs. Shumba pointed out that in times of climate-induced scarcity, families often prioritize survival over education, leading to girls with disabilities being withdrawn from school to assist at home. This reflects broader socioeconomic trends that educational access is compromised due to resource limitations.

The discussion of data illustrates the critical intersection of climate change, disability, and education, particularly for rural female learners. We argue that challenges identified necessitate a comprehensive approach to educational policy and support systems that address these unique vulnerabilities. First, unbearable classroom conditions during extreme heat underscore the urgent need for schools to implement climate-resilient infrastructure. Enhancing classroom environments, such as installing air conditioning and improving ventilation, can significantly improve educational outcomes for learners with disabilities. Moreover, transportation barriers highlighted by Mary and Ms. Gumbo call for significant investment in accessible infrastructure. Policymakers should prioritize development of safe, reliable pathways and transportation options for learners with disabilities, particularly in rural areas. Research indicates that improved accessibility can lead to higher attendance rates and better academic performance among these learners[48]. The health risks associated with climate change, as noted by Nurse Male Harry, suggest a need for integrated health and educational support systems. Schools should implement tailored health programs that address the specific needs of learners with disabilities, particularly during extreme weather events. Effective mental health resources and training for staff can help support learners better during these challenging times.

Insights from Village Head Mrs. Shumba emphasize the importance of community engagement and awareness initiatives that highlight the significance of education for all children, especially for girls with disabilities. Educational programs that foster community support can enhance resource allocation and ensure that vulnerable learners are not left behind. Finally, intersectional challenges faced by rural female learners with disabilities necessitate a holistic policy approach that integrates climate adaptation strategies with educational reforms. Policymakers must consider the unique needs of these learners in

[48] S. Shava & S. Masuku (2019) 'Living currency: The multiple roles of livestock in livelihood sustenance and exchange in the context of rural indigenous communities in southern Africa' *Southern African Journal of Environmental Education* 35(1).

climate action plans and educational policies to foster inclusive environments that promote resilience and equity in education. Therefore, addressing challenges posed by climate change requires a multifaceted strategy involving infrastructure improvements, health support, community engagement, and inclusive policy development to better support vulnerable learners in adapting to the realities of climate change.

5.2. Theme 2: Constitutional rights and educational policies in Zimbabwe for rural female learners with disabilities

The following are verbal responses from each participant regarding the effectiveness of constitutional rights and educational policies in Zimbabwe for rural female learners with disabilities

Shuvai (Female Learner with Disabilities) was of the view that,

> *"I feel that while there are policies in place to support people with disabilities, they are not always implemented effectively in rural areas. Many schools lack the necessary facilities, like ramps and accessible restrooms. Additionally, climate change makes it harder for us to travel to school safely. When roads are damaged by floods, it becomes even more challenging for girls like me to get an education."*

Equally, Mr. Dumba (Teacher) expounded that,

> "*Educational policies in Zimbabwe aim to be inclusive, but the reality is different. We need more resources to truly support female learners with disabilities. Climate change exacerbates existing inequalities, as many families struggle with food insecurity and lack of transport. This affects attendance and learning, especially for girls who already face societal pressures to stay home. We need more training for teachers to understand and support these learners effectively."*

Furthermore, Nurse Angie (Female Nurse) alluded that,

> *"As a healthcare provider, I see how climate change impacts the health of rural communities, which in turn affects education. Girls with disabilities often miss school due to health issues that arise from inadequate facilities and poor environmental conditions. The constitutional rights for these learners need to be better enforced, ensuring they receive healthcare and educational support they are entitled to. Without proper health and education, their future is at risk."*

More so, Mr. Mahoto (Village Head) shared that,

> *"The constitutional rights and policies are a good start, but they often do not reach the most marginalized in our community. Climate change has been harsh, leading to droughts and floods that disrupt education for all children, but particularly for girls with disabilities. We need to advocate for more local initiatives and resources that directly address these issues, ensuring that our girls can learn in a safe and supportive environment."*

Findings from participants highlight significant gaps in implementation of constitutional rights and educational policies in Zimbabwe, particularly for rural female learners with physical disabilities. Shuvai, a female learner, noted that although policies exist, their effectiveness is hindered by inadequate infrastructure in schools, such as absence of ramps and accessible restrooms. Infrastructural barriers significantly limit access to education for learners with disabilities in rural Zimbabwe[49] Furthermore, Shuvai's acknowledgment of climate change as a barrier emphasizes compounded challenges faced by these learners. The impact of climate events, such as floods damaging roads and it is clear that these climate-related disasters disproportionately affect rural communities, thereby hampering educational access. Mr. Dumba's perspective underscores the need for increased resources and teacher training to support inclusive education effectively. His assertion reflects the broader educational challenges faced in Zimbabwe, where insufficient funding has been shown to limit implementation of inclusive policies. The connection between climate change and educational disruptions is evident in his comments about food insecurity and transport issues,

[49] K.S. Tarisayi (2023) 'Autoethnographic reflections on the survival strategies of Zimbabwean migrant teachers' *Cogent Social Sciences* 9(2), 2282788.

thereby resonating with the view that environmental stressors can exacerbate existing inequalities in education.

Nurse Angie's observations bring attention to the health implications of climate change on education. She indicates that inadequate facilities and environmental conditions lead to health issues that cause absenteeism among girls with disabilities. This is supported by the World Health Organization which reports that poor health and educational facilities can significantly impact learning opportunities for vulnerable populations. Angie's call for better enforcement of constitutional rights reflects a critical gap in policy implementation, as many learners do not receive the support they need, in education. Lastly, Mr. Mahoto's comments on marginalization of rural communities' highlight the disconnect between policy frameworks and their actual impact. He stresses the need for local initiatives to address challenges posed by climate change, which aligns with recommendations from the United Nations Educational, Scientific and Cultural Organization advocating for localized approaches to improve educational access for marginalized groups.

The discussions stemming from participants indicate a pressing need for a holistic approach to improving educational access for rural female learners with physical disabilities in Zimbabwe. Barriers highlighted by Shuvai and reinforced by educational literature suggest that policy implementation must go beyond existence and focus on tangible outcomes. For instance, lack of necessary facilities in schools calls for urgent infrastructural investments, as emphasized by Inclusive Education Policy of Zimbabwe, which mandates that all schools be accessible. This suggests that without adequate funding and prioritization, rights of learners with disabilities remain unfulfilled. Moreover, Mr. Dumba's insights into resource allocation reflect a broader systemic issue within the Zimbabwean education sector. The need for comprehensive teacher training is critical, as educators play a vital role in fostering inclusive environments. Teachers equipped with the right skills can significantly improve educational outcomes for learners with disabilities.[50] This highlights the importance of professional development programs focusing on inclusive pedagogy, particularly in rural settings. Nurse Angie's emphasis on the interplay between health and education further underscores the necessity for integrated support systems. Addressing health issues linked to

[50] M. Chidarikire M. & M. Saruchera (2024) 'Exploring multifaceted impacts of El Niño driven drought on child-headed rural learners' well-being in drought-prone Chivi, Zimbabwe' *International Journal of Rural and Community Studies* 6, 1.

environmental conditions is essential for improving school attendance and learning outcomes. This aligns with the Health in All Policies approach advocated by the World Health Organization, which promotes the integration of health considerations into educational planning, particularly for vulnerable populations. Ensuring that learners with disabilities receive adequate healthcare support is crucial for their educational success.

Mr. Mahoto's call for local initiatives resonates with the argument that community involvement is essential for sustainable change. Localized strategies can bridge the gap between policy and practice, ensuring that unique challenges faced by rural communities are addressed effectively. This aligns with findings of the International Disability Alliance, which advocates for community-driven initiatives to enhance educational access for marginalized groups[51]. Engaging local leaders and stakeholders in the development and implementation of educational policies can foster a more inclusive environment for female learners with disabilities. Resultantly, a combination of infrastructural inadequacies, resource limitations, health impacts, and need for localized initiatives presents a complex challenge to achieving inclusive education in Zimbabwe. Addressing these issues requires concerted effort from government, educational institutions, and communities to ensure that rights of rural female learners with physical disabilities are upheld, particularly in context of climate change.

5.3. Theme 3: Strategies to enhance well-being and educational attainment of rural female learners with physical disabilities in context of climate change

This section dealt with verbal responses from the participants regarding strategies to enhance well-being and educational attainment of rural female learners with physical disabilities in the context of climate change:

Rumbi (Female Learner with Disabilities) was of the view that,

> *"I believe that providing accessible transportation to schools is crucial. Many of us face challenges getting to school, especially during the rainy season when roads*

[51] More information about the International Disability Alliance is available on the website: https://www.internationaldisabilityalliance.org/. Accessed 28 June 2025.

become impassable. Additionally, creating safe spaces within schools where we can learn and interact freely would help us feel more included and supported."

Additionally, Mr. Chidas (Male Parent) observed that,

"*As a parent, I think it's important to increase awareness in our community about the rights and capabilities of children with disabilities. Workshops for parents and community members can help reduce stigma and encourage support for girls with disabilities. We also need to advocate for better school facilities that accommodate their needs."*

Furthermore, Janet (Female Parent) narrated that,

"*I agree with Mr. Chidas. In addition to community awareness, we need to ensure that schools are equipped with proper resources, such as adaptive learning materials and trained teachers who understand the needs of girls with disabilities. Scholarships or financial support for their education can also relieve some of the burdens on families."*

More so, Mrs. Chifamba (Facilitator at NGO) commented: in

"*From an organizational perspective, we can implement mentorship programs that connect rural female learners with role models who have overcome similar challenges. This can inspire them and provide guidance. Furthermore, we should advocate for policy changes that prioritize inclusion of girls with disabilities in educational planning and climate resilience strategies."*

Lastly, Mr. Chomunorwa (Head of NGO) noted that,

"*We need a multi-faceted approach. Collaborating with local governments to improve infrastructure is key, especially in areas that are vulnerable to climate change. We should also focus on integrating technology into learning, which*

can provide alternative resources and educational opportunities, even in challenging conditions. Lastly, fostering partnerships between NGOs, schools, and communities can create a supportive network for these learners."

Findings from participants above reveal a multifaceted understanding of strategies necessary to enhance well-being and educational attainment of rural female learners with physical disabilities in the context of climate change. Rumbi, a female learner with disabilities, emphasized the critical need for accessible transportation to schools, particularly highlighting challenges posed during the rainy season when roads often become impassable. This means reliable transportation significantly impacts educational access for learners with disabilities, particularly in rural areas.[52] Furthermore, Rumbi's suggestion for creating safe spaces within schools reflects growing recognition of the importance of inclusive educational environments. This is because such spaces foster engagement and belonging among marginalized learners.[53]

Mr. Chidas, male parent, pointed out the importance of community awareness regarding rights and capabilities of children with disabilities. His perspective underscores the need for educational initiatives aimed at reducing stigma and promoting inclusivity. Janet, another parent, echoed this need, emphasizing the importance of equipping schools with adaptive learning materials and trained educators. The availability of tailored resources and trained staff significantly enhances educational experiences of learners with disabilities, thereby improving their academic outcomes. Mrs. Chifamba, facilitator at an NGO, introduced the idea of mentorship programs connecting learners with role models who have faced similar challenges. This approach suggests that mentorship can provide critical support and inspiration for learners from disadvantaged backgrounds. The call for policy changes to prioritize the inclusion of girls with disabilities in educational planning and climate resilience strategies was also notable, reinforcing the need for systemic changes highlighted in the analysis of educational policies in climate-affected regions. Lastly, Mr. Chomunorwa, head of an NGO, advocated for a multi-faceted approach, including collaboration with local

52 F. Machingura (2013) 'A woman should learn in quietness and full submission' (1 Timothy 2: 1): Empowering women in the fight against masculine readings of Biblical texts and a chauvinistic African culture in the face of HIV and AIDS' Studies in World Christianity 19(3), 233.

