



# Climate-Induced Water Stress and Gendered Vulnerabilities: An Exploration of Women's Adaptive Strategies in Urban Zimbabwe

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## ABSTRACT

Climate change-induced water scarcity in Africa is magnifying pre-existing gender inequalities, particularly in urban settings where women disproportionately shoulder the burden due to socio-cultural roles and economic marginalisation. This qualitative case study, grounded in Social-Ecological Resilience Theory, explored the gendered dimensions of water insecurity and adaptive strategies among low-income women in Makokoba, one of Bulawayo's oldest high-density suburbs. Drawing on insights from 30 in-depth interviews, 8 key informants, and 2 focus group discussions with women aged 18 to 60 years, the study identified four critical vulnerability domains: the feminisation of water collection, deteriorating urban water infrastructure, socio-economic precarity, and limited climate risk awareness. In navigating these challenges, women employ a spectrum of adaptive strategies, including water rationing, informal rotational water collection systems, grey-water reuse, and community-based water-sharing networks. Although these practices reflect agency and resilience, they remain largely informal, inequitable, and unsustainable without institutional support. The findings highlight a persistent gap between policy frameworks and lived experiences, with many water governance policies failing to address gender-specific needs. The study calls for urgent investment in gender-responsive infrastructure, inclusive water governance, and locally grounded capacity-building interventions. By centring women's voices and everyday realities, this research contributes to broader discourses on equitable urban climate adaptation and resilience in Southern Africa.

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## INTRODUCTION

Globally, climate change is increasing water stress, with women disproportionately affected due to gendered roles in water collection and caregiving.<sup>1</sup> In Sub-Saharan Africa, recurring droughts, rapid urbanisation, and failing infrastructure have deepened water insecurity, especially in low-income urban communities. Women bear the greatest burden, navigating daily shortages through informal and often

<sup>1</sup> Douglas Nyathi and Victor H. Mlambo, "Urban Agriculture and Climate Change: Ensuring Household Food Security Through Building Resilience in Bulawayo, Zimbabwe," in *University Initiatives on Climate Change Education and Research*, ed. W. Leal Filho et al. (Cham: Springer Nature Switzerland, 2024), 1–19, [https://doi.org/10.1007/978-3-031-25960-9\\_102-1](https://doi.org/10.1007/978-3-031-25960-9_102-1).

unsustainable coping mechanisms.<sup>2</sup> Climate change has intensified water stress, with urban areas particularly vulnerable due to population density, infrastructure strain, and competing water demands.<sup>3</sup> Women disproportionately bear the burden of water scarcity, as patriarchal norms often designate them as primary water collectors and household managers.<sup>4</sup> In low-income urban settings, climate-induced droughts and erratic rainfall force women to travel longer distances for water, reducing time for education, employment, and childcare.<sup>5</sup> Feminist scholars argue that water governance systems frequently marginalise women, reinforcing gender inequalities in resource access.<sup>6</sup> Sub-Saharan Africa faces acute water stress due to climate variability, rapid urbanisation, and weak infrastructure. In cities like Lagos and Nairobi, unreliable municipal water supplies force women to rely on expensive vendors or unsafe sources, thereby increasing their health risks.<sup>7</sup> Studies show that climate adaptation strategies often exclude women's voices, despite their critical role in household water security.<sup>8</sup>

Southern Africa is a climate hotspot, with rising temperatures and prolonged droughts exacerbating urban water shortages.<sup>9</sup> Research highlights how intersectional factors—race, class, and gender—shape vulnerability, with Black working-class women facing the highest water insecurity.<sup>10</sup> Climate change has intensified water stress in Zimbabwe, particularly in urban areas, where population growth, ageing infrastructure, and erratic rainfall patterns strain water supplies.<sup>11</sup> The country has experienced prolonged droughts, reduced river flows, and declining groundwater levels, exacerbating water scarcity.<sup>12</sup> Urban centres such as Harare and Bulawayo face severe water shortages due to failing treatment plants, pollution, and unequal distribution systems.<sup>13</sup> Climate models predict increased aridity and extreme weather events, further threatening urban water security.<sup>14</sup> Sithole argues that in Zimbabwe, women and girls spend significant time fetching water, often from distant or unsafe sources, reducing opportunities for education and income generation.<sup>15,16</sup> This labour is physically taxing and exposes them to health risks, including waterborne diseases and gender-based violence.<sup>17</sup> Economic constraints further deepen gendered vulnerabilities, as poor urban women lack resources to purchase water or install storage systems.<sup>18</sup> This study seeks to answer the following questions:

- i. How do water shortages affect the daily lives, health, and socio-economic well-being of low-income women in Bulawayo?

<sup>2</sup> Indrakshi Tandon et al., “Urban Water Insecurity and Its Gendered Impacts: On the Gaps in Climate Change Adaptation and Sustainable Development Goals,” *Climate and Development* 16, no. 3 (March 15, 2024): 187–98, <https://doi.org/10.1080/17565529.2022.2051418>.

<sup>3</sup> Lauri Ahopelto et al., “Water Governance for Water Security: Analysing Institutional Strengths and Challenges in Finland,” *International Journal of Water Resources Development* 40, no. 2 (March 3, 2024): 153–73, <https://doi.org/10.1080/07900627.2023.2266733>.

<sup>4</sup> UN Water, *United Nations World Water Development Report* (Paris: UNESCO, 2021).

<sup>5</sup> Tandon et al., “Urban Water Insecurity and Its Gendered Impacts: On the Gaps in Climate Change Adaptation and Sustainable Development Goals.”

<sup>6</sup> F. Sultana, *Political Ecology of Water and Gender: Feminist Perspectives* (London: Routledge, 2022).

<sup>7</sup> Mukami Kariuki, Sumila Gulyani, and Debabrata Talukdar, “Water for the Urban Poor: Water Markets, Household Demand, and Service Preferences in Kenya,” n.d.

<sup>8</sup> Suruchi Bhadwal et al., “Livelihoods, Gender and Climate Change in the Eastern Himalayas,” *Environmental Development* 31 (September 2019): 68–77, <https://doi.org/10.1016/j.envdev.2019.04.008>.

<sup>9</sup> Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2022 – Impacts, Adaptation and Vulnerability* (Cambridge: Cambridge University Press, 2023), <https://doi.org/10.1017/9781009325844>; Gina Ziervogel et al., “Supporting Transformative Climate Adaptation: Community-Level Capacity Building and Knowledge Co-Creation in South Africa,” *Climate Policy* 22, no. 5 (May 28, 2022): 607–22, <https://doi.org/10.1080/14693062.2020.1863180>.

