

Women, Water Scarcity, and Climate Change: A Crisis of Access and Empowerment

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Abstract

Water scarcity, exacerbated by accelerating climate change, disproportionately affects women and girls across the Global South and other vulnerable regions. This paper examines the intersecting crises of water insecurity and gender inequality, analysing how patriarchal social structures, limited land and resource rights, and inadequate climate governance compound women's vulnerabilities. Drawing upon feminist political ecology, the capability approach, and intersectionality theory, the study investigates how women's daily water-collection burdens translate into lost educational, economic, and civic opportunities, entrenching cycles of poverty and disempowerment. The paper presents empirical evidence from sub-Saharan Africa, South Asia, and Latin America, demonstrating that climate-induced water shocks — including erratic rainfall, prolonged droughts, and shrinking aquifers — fall most heavily on women who lack formal safety nets or decision-making power over water resources. The analysis further explores promising interventions: community-based water governance with mandatory female participation, gender-responsive national adaptation plans, and targeted cash-transfer programmes. The paper concludes that achieving water security and meaningful gender equality are inseparable goals; policies that ignore gender dynamics risk perpetuating — or deepening — the very inequities they aim to address. A rights-based, intersectional approach to water governance is therefore both an ethical imperative and a practical pathway toward climate resilience.

Keywords: Water Scarcity, Climate Change, Gender Inequality, Feminist Political Ecology, Water Governance, Women's Empowerment, Global South, Climate Adaptation.

Introduction

"Half of the world's population could be living in areas facing water scarcity by as early as 2025"(UNICEF,2020).

Water is the foundation and a fundamental right of a human, but for millions of people around the world, access to clean water resources is a daily struggle. According to a United Nations report (2023), more than 2.2 billion people worldwide lack access to safe drinking water. This issue no longer pertains to droughts or inadequate water infrastructure, but it is escalating due to climate change. As per the report by IPCC (2022), the freshwater resources are disrupted because of the rise in global temperatures, irregular rainfall patterns, and extreme weather events, making it difficult for communities to produce food, have safe drinking water, ensure hygiene and sanitation, and enjoy good health and well-being.

Water scarcity is not a gender-neutral issue. Women in developing countries are the primary victims of water scarcity, which is intensified by climate change. Women serve as caregivers for families, and as they prepare food, they are responsible for maintaining hygiene and sanitation. "Globally, 1.8 billion people lack water access at home. In 7 out of 10 such households, women and girls over 15 are primarily responsible for collecting water—more than twice the rate of their male counterparts" (WHO, 2023a). Girls under 15 also bear this burden more than boys. These long journeys often cost them education, work, and safety (WHO, 2023). These responsibilities become complicated due to a lack of accessible clean water resources, and it led to an increase in the number of waterborne diseases such as cholera and dysentery (WHO, 2023b). Hence, to bear the responsibility of collecting safe water for household needs, they must walk miles, which consumes hours of their day. "Globally, women and girls spend 200 million hours every day collecting water—an unpaid labour burden worsened by climate change." (UNICEF, 2016) This results in health-related risks, physical exhaustion and in some places, exposure to gender-based violence (World Bank, 2022). Further, because of this unequal burden, they are deprived of better education, personal development and employment, relegating them to a cycle of poverty. It is noteworthy that clean water is very important to achieve gender equality and women's empowerment. It will increase women's participation in education, self-employment, and other productive activities, as they no longer need to spend their valuable time fetching water. Further research shows that access to water improves public health, decreases maternal and newborn mortality rates, and increases the engagement of women in decision-making processes related to climate and water resource management (UN Women, 2023).

