

Nurturing Nature: Women's Contributions to Sustainable Climate Practices

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Abstract

Women have historically played vital roles in environmental stewardship, particularly within rural and indigenous contexts. As climate change intensifies, their participation in sustainable practices and climate action has become increasingly recognized. This paper explores women's transformative roles in climate resilience, leadership, and innovation, emphasizing their contributions to achieving Sustainable Development Goal 13 (SDG 13) on climate action. It discusses the intersectionality of gender and climate vulnerability, the barriers women face, and their role as agents of change across agriculture, energy, water management, and policy advocacy. Integrating gender perspectives into climate policies is imperative for inclusive, effective solutions and long-term sustainability.

Keywords

Women, Environmental Stewardship, Climate Action, Gender Equality, SDG 13

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Introduction

Climate change presents one of the most pressing global threats of the 21st century, influencing biodiversity, livelihoods, and socio-economic systems. The United Nations Sustainable Development Goal 13 (SDG 13) calls for urgent action to combat climate change and its impacts. While governments and institutions spearhead large-scale mitigation and adaptation strategies, the critical contributions of women—especially from indigenous and rural communities—remain essential yet underappreciated [1].

Women often hold traditional ecological knowledge, manage natural resources, and lead local sustainability initiatives. However, gender-based inequalities limit their access to decision-making platforms and resources. This paper examines how women’s involvement in climate governance, grassroots innovation, and community resilience can enhance global responses to climate change.



Figure 1: Gendered Impact of Climate Change. Women are disproportionately affected by climate-related events due to existing socio-economic inequalities, limited access to resources, and caregiving responsibilities [2].

Historical Context: Women as Environmental Stewards

Women’s environmental roles are rooted in traditional responsibilities, such as agriculture, water collection, and fuel management, aligning them closely with the natural world. These roles have endowed women with rich experiential knowledge essential for sustainable practices [3].

One of the earliest international examples is Wangari Maathai’s Green Belt Movement in Kenya, which mobilized women to plant over 50 million trees, addressing deforestation and empowering communities [4]. Similarly, Indigenous women globally have preserved biodiversity through seed saving and sustainable farming, often passing ecological knowledge orally through generations [5].

These precedents laid the foundation for modern gender-responsive environmental activism and demonstrate that sustainability efforts benefit from inclusive, community-rooted leadership.

Table 1: Prominent Women-Led Environmental Movements

Name	Region	Contribution	Impact
Wangari Maathai	Kenya	Green Belt Movement	Planted 50+ million trees; empowered rural women
Vandana Shiva	India	Navdanya, seed sovereignty	Promoted organic farming and seed-saving
Berta Cáceres	Honduras	Indigenous land rights and forest protection	Defended Lenca territory; opposed hydroelectric dams
Christiana Figueres	Global	UNFCCC Paris Agreement	Led international consensus on climate commitments

The Gender–Climate Nexus

Climate change disproportionately affects women due to existing socio-economic and cultural disparities. Women, particularly in low-income and rural settings, face higher exposure to climate-induced disruptions such as water scarcity, food insecurity, and displacement [6]. Their dependence on natural resources and lower adaptive capacity due to limited access to land, education, and finance further heightens their vulnerability [7].

For instance, in sub-Saharan Africa, women comprise nearly 50% of the agricultural labor force yet control less than 20% of agricultural land [8]. This imbalance restricts their capacity to implement adaptive practices like drought-resistant crops or irrigation systems.

Recognizing this, the UN Framework Convention on Climate Change (UNFCCC) has stressed gender-responsive climate strategies to include women's needs and perspectives in climate policy [9]. Without integrating gender equality into climate action, resilience, and sustainability will remain elusive.