<sup>10</sup> Douglas Nyathi et al., “The Intersection of Climate Change and Gender-Based Violence in Sub-Saharan Africa: A Synthesis,” 2025, 45–63, [https://doi.org/10.1007/978-3-031-90236-9\\_3](https://doi.org/10.1007/978-3-031-90236-9_3).

<sup>11</sup> UN Water, *United Nations World Water Development Report*.

<sup>12</sup> M. Matsa, “Climate Change and Water Stress in Harare: A Gendered Political Ecology Perspective,” *Geoforum* 128 (2022): 1–12.

<sup>13</sup> K. Dube and W. Gumindoga, “Urban Water Crises in Zimbabwe: Climate Change, Infrastructure Failure, and Gendered Impacts,” *Water Policy* 23, no. 4 (2021): 712–30.

<sup>14</sup> M. R. Ndebele-Murisa, C. P. Mubaya, and L. Pretorius, *Climate Change Trends and Impacts in Southern Africa: A Synthesis of Key Literature*, 2nd ed. (SARUA, 2020).

<sup>15</sup> Mmaphuti Percy Dipela and Sello Sithole, “Under-Utilisation of Internal Employee Assistance Programme (EAP) Services by the South African Police Service in Lephalale, Limpopo Province,” *Social Work* 57, no. 4 (2021): 486–98; Ndebele-Murisa, Mubaya, and Pretorius, *Climate Change Trends and Impacts in Southern Africa: A Synthesis of Key Literature*.

<sup>16</sup> Ndebele-Murisa, Mubaya, and Pretorius, *Climate Change Trends and Impacts in Southern Africa: A Synthesis of Key Literature*.

<sup>17</sup> Anushree Tandon et al., “Why Do People Buy Organic Food? The Moderating Role of Environmental Concerns and Trust,” *Journal of Retailing and Consumer Services* 57 (2020): 102247.

<sup>18</sup> Nyathi et al., “The Intersection of Climate Change and Gender-Based Violence in Sub-Saharan Africa: A Synthesis.”

- ii. What gender-specific roles and responsibilities shape women's experiences and burdens during periods of water scarcity?
- iii. What coping strategies do low-income women employ to manage water shortages, and how effective and sustainable are these strategies?
- iv. How do institutional responses (e.g., local government, NGOs, community organisations) address or fail to address the gendered dimensions of water insecurity in Bulawayo?

The article is structured as follows: it begins with the theoretical framework, drawing on Social-Ecological Resilience Theory to contextualise the study. This is followed by the Methodology section, outlining the qualitative research design and data collection process. The third section presents and discusses the study's key findings, highlighting gendered vulnerabilities and coping strategies. The article concludes with a synthesis of key insights and offers practical policy recommendations to enhance gender-responsive climate adaptation and urban water governance in less resourced settings.

### THEORETICAL FRAMEWORK

Feminist Political Ecology (FPE) (*See fig 1*) is an interdisciplinary framework that explores how gender, environment, and power intersect in shaping access to, control over, and knowledge of natural resources. Rooted in both political ecology and feminist theory, FPE critiques the assumption that environmental issues affect all people equally, highlighting instead how gendered roles and relations influence people's experiences of environmental change and governance.<sup>19</sup> FPE emphasises that environmental knowledge, access to land and water, and participation in decision-making are not merely technical or ecological issues, but are socially constructed and **deeply embedded in local, institutional, and structural power dynamics**.<sup>20</sup> It pays particular attention to how women, especially in rural and marginalised communities, often bear the burden of environmental degradation and resource scarcity, despite being excluded from formal governance structures.<sup>21</sup>

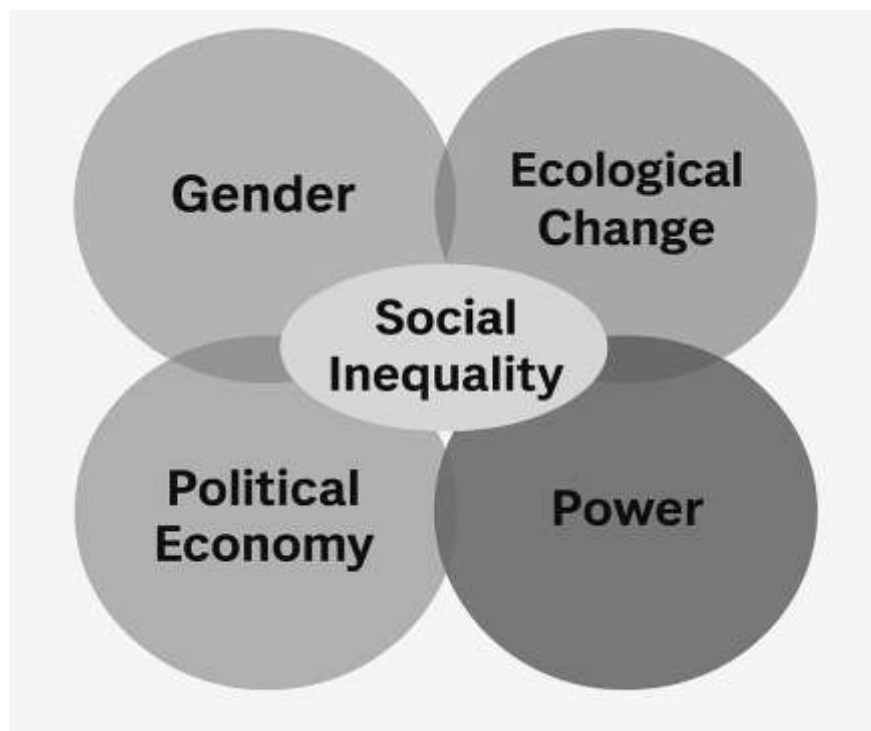


Figure 1: The Feminist Political Ecology framework  
Source: Authors <sup>22</sup>

<sup>19</sup> D. Rocheleau, B. Thomas-Slayter, and E. Wangari, *Feminist Political Ecology: Global Issues and Local Experiences* (Routledge, 1996).

<sup>20</sup> Rebecca Elmhirst, "Introducing New Feminist Political Ecologies," *Geoforum* 42, no. 2 (2011): 129–32.

<sup>21</sup> B. Agarwal, *Gender and Green Governance* (London: Oxford University Press, 2010).

<sup>22</sup> Peter Mudungwe, "Migration Governance in Africa: Challenges and Opportunities," *African Human Mobility Review* 11, no. 1 (2025): 13–40.