53 K.S. Orievulu & C.C. Iwuji (2022) 'Institutional responses to drought in a high HIV prevalence setting in rural South Africa' *International Journal of Environmental Research and Public Health* 19(1), 434.

governments to improve infrastructure and the integration of technology into learning. Infrastructure improvements are essential for educational access in climate-vulnerable areas, and that technology can play a transformative role in providing alternative resources and learning opportunities for learners facing environmental challenges.[54]

The discussions based on responses from participants highlight critical strategies that can effectively enhance the well-being and educational attainment of rural female learners with physical disabilities amidst challenges posed by climate change. Accessibility to transportation, as highlighted by Rumbi, is a fundamental barrier that often inhibits regular school attendance. This issue is not merely logistical; it reflects broader systemic inequalities that need addressing through targeted policies and community support.[55] Through ensuring accessible transportation, educational authorities can facilitate consistent attendance and engagement among learners with disabilities, promoting their academic success. Community awareness and education, as articulated by Mr. Chidas and Janet, are crucial in dismantling stigma and fostering supportive environments for learners with disabilities. Implementing community workshops can empower parents and community members to advocate for the rights of children with disabilities, thereby nurturing an inclusive culture. These initiatives can mitigate social isolation often experienced by these learners.[56] The necessity for adaptive resources and trained educators cannot be overstated, as emphasized by Janet. Schools must be equipped with tools and personnel to address the specific needs of learners with disabilities. This aligns with inclusive education frameworks that prioritize differentiated instruction and accessibility as foundational elements of teaching. Mentorship programs, as proposed by Mrs. Chifamba, serve as a powerful intervention to inspire and guide rural female learners. Through connecting them with role models, these programs can enhance resilience and motivation, offering practical examples of overcoming obstacles similar to those faced by the learners.

Finally, Mr. Chomunorwa's call for a multi-faceted approach underscores the interconnectedness of various strategies necessary for meaningful change. Collaborating

54 Ibid.

55 M.B. Rapanyane (2024) 'South African basic education system: Colonial legacies in the curriculum design and a way forward' *E-Bangi Journal of Social Sciences and Humanities* 21(2), 428.

56 A. Sibanda & S. Manik (2022) 'Environmental Education (EE) teaching in a rural drought-prone district in Zimbabwe: Micro innovations with growth potential' *Journal of Geography Education in Africa*' 5, 77.

with local governments to improve infrastructure directly addresses physical barriers posed by climate change, while integrating technology can enhance learning experiences even in adverse conditions.[57] This comprehensive strategy not only supports educational attainment but also promotes overall well-being of rural female learners with physical disabilities, ensuring they are equipped to thrive in a changing climate. Consequently, findings and discussions presented highlight the urgent need for a collaborative and inclusive approach to support rural female learners with disabilities, emphasizing the importance of accessibility, community awareness, resource availability, mentorship, and infrastructural improvements in the face of climate change.

6. Recommendations

The following are actionable recommendations tailored to each ministry and stakeholder based on findings regarding challenges posed by climate change, particularly for rural female learners with disabilities:

6.1. Ministry of Primary and Secondary Education

- *Develop Climate-Resilient Infrastructure*: Invest in and prioritize construction of climate-resilient school buildings equipped with adequate ventilation, ramps, and accessible restrooms.
- *Teacher Training Programs*: Implement training programs focused on inclusive education practices, particularly for teachers in rural areas, to better support learners with disabilities.
- *Adaptive Learning Materials*: Ensure that schools are equipped with adaptive learning materials and technologies that cater specifically to the needs of learners with disabilities.

6.2. Ministry of Gender and Women Empowerment

- *Awareness Campaigns*: Launch community workshops to raise awareness about the rights of girls with disabilities and challenge societal norms that hinder their education.

[57] T.P. Zinyemba, W. Groot & M. Pavlova (2023) 'Effects of parental HIV on children's education: A qualitative study at Mashambanzou Zimbabwe.' Review of Social Economy 83(2), 161.

- *Support Programs for Families*: Create initiatives that provide financial and social support to families, reducing economic burden and encouraging continued education for girls with disabilities.

6.3. Ministry of ICT

- *Digital Learning Platforms and free internet*: Develop and promote accessible digital learning platforms to provide alternative educational resources, especially during school closures due to climate impacts.
- *Training for Educators*: Facilitate ICT training for rural teachers to enhance their ability to use technology in inclusive education settings.

6.4. Ministry of Finance, Investment, and Economic Development

- *Allocate Funds for Inclusivity*: Ensure that budget allocations prioritize funding for inclusive education and climate-resilient infrastructure in rural schools.
- *Incentivize Private Investment*: Create incentives for businesses to invest in accessible transportation services and community support programs for learners with disabilities.
- *Enhance Basic Education Assistance Module (BEAM) Funding*: To increase BEAM funding specifically allocated for learners with physical disabilities, ensuring that more students can access high-quality education, adaptive technologies, and necessary support services. More so, to establish a monitoring system to track use of BEAM funds, ensuring they are effectively utilized to support learners with physical disabilities in accessing education.

6.5. Ministry of Health and Child Welfare

- *Integrated Health and Education Services*: Develop programs that combine free health services with educational support, focusing on specific health needs of vulnerable learners.
- *Mental Health Support*: Implement mental health initiatives in schools to address climate-related stress and its impact on educational focus.

6.6. Department of Meteorological Services

- *Climate Awareness Programs*: Work with educational institutions to provide regular updates on climate conditions and their potential impact on school operations and learner safety.
- *Emergency Response Plans*: Collaborate with schools to develop emergency response plans for climate-related disruptions, ensuring all learners are informed and prepared.

6.7. Disability Organizations

- *Community Engagement Initiatives*: Collaborate with local communities to raise awareness about challenges faced by learners with disabilities and promote inclusive practices.
- *Mentorship Programs*: Establish mentorship programs that connect rural female learners with successful individuals who have overcome similar challenges.

6.8. Business Communities

- *Support Accessible Transportation Initiatives*: Partner with local governments to provide accessible transportation solutions for learners with disabilities.
- *Corporate Social Responsibility Programs*: Invest in educational initiatives that support inclusivity and resilience among rural female learners.

6.9. Members of Parliament and local village heads

- *Advocate for Policy Reforms*: Promote and support development of policies that integrate climate adaptation and inclusive education in legislative agendas.
- *Engage with Constituents*: Facilitate discussions with community members about challenges faced by learners with disabilities and advocate for resources to address these issues.

6.10. School Development Committees

- *Community-Driven Solutions*: Involve community members in identifying and implementing strategies to enhance accessibility and resilience in schools.
- Regular Needs Assessments: Conduct assessments to identify specific needs related to climate challenges and the accessibility of learning environments.

6.11. Teachers and Parents

- *Encourage Open Communication*: Foster an environment where teachers and parents can communicate openly about the needs of learners with disabilities.
- *Support Learning at Home*: Provide parents with resources and strategies to support their children's learning, particularly during periods of school disruption due to climate events.

6.12. Department of Social Welfare

- *Increase Food Rations*: Conduct assessments to determine current food needs and adjust rations, accordingly, ensuring that learners with physical disabilities receive sufficient nutrition during drought periods. In addition, collaborate with local NGOs and community organizations to supplement food supplies and ensure that deliveries reach those in need.
- *Targeted Outreach Programs:* To implement outreach programs to identify and register learners with physical disabilities who require additional support, ensuring they are prioritized for food assistance.
- Awareness Campaigns To launch campaigns to raise awareness about specific challenges faced by learners with physical disabilities, encouraging community support and participation in food distribution efforts.

6.13. Zimbabwe National Water Authority (ZINWA)

- *To Increase Solar-Powered Boreholes:* To drill additional solar-powered boreholes in strategic locations accessible to learners with physical disabilities, ensuring they can obtain clean water without significant effort. Furthermore, to partner with local

communities to maintain and manage these boreholes, providing training for users, including those with disabilities.

- *Accessibility Improvements:* To ensure that paths to these boreholes are well-maintained and accessible for learners with mobility challenges, including the installation of ramps and clear signage.

7. Conclusion

This research study has highlighted multifaceted impacts of climate change on rural female learners with physical disabilities in Masvingo North, Zimbabwe. The findings reveal that these learners face unique challenges exacerbated by climate-related factors, including increased environmental hazards, limited access to educational resources, and heightened vulnerability to socio-economic disruptions. The data indicate that extreme weather events, such as droughts and floods, not only disrupt educational opportunities but also strain already limited support systems available to these individuals. Furthermore, the intersection of gender, disability, and climate change creates compounded disadvantage, as cultural norms often marginalize both women and individuals with disabilities, leading to reduced access to education and essential services. To address these challenges, it is crucial for policymakers and stakeholders to implement targeted interventions that promote inclusivity and resilience. Strategies may include enhancing infrastructure to withstand climate impacts, providing tailored educational resources, and fostering community awareness to support rights and needs of rural female learners with disabilities. Therefore, an urgent action is needed to mitigate the effects of climate change on this vulnerable population. Through prioritizing their needs, we can contribute to a more equitable and sustainable future, ensuring that every learner can thrive despite challenges posed by the changing climate.

The Impact of Lithium Mining on the Right to Safe, Clean and Potable Water in Bikita and Kamativi

Obert Bore and Dickson Bhewu[1]*

Abstract

This paper assesses the impact of lithium mining on the realization of the right to clean, safe and potable water on communities living in lithium mining areas in Zimbabwe. The assessment is necessitated by the global energy transition agenda for decarbonisation driving demand for critical minerals such as lithium. As a mineral commodity, lithium is considered a critical mineral crucial to produce clean technologies. Zimbabwe is one of the key global producers of lithium and has witnessed an influx of corporate investments into the lithium sector. Two case studies were carried out at Bikita Minerals and Kamativi through interviews and focus group discussions with various stakeholders, including community members, traditional leaders, and company officials to ascertain the extent to which the selected lithium projects impacted the right to clean, safe and potable water. It was noted that although the constitutional framework provides for the right to clean, safe and potable water, the right is not absolute and could be limited. While the constitutional framework provides for communities to benefit from the extraction of resources in their area, in practice it is not being fully implemented to compensate and offset negative externalities of lithium mining on communities. Both case studies revealed concerns by communities over increased water scarcity and pollution of water bodies such as rivers and dams. In Kamativi, the researchers observed a long queue of community members at one water point given the scarcity of water due to the drought and pollution to the dam. The pollution of water coupled with climate induced droughts in the areas exacerbates the challenges and fuels conflicts between communities and mining companies. Given the water intensive lithium processing methods, the paper recommends for lithium mining companies to undertake comprehensive water impact assessment as part of the environmental impact assessment and develop strategies for sustainable water consumption.