Furthermore, it is important to note that water scarcity is not merely a natural consequence, but it is often shaped by the social and political systems of an economy. For instance, the Neoliberal development models prioritised the commodification of water and shifted control of water resources from public to private entities, making water unaffordable for marginalised communities (Roberts, 2008). In addition, patriarchal water governance structures exclude women from mainstream decision-making, ignoring the fact that primary users and managers of household water are women only (Dasthagir & Arun, 2024). Additionally, it is observed that not all women experience water scarcity in the same way. A woman's access to water often heavily depends on the societal class she belongs to, her native place, or her skin colour (Silva & Rezende, 2022). Unfortunately, these factors are overlooked while drafting policies related to water scarcity and climate change. Consequently, it severely affects the efforts undertaken to address the structural inequalities ("who suffers most and who remains unheard"). Nevertheless, women have pioneered various initiatives for local water conservation, sustainable farming practices, and advocated policies that promote equitable access to resources in many economically backward countries. This proves that they are not just victims of water scarcity; they are a catalyst for change in water management and climate adaptation practices. Despite these barriers, women across the Globe are emerging as the leaders in addressing water challenges through sustainable, innovative, and community-centred approaches.

"Women are not just beneficiaries but as solution-creators".

Hence, this paper explores the interplay between gender, water scarcity, and climate change by highlighting how women are severely affected by water scarcity and how they still showcase their role as leaders in water management. This study will follow a gender-sensitive approach to acknowledge the vulnerabilities women face and the ways that empower them to be a part of the solution.

Literature Review

Water scarcity has become a major global issue. The condition is exacerbated by an increase in population and climate change (Gosling & Arnell, 2016). Existing literature has explored how climate change will affect global water scarcity in the future. For instance, researchers like Alcamo et al. (2007) and Arnell (2004) have used simulated changes in climate from global climate models (GCMs) to assess the impact on water resources. The outcomes of the research show that the hydrological cycle is severely affected by climate change and disrupts both the quantity and distribution of water. Rising global temperatures, intensifying droughts and unpredictable rainfall have drastically affected water security in vulnerable regions (IPCC, 2022). For example, freshwater availability is projected to decline by 15% by 2050 in Africa, affecting the lives of over 500 million people (IPCC, 2022). Similarly, due to glacier retreat and reduced monsoon predictability is placing immense pressure on river basins, thereby affecting millions of people. (WMO, 2021).

According to the World Bank (2020), climate-induced water scarcity could cost economies up to 6% of their GDP by 2050. It is primarily due to migration of people to water-rich areas due to a reduction in agricultural productivity, and severe health issues due to scarcity of water. The results of a recent study by the United Nations (2023) are terrific, as it reports that over 2.2 billion people lack access to safe drinking water, and this figure is expected to rise as climate change intensifies. However, these statistics don't reveal the specific challenges and vulnerabilities that women experience.

Nevertheless, research on climate change and water scarcity has gained global attention, but its gendered impacts remain underexplored in mainstream environmental literature. Women are disproportionately affected by declining water resources due to their socially assigned roles such as caregiving, hygiene management, and food preparation (UN Women, 2022). Their experiences can add much value in policy initiatives related to climate change and water scarcity. However, they are often excluded from decisions and the policy-making process related to water governance and climate change, rendering their experiences invisible in formulated strategies.

UNICEF (2016) reports "globally, women and girls spend 200 million hours every day collecting water—an unpaid labour burden worsened by climate change". This unpaid labour contributes to systemic gender inequality. In a report, UNESCO (2019) highlighted that the probability of girls dropping out of school in areas with water stress is 2.5 times more likely than boys, as they are vested with household caregiving responsibilities. One of the most serious consequences of walking alone long distances to fetch water is the increased risk of gender-based violence (Amnesty International, 2020). Additionally, these long journeys—especially during extreme heat or drought often lead to serious health problems for women. Still, the majority of water and climate adaptation policies remain gender-blind. Scholars such as Arora-Jonsson (2011) and MacGregor (2010) asserted that international climate frameworks like the Paris Agreement treat women as passive recipients of aid rather than active agents in policy formulation; thereby marginalising gender concerns to a greater extent. This reflects a system's failure to examine how gender interacts with class, geography, race and ability to shape water-related experiences (Haque et al., 2023).

Theoretical Framework

- **Neoliberalism and Patriarchy**

The marginalisation of women in climate change and water scarcity decision-making is not accidental but is rooted in our structural systems. For instance, Neoliberal development models, which promote commodification and privatisation of water, often exclude women who cannot afford the rising utility costs (Mehta, 2014). In countries like South Africa and India, privatisation has led to prioritisation of access to water resources to industrial needs over domestic water use, which further limits household access (Bond, 2012).