A central contribution of FPE is its focus on everyday practices and embodied experiences, which provides a grounded understanding of how environmental changes are negotiated at the household and community level.<sup>23</sup> For example, in climate-induced water crises, FPE demonstrates how women's roles as primary water collectors are intensified while their control over water resources remains limited due to patriarchal norms and institutional exclusion.<sup>24</sup> PE also challenges gender-neutral environmental policies, arguing that they often reproduce existing inequalities by ignoring the gendered dimensions of vulnerability, labour, and access.<sup>25</sup> By incorporating intersectionality—considering how gender interacts with class, ethnicity, and age—FPE offers a comprehensive approach to understanding environmental justice and resilience. In the context of climate-induced water crises, FPE is particularly valuable. As water scarcity intensifies due to climate change, the burden of managing and accessing water disproportionately falls on women, especially in the Global South.<sup>26</sup> Women are often responsible for domestic water provision, agricultural irrigation, and community health, yet they frequently lack formal rights or decision-making power over water governance.<sup>27</sup> This disjuncture between responsibility and authority is central to FPE analyses.

## METHODOLOGY

This study employed a qualitative case study approach to examine climate-induced water stress and gendered vulnerabilities in Makokoba Township, Bulawayo (See fig 2 below).<sup>28</sup>

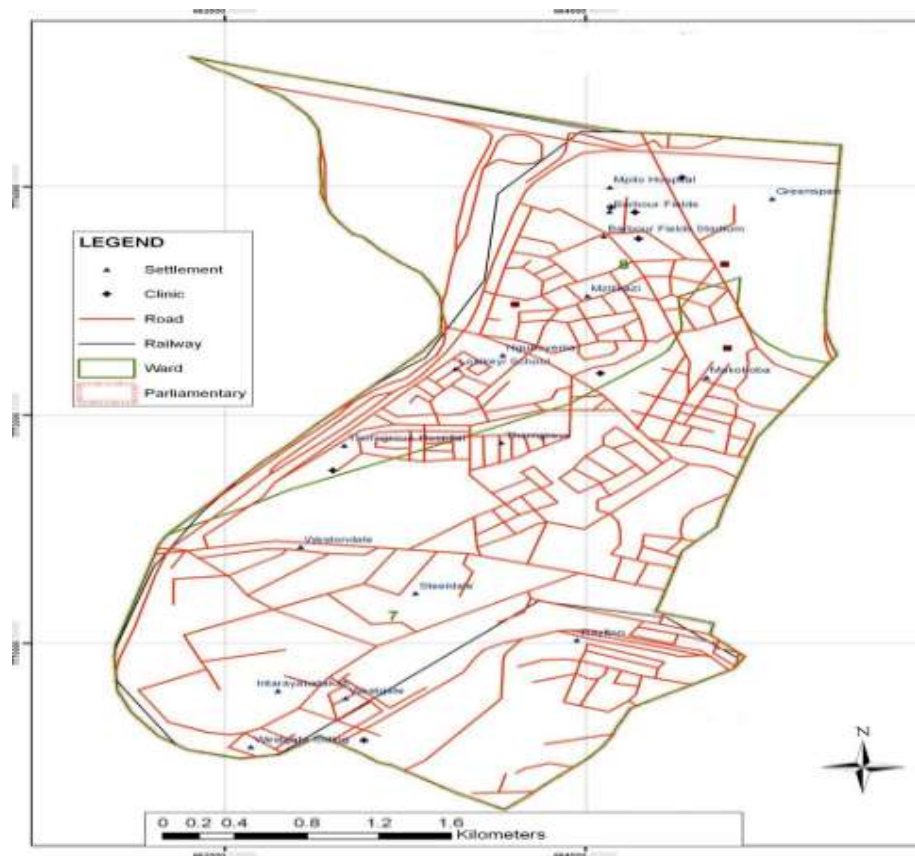


Figure 2: The Map for Makokoba, a high-density suburb in Bulawayo.

Source: Authors.<sup>29</sup>

<sup>23</sup> A. J. Nightingale, "The Nature of Gender: Work, Gender, and Environment," *Environment and Planning Development* 24, no. 2 (2006): 165–85.

<sup>24</sup> Y. Truelove, "(Re-) Conceptualizing Water Inequality in Delhi," *Geoforum* 42, no. 2 (2011): 143–52.

<sup>25</sup> Bernadette P Resurrección, "Persistent Women and Environment Linkages in Climate Change and Sustainable Development Agendas," in *Women's Studies International Forum*, vol. 40 (Elsevier, 2013), 33–43.

<sup>26</sup> Elmhirst, "Introducing New Feminist Political Ecologies."

<sup>27</sup> Agarwal, *Gender and Green Governance*.

<sup>28</sup> Robert K. Yin, *Case Study Research and Applications: Design and Methods* ( Sage Publications, 2018).

<sup>29</sup> Mudungwe, "Migration Governance in Africa: Challenges and Opportunities."

The methodology was carefully designed to capture the complex realities of the experiences of women with water scarcity while maintaining rigorous academic standards.<sup>30</sup> The research adopted a multi-method qualitative design,<sup>31</sup> combining: 1) in-depth interviews, 2) focus group discussions, and 3) key informant interviews. Thirty women aged 18-60 from low-income households participated, representing diverse occupations including traders, informal workers, and caregivers.<sup>32</sup> Eight key informants (water committee members, NGO workers, and health professionals) provided additional perspectives.<sup>33</sup> Data collection occurred over three months, with all sessions audio-recorded and transcribed verbatim to ensure accuracy.<sup>34</sup> Methodological choices were guided by Social Ecological Resilience Theory, which proved valuable for analysing the dynamic relationships between individuals, communities, and environmental systems.<sup>35</sup> The case study approach was particularly appropriate as it allowed for in-depth examination of real-world phenomena in their natural context.<sup>36</sup> Purposive sampling ensured representation of varied experiences with water scarcity among urban women.<sup>37</sup>

Ethical considerations were prioritised throughout the research process.<sup>38</sup> The study obtained formal ethical approval and implemented comprehensive protections, including informed consent procedures in local languages, use of pseudonyms, voluntary participation, and debriefing options.<sup>39</sup> These measures were preferred given the vulnerable status of participants facing water insecurity.<sup>40</sup> Data analysis followed systematic qualitative procedures using NVivo software.<sup>41</sup> A hybrid deductive-inductive approach,<sup>42</sup> enabled both theory-guided and emergent theme identification. The analytical process included multiple stages: familiarisation with data, coding based on resilience theory, identification of unexpected themes, constant comparative analysis,<sup>43</sup> and member checking.<sup>44</sup> Several strategies enhanced the study's trustworthiness.<sup>45</sup> Methodological triangulation was achieved through multiple data collection approaches, while data were triangulated from different participant categories.<sup>46</sup> Prolonged engagement in the field allowed for a deeper understanding of the context (Geertz, 1973). Peer debriefing provided external validation, and thick description, using participant quotations, strengthened findings.<sup>47</sup> Researchers maintained reflexivity journals to monitor potential biases throughout the process.<sup>48</sup>

<sup>30</sup> J. W. Creswell and C. N. Poth, *Qualitative Inquiry and Research Design: Choosing among Five Approaches* (SAGE Publications, 2018).