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1. Introduction

Water is essential to life. The right to clean and safe water is a fundamental human right indispensable for the enjoyment of life and human dignity. It is intrinsically connected to the right to a clean, healthy, and sustainable environment. The International Covenant on Economic, Social and Cultural Rights (ICESCR) explicitly recognizes in Article 11 the right to an adequate standard of living,

including adequate food, clothing, housing, and continuous improvement of living conditions, which by extension covers access to clean water. This article was extensively interpreted through the General Comment (GC) No. 15 in 2002 in which the United Nations Committee on Economic, Social and Cultural Rights defined the 'right to water' as the right of everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses.[2] This laid the basis for recognition of the right to water as a fundamental human right under international law. Following the adoption of GC 15, the right to safe drinking water was first recognized by the United Nations General Assembly and the Human Rights Council as part of binding international law in 2010.[3] Since then several international and regional instruments stress the importance of access to clean and safe water. Albeit not explicitly, article six of the International Covenant on Civil and Political Rights (ICCPR) which upholds the right to life, is increasingly interpreted to include the right to a healthy environment, which is indispensably linked to access to safe drinking water.[4]

The right is further reinforced in the Sustainable Development Goals (SDGs) and Agenda 2063 of the African Union. SDG six enjoins states to ensure availability and sustainable management of water and sanitation for all by 2030, emphasizing that access to safe and affordable drinking water is a universal right.[5] The right is also linked to other SDGs such as goal 13 on climate action, highlighting the importance of safeguarding environmental resources, including water, in the context of sustainable development. Within the African context where millions of people

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2 United Nations, Committee on Economic, Social and Cultural Rights (2003) General Comment No. 15 (2002), The Right to Water (arts. 11 and 12 of the International Covenant on Economic, Social and Cultural Rights).

3 United Nations (2010) The human right to water and sanitation: Resolution adopted by the General Assembly on 28 July 2010 (A/RES/64/292).

4 Human Rights Committee (2019) General Comment No. 36 on Article 6 of the International Covenant on Civil and Political Rights, on the Right to Life.

5 United Nations General Assembly (2015) Transforming our World: The 2030 Agenda for Sustainable Development (A/RES/70/1). Available at: https://docs.un.org/en/A/RES/70/1. Accessed 27 June 2025.

do not have access to safe drinking water, Agenda 2063 stresses the importance of environmentally sustainable and climate-resilient economies, with universal access to water and sanitation services under aspiration 1 and 7.[6] Additionally, while the African Charter on Human and Peoples' Rights (ACHPR) does not explicitly recognize the right to safe and potable water, it enshrines the right of peoples to a general satisfactory environment favourable to their development.[7] This imposes a duty on states to ensure that natural resource exploitation does not impair people's access to fundamental rights such as water. Article 21 of the ACHPR further reinforces the right of peoples to freely dispose of their wealth and natural resources. The disposal of natural resources through participating in economic activities such as mining may however impact enjoyment of the right to clean water and the right to a satisfactory environment. The Draft Convention on the Right to Development sufficiently buttresses the interaction, interdependence and mutually reinforcing nature of these rights. It reaffirms that environmental sustainability, including access to clean water, is crucial for development.[8] Similarly, the 1986 UN Declaration on the Right to Development provides in article two that the human person is the central subject of development and should be the active participant and beneficiary of development.[9] This implies that economic activities, including mining, must be people-centered and must not compromise basic rights such as access to water.

Furthermore, soft law also provides specific protections and recognition of indigenous peoples and rural communities who are often impacted by mining. The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP),[10] notably Article 25 and Article 32, are apt. These articles assert that indigenous peoples have the right to maintain and strengthen their spiritual relationship with traditionally owned or otherwise occupied and used lands, territories, waters, and coastal seas. Consequently, indigenous peoples and rural communities must give free, prior, and informed consent (FPIC) before the approval of any project affecting their lands or waters. Moreso, the United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas (UNDROP**)**, particularly recognizes the right of rural communities to

6 African Union (2015) Agenda 2063, The Africa We Want, pp 2-3 and 9-11; Available at; https://au.int/sites/default/files/documents/36204-doc-agenda2063_popular_version_en.pdf Accessed 22 April 2025.

7 Article 24.

8 Preamble of the Draft Convention on the Right to Development. Available at: https://www.ohchr.org/sites/default/files/2022-04/A_HRC_WG_2_23_2_AEV.pdf. Accessed 24 April 2025.

9 Article 2 of the UN Declaration on the Right to Development.

10 UN General Assembly (2007) Declaration on the Rights of Indigenous Peoples (A/61/L.67)

access clean drinking water and to conserve water sources for future generations.[11] In the contemporary era, the global decarbonization agenda has categorized minerals crucial to fighting climate change. Minerals such as lithium, copper, nickel, cobalt have been terms as strategic for transiting from fossil fuels to renewable energy technology.

Lithium, a non-ferrous metal essential to produce Electric Vehicle (EV) batteries, consumer electronics, among others, has been labelled the "new oil."[12] Globally, this mineral including other critical minerals are now in high demand. The surge in demand is driven by the global commitment to meet climate goals under the Paris Agreement, with EV sales rising dramatically from 3 million in 2020 to 6.6 million in 2021, according to the International Energy Agency (IEA).[13] Lithium prices have mirrored this surge, with lithium carbonate prices surpassing $75,000 per metric ton by March 2022, representing a 550% increase.[14] Zimbabwe, endowed with Africa's largest lithium reserves and ranked sixth globally, is poised to benefit from this boom.[15] According to the 2022 United States Geological Survey (USGS) Critical Minerals List, Zimbabwe is already among the leading global lithium producers, trailing Australia, Chile, China, Argentina, and the United States.

As a result of this demand for lithium, Zimbabwe has witnessed an influx of investors. Predominantly these investors are Chinese companies such as Sinomine Resources Group, Sichuan Yahua, Shenzhen Chengxin Lithium Group Company Limited, and Zhenjiang Huayou Cobalt. The Zimbabwe Investment Development Agency (ZIDA) reported that in the first quarter of 2023, 36% of all investment licenses were issued to lithium investors, with projected

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11 Articles 21 and 22.

12 G. Martin et al. (2017) 'Lithium market research – global supply, future demand and price development' *Energy Storage Materials*, 6, 171. See also L.V, Garcia et al. (2011) 'Lithium in a sustainable circular economy: A comprehensive review', *Processes*, 11, 418, p1. See also D. Kennedy ,' Lithium is the new oil', *Climate Capital Media* (3 June 2022), Available at: https://www.climateandcapitalmedia.com/lithium-is-the-new-oil/. Accessed 1 November 2024.

13 International Energy Agency (2022) Global EV Outlook 2022: Securing Supplies for an Electric Future, p 4. Available at: https://iea.blob.core.windows.net/assets/ad8fb04c-4f75-42fc-973a-6e54c8a4449a/GlobalElectricVehicleOutlook2022.pdf. Accessed 20 September 2025. I. Shine (2022) 'The world needs 2 billion electric vehicles to get to net zero. But is there enough lithium to make all the batteries?', *World Economic Forum 2022.* Available at: https://www.weforum.org/agenda/2022/07/electric-vehicles-world-enough-lithium-resources/. Accessed 1 November 2024.

14 M Azevedo, et al (2022), *Lithium Mining: How New Production Technologies Could Fuel the Global EV Revolution*, Mckinsey and Company. Available at: https://www.mckinsey.com/industries/metals-and-mining/our-insights/lithium-mining-how-new-production-technologies-could-fuel-the-global-ev-revolution. Accessed 30 October 2024.

15 Nassar, N. & Fortier, S. (2021) 'Methodology and Technical Input for the 2021 Review and Revision of the U.S. Critical Minerals List Open-File Report 2021–1045 (US Geological Survey) https://doi.org/10.3133/ofr20211045.

investments worth over US$301.15 million.[16] Lithium mining has already unlocked more than USD 1 billion, and the Government of Zimbabwe has introduced policies, including an export ban on raw lithium to compel processing and maximize domestic benefits and economic gains.[17] While lithium mining brings potential economic opportunities for employment, revenue for the state, and benefits to downstream economies, there is a breadth of research evidence showing that it is not without environmental costs as seen from the largest global lithium producers such as Bolivia, Chile, and Argentina. Within this 'lithium triangle', significant impacts on water resources have been noted. Beyond negative environmental externalities, its extraction across many African countries is also riddled with human rights violations.[18] A report by Amnesty International unveiled that lithium-ion batteries used to power everyday electronics and EVs relied on cobalt originating from artisanal mines sites in the south of the DRC.[19] The concern around rights violations, such as child labour is not unique to the artisanal mining of cobalt in the DRC, but rather a concern more broadly in the mining of critical metals.[20] Against this backdrop, this paper aims to assess the impact of lithium extraction on the constitutional right to a safe, clean, and potable water in Zimbabwe, enshrined in Section 77 of the Constitution of 2013. It critically examines whether the exploitation of natural resources like lithium can legally and practically undermine the realization of environmental rights, focusing on two case studies: Kamativi Mining Company and Bikita Minerals. The paper further analyses Zimbabwe's legal and policy frameworks governing water rights in the context of mineral extraction and explores the extent to which constitutional

16 Zimbabwe Investment Development Agency Annual Report 2023; Available at, https://zidainvest.com/wp-content/uploads/2024/07/ZIDA-2023-ANNUAL-REPORT-COMPREHENSIVE-DIGITAL.pdf.

17 Base Minerals Export Control (Lithium Bearing Ores and Unbeneficiated Lithium) Order, 2022 Statutory Instrument 213 of 2022, which was replaced by the Base Minerals Export Control (Unbeneficiated Base Mineral Ores) (Amendment) Order, 2023 (No. 1) Statutory Instrument 7 of 2023, and later Statutory Instrument 57 of 2023, all passed in terms of the Base Minerals Export Control Act.

18 Global Witness (2023) A rush for lithium in Africa risks fuelling corruption and failing citizens. Available at: https://www.globalwitness.org/en/campaigns/natural-resource-governance/lithium-rush-africa/. Accessed 15 December 2024.

19 Amnesty International (2016) 'Exposed: Child labour behind smartphones batteries and electric car batteries', *Amnesty International News 19 January 2016.* Available at: https://www.amnesty.org/en/latest/news/2016/01/child-labour-behind-smart-phone-and-electric-car-batteries/. Accessed 15 December 2024.