The patriarchal structure of the society in water governance also plays a key role. Across Africa and Asia, less than 17% of board members making decisions related to water management are women. This ignores the primary role women play in water management at the household and community levels (UNDP, 2021) and perpetuates policies that ignore women's realities and reinforce cycles of dissatisfaction. UNFCCC (2020) reported that many national adaptation plans (NAPs) lack gender-disaggregated data, making it difficult to formulate adequate gender specific solutions. This continuous exclusion of women from decision-making and data collection leads to a loss of unique insights into policies. In this regard, Swai et al. (2012) argue that the contributions and leadership of women in climate resilience remain under-recognised. The researchers argue that while both men and women observe the effects of climate change, women often relate to water scarcity and face challenges in fulfilling their day-to-day household needs; it is imperative to inculcate their perspective in formulating climate and water management-related strategies at the community level. Unfortunately, their lived experiences are often ignored, and they are sidelined from decision-making related to water governance and climate policies (Arora-Jonsson, 2011; MacGregor, 2010).

However, this gender blindness in existing climate policies is critiqued by several scholars. For instance, Haque et al. (2023) point out that many official climate adaptation plans are high-tech and involve large-scale infrastructure, like dams or irrigation systems. While these approaches may be helpful at the large scale, they often overlook the everyday ground-level strategies that women use to deal with water scarcity, such as making prudent use of water, modifications in farming practices and organising local support systems. These small, practical methods can be a game-changer in low-income areas, but they rarely get the attention from policymakers. Consequently, women's contributions remain

undervalued. The authors also highlighted the patriarchal structure of society, where women face discrimination based on race, class, and geography alongside gender, questioning their existence in the society (Crenshaw, 1991).

However, some researchers like Akinbami (2021) criticised the top-down development models that do not engage the local knowledge and experience of Nigerian women. The researcher emphasised empowering women as active agents of change through the concept of climatepreneurship. Moreover, the study appraised climate-smart initiatives taken by women, including renewable energy, sustainable agriculture and water conservation. Such initiatives build climate resilience strategies while also creating viable economic opportunities for women. In this regard, women need adequate support in training, decision-making, and access to credit, but inevitable structural barriers like patriarchal norms and limited access to education hinder their success. Further, Paul F. Steinberg (2020) adds an interesting dimension to the consequences of climate change by urging a shift from the feeling of despair and fear to empowerment and hope. He argues that when people (especially women) feel empowered, they begin to believe that they are change agents; hence, their likelihood to engage in meaningful climate action increases. The findings of this study align well with the work of Akinbami et al. (2019) and Haque et al. (2023), who advocated for participatory, empowerment-based approaches. In this regard, women cannot be just victims of climate change; when given the opportunity, they are the leaders, innovators and community builders (Robinson & Verveer, 2015).

Today, entrepreneurship is broadly recognised as a pathway for gender empowerment and climate adaptation. For instance, in Kenya, through initiatives like the “Maji na Ufanisi”, women are trained to operate water kiosks and maintain sanitation facilities in slums. In Bangladesh, women-led cooperatives use solar-powered water pumps to irrigate crops (Oxfam, 2021). These initiatives challenge the narrative of “women as victims” and highlight the transformative potential of gender-inclusive innovation.

But women face certain barriers in their path to empowerment. For instance, in countries like India and South Africa, there are various structural barriers that prevent women from accessing capital and networks (Mitra et al., 2024). The researchers further asserted that if a woman gets access to credit, education, and leadership opportunities, she can significantly enhance climate resilience (Dankelman, 2010; Nelson et al., 2021).

Karadayı et al. (2024) review global research on climate entrepreneurship in developing countries. They opined that innovation in green technology and clean energy is growing, but there is a need to help women and marginalised groups with proper funding and institutional support. Similarly, Akinbami et al. (2019) emphasised the need to integrate the voice of marginalised women in climate action plans and build their capacity through adequate funding, education and inclusion in community governance. Through surveys, the researchers found that women are more aware of environmental changes and want to adopt appropriate strategies, but they often lack institutional support. The authors note that women are both a solution to climate problems and a sector vulnerable to climate shocks.