<sup>31</sup> Norman K. Denzin, *The Research Act* (Routledge, 2017), <https://doi.org/10.4324/9781315134543>.

<sup>32</sup> Michael Quinn Patton, *Qualitative Research and Evaluation Methods*, 4th ed. (SAGE, 2015).

<sup>33</sup> Sarah J. Tracy, "Qualitative Quality: Eight 'Big-Tent' Criteria for Excellent Qualitative Research," *Qualitative Inquiry* 16, no. 10 (December 1, 2010): 837–51, <https://doi.org/10.1177/1077800410383121>.

<sup>34</sup> S. Kvale and S. Brinkmann, *InterViews: Learning the Craft of Qualitative Research Interviewing*, 3rd ed. (Thousand Oaks, CA: SAGE Publications, 2015).

<sup>35</sup> C. Folke, *Resilience: The Science of Adaptation to Climate Change* (Oxford: Oxford University Press, 2016).

<sup>36</sup> Y S Lincoln and E G Guba, "Naturalistic Inquiry. London, United Kingdom: Sage," 1985.

<sup>37</sup> Ted Palys, "Purposive Sampling," *The Sage Encyclopedia of Qualitative Research Methods* 2, no. 1 (2008): 697–98.

<sup>38</sup> M. Israel and I. Hay, *Research Ethics for Social Scientists: Between Ethical Conduct and Regulatory Compliance* (London: SAGE Publications, 2006).

<sup>39</sup> Angelica Orb, Laurel Eisenhauer, and Dianne Wynaden, "Ethics in Qualitative Research," *Journal of Nursing Scholarship* 33, no. 1 (March 23, 2001): 93–96, <https://doi.org/10.1111/j.1547-5069.2001.00093.x>.

<sup>40</sup> Sultana, *Political Ecology of Water and Gender: Feminist Perspectives*.

<sup>41</sup> P. Bazeley and K. Jackson, *Qualitative Data Analysis with NVivo*, 2nd ed. (London: SAGE Publications, 2013).

<sup>42</sup> Jennifer Fereday and Eimear Muir-Cochrane, "Demonstrating Rigor Using Thematic Analysis: A Hybrid Approach of Inductive and Deductive Coding and Theme Development," *International Journal of Qualitative Methods* 5, no. 1 (2006): 80–92.

<sup>43</sup> B. G. Glaser and A. L. Strauss, *The Discovery of Grounded Theory: Strategies for Qualitative Research* (Chicago, IL: Aldine Publishing Company, 1967).

<sup>44</sup> Lincoln and Guba, "Naturalistic Inquiry. London, United Kingdom: Sage."

<sup>45</sup> Tracy, "Qualitative Quality: Eight 'Big-Tent' Criteria for Excellent Qualitative Research."

<sup>46</sup> Denzin, *The Research Act*.

<sup>47</sup> van J. Maanen, *Tales of the Field: On Writing Ethnography* (London: The University of Chicago Press., 2011).

<sup>48</sup> Wanda Pillow, "Confession, Catharsis, or Cure? Rethinking the Uses of Reflexivity as Methodological Power in Qualitative Research," *International Journal of Qualitative Studies in Education* 16, no. 2 (March 2003): 175–96, <https://doi.org/10.1080/0951839032000060635>.

## PRESENTATION OF FINDINGS AND DISCUSSION

The findings of the study are presented using predetermined themes. These themes were derived from the main research questions.

### Impact of water shortages on the daily lives, health and socio-economic well-being of low-income women

The first research question guiding this study was: How do water shortages affect the daily lives, health, and socio-economic well-being of low-income women in Bulawayo? The study draws on in-depth interviews with 30 women aged between 25 and 60 years, as well as key informant interviews with community health workers and local leadership. The anecdotes reveal the gendered burdens of water insecurity and highlight the resilience strategies that women adopt under harsh urban living conditions (See Table 1 below)

**Table 1: Gendered Impacts of Water Shortages in Makokoba**

Thematic Area	Findings
Daily Routines & Time Use	Women wake as early as 3:00 a.m. to queue at public boreholes, spending hours collecting water, reducing time for work, rest, or caregiving.
Household Stress	Water scarcity increases domestic tension, especially in extended or polygamous households.
Gender-Based Violence	Rising GBV cases are linked to suspicion, stress, and unmet domestic expectations due to long hours spent fetching water.
Health Impacts	Poor menstrual hygiene, UTIs, skin infections, and a higher risk of cholera and diarrhoea due to poor sanitation and hygiene.
Sanitation Challenges	Inadequate water for flushing shared toilets; lack of privacy and dignity in sanitation practices.
Livelihood Disruption	Women with food businesses, salons, or laundry services had to scale down or stop operations due to a lack of water.
Economic Dependency	Reduced income led to increased reliance on male partners or relatives, deepening economic inequality.
Education Disruption	Young girls miss school or drop out to assist in water collection, affecting their long-term prospects.

In-depth interviews and focus group discussions revealed that water shortages in Makokoba have drastically altered the daily routines of women. Participants stated that they wake up as early as 3:00 a.m. to queue at public boreholes, often waiting for hours and returning home with little water. This time-consuming task disproportionately falls on women and girls, reducing time available for other household responsibilities, paid work, or rest. One participant noted:

*I used to do laundry for people to earn money, but now I spend half the day just trying to find water.*

Women also reported increased domestic tensions due to water scarcity. The pressure to manage households without adequate water, particularly in polygamous or extended family settings, has heightened stress and conflict. Tasks, such as cooking, bathing children, or washing clothes, have become more difficult and contentious, contributing to emotional exhaustion. It emanated from the discussions that gender based violence cases were on the increase as a result of water challenges. One female participant opined that:

*What we have seen in this community is that gender based violence has increased as a result of water shortages. Last week, a woman was bashed by her husband after spending more than 3 hours trying to get a bucket of water. The husband assumed that the woman had gone to see her boyfriend instead of getting water. We have also seen a rise in this kind of conflict when men come back from work and find their wives not yet cooked or still away looking for water.*

Participants of the study also indicated that water scarcity has significant health implications, especially for women and children. Several participants linked poor menstrual hygiene, skin infections, and urinary tract infections to water shortages. The lack of water for personal hygiene also increases the risk of spreading communicable diseases such as diarrhoea and cholera—conditions that have historically affected Makokoba during dry spells. Some women expressed frustration over being unable to maintain cleanliness during their menstrual periods. One female participant alluded that:

*There are times when I have to reuse a cloth because I have no water to clean or dispose of it. It is humiliating.*