20 Business and Human Rights Resource Centre Briefing (2021) "Going Out" Responsibly: The Human Rights Impact of China's Global Investments. Available at; https://media.business-humanrights.org/media/documents/2021_BHRRC_China_Briefing.pdf. See also Business and Human Rights Resource Centre Briefing (2023) "Unpacking Clean Energy: Human Rights Impacts of Chinese Overseas Investment in Transition Minerals" p 3, Available at; https://media.business-humanrights.org/media/documents/2023_China_TM_briefing.pdf . Accessed 24 April 2025.

safeguards are operationalized to protect communities' access to water in the face of expanding lithium mining activities

2. Context Setting: Lithium Extraction for Energy Transition and Impacts on Enjoyment of Human Rights

In the context of an energy transition towards cleaner technologies, the main challenge facing human efforts is making the development of natural resources compatible with the preservation of the environment and the rights of local communities. The surge in demand for lithium presents significant economic opportunities for green minerals producing countries like Zimbabwe. For instance, at the continental level, the Africa Union is eager to facilitate a green transition and created a framework for African countries to benefit from the economic opportunities. An African Green Minerals Strategy (AGM) was adopted in April 2025 focusing on Critical Energy Transition Minerals (CETM).[21] The AGM strategy is aimed towards achieving the Africa Mining Vision (AMV) goal of a transparent, equitable and optimal exploitation of mineral resources to underpin broad-based sustainable growth and socio-economic development.[22] Its strategic vision is an Africa that harnesses green mineral value-chains for industrialization and electrification, creating green technologies and sustainable development to enhance the quality of life of its people.[23] In line with the vision, the overall objective of the AGMS is to use green minerals to underpin Africa's industrialization towards electrification, creating green technologies and sustainable development.[24] Continentally, it is acknowledged that investments in green minerals like lithium projects could drive economic development through job creation, diversification of economies and downstream economic benefits.[25]

Although the demand for lithium has brought significant benefits to the producer countries, there is evidence of systematic and widespread abuse of workers and communities rights by

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21 Africa Green Minerals Strategy 2024, p 2. Available at: https://www.wto.org/english/tratop_e/tessd_e/29-301024_e/11_Subsidies%20WG_AfDB%20Presentation.pdf. Accessed 20 October 2024.

22 Ibid.

23 Ibid., p 10

24 Ibid.

25 C. Denina and W. Roelf, 'Africa gears up to keep more profits form lithium boom', Reuters (9 February 2023). Available at: https://www.reuters.com/markets/commodities/africa-gears-up-keep-more-profits-lithium-boom-2023-02-09/. Accessed 16 December 2024.

corporations investing in green minerals projects.[26] There is a breadth of evidence that poor labour, safety, health and environmental standards exist in many producing countries.[27] These emerging negative externalities have prompted the United Nations Secretary General to establish the United Nations Panel on Critical Energy Transitional Minerals in April 2024.[28] Zimbabwe is part of the Panel, including other green minerals producing countries. The panel was tasked to develop a set of voluntary principles to address challenges often linked to mining such as social conflict and environmental degradation—and ensure a just, equitable, and successful energy transition. In September 2024, the Panel produced key principles to guide the energy transition powered by green minerals. Rightfully, principle 1 states that human rights must be at the core of all mineral value chains while principles 2 places emphasis on the need to safeguard the integrity of the environment and biodiversity. This is because increased mineral demand risks placing additional pressure on biodiversity, water, geodiversity and ecosystems, and therefore the Panel recommended that members ought to redouble their efforts to safeguard the integrity of the environment and ensure the long-term health and resilience of people and the planet, in particular ecosystems that are vulnerable to the pressures, including water.[29]

Processing of lithium requires significant amounts of water, at approximately 50 000 gallons per tonne of lithium. This creates competition for water resources between mining companies on the one hand and communities on the other. For example, in Chile's Salar de Atacama, lithium extraction being performed by various companies has consumed 65% of the region's water supply.[30] This has not only created extreme water shortages but has also had a substantial impact on the ability of local farmers to grow crops and maintain livestock. In Argentina lithium

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26 G. Mkodzongi, 'Lithium mining and economic development in Zimbabwe', *Africa Policy Research Institute*, (18 September 2024). Available at: https://afripoli.org/lithium-mining-and-national-economic-development-in-zimbabwe. Accessed 15 December 2024.

27 ZELA, 'Chinese dominance in Zimbabwe's lithium mines: Potential risks, vulnerabilities and opportunities in the critical mineral sector', IPIS (20 September 2023). Available at: https://ipisresearch.be/weekly-briefing/chinese-dominance-in-zimbabwes-lithium-mines-potential-risks-vulnerabilities-and-opportunities-in-the-critical-minerals-sector/. Accessed 15 December 2024.

28 United Nations, 'UN Secretary-General's Panel on Critical Energy Transition Minerals'. Available at: https://www.un.org/en/climatechange/critical-minerals. Accessed 20 October 2024.

29 United Nations Secretary-General's Panel on Critical Energy Transition Minerals (2024) Resourcing the Energy Transition: Principles to Guide Critical Energy Transition Minerals Towards Equity and Justice, pp 11-12. Available at: https://www.un.org/sites/un2.un.org/files/report_sg_panel_on_critical_energy_transition_minerals_11_sept_2024.pdf. Accessed 10 November 2024.

30 S. Ahmad, 'The Lithium Triangle: Where Chile, Argentina, and Bolivia Meet', *Havard International Review* (15 January 2020). Available at: https://hir.harvard.edu/lithium-triangle/. Accessed 10 November 2024.

extraction at the Hombre Muerto salt flat have left a mark on the local environment, most notably on the nearby Trapiche Rive.[31] In fact, the Argentinian Supreme Court of Catamarca held that lithium mining had damaged the river Salar del Hombre Muerto and halted the lithium project as a result of its impact on a water stream in the province of Los Patos.[32] The application to halt the operations had been filed by the Atacameños Indigenous Community against the Province of Catamarca and lithium mining companies Livent (Minera del Altiplano SA) and Galaxi Lithium SA.[33] Additionally, it was estimated in 2020 that lithium mining in Argentina would use up to 50 billion litres of water in 2022, equivalent to the annual consumption of a city with a population of 350,000.[34] Further, a 2021 study by the Wetlands International confirms that lithium mining is associated with massive water loss and leads to freshwater salinization posing a huge threat to fragile wetlands in Argentina, Bolivia, and Chile.[35] While the impacts of lithium on water resources elsewhere have been well-documented, there is a gap concerning how exploitation of lithium has or is impacting the right to water in Zimbabwe.

This article is divided into five parts. The first part provides an introduction, research questions and methodology. The second part explores the constitutional and national legal framework for protection of the right to safe, potable and clean water in the mining sector. The third part focuses on environmental and water related challenges in the lithium mining sector in Zimbabwe. The fourth part draws on case studies from Bikita and Kamativi on how its lithium mining impacts the realisation of the right to water. It also discusses the findings of the research and provides recommendations to address the observed challenges. The fifth section concludes the paper.

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31 E. Litvinoff, 'In Argentina, lithium mining leaves a river running dry', *Dialogue Earth* (30 October 2024). Available at: https://dialogue.earth/en/author/edgardolitvinoff/. Accessed 16 December 2024.

32 Ibid.

33 Pagina 12, La Corte ordenó detener la explotación de litio en el Salar del Hombre Muerto, (14 March 2024). Available at: https://www.pagina12.com.ar/720777-la-corte-de-justicia-ordeno-detener-la-explotacion-de-litio-. Accessed16 December 2024.

34 M. Franssen, 'If the water disappears, life will disappear', *Green European Journal*, (13 June 2023). Available at: https://www.greeneuropeanjournal.eu/if-the-water-disappears-life-will-disappear/. Accessed 15 December 2024.

35 Wetlands International (2021) 'Impactos ambientales de la explotación de litio en los humedales y recursos hídricos del Altiplano'. Available at: https://lac.wetlands.org/publicacion/impactos-ambientales-de-la-explotacion-de-litio-en-los-humedales-y-recursos-hidricos-del-altiplano/. Accessed 10 November 2024.

2.1 Research questions

1. Can the right to safe, clean and potable water under the Zimbabwean legal framework be restricted through the exploitation of lithium?
2. What are the conditions under which interference with the right can be justifiable during exploitation of lithium?
3. Were the Constitutional safeguards for promoting the realization of the right to safe, clean and potable water in Zimbabwe followed in the case of Bikita and Kamativi?
4. How has lithium mining in Bikita and Kamativi impacted the realization of the right to safe, clean and potable water?

3. Methodology

The paper adopted a mixed research methodology combining doctrinal legal research and empirical qualitative research. The doctrinal component involved a systematic review, assessment, and analysis of the international, regional, and national legal frameworks relating to the right to clean, safe, and potable water. At the international level, the study examined binding instruments such as the ICESCR and ICCPR. Soft law instruments, including the UNDRIP, UNDROP, SDGs, the Draft Convention on the Right to Development, the Declaration on the Right to Development, the United Nations Guiding Principles on Business and Human Rights (UNGPs), and the Inter-American Democratic Charter, were also analysed for their relevance to the right to water and environmental protection. At the regional level, key instruments reviewed included the African Charter on Human and Peoples' Rights and Agenda 2063. At the national level, the study analysed the Constitution of Zimbabwe, 2013 particularly section 77, and relevant legislative instruments governing mining and water rights, namely the Mines and Minerals Act [Chapter 21:05], the Environmental Management Act [Chapter 20:27], and the Water Act [Chapter 20:24].

To frame the analysis of rights and duties concerning water access in mining communities, the research adopted a Human Rights-Based Approach (HRBA). The HRBA was used to identify rights holders, duty bearers, and accountability mechanisms. Given the increasing prominence of human rights approaches in environmental protection,[36] employing a HRBA provided a

[36] L.K Masekesa (2022) 'A human rights-based approach to implementing Target 11.6 of Sustainable Development Goal 11 in Zimbabwe' *African Human Rights Law Journal,* 22, 241-265.

valuable lens for examining the realization and limitation of environmental rights in the context of lithium mining.[37]

For the empirical component, a qualitative methodology was adopted to collect primary data through semi-structured interviews and focus group discussions (FGDs) during field visits. The case study selection was for specific reasons. The selection of Bikita was selected because it is the oldest and largest lithium mine in Zimbabwe, located in a dry region particularly vulnerable to water scarcity, and because it is the only known lithium project in the country where the company was fined for polluting a major water body. Kamativi was chosen due to its proximity to the Gwayi River, one of Zimbabwe's major rivers, its location in a water-stressed region, and the accessibility of company officials to the researchers, which facilitated richer data collection. A total of twenty-five (25) face-to-face key informant interviews were conducted with stakeholders, including traditional leaders, community environmental monitors, councillors, and officials from the Environmental Management Agency (EMA). In Bikita, two FGDs were conducted in Ward 10, involving thirteen (13) male and twelve (12) female community members while in Kamativi, two FGDs were also held with twenty-six (26) participants — thirteen (13) male and thirteen (13) female community members, traditional leaders, and local authorities. Males and females were separated to ensure that each group would be free to express their views without any biases. Respondents were asked structured questions regarding their experiences with lithium mining, focusing on impacts on water resources and the broader effects on their livelihoods.