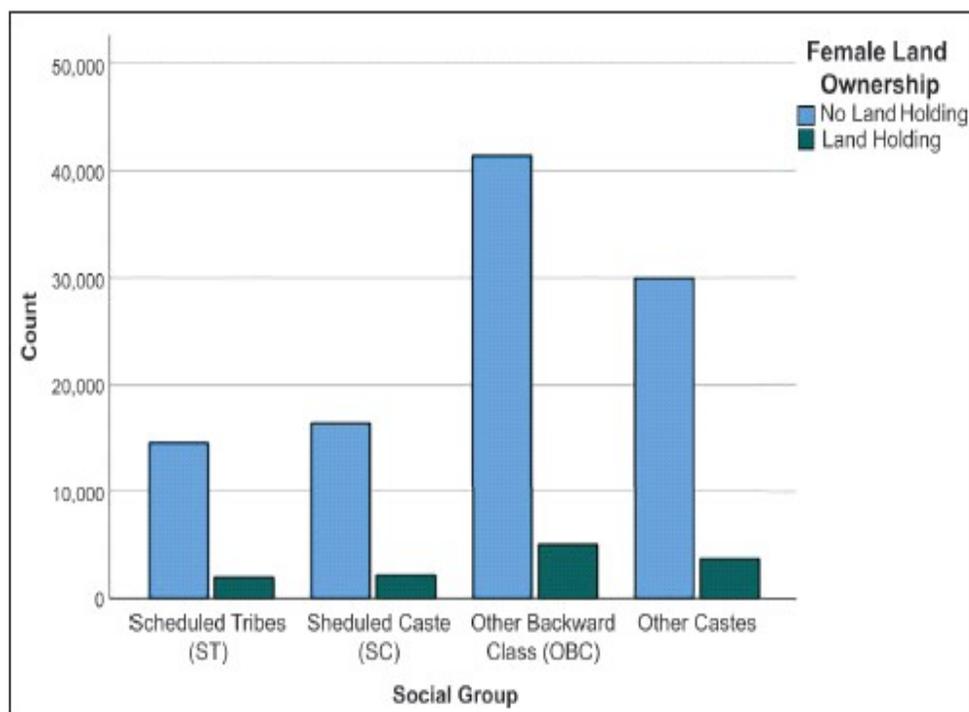


Figure 2: Gender Disparities in Land Ownership in India across various castes [10]

Women's Leadership in Climate Movements

Women have emerged as influential leaders in climate advocacy. Greta Thunberg's "Fridays for Future" movement exemplifies how youth and gender activism can mobilize global attention and pressure political actors for urgent climate responses [11]. Across the Global South, women activists have organized local campaigns demanding clean water, forest rights, and land reform, effectively linking environmental protection to gender justice.

Institutionally, women like Christiana Figueres, former Executive Secretary of the UNFCCC, have driven critical agreements, including the 2015 Paris Agreement. Her consensus-building efforts underscore the significance of inclusive governance in achieving climate goals [12].

Indigenous women leaders have also played critical roles. For example, Patricia Gualinga of Ecuador's Sarayaku community advocates for the protection of Amazonian forests and indigenous sovereignty at international forums, demonstrating how indigenous knowledge and activism are indispensable for climate justice.

Table 2: Influential Women in Climate Leadership

Leader	Role	Contribution
Greta Thunberg	Youth Climate Activist	Global “Fridays for Future” mobilization
Christiana Figueres	UNFCCC Executive Secretary (2010–2016)	Architect of the 2015 Paris Agreement
Hindou Oumarou Ibrahim	Indigenous Rights Advocate (Chad)	Integrating Indigenous knowledge into climate policy
Patricia Gualinga	Indigenous Leader (Ecuador)	Defending Amazon forests and cultural rights

Women as Drivers of Sustainable Practices

- 1. Agriculture:** Women farmers are at the forefront of sustainable agricultural practices. They engage in crop diversification, agroecology, composting, and intercropping, all of which contribute to ecological resilience. In East Africa, for example, women-led cooperatives have adopted climate-smart agriculture to combat erratic rainfall and soil degradation [13].

Programs like India’s Self-Employed Women’s Association (SEWA) empower women to access training, seeds, and markets, linking gender empowerment to food security and climate adaptation [14].