Inadequate sanitation in shared toilet facilities, especially when water tanks run dry, was cited as a persistent challenge that compromises privacy and dignity. Further engagements also indicated that water shortages negatively affected women's income-generating activities. Women who run small food businesses, operate backyard salons, or do laundry for income have had to scale down or suspend operations due to the lack of water. For some, this has led to increased dependence on male partners or family members, further entrenching gendered economic inequalities. Young women also reported dropping out of school or missing lessons during the peak of water shortages to assist with household chores or water collection. This disrupts their education and long-term economic prospects. In some cases, mothers admitted prioritising water collection over sending children to school during critical days. One key informant insinuated that:

*We have seen a disturbing trend in this community where young girls end up not going to school, as they spend much of their time looking for water. Our worry is that these girls will end up being abused. The best way to protect children is to keep them in schools. Anything that disturbs them makes them vulnerable to abuse.*

The above discussion confirms and substantiates the findings of this study by aligning with existing literature on the gendered impacts of urban water scarcity. Numerous scholars affirm that water insecurity significantly disrupts the daily lives and overall well-being of low-income women in urban settings, reinforcing their vulnerability through time poverty, health risks, and economic marginalisation.<sup>49</sup> The study's observation that women in Makokoba bear the primary responsibility for water collection, often at the expense of income-generating activities and rest, echoes similar conclusions drawn by Agarwal.<sup>50</sup> Health-related challenges reported by participants—including poor menstrual hygiene and heightened disease exposure—are similarly noted by Parry et al. and Grothmann and Patt.<sup>51</sup> Furthermore, the negative impact of shared sanitation facilities on women's dignity is consistent with findings by UN-Habitat and Marx et al.<sup>52</sup> These parallels strongly validate this study's conclusions regarding the compounded socio-economic vulnerabilities faced by women under conditions of climate-induced water scarcity.<sup>53</sup>

### **Gender-specific roles and responsibilities that shape women's experiences and burdens during periods of water scarcity**

The second research question explored the gender-specific roles and responsibilities that shape experiences of women and amplify their burdens during periods of water scarcity. In the context of water insecurity, gendered divisions of labour significantly influence how men and women experience and respond to water scarcity. In many urban and peri-urban communities in Zimbabwe—such as Makokoba

<sup>49</sup> C. Moser et al., *Pro-Poor Adaptation to Climate Change in Urban Centers: Case Studies of Vulnerability and Resilience in Kenya and Nicaragua* (World Bank, 2010).

<sup>50</sup> Agarwal, *Gender and Green Governance*.

<sup>51</sup> M. L. Parry et al., *Assessing the Costs of Adaptation to Climate Change: A Review of the UNFCCC and Other Recent Estimates* (International Institute for Environment and Development (IIED) & Grantham Institute for Climate Change, 2009); Torsten Grothmann and Anthony Patt, "Adaptive Capacity and Human Cognition: The Process of Individual Adaptation to Climate Change," *Global Environmental Change* 15, no. 3 (October 2005): 199–213, <https://doi.org/10.1016/j.gloenvcha.2005.01.002>.

<sup>52</sup> UN-Habitat, *World Cities Report 2016: Urbanization and Development—Emerging Futures* (United Nations Human Settlements Programme, 2016); A. Marx et al., *Private Standards and Global Governance: Economic, Legal and Political Perspectives* (Edward Elgar Publishing, 2013).

<sup>53</sup> Nyathi and Mlambo, "Urban Agriculture and Climate Change: Ensuring Household Food Security Through Building Resilience in Bulawayo, Zimbabwe."

in Bulawayo—water collection, storage, and usage management fall disproportionately on women. These traditional gender roles place women at the centre of household water provision and sanitation, exposing them to heightened physical, emotional, and socio-economic burdens during periods of scarcity. It emanated from the anecdotes that in low-income households, women are primarily responsible for sourcing and managing water for domestic needs, including cooking, bathing, laundry, cleaning, and caregiving. These responsibilities become significantly more demanding during water shortages. The study found that in Makokoba, women often rise before dawn to queue at boreholes or municipal water tanks. Waiting times can stretch to several hours, with women sometimes making multiple trips in a day, often carrying heavy containers over long distances. This labour-intensive responsibility, while historically viewed as a domestic duty, often goes unrecognised as a form of unpaid labour. During periods of scarcity, this invisible labour becomes more intense, reducing women's time for rest, income-generating activities, or social engagement. Such situations reflect the social norms that assign water-related tasks to women, reinforcing unequal gender roles.

Participants in the study also indicated that the physical burden of carrying heavy buckets—often on the head or back—has health implications, especially for elderly women, pregnant women, and girls. Back pain, fatigue, and joint strain were frequently reported. Women and girls were reportedly facing increased risk of harassment or violence, particularly when fetching water late at night or from isolated sources. Some participants reported feeling unsafe, especially in overcrowded or poorly lit areas. In addition to physical strain, the emotional toll of maintaining family hygiene and dignity under conditions of scarcity is immense. The inability to keep children clean or to maintain menstrual hygiene with dignity causes shame and psychological stress. Women often sacrifice their own hygiene needs to prioritise those of children or male family members, reflecting deeply ingrained gendered caregiving roles. It emanated from the in-depth interviews and focus group discussions that water scarcity directly affects women's ability to earn an income, particularly those involved in informal businesses that require water, such as selling cooked food, running backyard salons, or doing laundry. These businesses often form the backbone of household survival in low-income areas. When water is unavailable, women are forced to halt or scale back operations, leading to income loss and increased dependence on male partners or remittances. Furthermore, time spent collecting water reduces opportunities for paid work or participation in community meetings and decision-making spaces. This further limits women's economic empowerment and public influence, reinforcing structural inequalities. One woman opined that:

*Water challenges place a significant burden on women in this community. We are responsible for cooking, cleaning, and caring for the family, including extended members who may be sick or elderly. If I don't fetch the water, no one will. The current water situation is disrupting our informal activities, such as vending, which is a crucial part of our livelihood as women. How can we participate in such activities when we are expected to spend our time searching for water? To me, this water crisis is exacerbating the feminisation of poverty in our community. We can't even rest like others do. What is also disturbing of late is the rise of gender based violence. Water shortages are now a source of antagonism in households.*

Young girls are often co-opted into water-fetching responsibilities, either accompanying their mothers or performing the task alone. This negatively impacts their education, with some missing school or arriving late due to their household obligations. This early socialisation into gendered labour reinforces intergenerational patterns of inequality. Girls are taught to accept water collection as a natural part of their identity as future homemakers, while boys are often exempted from such duties. One key informant noted that:

*As an organisation focused on issues affecting young girls, we believe the water crisis demands urgent attention due to its impact on them. This crisis infringes upon their rights, disrupting their ability to play and concentrate on schoolwork. Moreover, it exposes them to verbal and sexual abuse.*