4. The Zimbabwean Legal Framework for Right to Water

4.1 International and regional framework

The Zimbabwean legal framework on the right to water is largely inspired by the international and regional frameworks. However, key fundamental international human rights documents such as the Universal Declaration of Human Rights (UDHR) of 1948, and the International Covenant on Economic, Social and Cultural Rights (ICESCR) and International Covenant on Civil and Political Rights (ICCPR) do not explicitly refer to a right to water. Nonetheless, one of the first relevant international instruments albeit non-binding to refer to water was the 1972

[37] M. Hana, (2011) 'Human Rights Approaches to Environmental Protection at the International Level and their Application in the Czech Republic', *Common Law Review, Issue 2010/11 Environmental Law*.

Stockholm Declaration.[38] In principle 2, the Declaration mentioned the importance of water for present and future generations. Years later, the right to water featured for the first time in an international law document, when the Mar del Plata Action Plan was adopted in 1977 following the UN Conference on Water. The Action Plan stated that "all people have the right to have access to drinking water in quantities and of a quality equal to their basic needs".[39]

Since then, several international and regional instruments stress the importance of access to clean and safe water. Albeit not explicitly stated, article six of the ICCPR, which upholds the right to life, is increasingly interpreted to include the right to a healthy environment, which is indispensably linked to access to safe drinking water.[40] Various international processes and soft law instruments such as the Dublin Statement,[41] the UN Conference on Environment and Development,[42] and the International Conference on Population and Development,[43] encapsulated the essence and importance of access to water for enjoyment of other fundamental human rights. However, the right was only seen as a derived right under the right to an adequate standard of living. The notion of water as a derived right was further supported in 1999 when the UN General Assembly reaffirmed the right to water in its resolution on the right to development.[44]

It was after the above developments that the General Comment 15 (GC 15) was adopted. For the first time the content of the right to water and related obligations arising for state parties to the ICESCR were identified. In the GC 15, the Committee defined the right to water as the right of everyone to sufficient, safe, acceptable and physically accessible and affordable water for personal and domestic uses.[45] While the ICESCR does not explicitly refer to the right to

38 Declaration of the United Nations Conference on the Human Environment, Stockholm, 16 June 1972, UN doc. A/CONF.48/14/Rev.1.

39 Report of the UN Water Conference" *Mar del Plata Action Plan*", Mar del Plata Argentina, 14-25 March 1977, UN Doc. E/CONF.70/29.

40 Human Rights Committee (2019) General Comment No. 36 on Article 6 of the International Covenant on Civil and Political Rights, on the Right to Life.

41 International Conference on Water and the Environment, Dublin Ireland, 26-31 January 1992, *Dublin statement on Water and sustainable Development* of 31 January 1992, principle No. 4.

42 UN Conference on Environment and Development, Rio de Janeiro Brazil, 3-14 June 1992, UN doc. A/CONF.151/26.

43 Report of the International Conference on Population and Development 5-13 September 1994, UN DocA/CONF.171/13/Rev. 1, hereafter: Cairo Declaration, Principle 2.

44 UN GA Resolution, *The Right to Development*, 17 December 1999, UN Doc. A/RES/54/175, para. 12 (a).

45 United Nations, Committee on Economic, Social and Cultural Rights (2003) General Comment No. 15 (2002), The Right to Water (arts. 11 and 12 of the International Covenant on Economic, Social and Cultural Rights).

water, the Committee underlined that the right to water was part of the right to an adequate standard of living, as were the rights to adequate food, housing and clothing. The Committee also stressed that the right to water was inextricably linked to the rights to health, adequate housing and food, and a safe environment.

Thus, although not recognized as a self-standing human right in international treaties, the right entails specific obligations for States. These obligations require states to ensure everyone's access to enough safe drinking water for personal and domestic uses, defined as water for drinking, personal sanitation, washing of clothes, food preparation, and personal and household hygiene.[46] These obligations also require States to protect the quality of drinking-water supplies and resources.[47] This implies that the states have a positive duty to not only refrain from interfering directly or indirectly with the enjoyment of the right to water, but also to prevent third parties from interfering with the right to water.[48] Having acceded to ICESCR in May 1991, Zimbabwe is bound by this treaty obligation together with other instruments that implicitly provide for the right to access to water. These include the Convention on the Elimination of All Forms of Discrimination against Women, adopted in 1979,[49] International Labour Organization (ILO) Convention No. 161 concerning Occupational Health Services, adopted in 1985 (art. 5), the Convention on the Rights of the Child, adopted in 1989,[50] and the 2006 Convention on the Rights of Persons with Disabilities.[51]

At the regional level, the ACHPR which Zimbabwe ratified is also crucial. It imposes a duty on states to ensure that natural resource exploitation does not impair people's access to fundamental rights such as water.[52] Guidelines on the Right to Water in Africa informs states, to meet obligations to respect, protect and fulfil the individual and collective right to water.[53] The Guidelines also mandates states to mobilise available resources in order to respect, protect, promote and fulfil the right to water.[54] However, like every other socio-economic right, the right to water is subject to progressive realisation as espoused by Article 2 of ICESCR and

46 OHCHR, UN-HABITAT and the World Health Organization (WHO) (2010) The Right to Water, Fact Sheet No. 35, p 3.
47 Ibid.
48 Ibid. 27.
49 Article 2 of the Convention on the Elimination of All Forms of Discrimination against Women, adopted in 1979.
50 Articles 24 and 27 (3) of the Convention on the Rights of the Child, adopted in 1989.
51 Article 28 of the 2006 Convention on the Rights of Persons with Disabilities.
52 Article 24 of the African Commission on Human and Peoples Rights.
53 African Commission on Human and Peoples Rights (ACHPR).
54 Article 4.1. of the Guidelines on the Right to Water.

Article 4.3. of the Guidelines on the Right to Water. These two instruments combinedly adopt a minimum core approach whereby States are supposed to demonstrate the minimum resources allocated to the realisation of this respective right.[55] Zimbabwe is a party to all these international and regional instruments.[56]

4.2 Constitutional and national framework

The right to water is provided under section 77 of the Constitution of Zimbabwe, 2013 which provides that:

> "Every person has the right to-
>
> (a) Safe, clean and portable water; and
> (b) Sufficient food;
>
> and the State must take reasonable legislative and other measures, within the limits of the resources available to it, to achieve progressive realization of this right."

This entails that citizens must access water that is safe, clean and potable for both their domestic and commercial needs. The section places an obligation on the State to ensure progressive realization of this right.[57] The enforceability of this provision is weakened by the inclusion of the subjective element, within the limits of the resources available to them. This subjective element limits the positive obligation. Such technical justifications and internal modifiers are forms of declaration without implementation. They enable reluctant government officials, policy implementers, agencies and institutions to meet the requirements minimally, based on the justification that resources were not available or enough to do so. This right and the right to a clean and safe environment are interdependent.[58] A safe, clean, healthy and sustainable environment is necessary for the full enjoyment of human rights, including the rights to life, to the highest attainable standard of physical and mental health, to an adequate standard of living, to adequate food, to safe drinking water and sanitation, to housing, to participation in cultural

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55 P. Mukumbiri (2022) 'Judicial interpretation of the right to water and the right to health under the 2013 Constitution of Zimbabwe'. In J Tsabora (ed) *The Judiciary and the Zimbabwean Constitution* (University of Zimbabwe Press).

56 Zimbabwe acceded to the International Covenant on Economic, Social and Cultural Rights (ICESCR) in May 1991.

57 Section 44 of the Constitution of Zimbabwe, 2013.

58 Section 73 of the Constitution of Zimbabwe, 2013.

life and to development, as well as the right to a healthy environment itself, which is recognized in regional agreements and most national constitutions.[59] The state should therefore refrain from violating human rights through causing or allowing environmental harm; protect against harmful environmental interference from other sources, including business enterprises. Given that the Constitution of Zimbabwe, 2013 is still in its infancy, judicial interpretation of the right to water has been brought to the court in limited circumstances. Where cases have been brought for adjudication, the courts seem to have diverging approaches. In *Forbes & Thompson (Bulawayo) (Pvt) Ltd* v *The National Water Authority and Kadyamusuna,*[60] the High Court granted a court order on a respondent who had disconnected water supply to a mine without lawful order. It was held that the disconnections of water supplies led to the creation of possible health hazards in indirect violation of the fundamental right to clean, safe and portable water.[61]

The Supreme Court decision *in Farai Mushoriwa v City of Harare* ruled that disconnecting water for payment defaulters was reasonable and not a violation of the right to water.[62] The Constitution of Zimbabwe, 2013 mandates the State to take reasonable legislative and other measures. The closest reasonable legislative measure is in terms of the Water Act [Chapter 20:24] which provides for a plethora of issues with regards to the use of water, the protection of the environment and the prevention and control of water pollution.[63] Section 32 of the Water Act [Chapter 20:24] entitles every person to abstract water for primary purposes. Though the Water Act [Chapter 20:24] has provisions that define primary and environmental water uses, most of the clauses in the Water Act [Chapter 20:24] relate to the management of water for commercial use rather than domestic use.[64] The right to water is not expanded in this Act as envisaged by section 77 of the Constitution of Zimbabwe, 2013. Fortunately, the Water Act [Chapter 20:24] is complimented by the Water Policy (2013) which is hinged on several principles including the need for equity in access to water, sustainability and considering a safe environment.[65]

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59 Article 1 on Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters, and article 24 of the African Charter on Human and Peoples' Rights.

60 *Forbes &Thompson (Bulawayo) (Pvt) Ltd* v *The National Water Authority and Kadyamusuna* HB 147/17.

61 *Farai Mushoriwa* v *City of Harare* 2014 (1) ZLR.

62 *Farai Mushoriwa* v *City of Harare* SC 54/2018.

63 Long Title of the Water Act [Chapter 20.24].

64 H Makurira & N Viriri (2017) *Water Permit Systems, Policy Reforms and Implications for Equity in Zimbabwe: Project Country Report*.

65 Z Murungweni, (2011) 'Zimbabwe National Water Policy - Background Paper on Water Resources Development and Management', *Thematic Paper No 2: Report: Water Resources, Use, Demand, Planning and Financing*.

Zimbabwean statue law recognizes the importance of the right to water and the duty of public authorities to provide their people with adequate water. For example; (i) section 64 of the Public Health Act [Chapter 15:17] requires every local authority to provide and maintain as far as may be reasonably possible, a sufficient supply of wholesome water for drinking and domestic purposes; and (ii) Section 5 of the Zimbabwe National Water Authority Act [Chapter 20:25] (hereinafter referred to as ZINWA) instructs relevant authorities to supply people with water. It also mandates ZINWA to encourage and assist local authorities to discharge their functions with regards to the development and management of water resources under their jurisdiction.[66]

Section 57(1) of the Environmental Management Act [Chapter 20:27] (EMA) criminalizes causing water pollution. Offenders, such as mining companies, are liable to pay the cost for removal of any foreign substances and restoration of the damaged environment and pay third party reparation or compensation.[67] The maximum sentence that EMA can impose is level 14 (equivalent to US$5000), as such it has been regarded as not deterrent enough. Environmental polluters often resort to the "pollute and pay principle" because they can afford these little fines.