- 2. Renewable Energy:** Women also play pivotal roles in expanding access to clean energy. In India and Africa, organizations like Barefoot College have trained women as solar engineers, enabling rural communities to install and maintain solar systems [15]. This not only reduces carbon footprints but also generates income, enhances self-reliance, and improves household health by replacing kerosene with clean lighting.
- 3. Water Management:** As primary water gatherers in many communities, women are uniquely positioned to manage water resources sustainably. In Nepal, women-led groups have revived traditional water systems and introduced rainwater harvesting to address scarcity [16]. Their initiatives highlight the necessity of including women in water governance structures.

Economic Empowerment and Green Entrepreneurship

Women’s economic roles in climate resilience extend beyond domestic or agricultural domains. In the green economy, they are increasingly establishing eco-enterprises and participating in green jobs. Women-led businesses in sustainable textiles, waste recycling, and organic food are gaining momentum, particularly in South Asia and Latin America [17].

In renewable energy, women entrepreneurs are deploying clean cookstoves and solar-powered systems in off-grid regions, reducing emissions while boosting livelihoods [18]. However, lack of access to credit, training, and land continues to limit their entrepreneurial potential [19].

Table 3: Barriers Faced by Women Entrepreneurs in the Green Economy

Barrier	Description
Limited access to credit	Difficulty securing loans without land/title
Technological barriers	Lower access to digital tools and training
Market exclusion	Less representation in formal green supply chains
Gender norms and constraints	Time poverty and restricted mobility limit participation

Policies supporting women’s access to finance, markets, and green technologies can exponentially increase their contributions to climate action and economic resilience.

Gender, Health, and Climate Vulnerability

Climate change has profound gendered health impacts. Women are more vulnerable to heat stress, vector-borne diseases, and food insecurity due to caregiving roles and biological factors [20]. During disasters, they face heightened risks of violence, exploitation, and reproductive health complications.

In Bangladesh, for example, cyclone-prone coastal women report increased reproductive health issues and restricted mobility due to cultural norms, reducing their ability to evacuate or access healthcare [21].

Health policies must integrate climate adaptation and gender concerns, ensuring equitable access to healthcare, safe shelter, and post-disaster recovery services. Promoting women as health educators and emergency responders can also enhance community resilience.

Women and Climate Policy Advocacy

Women are increasingly shaping environmental policy. Besides global actors like Figueres, national leaders and grassroots networks are pushing for climate justice frameworks that prioritize gender equality.

The UNFCCC Gender Action Plan calls for equal participation of women in climate negotiations and policy development. However, women hold less than 25% of ministerial roles in environment-related sectors globally [22]. This underrepresentation diminishes the inclusivity and efficacy of climate strategies.

Grassroots advocacy, often led by women's networks, has been instrumental in integrating gender into national climate adaptation plans (NAPs) in countries like Uganda and Costa Rica. These efforts stress the importance of inclusive climate governance, not just in policy formulation but in its implementation and monitoring.

Table 4: Gender Representation in Environmental Leadership [22]

Country	% of Women in Environmental Ministries (2021)
Sweden	57%
Canada	43%
Kenya	31%
India	12%
Global Average	25%

Challenges and the Way Forward

Despite their pivotal roles, women continue to face systemic challenges, including patriarchal norms, land insecurity, limited education, and inadequate political representation. Climate finance mechanisms often exclude women due to bureaucratic hurdles and gender biases in lending.

To address these barriers, the following steps are vital:

- Enact gender-responsive climate policies that recognize women as stakeholders.
- Improve access to education, finance, and land for women in rural and indigenous areas.
- Promote women's leadership in climate-related institutions and governance bodies.
- Support community-based women's organizations working on climate resilience.

International frameworks like the SDGs, UNFCCC Gender Action Plan, and Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) provide blueprints for integrating gender equity in climate governance.

Conclusion

Women are indispensable agents of climate action. Their knowledge, leadership, and innovation are crucial for building inclusive, just, and sustainable climate responses. From grassroots activism to policymaking, from farming to renewable energy, women's contributions are multifaceted and transformative.

Empowering women and addressing structural inequalities will not only enhance climate resilience but also help achieve SDG 13 and other interlinked goals on gender, poverty, and sustainable ecosystems. Recognizing and strengthening women's roles in climate governance is not merely a matter of equity—it is a prerequisite for a livable and sustainable future.

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