The study affirms that gender-specific roles, particularly women's responsibility for domestic water management, intensify their exposure to the burdens of water scarcity.<sup>54</sup> In many African urban cultural contexts, women are expected to secure and manage water for drinking, cooking, hygiene, and caregiving.<sup>55</sup> This reinforces their time poverty, limiting opportunities for paid work, education, and rest.<sup>56</sup> Women's unpaid care work expands significantly during water shortages, often unacknowledged in formal policy frameworks.<sup>57</sup> Moreover, intra-household tensions and gender-based violence are exacerbated when women fail to meet water-related expectations.<sup>58</sup> These findings reflect broader feminist analyses which argue that climate stressors disproportionately impact women due to entrenched social norms and unequal resource access.<sup>59</sup>

### **Coping strategies employed by low-income women to manage water shortages, their effectiveness and sustainability**

The third research question examined the coping strategies of low-income women to manage water shortages and assessed the effectiveness and sustainability of these responses. The focus group discussions and key informants revealed that water scarcity in urban low-income communities such as Makokoba, Bulawayo, has become a persistent challenge due to climate change, ageing infrastructure, and poor municipal service delivery. Women, who are traditionally responsible for water procurement and household management, bear the brunt of this crisis. In response, they have developed a range of coping strategies to meet daily water needs (*See Table 2 below*).

**Table 2: Coping Strategies for Water Shortages Among Low-Income Women in Makokoba, Bulawayo**

<b>Coping Strategy</b>	<b>Description</b>	<b>Effectiveness</b>	<b>Sustainability &amp; Limitations</b>
Informal Water Collection Networks	Women coordinate turns to fetch water from boreholes or bowsers; sometimes they hire boys to fetch water.	Reduces physical burden and builds social cohesion.	Depends on trust and reciprocity; excludes the financially vulnerable.
Water Storage & Reuse	Storage in drums, buckets, and the use of greywater for toilets and gardens.	Effective for short-term needs.	Health and hygiene risks; contamination; takes up space in small homes.
Purchasing Water from Vendors	Water is bought from private vendors or informal boreholes during peak shortages.	Quick relief during severe shortages.	Unaffordable for many; increases inequality; concerns about water quality.

<sup>54</sup> K. M. Dossou and G. B. Dossou, "Climate Change: A New Threat to Gender Equity in Africa," *International Journal of Climate Change Strategies and Management* 2, no. 2 (2007): 145–60.; Agarwal, *Gender and Green Governance*.

<sup>55</sup> Moser et al., *Pro-Poor Adaptation to Climate Change in Urban Centers: Case Studies of Vulnerability and Resilience in Kenya and Nicaragua*; H. Bambrick, "Climate Change and Health in Africa: Issues and Challenges," *Public Health Reviews* 36, no. 1 (2015): 1–11.

<sup>56</sup> UN-Habitat, *World Cities Report 2016: Urbanization and Development—Emerging Futures*.

<sup>57</sup> D. Elson, *Male Bias in the Development Process*, 2nd ed. (Manchester University Press, 1995); Marx et al., *Private Standards and Global Governance: Economic, Legal and Political Perspectives*.

<sup>58</sup> Parry et al., *Assessing the Costs of Adaptation to Climate Change: A Review of the UNFCCC and Other Recent Estimates*; Grothmann and Patt, "Adaptive Capacity and Human Cognition: The Process of Individual Adaptation to Climate Change."

<sup>59</sup> T., Simelane and M. Simelane, "Gender Dimensions of Access and Use of Water in Rural Households of Swaziland," *Africa Insight* 45, no. 2 (2015): 108–22; Douglas Nyathi et al., "Women's Vulnerability and Adaptive Capacity to Climate Change in Agrarian Settings of Zimbabwe," in *Climate Crisis, Social Responses and Sustainability. Climate Change Management*, ed. U. Mukhopadhyay et al. (Cham.: Springer, 2024), 541–59, [https://doi.org/10.1007/978-3-031-58261-5\\_23](https://doi.org/10.1007/978-3-031-58261-5_23).

Community Facilities (NGOs/Churches)	Use of boreholes, tanks, and kiosks provided by NGOs and donors.	Reliable during crises and reduces the burden.	Maintenance issues, long queues, and often donor-dependent.
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It emanated from the anecdotes that one of the most common coping mechanisms is the establishment of informal water collection networks. Women coordinate with neighbours and relatives to take turns queuing at boreholes or municipal bowsers. This rotation system reduces the physical burden and time cost for individuals. It is particularly effective in fostering social cohesion and collective resilience. However, it depends on mutual trust and reciprocity—conditions that may be strained during extended periods of scarcity. In some cases, women pay young men or boys to collect water on their behalf. Although this strategy helps elderly or ill women, it is not always financially sustainable for households with limited or no income. This was amply captured by one participant who orated that:

*The creation of informal water collection networks involves women coordinating with neighbours and relatives to take turns waiting at boreholes or municipal bowsers. This rotation system alleviates the physical strain and time commitment for individuals, while effectively promoting social cohesion and collective resilience. However, it relies on mutual trust and reciprocity, which can be challenged during prolonged periods of scarcity. In some instances, women hire young men or boys to collect water on their behalf. Those with the capacity to hire boys to secure water for them are the well-to-do who receive some remittances from the diaspora.*

The deliberations also demonstrated that low-income women have adopted various storage practices to maximise water availability. Households commonly store water in drums, buckets, basins, and repurposed containers. Some women strategically reuse greywater (e.g., laundry or dishwashing water) for flushing toilets or watering small gardens. These practices are relatively effective in the short term but present serious health and safety concerns. Many households lack proper lids or treatment options, making stored water prone to contamination. Improperly stored water can also become breeding grounds for mosquitoes, raising the risk of disease outbreaks. Furthermore, indoor storage takes up valuable living space in small homes and often exposes young children to safety hazards. In times of severe water shortages, some women resort to purchasing water from private vendors. These suppliers often fetch water from boreholes in neighbouring suburbs or from informal wells. While this provides a quick solution, it raises concerns about water quality, regulation, and affordability. This coping strategy is highly inequitable, as only those with disposable income can afford to buy water consistently. The commodification of water in an impoverished community exacerbates social inequality and forces women to make difficult trade-offs—such as reducing spending on food or healthcare to afford water.