The right to water, though essential, is not an absolute right,[68] and can be limited only in terms of the law of general application and to the extent that the limitation is fair, reasonable, necessary and justifiable in a democratic society based on openness, justice, human dignity, equality and freedom.[69] With regards to the law of general application, the right to water is limited through section 5 of the Water Act [Chapter 20:24] which stipulates that:

> Nothing in this Act shall affect the rights conferred on holders of mining locations or prospectors by the Mines and Minerals Act [Chapter 21:05] in respect of the use of— (a) water for primary purposes; or (b) ground water

A mere reading of this provision is instructive of the limitation imposed on the right to water by holders of rights conferred on mining locations and prospectors. It presupposes that mining

66 Local Authorities are mandated to provide portable water in terms of the Rural District Councils Act [Chapter 29:13] and the Urban Councils Act [Chapter 29:15].

67 N. Madya & M. Muzaza (2024) 'Mining Laws and Regulations Zimbabwe 2024: Zimbabwe, ICLG. Available at: iclg.com/practice-areas/mining-laws-and-regulations/zimbabwe. Accessed 26 September 2024.

68 Section 86(3) of the Constitution of Zimbabwe, 2013.

69 Section 86(2) of the Constitution of Zimbabwe, 2013.

rights are superior to other rights such as the right to water.[70] Further this position is supported by the section 2 of Mines and Minerals Act [Chapter 21:05] which provides that:

> The dominium in and the right of searching and mining for and disposing of all minerals, mineral oils and natural gases, notwithstanding the dominium or right which any person may possess in and to the soil on or under which such minerals, mineral oils and natural gases are found or situated, is vested in the President, subject to this Act.

This places the minerals rights over any other rights which may be held by individuals or communities.[71] This stems from the fact that the Act is a relic of the colonial era wherein mining processes were predicated on taking from the host communities rather than benefiting them. The other qualification is the requirement of the limitation to be fair, reasonable, necessary and justifiable. It places the onus on the State to prove how this right is justifiably limited. The existing literature is inadequate to establish satisfactory justification for limiting the right to access safe, clean and portable bearing in mind the cumulative impacts that may be posed for infringement.[72] In terms of section 77 which states that the State must take measures to implement the right to water, but only 'within the limits of the resources available to it'. The issue of availability of resources was deliberated at length by the Constitutional Court of South Africa in the case of *Soobramoney* v *Minister of Health,*[73] where it was held that the decision by Kwazulu Natal Health Department not to provide dialysis treatment was justified on the account of limited resources. In the case of *Mushoriwa* v *City of Harare*,[74] the Supreme Court held that the city council's power to disconnect water is reasonable and in line with section 77 of the Constitution of Zimbabwe, 2013, bearing in mind the enormous economic and budgetary considerations that would ordinarily rise in the provision of safe and clean water. Availability of resources is therefore an essential requirement for realization of the right to water.[75]

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70 *Chidyausiku v Havilahvale Mining Syndicate and 3 Others* (314 of 2023) [2023] ZWHHC 208 (24 May 2023). The court held that in term of section 179 of Mines and Minerals Act [*Chapter 21:05*] mining rights are superior to farming rights. This gives general approach adopted by the judiciary.

71 S.N Kativu & P. Oskarsson (2021) 'Our own law is making us beggars': Understanding experiences of governed, mine-side communities in Mutoko district, Zimbabwe' *The Extractive Industry and Society* 8(4), 101003.

72 R.P. Hall, et al. (2014) 'The human right to water: The importance of domestic and productive water rights' *Sci Eng Ethics* 20, 849–868.

73 *Soobramoney* v *Minister of Health* 1997 12 BCLR 1696 (CC).

74 *Mushoriwa* v *City of Harare* SC 54/ 2018.

75 D.R. Boyd (2011) 'The Right to Water: A Briefing Note', InterAction Council High Level Expert Group Meeting, *The Global Water Crisis: Addressing an Urgent Security Issue*. Available at: https://www.interactioncouncil.org/publications/right-water-briefing-note. Accessed 16 December 2024.

4.2.1 Justifiability of limitation

Zimbabwe is on the trajectory of pursuing economic development.[76] This is reflected and supported by the constitution framework which supports the pursuit of economic interest in a sustainable way.[77] For context, the right to water is intrinsically interlinked to the right to environmental rights provided for in section 73 of the Constitution of Zimbabwe, 2013 which state that:

> (1) Every person has the right –
>
> (a) to an environment that is not harmful to their health or well-being; and
>
> (b) to have the environment protected through reasonable legislative measures…that (i) prevent pollution
>
> (iii) secure ecological sustainable development and use of natural resources while promoting economic and social development."

Placing an obligation on the State to provide legislative protections that prevent pollution presupposes that a conducive environment is necessary for citizens to access safe, clean and potable water.[78] The most important point that emanates from this provision is the recognition of the need to protect the environment in the context of exploiting natural resources. Exploitation of resources (such as lithium) to promote economic development can be invoked as a justifiable limitation which is in the public interest.[79] Though not expressly conferred in the Constitution of Zimbabwe, 2013, the State has the right to exploit its natural resources, including lithium through the provisions of the Mines and Minerals Act 1961.[80] However,

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76 G. Chigumira et al. (2019) Enhancing Natural Resource Management in Zimbabwe: Case Studies Of Mineral Exploration; Forestry Management; Wild Life Management And Solar Energy, (Zimbabwe Economic Policy Analysis and Research Unit (ZEPARU)). Available at: zepari.co.zw/sites/default/files/2019-05/ENHANCING%20NATURAL%20RESOURCE%20MANAGEMENT%20IN%20ZIMBABWE%20for%20web.pdf. Accessed 28 June 2025.

77 Section 73 (1)(b)(iii) of the Constitution of Zimbabwe, 2013.

78 Zimbabwe Lawyers for Human Rights (2015) Fact Sheet No 5: Section 77 of the Constitution: The Right to Safe, Clean and Portable Water'. Promoting Active Citizenship to Defend and Enforce the Social and Economic Rights in the Constitution.

79 Section 86(2) of the Constitution of Zimbabwe, 2013.

80 The Mines and Minerals Act is the principal legal framework regulating the exploration and exploitation of mineral resources in Zimbabwe. However, the Act was enacted in the colonial era and focus on mineral extraction as opposed to sustainable management. As such the Act is currently under review and yet to be aligned with the Constitution.

section 315 of the Constitution of Zimbabwe, 2013 also requires an Act of Parliament to regulate the negotiation of State contracts that relates to concessions of minerals and other rights to ensure transparency, honesty, cost-effectiveness and competitiveness.[81]

Section 13(4) of the Constitution of Zimbabwe, 2013 provides that 'the State must ensure that local communities benefit from the resources in their areas.'[82] This qualification that there be benefit sharing between communities and mining exploitations facilitates sustainability.[83] However, as argued above the Mines and Minerals Act which is supposed to give effect to this provision was not designed to benefit communities and served to legitimize the channelling of wealth into the hands of the elite as well as the dispossession of communities who host the resources.[84] The principal legislation governing mining explorations in Zimbabwe is not in sync with provisions of the Constitution of Zimbabwe, 2013, Draft Convention on the Right to Development, United Nations Declaration on the Rights of Indigenous Peoples and the United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas, Declaration on the Right to Development, the Inter-American Democratic Charter, International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights. Though there is an amendment Bill currently undergoing parliamentary processes,[85] its passage into law has been delayed,[86] by political and economic interest. The current law is regarded as hindering effective regulation and management of the mining sector, leading to increased disputes in enforcing transparency and accountability.[87]

5. Comparative analysis

81 Section 62 of the Constitution of Zimbabwe, 2013 grants the public the right to access public information in the interest of public accountability.

82 Article 17 and 18 of the UN Declaration on the Right to Development.

83 Natural Justice Foundation (2014) 'Review of National Laws & Policies that Support or Undermine Indigenous Peoples and Local Communities Zimbabwe'. Available at: https://naturaljustice.org/wp-content/uploads/2015/09/Zimbabwe-Legal-Review.pdf. Accessed 25 September 2024.

84 ZIMCODD (2022) 'The necessity of legal and institutional reforms for economic development: Case of Mines and Minerals Bill' *Spiked*. Available at: https://spikedmedia.co.zw/the-necessity-of-legal-and-institutional-reforms-for-economic-development/. Accessed 28 June 2025.

85 Veritas (2023) 'The legislative agenda for the tenth Parliament' *Bill Watch 40/2023*. Mines and Minerals Bill – process to align and review it has started in 2015, it was included in the legislative agenda of the current 10th session of Parliament.

86 Zimbabwe Environmental Law Association, 'Zimbabwe Mines and Minerals Bill: What is the status really?' Available at: zela.org/zimbabwes-mines-and-mineral-amendment-bill-what-is-the-status-really/. Accessed 25 September 2024.

87 P Matika, 'Mining laws review fuel conflict', *The Chronicle* (22 July 2024). Available at: https://www.chronicle.co.zw/mining-law-review-delays-fuel-conflict/. Accessed 17 November 2024.

While lithium presents an opportunity for economic transformation, its exploration has been accompanied by myriad socio-environmental and governance challenges. Across resource-rich countries, extraction of lithium seems to be a double-edged sword. On one hand, they promise significant economic development and livelihood improvements while on the other, they exacerbate land and resource grabs, empower political elites, fuel corruption, and marginalize affected communities.[88] This is mirrored in other African countries. In the Democratic Republic of Congo (DRC), particularly Manono in Tanganyika Province, there have been concerns over lithium mining projects. Despite communities' high expectations for socio-economic benefits, there have been reports of ongoing conflicts between prospective mining companies, and lack of adequate community consultation to obtain FPIC for the projects.[89] Notably, community consultation processes were either absent or severely compromised, and environmental impacts were not adequately disclosed or assessed in advance. Similarly, in Namibia, lithium mining activities have endangered local water supplies due to hydrological disturbances caused by hard rock mining operations that penetrate groundwater levels, necessitating continuous pumping of water and resulting in ecological imbalances.[90] These emerging patterns evident in other lithium mining countries characterized by the absence of proper community consultation and environmental due diligence run contrary to international and regional human rights frameworks, which explicitly affirm principles such as FPIC and environmental impact assessments (EIA) as legal requirements.

For FPIC, although UNDRIP, UNDROP and the Declaration on the Right to Development are non-binding, they have become widely accepted as standard setting instruments relevant for states to consider when dealing with development projects where rights of indigenous or rural communities might be impacted. The principle of FPIC also flows from binding treaty norms and other rights guaranteed by ICCPR and ICESCR. In particular, the principle is linked to the right to develop and maintain cultures under article 27 of the ICCPR and article 15 of the

88 Global Witness Report, 'A new rush for Lithium in Africa risks fuelling corruption and failing citizens' (November 2023). Available at: www.globalwitness.org/en/campaigns/natural-resource-governance/lithium-rush-africa visited 24 September 2024.