“Closing gender gaps in labour and innovation could add \$28 trillion to global GDP by 2025” (Feloni, 2019).

Methodology

This paper uses a qualitative, interpretive research design informed by feminist methodology. This approach tries to capture the lived experiences of the rural women rather than treating them merely as objects of study (Harding, 1987). Qualitative methods are particularly suited to examining how structural inequalities are experienced and reproduced at the household and community levels — levels at which water scarcity is most viscerally felt.

• Data Sources and Selection

The study is based on secondary data extracted from four principal source categories. First, peer-reviewed empirical literature published between 2000 and 2025 was systematically reviewed using databases including Web of Science, Scopus, and Google Scholar, with search terms combining 'water scarcity', 'climate change', 'gender', 'women', 'Sub-Saharan Africa', 'South Asia', and 'Latin America'. Second, grey literature — including reports by UNDP, UNICEF, UN-Water, FAO, IPCC, and the World Bank — was studied to capture policy-relevant evidence and quantitative baselines. Third, data from nationally representative household surveys (including DHS and MICS datasets) were analysed to contextualise findings on time use, water access, and health outcomes. Fourth, ethnographic and

participatory action research studies provided micro-level insights into women's agency and coping strategies under water stress.

- **Case Study Selection**

Case studies were selected through purposive sampling to ensure geographic diversity and variation in governance contexts. Three regional clusters form the empirical core of the paper: (i) Sub-Saharan Africa, with particular attention to Ethiopia, Kenya, and Zambia, where rainfall variability and groundwater depletion are well-documented; (ii) South Asia, focusing on India (particularly Rajasthan and Bundelkhand) and Bangladesh, where monsoon disruption and arsenic contamination intersect with deep gender hierarchies; and (iii) Latin America, with cases from Bolivia and Peru, where Andean glacial retreat threatens water supplies for indigenous women farmers. These cases were selected because they represent distinct socio-ecological and institutional contexts while collectively illuminating the global scope of the water-gender nexus under climate change.

- **Analytical Approach**

Data were analysed through a process of thematic synthesis guided by the three theoretical pillars established in the Framework: feminist political ecology, the capability approach, and intersectionality theory. Thematic coding proceeded in two phases: an initial open-coding phase to identify recurring concepts (e.g., time poverty, decision-making exclusion, health burden, adaptive capacity), followed by an axial-coding phase in which themes were organised around the three levels of analysis: household, community, and governance. Throughout, intersectional considerations — including caste, class, ethnicity, age, and disability — were held as cross-cutting analytical lenses. The synthesis foregrounds women's agency alongside their vulnerability, reflecting the feminist methodological commitment to avoiding the victimisation of subjects.

Findings

- **The Gendered Burden of Water Collection**

Across the case study regions, women and girls bear primary responsibility for household water provisioning. UNICEF and WHO (2023) estimate that women and girls account for approximately 80 per cent of water collection globally. In sub-Saharan Africa, average daily water-fetching distances exceed three kilometres in water-stressed communities; in parts of Rajasthan, women report travelling up to six kilometres per trip (Sultana, 2018). As climate change intensifies drought cycles and depletes surface water sources, these distances lengthen and the time cost of water collection rises correspondingly.

Time-use surveys across the case regions reveal that girls aged 10–17 who live in water-insecure households spend an average of 40 minutes more per day on water collection than their peers in water-secure households — time directly subtracted from school attendance (UN-Water, 2021). In Bolivia, interviews with Quechua women document how the retreat of glaciers has forced some communities to travel twice as far for irrigation water as they did a generation ago, displacing time previously devoted to productive agriculture and community participation (Carey et al., 2017).