Many women practice strategic water rationing. Priorities are set around essential activities, such as cooking, drinking, and bathing children, while other tasks like laundry or cleaning may be deferred or outsourced. In some households, bathing is done communally or on alternate days to conserve water. While rationing is effective in the short term, it places a psychological burden on women who must constantly negotiate competing needs. The long-term sustainability of this approach is questionable, particularly where sanitation and hygiene are compromised. Some women rely on boreholes, tanks, and water kiosks installed by NGOs, churches, or donor-funded programs. These facilities are often considered more reliable than municipal supplies and offer a lifeline during crises. However, their effectiveness depends on regular maintenance, fuel for pumping, and governance systems for fair access. The sustainability of such facilities is mixed. Although they offer a more resilient option, they are often donor-dependent and vulnerable to breakdowns. Women have expressed frustration over long queues, poor maintenance, and disputes over access—especially during peak demand. Despite the challenges, women in Makokoba have developed informal coping mechanisms. These include creating neighbourhood water-sharing groups, pooling money to buy water from private suppliers, and storing water in drums and buckets during days when supply is restored. However, such strategies are often unsustainable and exclude the most vulnerable, particularly elderly women and single mothers without financial means. While boreholes and water tanks provided by NGOs have helped reduce hardship, participants emphasised that these solutions are insufficient and sometimes poorly maintained. There is a strong sense of fatigue and

abandonment among women, who feel their voices are not heard in formal water governance structures. This was captured through anecdotes from one female key informant who noted that:

*Despite facing numerous challenges, women in Makokoba have come up with informal strategies to manage their water needs. These strategies include forming local groups to share water resources, collectively raising funds to purchase water from private suppliers, and storing water in containers like drums and buckets when the supply is temporarily restored. However, these methods often fall short in terms of sustainability and tend to leave out the most vulnerable individuals, such as elderly women and single mothers who lack financial resources. While the installation of boreholes and water tanks by NGOs has provided some relief, participants have noted that these solutions are often inadequate and suffer from poor maintenance. There is a widespread feeling of fatigue and neglect among these women, who feel that their concerns are overlooked in the formal water governance frameworks.*

Low-income women adopt a range of coping strategies to address chronic water shortages, reflecting both resilience and structural vulnerability.<sup>60</sup> Common tactics include water rationing, informal collection networks, greywater reuse, and reliance on boreholes or NGO-installed tanks.<sup>61</sup> These strategies mitigate immediate hardships but are often unsustainable and expose women to health and safety risks.<sup>62</sup> Informal rotation systems and neighbourhood sharing arrangements demonstrate collective action but depend heavily on social cohesion and trust, which may erode under stress.<sup>63</sup> Women's reliance on unregulated private vendors raises concerns about affordability and equity.<sup>64</sup> Ultimately, these strategies function as survival mechanisms in the absence of gender-sensitive, institutional water governance, highlighting the urgent need for systemic and sustainable interventions.<sup>65</sup>

### **Institutional responses addressing the gendered dimensions of water insecurity**

The fourth research question investigated how institutional responses—such as those by local government, NGOs, and community organisations—address or fall short in responding to the gendered dimensions of water insecurity in Bulawayo. Participants of the study concurred that water insecurity in Bulawayo is a persistent and systemic challenge, exacerbated by climate change and other factors, including collapsing infrastructure and population growth. However, its impacts are not gender-neutral. Women, particularly those in low-income communities, are disproportionately affected due to their traditional roles in water collection, household hygiene, and caregiving. Participants of the study agreed that the Bulawayo City Council (BCC) is the primary institution responsible for water service delivery. In response to recurrent droughts and reduced dam levels, BCC was reportedly implementing water rationing schedules and emergency water delivery through bowsers in high-density suburbs such as Makokoba. While these interventions were viewed as critical, they often overlook the gendered burdens they place on women, who must queue for hours and manage limited water across multiple household needs. BCC has made efforts to inform residents about climate change issues and the need to conserve water, which are sometimes inclusive of women. However, interviews and field observations suggest that women's participation is often tokenistic. Structural barriers, such as time poverty, low literacy levels, and cultural norms, hinder meaningful engagement. Moreover, decision-making on water management remains largely technocratic, with limited integration of gender analysis in planning or budgeting. One local leader noted that:

<sup>60</sup> Moser et al., *Pro-Poor Adaptation to Climate Change in Urban Centers: Case Studies of Vulnerability and Resilience in Kenya and Nicaragua*.

<sup>61</sup> Carl Folke et al., "Adaptive Governance of Social-Ecological Systems," *Annu. Rev. Environ. Resour.* 30, no. 1 (2005): 441–73.; Agarwal, *Gender and Green Governance*.

<sup>62</sup> Dossou and Dossou, "Climate Change: A New Threat to Gender Equity in Africa"; Parry et al., *Assessing the Costs of Adaptation to Climate Change: A Review of the UNFCCC and Other Recent Estimates*.

<sup>63</sup> Marx et al., *Private Standards and Global Governance: Economic, Legal and Political Perspectives*; Bambrick, "Climate Change and Health in Africa: Issues and Challenges."

<sup>64</sup> Grothmann and Patt, "Adaptive Capacity and Human Cognition: The Process of Individual Adaptation to Climate Change"; UN-Habitat, *World Cities Report 2016: Urbanization and Development—Emerging Futures*.

<sup>65</sup> Simelane and Simelane, "Gender Dimensions of Access and Use of Water in Rural Households of Swaziland."

*It is disheartening to witness the apparent incapacitation of the Bulawayo City Council in resolving the city's water crisis. The increasing reliance on boreholes reflects not innovation, but the troubling ruralisation of our urban landscape. I find it difficult to reconcile the reality of such conditions within a metropolitan setting. It is not merely about accessing water — it is about dignity, planning, and accountability. Ratepayers deserve more than excuses; we deserve piped water and sustainable infrastructure solutions, such as water recycling and modernised distribution systems. We continue to pay for services that are simply not being delivered.*

Document analysis indicates that at the national level, the Zimbabwe National Water Authority (ZINWA) and the Ministry of Women Affairs, Community, Small and Medium Enterprises Development are mandated to mainstream gender into national development priorities. The National Gender Policy (2017–2021) and the Zimbabwe National Water Policy both recognise the importance of integrating gender in water governance.<sup>66</sup> However, implementation remains weak due to poor inter-agency coordination, limited funding, and the absence of disaggregated data to inform policy. In practice, national water interventions are rarely tailored to the lived realities of low-income urban women. There is also a disconnect between gender-focused ministries and water-sector institutions, which limits effective policy translation at the local level. One participant postulated that:

*Our government has demonstrated notable strength in the development of progressive policies and frameworks. However, as one speaker aptly highlighted during our discussion, the core challenge lies in the persistent gap between policy formulation and effective implementation—often compounded by inadequate funding. This disconnect is especially evident in the lived realities of women during this water crisis. Despite the existence of gender-sensitive water governance policies, the failure to operationalise them meaningfully continues to expose women to disproportionate hardship and systemic neglect.*

Non-governmental organisations (NGOs) were also reportedly playing a more proactive role in addressing the gendered impacts of water scarcity. Organisations such as Oxfam, Plan International, and Bulawayo Progressive Residents Association (BPRA) have supported gender-sensitive water infrastructure development—such as borehole drilling, rainwater harvesting systems, and hygiene promotion campaigns. Some of these initiatives explicitly involve women in the design, management, and maintenance of water points. For example, women's water user committees have been trained in borehole maintenance, budgeting, and conflict resolution. These participatory models have proven effective in enhancing women's agency, though they often depend on donor funding and are difficult to scale without institutional support. NGOs have also raised awareness around menstrual hygiene management, sanitation, and gender-based violence risks associated with water collection. Such interventions contribute to shifting harmful norms and improving public health outcomes. However, coverage is uneven and often limited to project cycles. Community leaders and informal women's groups have taken initiatives where formal institutions have fallen short. In Makokoba, women have formed informal water-sharing groups and engaged local councillors on service delivery issues. These grassroots responses are critical to day-to-day survival and provide models of community-led resilience. However, without legal recognition, technical support, or financial resources, these responses remain precarious and unsustainable.