89 D. Markal, 'Disputed Manono Mining Lithium in DRCI sparks concern', *Mongabay* (8 August 2024). Available at: news.mongabay.com/2024/08/disputed-manono-lithium-mining-project-in-drc-sparks-concern/. Accessed 25 September 2024.

90 C.A. Brandt (2023) *Lithium mining in Namibia- – Dâures Constituency, Erongo Region: An overview of the legal position and effects of lithium mining on the environment and local communities* (Land, Environment and Development Project Legal Assistance Centre). Available at: www.lac.org.na/projects/lead/Pdf/Lithium_Mining_in_Namibia-Daures-2023.pdf. Accessed 26 September 2024.

ICESCR. However, notably 32 (1) of UNDRIP underscores the right of indigenous peoples to determine and develop priorities and strategies for the development or use of their lands or territories and other resources. This right is accompanied by the duty of the State to consult and cooperate in good faith with the indigenous peoples concerned through their own representative institutions in order to obtain their free and informed consent prior to the approval of any project affecting their lands or territories and other resources, particularly in connection with the development, utilization or exploitation of mineral, water or other resources.[91] This means States must have consent as the *objective* of consultation before any mining project can commence. In fact, consultation and participation are crucial components of the consent process. The importance of consultation and participation is stressed in Article 13 of the Draft Convention on the Right to Development. The provision obliges States to ensure that meaningful participation, consultation, and prior informed consent of indigenous peoples and local communities are secured before undertaking development projects that affect them. It further obliges states to carry out environmental and human rights impact assessments as an integral part of development planning. This means affected communities have to be involved in decision making as a *prerequisite* for the projects to proceed. This is supported by article 10 of UNDROP which recognizes the right of rural communities to participate in decision-making processes that may affect their lives, land, and environment. In the context of this discussion where lithium mining could potentially impact water resources and rights of those that dependent on water bodies in lithium mining areas article 21 of UNDROP is also instructive. It emphasizes that water must be preserved and managed in ways that respect the rights of rural communities and ensure long-term sustainability.

Although developed for the Americas, the Inter-American Democratic Charter, also provides persuasive guidance on the necessity of public participation and environmental stewardship as integral to democratic governance. Article 6 affirms that citizen participation in decisions relating to their development is a fundamental component of democracy. Thus, the failure to ensure that communities in Manono, Namibia were adequately informed and consulted violates these emerging international legal norms. The experiences in these countries reveal serious gaps between international legal obligations and the realities on the ground. Addressing these gaps is critical to ensuring that lithium extraction contributes meaningfully to sustainable development without sacrificing human rights or the environment. We now turn to Bikita and

[91] Article 32(2) of the UNDRIP.

Kamativi Cases to assess whether the rights of communities were respected in line with international, regional and national frameworks.

6. Emerging Water Crisis in the Lithium Mining Sector

6.1 The case of Bikita Minerals Lithium Project

Bikita Lithium Mine (BLM) is the oldest lithium mine which started mining in 1905, as a tin mine. BLM is situated in the Bikita West constituency of Masvingo province.[92] The company has changed ownership over the years. In 1950, the company started mining petalite lithium. As the oldest lithium mine in Zimbabwe, BLM has been exporting petalite ore for over 100 years. However, in 2022, BLM was acquired by Sinomine Resource Group Company Limited for USD 180 million.[93] According to the company, it was mainly a pegmatite lithium mine since 1911. Bikita deposits are known to be the lithium-ceasium-tantalite (LCT) bearing type. BLM is considered a key global supplier of lithium mineral petalite. The company has a mining lease measuring 1,528 Ha (15.3 km²) with an estimated 65.4 million tonnes of lithium ore grading 1,4%. As of 2020, BLM was the only exporting petalite in the world (less than 90,000 tonnes per annum). BLM employs over 400 locals and has constructed houses for 300 employees and stakeholders. Sinomine invested over USD 300 million to explore and expand the spodumene plant. In 2022, BLM commenced constructing a spodumene concentration plant and renovated its petalite concentrator for industrial and chemical grades.

6.1.1 Discussion of findings

Firstly, it is important to note that Bikita district falls in three natural regions which are 3, 4 and 5 with maximum rainfall of up to 800mm in some parts of the district, especially Wards 9, 10, 11, 32 and 15. BLM is located in ward 10 which also falls within region 3 which is water stressed. The region receives around 600 to 800mm per annum and is less reliable.[94] Therefore, the region is already water strained due to its ecological characteristics. BLM is not the only

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92 F. Carbajal Glass (2022) 'Preventing environmental crime and human vulnerability through the MGPOC Framework: The case of Zimbabwe's lithium industry' *Journal of Illicit Economies and Development*, 4(1), 37.

93 Zimbabwe Environmental Law Association (2023) *Implications of the Lithium Mining Rush in Zimbabwe: Analysis of Legal Developments.* Available at: https://zela.org/download/map-of-lithium-exploration-and-mining-projects-in-zimbabwe-2/. Accessed 28 June 2025.

94 World Food Programme (2022) *Bikita District Food and Nutrition Security Profile*, p. 23. Available at; https://www.fnc.org.zw/wp-content/uploads/2023/04/Bikita-District-Profile.pdf. Accessed 28 June 2025.

lithium project located in drought prone areas, but other projects in the country include Kamativi, Gwanda and Mberengwa. This aligns with research conducted by the U.S. Geological Survey (USGS) and the World Resources Institute (WRI) using the Aqueduct tool, which reveals that at least 16% of critical mineral mines, deposits, and districts worldwide are located in regions with high or extremely high water stress.[95] In these areas, just like in Bikita, significant agricultural, industrial, and domestic water usage is common, leading to the depletion of water resources.[96] Thus, the ecological vulnerability of Bikita exacerbates the adverse effects of lithium mining on community access to water. However, the sensitive nature of the ecosystem requires a precautionary approach to ensure that mining activities do not exacerbate or cause harm to local communities. The *precautionary principle, which requires* that industries operating in fragile ecosystems must bear the burden of proving their activities will not cause harm, should apply to mining activities like those of BLM in drought-stricken Bikita given that processing of lithium produces large amounts of waste and tailings.

The researchers found that Bikita Minerals' operations directly exacerbated water insecurity in Ward 10 and surrounding areas. During interviews and FGDs, community members reported that Matezva Dam, a crucial source of water for thousands of households, livestock, and agriculture, was polluted by hazardous waste discharges from the mine. This was confirmed by the Environmental Management Agency (EMA) officials who indicated that on 16 May 2024 the company had been fined USD 5,000, a Level 14 fine after releasing of toxic chemicals into the dam.[97] However, the officials could not release the data on the chemical composition of the toxic elements. Nonetheless, scientific research shows that ubiquitous chemicals used in lithium extraction and processing plants, such as hydrochloric acid, sulfuric acid, and sodium hydroxide, are toxic to humans and could have side effects such as excessive urination, thirst, nausea and diarrhoea if consumed in large quantities.[98] Effectively, the pollution of Matezva Dam by BLM directly impinges section 77 of the Constitution of Zimbabwe, 2013 which guarantees the right to safe, clean, and potable water. The pollution is also a violation of section 73 of the Constitution of Zimbabwe, 2013 on environmental rights as it results in community

95 S Lakshman (2024) *More Critical Minerals Mining Could Strain Water Supplies in Stressed Regions* (World Resource Institute). Available at: https://www.wri.org/insights/critical-minerals-mining-water-impacts. Accessed 24 April 2025.

96 Ibid.

97 T. Tagwirei, 'EMA demands compliance with regulations in mining' *EnviroPress* (3 February 2025). Available at; https://enviropresszim.com/ema-demands-compliance-with-regulations-in-mining/. Accessed 27 April 2025.

98 J.J. Mcketta (1988) 'Lithium and lithium compounds' *Encyclopaedia of Chemical Processing and Design*, 28.

members exposed to an environment that is not safe to their wellbeing. This is also mirrored in the landmark African Commission decision in *Social and Economic Rights Action Center (SERAC) v Nigeria* (2001), where the Nigerian government and Shell was found to have violated rights to health, clean environment, and livelihood through oil pollution by Shell.[99] The African Commission interpreting the African Charter articles 21 and 24 emphasized that states (and by extension, companies) must prevent pollution that destroys communities' access to essential resources like water.

While the obligation to provide safe and clean water under section 77 is the duty of the State, juristic persons like BLM have a responsibility under section 44 of the Constitution of Zimbabwe, 2013 to respect human rights by not doing anything that directly affects the realization and enjoyment of such rights. This is supported by pillar two of the United Nations Guiding Principles on Business and Human Rights which provide for corporate responsibilities. Of significance is that this responsibility requires corporations to avoid causing or contributing to adverse human rights impacts through their own activities and address such impacts when they occur. Where human rights abuses occur corporates have an obligation to mitigate adverse human rights impacts that are directly linked to their operations, products.[100]

Notably, a traditional leader remarked "*tutsime twedu hatusisina mvura because of Bikita Minerals"* meaning our wells no longer has water due to the mining project by BLM. This further erodes the right to access sufficient, reliable water sources, a duty affirmed under Article 14(2)(h) of Convention on Elimination of Discrimination Against Women (CEDAW) regarding rural women's access to clean water. While the company paid the fine to EMA, the 5000 is not reflective of the environmental damage to the aquatic life in the water body and overall impact of community livelihoods given that the community livestock relied on that dam. Communities also use the dam for irrigating their crops among other uses. This also flies against principle 15 of the Draft Convention on the Right to Development, emphasizing that development projects must avoid serious environmental damage. This point was reinforced by the Indian Supreme Court case decision in *Vellore Citizens' Welfare Forum*

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99 *Social and Economic Rights Action Center (SERAC) and Center for Economic and Social Rights (CESR) v Nigeria* (Communication No. 155/96) (Communication 155 of 1996) [2001] ACHPR 35 (27 October 2001). See also a similar case involving *Shell Petroleum Development Company v. Farah* (1995) (Nigeria), where the court found Shell liable for oil spills that contaminated rivers used by communities for drinking, fishing, and agriculture and established a clear liability for corporate pollution harming water rights.

100 Principle 13 of UNGPs.

v. Union of India (1996),[101] where tannery industries' over-extraction and pollution of groundwater were held to violate the constitutional rights to life, health, and clean environment under Article 21 of the Indian Constitution. The Court emphasized the *precautionary principle* that industries operating in fragile ecosystems must bear the burden of proving their activities will not cause harm. A similar burden should apply to mining activities in drought-stricken areas like Bikita.