- **Health Consequences**

Water scarcity is highly inconvenient for women and impacts their health adversely. Pregnant women and adolescents carry heavy loads — typically 15–20 litres at a time on the head or back and walk for miles, leading to chronic musculoskeletal injury (Geere et al., 2018). In Bangladesh, increased salinity of groundwater sources attributable to sea-level rise and cyclone-driven storm surges has been associated with significantly elevated rates of hypertension and pre-eclampsia among pregnant women (Khan et al., 2019). Inadequate water and sanitation facilities in schools also disproportionately affect adolescent girls, who frequently drop out at menarche when menstrual hygiene management becomes impossible (Sommer et al., 2015).

These risks increase because of climate-driven water contamination. In parts of Zambia, increased flood events flush faecal coliforms into shallow wells that are predominantly used by women; diarrhoeal disease burden falls heavily on mothers, both as primary caregivers and as those most exposed through water collection (Mukherjee & Rushforth, 2020). The physical health consequences of water insecurity thus cascade into economic and social domains, limiting women's labour force participation and reinforcing their dependence on male household members.

- **Educational and Economic Opportunity Costs**

The opportunity costs of water burden extend well beyond lost schooling. In Kenya, rural women in water-insecure areas are significantly less likely to engage in non-farming, income-generating activities than those with adequate water access (Koolwal & Van de Walle, 2013). During seasonal depletion of water sources, women's agricultural productivity declines significantly, mainly because women rely mainly on rain-fed cropping across the regions studied for the study. Owing to the constant droughts from 2012 to 2020 in India's Bundelkhand region, debt-ridden farmers withdrew their daughters from school to help with water collection, creating obstructions in their education (Mehta et al., 2021).

These economic losses impact at the systemic as well as household levels. The World Bank (2016) estimated that the loss of time caused from insufficient water and sanitation cost up to 1.5 per cent of GDP annually. Rural women bearing this burden, deteriorates the gender dividend that their economic participation otherwise generates — in terms of child nutrition, household savings, and community welfare.

- **Political Marginalisation and Governance Exclusion**

Though women have predominantly been at the centre of water management at household level yet they have been forbidden from water governance which is both a cause and a consequence of water insecurity. In Ethiopia, despite legal provisions for community water committee participation, women constitute less than 20 per cent of committee members in rural kebeles, and their presence at decision-making meetings is constrained by patriarchal mentality discouraging women's public voice (Agarwal, 2010; WaterAid, 2022). This exclusion from water dialogues systematically neglect women's priorities such as location of collection points, safety of access routes, provisions for menstrual hygiene — reinstating the water burden borne by women.

At the national policy level, gender considerations remain marginal in most National Adaptation Plans (NAPs). A 2023 analysis of 67 NAPs by the UNDP Gender Climate Tracker found that less than one-third contained gender-specific water adaptation measures, and a smaller fraction included mechanisms for women's participation in plan development (UNDP, 2023). This governance gap allows climate-induced water shocks to deepen existing gender inequities unchecked.

- **Intersectionality: Compounding Vulnerabilities**

Women do not experience water insecurity as a uniform group. Intersectionality analysis reveals that caste, class, ethnicity, age, and disability status radically differentiate vulnerability. In India, Dalit women face dual discrimination: access to community water infrastructure is routinely denied on caste grounds, and women from these strata of the society are forced to use degraded or more distant sources regardless of their availability (Birkenholtz, 2009). In Bolivia, indigenous Aymara and Quechua women face language barriers when engaging with state water institutions that operate primarily in Spanish, effectively excluding them from complaint and advocacy mechanisms. (Diosey Ramon Lugo, 2026)

In sub-Saharan Africa Widowed women and matriarchal households are vulnerable. In this region water access rights are closely knitted to land rights inherited through male lineage; widowed women may simultaneously lose access to irrigation infrastructure (Doss et al., 2015). The circumstances become increasingly challenging for elderly women with mobility limitations who are unable to travel increasing distances to water sources as nearby sources decline, and are often the last to receive water when household water is rationed under stress. These cumulative disadvantage demonstrate that gender-blind water policies are insufficient; effective intervention must be intersectional.