Institutional responses to water insecurity in Zimbabwe have often been inadequate in addressing its gendered dimensions. Studies show that urban local authorities such as Bulawayo City Council struggle with ageing infrastructure and erratic water supply, disproportionately affecting women.<sup>67</sup> Gender is frequently overlooked in water policy and planning, despite evidence that women carry the greatest burden

<sup>66</sup> Gender and Community Development. Ministry of Women Affairs, *The National Gender Policy* (Harare: Ministry of Women Affairs, Gender and Community Development, 2017).

<sup>67</sup> Zanele A. Ndlovu and Lytton Chiromo, "Pre-Service Mathematics Teachers' Development Process in Using Manipulatives in Number Operations," *South African Journal of Childhood Education* 9, no. 1 (September 5, 2019), <https://doi.org/10.4102/sajce.v9i1.698>; A. Dube and M. Dube, "The Role of Educational Systems in Fostering Women's Leadership in Africa," *International Journal of Education and Leadership*, 18(2), 143-156. 18, no. 2 (2020): 143–56.

of water collection and household sanitation.<sup>68</sup> While donor-funded NGOs have installed boreholes and tanks, these are inconsistently maintained and lack gender-sensitive governance frameworks.<sup>69</sup> Women's voices remain marginalised in water decision-making structures, leading to poorly targeted interventions.<sup>70</sup> Institutional fragmentation and underfunding further undermine coordinated responses to urban water insecurity.<sup>71</sup> These findings align with calls for more inclusive, gender-responsive water governance that integrates local knowledge and addresses urban poverty holistically.

## RECOMMENDATIONS

Addressing water scarcity goes beyond technical solutions; it requires a thoughtful engagement with the socio-cultural norms that define gendered roles within households and communities. In many urban settings, women are primarily responsible for water collection, management, and use, yet their perspectives are often neglected in planning and policy-making. Empowering women through inclusive water governance and participatory infrastructure planning is, therefore, crucial for promoting equitable and sustainable urban development. In Makokoba, one of Bulawayo's oldest high-density suburbs, low-income women have shown remarkable ingenuity and resilience in dealing with chronic water shortages. Their coping strategies include informal cooperation among neighbours, rationing limited supplies, purchasing water from vendors, and utilising donor-supported infrastructure such as boreholes and communal tanks. While these strategies offer short-term relief, they remain fragile and unsustainable without systemic support. They highlight women's agency while simultaneously exposing the structural inequalities that hinder long-term resilience. To effectively tackle water insecurity in low-income urban areas, investment in reliable infrastructure must be paired with inclusive governance models and gender-sensitive planning approaches. This involves placing women's voices and lived experiences at the heart of decision-making processes. Their knowledge of household and community water needs is essential for crafting solutions that go beyond mere survival to encompass dignity, health, and equity. Although NGOs have made significant strides in advancing participatory and gender-responsive initiatives, government institutions have largely fallen behind in integrating gender into water governance. Bridging this gap is vital for developing transformative, just, and sustainable responses to urban water challenges in Bulawayo.

## CONCLUSION

This study aimed to explore the gendered impacts of climate-induced water shortages on low-income women in urban Bulawayo. It sought to understand how water scarcity affects their daily lives, health, and socio-economic well-being, and how gender-specific roles shape their experiences and burdens. Additionally, the study examined the coping strategies employed by these women, assessing their effectiveness and sustainability, while critically analysing the responsiveness of institutions—local government, NGOs, and community structures—to the unique vulnerabilities and needs of women in water-insecure urban settings. The findings reveal that water shortages in Makokoba have profound impacts on the lives of low-income women, affecting their time, health, dignity, and livelihoods. The burden is deeply gender bias, reinforcing existing inequalities while highlighting women's agency in coping with adversity. Addressing these challenges requires gender-sensitive water governance, greater investment in infrastructure, and the active inclusion of women in decision-making processes related to water service delivery. Water scarcity in urban Zimbabwe, particularly in Makokoba, exposes and reinforces entrenched gender roles that place the burden of water management squarely on women and

<sup>68</sup> P. B. Matondi, "Water Reforms in Zimbabwe: Context, Issues and Challenges," in *The Gender Politics of Water Policy Reforms in Zimbabwe*, ed. P. B. Matondi and K. Mudege (Weaver Press, 2011), 1–25; J. Manjengwa, D. Tirivanhu, and L. Zhou, "Access to Water in Poor Urban Communities in Zimbabwe: The Case of Mabvuku and Tafara," *Urban Forum* 25, no. 4 (2014): 503–16.

<sup>69</sup> K. S. Tarisayi, "NGOs and the Politics of Water Provision in Zimbabwe's Urban Informal Settlements," *Development in Practice* 32, no. 4 (2022): 532–45; I. Nhapi, "Water Policy, Access and Sustainability in Zimbabwe," in *Water and Policy Reform in Southern Africa*, ed. M. van Koppen, B. Schreiner, and H. Fakir (HSRC Press, 2015), 173–92.

<sup>70</sup> M. Mawere, "Coping with Water Scarcity: A Critical Analysis of the Culture of Water Supply and Management in Urban Zimbabwe," *Journal of Environmental and Sustainability Issues* 2, no. 1 (2013): 18–28; C. Chikozho, "Towards Strategic Use of Water Resources in the Limpopo River Basin: Mapping the Institutional Landscape," *Africa Institute of South Africa, Occasional Paper* 55, 2008.

<sup>71</sup> Shepherd Mpfu, *Digital Humour in the Covid-19 Pandemic* (Springer, 2021); M. Musarurwa, "The Politics of Water in Zimbabwe: Urban Water Supply and Sanitation during the Crisis Period," *Journal of African Studies and Development* 2, no. 7 (2010): 190–200.

girls. These roles limit women's mobility, health, and economic participation, while also placing their safety and dignity at risk.

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