Further, community members expressed their concern about their well-being and possibly health status as they lacked access to clean and safe water. Failure to avoid release of chemicals into the dam also violates the community's right to an 'adequate standard of living,' including water enshrined in Article 11 and 12 of ICESCR. Moreover, the pollution has heightened the community's risk of waterborne diseases and undermined food security, violating the right to health. While the company drilled some boreholes, it emerged that the boreholes are not enough to service all the surrounding community members. In addition, the community expressed that the company had not assisted the community through the community share ownership structure Trust which was initially funded by the old company in line with the old Indigenization and Economic Empowerment Act [Chapter 14:33]. This lack of community benefit from the resources in the area, although sanctioned by section 13 of the Constitution and article 21 of the African Charter, it is not happening in Bikita.

Another key finding which emerged during the FGDs was the lack of FPIC and inadequate community consultation. The researchers noted that most of the community members were not aware of the need for EIA consultation and did not appreciate some concepts of FPIC. The local traditional leaders, councillors, and community environmental monitors all confirmed that no meaningful consultations were conducted regarding BLM's new lithium processing plant and powerline projects which were all constructed between 2023 and 2024. This is despite prerequisites under section 97 of the Environmental Management Act [Chapter 20:27] mandating an EIA consultation to be conducted for projects such as mining plants and energy infrastructure. A community member expressed that "*We were not consulted...the Chinese investors act like they have powers from someone from Harare. They don't talk to us even if we try to engage them."* These views reveal systemic exclusion and disempowerment undermining development as a human right. It seemed that, according to one of the local

[101] *Vellore Citizens' Welfare Forum v. Union of India (1996),* AIR 1996 SUPREME COURT 2715, 1996 (5) SCC 647, 1996 AIR SCW 3399, (1996) 5 COMLJ 40, (1996) 7 JT 375 (SC).

leaders, EMA officials wrongly informed the local leader that no new EIA was necessary because previous approvals sufficed. However, it is important to note that the requirement for EIA would still apply for processing plants for an existing mining project that was already approved. This is because the impacts of mining would be different from impacts that emerge from operating a processing facility where toxic chemicals could be discharged. Effectively, the failure to undertake proper EIA consultations with the local community members calls into question the validity of the EIA certificate for the BLM's processing plants. It also arguably violates section 4 of the EMA Act, which requires public participation in environmental governance, as well as articles 32 of UNDRIP guaranteeing indigenous peoples' rights to FPIC before any project affecting their lands or resources is approved. The case of *Endorois Welfare Council v Kenya,*[102] decided by the African Commission on Human and Peoples' Rights, is also highly instructive on importance of consultation and FPIC. The Commission held that the Kenyan government violated the Endorois people's rights by allowing resource development on their land without prior consultation, adequate compensation, or environmental protection. It further reaffirmed that any development project impacting land, culture, and natural resources must engage affected communities through meaningful consultations, which clearly did not happen in Bikita. This demonstrates that BLM's activities have substantially compromised the realization of the right to clean, safe, and potable water, violated participatory rights, of local communities. However, addressing these challenges requires strengthening enforcement of EIAs, ensuring genuine community consultation, and holding companies accountable to both national and international human rights and environmental standards. While the company expressed that they were drilling some boreholes to assist the community, it emerged from the communities that the boreholes were not enough to service all the surrounding community members. In addition, the community expressed that the company had not assisted the community through the community share ownership structure Trust which was initially funded by the old company in line with the old Indigenisation and Economic Empowerment Act.

6.2 The case of Kamativi Mining Company

[102] *Centre for Minority Rights Development and Minority Rights Group International and Centre on Housing Rights and Evictions (intervening) (on behalf of Endorois Welfare Council) v Kenya*, Merits, Comm 276/2003, 46th Ordinary Session (11-25 November 2009), 27th Activity Report, IHRL 3591 (ACHPR 2009), November 2009, African Commission on Human and Peoples' Rights [ACHPR].

Kamativi is in Hwange district, Matabeleland North province Zimbabwe. The lithium mining venture is owned by Kamativi Mining Company (KMC) - a joint venture formed by Zimbabwe Development Mining Company (ZMDC), a state-owned entity and a Chinese Investor called Sichuan Yahua Lithium Industry Technology Company Limited. The Chinese company is a subsidiary of the Sichuan Yahua Industrial Group (referred to as Yahua Group), which has a market capital of 6 USD billion. According to the Yahua Group website, the company controls a 60% stake in KMC.[103] The company sits on a mining grant covering 1000 hectares and is expected to have a lifespan of between 15 to 25 years. The company is mining lithium and processing it for export. The company has already established two large processing plants with capacity to process 300 000 tonnes of lithium spodumene ore into 50 000 tonnes of spodumene concentrate per annum.[104]

6.2.1 Discussion of findings

Kamativi is in agro-ecological zone IV, which is characterized by high temperatures and low rainfall, leading to water stress. These environmental conditions inherently make access to safe, clean, and potable water precarious. During key interviews and FGDs, it emerged that KMC had increasingly placed pressure on an already strained water system. The primary water source for Kamativi was a dam built during the colonial-era by the Kamativi Tin Mine which now serves both the community and mining operations. Observations during site visits confirmed that KMC utilizes large quantities of dam water for construction purposes, and domestic consumption by its workers. Trucks branded 'KMC' were seen ferrying water from the dam, corroborating community claims that mining activities have monopolized this critical water source. This monopolization threatens the right to water for communities protected under the Constitution and other regional and international instruments.

Further, from interviews with Kamativi Clinic health officials, it was revealed that there had been an increase in waterborne diseases, notably cholera, and typhoid, since the commencement of intensified lithium mining activities by KMC. Community members also confirmed feeling sick from drinking polluted water from the dam. However, it appeared that

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103 Sichuan Yahua Industrial Group; Available at: https://www-scyahua-com.translate.goog/service.aspx?t=44&_x_tr_sl=zh-CN&_x_tr_tl=en&_x_tr_hl=en&_x_tr_pto=sc. Accessed 25 April 2025

104 R. Mapuranga (2024) 'KMC's Phase 2 Processing Plant commissioning moved to September' *Mining Zimbabwe* (12 July 2024). Available at: https://miningzimbabwe.com/kmcs-phase-2-processing-plant-commissioning-moved-to-september/. Accessed 25 April 2025.

the sicknesses might have been caused by drinking contaminated water from the dam since the mine is located on top of a mountain and there is no proper ablution for workers. In fact, some workers confirmed that they used the bush, which if washed would contaminate the dam. Therefore, the increase in waterborne diseases directly impacts the community's rights to clean and safe water and the right to a clean and healthy environment guaranteed by the Constitution.[105] By failing to ensure proper toilet facilities are constructed that do not discharge waste into the dam, KMC appears to have adversely contributed to a violation of community water rights. This situation mirrors the African Commission's finding in *Social and Economic Rights Action Centre* (*SERAC)* case where pollution of water sources by oil companies without remediation was held to violate multiple rights, including the rights to health, environment, and adequate standard of living.

According to GC 15 of ICESCR, the right to water entails that it must be available, safe, acceptable, accessible, and affordable. The pollution of the dam by KMC's operations infringes on three of these key elements. The pollution affected the water as it would not be safe for drinking. Again, given the drought conditions finding an available and accessible alternative source would be difficult for these rural community members. One community member indicated that over 2000 residents of KMC relied on just one borehole. For rural women, Article 14(2)(h) of CEDAW guarantees the right to access to water, which in this case appears to have been violated by KMC.

More so, when asked about environmental impact assessment consultation, the community leaders and other community members expressed that they were not aware of EIA consultations done in relation to the mining activities. While the consultation might have been done by the previous mine owner, it is still a prerequisite for new processing plants. Thus, like the Bikita, it was noted that there was no meaningful consultation before the commencement of KMC's new operations. Community members were unaware that the construction of the lithium processing plant and other facilities could impact their access to water. Additionally, they were not informed of potential risks. This also impinges their rights under UNDRIP, UNDROP as well as section 4 of EMA for them to participate in decision making processes. The Kamativi case also echoes findings of the African Commission in the *Endorois Welfare Council* case where failure to consult indigenous communities about development projects on their land was

[105] Section 73, 77 and 76 of the Constitution of Zimbabwe, 2013.

deemed a breach of the right to development articulated under Article 22 of the ACHPR and the Declaration on the Right to Development (1986). When asked about the positive impacts of the lithium project, a resident of Kamativi indicated that "*We see no development, only destruction. Mining only helps a few people as they are only employing people from outside our community."* Thus, KMC's actions may have violated not just Zimbabwean national law, but binding international legal obligations.

Based on the findings above, the following recommendations are proffered.

7. Recommendations

7.1 Recommendations to Government of Zimbabwe and local authorities

- During the ongoing mining audit, government should also assess the impact of lithium on water resources and seek views from all stakeholders including companies.
- Reforming the Mines and Minerals Act [Chapter 21:05] to include clear provisions on free, prior and informed consent to ensure that communities are fully aware of the impacts of projects on their livelihoods and provide views on how the impacts should be addressed. The government should seek to align the Act with international and regional best practices on FPIC such as UNDRIP, UNDROP and the African Charter on Human and People's Rights
- The Water Act [Chapter 20:24] must also be reformed to include provisions that expand and prioritise accessibility of water by community members for domestic use.
- EMA should put in place a proper due diligence mechanism, particularly in the critical minerals sector to ensure that all impacts of the projects are monitored, tracked and mitigated against. While EMA Act provides for EIA consultations, the consultation should expand to social and cultural impacts and paying attention to special ecosystems in different regions.
- Undertake periodic monitoring of the water situation in lithium communities, including undertaking ground water tests.

7.2 Recommendations to mining companies

- Undertake a water impact assessment as part of the EIA process and develop strategies for sustainable water consumption to ensure that development of lithium projects does not

infringe the right to water, right to a clean and safe environment, right to development and ensuring proper FPIC throughout the project cycle

- Invest in technologies for recycling used water, to reduce conflicts over water resources with communities.
- Adopt human rights policies for their projects and ensure continuous engagement with communities to address the water crisis and ensure that such policies are implemented and monitored with various stakeholders.

8. Conclusion

This paper sought to assess the impact of lithium mining on the realization of the right to water using a case study approach, with reference to Bikita and Kamativi. The paper found that the processes for obtaining community consent were either superficial or absent. Environmental Impact Assessments (EIAs), while legally required under Zimbabwe's Environmental Management Act, often do not adequately capture or address community concerns, thereby undermining meaningful participation and violating the spirit of UNDRIP and UNDROP. To strengthen protection of water rights, it is important for states to ensure that this right be interpreted as part of the right to life and the right to an adequate standard of living

The research also found that even though the constitutional framework provides for this right, it is not absolute. It can be limited in terms of law of general application and the limitations should be reasonable and justified in an open and democratic society. The existence of a protective constitutional framework for community benefit from the extraction is not being implemented to ensure that negative externalities can be offset by benefits that accrue from mining. Further, the potential environmental degradation and resource depletion associated with mining activities undermine the fundamental rights enshrined in the Constitution of Zimbabwe, 2013. While the national framework is progressive, it currently does not meet some of the international norms which are crucial for law reform processes. In this regard, the UNDRIP and UNDROP requiring FPIC should be part of the national framework to ensure better protection of rural and indigenous communities.

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