Discussion

- **Water as a Site of Gender Power Relations**

The findings validate the feminist political ecology insight that the importance of water is not limited only to a physical resource but a site through which gendered power relations proliferate (Rocheleau et al., 1996; Sultana, 2011). Across all three regional clusters, access to water is mediated not by need or physical proximity but by social stratification that subordinates women's claims. Climate change operates as a force multiplier: it does not create gender inequality, but it amplifies existing inequities by increasing resource scarcity, intensifying competition for diminishing supplies, and strengthening the social mechanisms through which powerful actors — typically men, upper-caste households, or those with capital — secure preferential access.

This dynamic challenges framings of the water-gender nexus as a technical problem of infrastructure deficit. While extending piped water and borehole access to water-insecure communities undeniably reduces women's time burdens, infrastructure investment alone does not alter the governance structures that determine who decides, who controls, and who benefits from water systems. Without deliberate attention to power, even well-intentioned water projects can be captured by elite men, reinforcing rather than disrupting gendered hierarchies (Cleaver, 2000).

- **Capability Deprivation and the Climate-Gender Nexus**

Nussbaum's (2011) capabilities framework provides a normative lens through which to evaluate the human costs documented in the findings. Water insecurity under climate change systematically deprives women of multiple central human capabilities: bodily health (through contamination, physical injury, and reproductive risk); bodily integrity (through dangerous water-collection routes and exposure to violence at water points); senses, imagination, and thought (through school dropout); play and emotional flourishing (through time poverty); and political participation (through governance exclusion). When capabilities are understood as the real freedoms people have to live lives of their own choosing, the water-gender nexus under climate change constitutes a fundamental capability deprivation warranting urgent remedial action.

The capability framing also resists the tendency to reduce women to victims by recognising their agency. Across the case studies, women demonstrate remarkable adaptive capacity — diversifying water sources, forming informal water-sharing networks, innovating low-cost rainwater harvesting, and collectively advocating for infrastructure investment. Public policy that builds on and extends this existing agency — rather than imposing externally designed solutions — is more likely to achieve durable improvement in water security and gender equality simultaneously.

- **The Limits of Gender-Mainstreaming in Climate Policy**

The UNDP (2023) finding that fewer than one-third of NAPs contain gender-specific water measures suggests that formal commitments to gender mainstreaming in international climate agreements — articulated most explicitly in the Paris Agreement's preamble and the Lima Work Programme on Gender — have not translated into substantive policy change. Several explanations are offered by the literature. First, gender mainstreaming is frequently treated as a procedural add-on — a 'gender paragraph' appended to water sections — rather than as a substantive reorganisation of resource priorities and decision-making structures (Arora-Jonsson, 2011). Second, women's civil society organisations are chronically underfunded relative to the scale of advocacy needed to influence national adaptation policy processes (Ciplet & Roberts, 2017). Third, data gaps persist: without disaggregated data on time use, water access, and health outcomes by gender, it is difficult to build the evidence base needed to drive policy change.

- **Towards Transformative Water Governance**

The analysis points toward several conditions under which water governance can become genuinely transformative rather than merely ameliorative. First, women's substantive — not merely tokenistic — participation in water governance bodies is associated with better targeting of infrastructure to women's needs and more equitable distribution of water access (Agarwal, 2010). Substantive participation requires addressing the structural barriers women face: time constraints, social norms, language barriers, and lack of technical knowledge — through deliberate support mechanisms rather than assumed inclusion.

Second, land and water rights reform is foundational. Where women lack formal land rights, their access to irrigation and their standing in water governance forums is contingent and easily withdrawn. Secure, legally enforceable water rights that women can hold independently of male household members are a necessary — if not sufficient — condition for durable water security (Doss et al., 2015).

Third, climate finance must be explicitly directed toward gender-responsive water adaptation. The Green Climate Fund and the Adaptation Fund have both adopted gender policies, but implementation lags behind stated commitments. Ensuring that a meaningful proportion of adaptation finance flows to women's organisations and community-led water adaptation initiatives would substantially increase the gender-responsiveness of climate investments.

Policy Recommendations

Based on the findings and discussion, this paper advances the following policy recommendations, organised across three levels of governance:

- **Community and Local Level**

Water User Associations (WUAs) and Village Water Committees should be required by law to allocate at least 50 per cent of membership and leadership positions to women. Critically, this should be accompanied by targeted capacity-building — in technical water management, financial literacy, and advocacy — to enable women to participate substantively rather than nominally. Community-level time-use analyses should be conducted to assess and periodically reassess the gendered distribution of water-collection burdens, informing decisions about infrastructure placement and maintenance priorities.

Rainwater harvesting and decentralised water storage technologies have demonstrated potential to reduce women's collection distances and buffer against seasonal drought. Community-based programmes providing affordable household rainwater harvesting systems — with women trained as installers and maintenance technicians — have shown success in Ethiopia and India and merit wider replication and government support.

- **National Level**

All National Adaptation Plans should be required to include gender-responsive water security components developed through consultative processes that formally include women's civil society organisations, particularly those representing marginalised groups — Dalit women, indigenous women, and female-headed households. The United Nations Framework Convention on Climate Change (UNFCCC) Gender Action Plan should serve as a minimum reference framework, with country-specific targets and accountability mechanisms.

National governments should invest in sex-disaggregated water data infrastructure, including regular time-use surveys, gender-sensitive water quality monitoring, and disaggregated health surveillance linked to water source type. This evidence base is essential for identifying which populations bear the heaviest water-related burdens and for evaluating the impact of adaptation interventions over time.

Social protection programmes — including conditional and unconditional cash transfers — should explicitly target women in water-insecure areas during drought and flood events. Such programmes have been shown to buffer the erosion of girls' schooling during climate shocks in Kenya and Ethiopia and to reduce distress coping strategies (such as early marriage) that are triggered by water insecurity.

- **International and Global Level**

Multilateral climate finance institutions should establish gender-transformative water adaptation as a dedicated funding window, with simplified access for women's organisations and community-level actors in least-developed countries. The current architecture of climate finance favours large, bankable projects implemented by national governments or private sector actors, systematically marginalising the community-based initiatives that evidence suggests are most effective for gender-responsive water adaptation.

The Sustainable Development Goals — particularly SDG 6 (Clean Water and Sanitation) and SDG 5 (Gender Equality) — should be operationally integrated in reporting and accountability frameworks. Progress on SDG 6 targets should be disaggregated by gender, and countries should be required to demonstrate how water access improvements are distributed across gender and intersecting social categories.

Conclusion

The convergence of climate change and water scarcity represents one of the defining human security challenges of the twenty-first century, and women — particularly those in the Global South who are already disadvantaged by poverty, marginalisation, and patriarchal governance structures — are bearing a disproportionate and unjust share of its costs. This paper has demonstrated that the water-gender nexus under climate change is not a peripheral concern but a central axis along which climate justice must be evaluated and addressed.

Drawing on feminist political ecology, the capability approach, and intersectionality theory, the analysis reveals how structural inequalities mediate the impact of water shocks, converting climatic events into gender-differentiated outcomes: lost schooling for girls, lost earnings for women, eroded health, and deepened political marginalisation. At the same time, the evidence from Ethiopia, India, Kenya, Bolivia, and Bangladesh consistently demonstrates that women's agency — when structurally supported — is a powerful resource for climate adaptation. Communities and countries that have invested in women's meaningful participation in water governance have achieved better water security outcomes for all.

The implication is clear: water security and gender equality are not competing or sequential goals, but mutually constitutive ones. Policies that treat water as a purely technical or engineering challenge, divorced from the social relations of gender, caste, class, and ethnicity that govern access to it, will continue to reproduce the inequities they nominally seek to address. A rights-based, intersectional, and participatory approach to water governance — adequately resourced through reformed climate finance architecture — offers the most credible pathway toward both climate resilience and the realisation of women's human capabilities.

Future research should prioritise longitudinal studies that track women's water burden over climate cycles, participatory action research that centres women's own knowledge in adaptation design, and rigorous evaluations of gender-responsive water governance interventions across diverse institutional contexts. The scholarship reviewed here has laid an essential foundation; building upon it with methodological rigour and feminist commitment is both a scholarly and an ethical obligation.

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