



Interrelationship between Climate Change and Women's Health: A Study in Human Rights Perspective

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Abstract

This article examines the heightened vulnerability of women to environmental disasters and extreme weather events stemming from economic hardship, sexual and reproductive health issues, gender discrimination, and limited social mobility. These gender-specific impacts permeate various aspects of women's lives including housing, transportation, food, health, and political participation, infringing on rights and wellbeing. However, such differential impacts are excluded from governmental data and academic literature. Moreover, climate change effects on women are overlooked and women's involvement in climate policymaking is restricted. Investigating the complex interrelation between women, environment, and climate change, the article finds women more susceptible to climate change impacts due to socially imposed gender constraints limiting choices and enabling environmental injustices. Utilizing an intersectional gender lens, climate justice issues are also scrutinized alongside initiatives promoting gender equity and women's leadership to advance local and global climate justice. This necessitates gender-responsive adaptation and mitigation efforts while tackling exacerbated gender-based violence and discrimination. Additionally, concepts of ecofeminism, women-led movements, and female environmentalists are examined. Ultimately, prioritizing gender justice by increasing cognizance of differential climate change impacts and representation of women and marginalized groups in climate policymaking is vital for equitable and sustainable development.

Keywords: Climate Change, Women, Vulnerability, Gender Justice, Environmental Justice

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1. Introduction

“Climate change is not just an environmental issue, it’s also a social justice issue, and women are at the heart of both.”

- Mary Robinson, Former President of Ireland.¹

The Earth’s climate is presently undergoing changes, and unless warming is limited to below 2°C, these changes could become irreversible and have catastrophic consequences. Climate change can potentially make millions of poor people worldwide more vulnerable and threaten their livelihoods, exacerbating challenges such as disasters, hunger, susceptibility to disease outbreaks, and loss of livelihoods.² Natural disasters induced by climate change, such as prolonged dry spells and associated droughts, intense rainfall, snow avalanches, and severe dust storms, are increasing in frequency and intensity. However, the degree of vulnerability to these impacts varies significantly across geographies and demographics.³ Climate change disproportionately affects the poorest and the most marginalized segments of society, such as women, children, and indigenous peoples. Here, we are going to see the impact of Climate Change through gendered lenses.

These gendered effects are evident in various aspects of life, including housing, transportation, food insecurity, health, and political agency, impacting women’s lives and rights. Women’s vulnerability to climate change further intensifies due to gender-based inequalities in law and practice, gender-defined societal

¹ Mary Robinson, “Climate Change Is a Human Rights Issue,” *Time*, 27 November 2017, available at:<https://time.com/5025808/mary-robinson-climate-change-human-rights/> (Visited on March 08, 2022).

² Intergovernmental Panel on Climate Change (IPCC), “Global warming of 1.5°C” (2018), available at:<https://www.ipcc.ch/sr15/>.(Visited on April 08, 2022).

³ UN Office for Disaster Risk Reduction (UNDRR), Global Assessment Report on Disaster Risk Reduction 2019 (2019), available at:https://gar.undrr.org/sites/default/files/publications/GAR2019_Report_English.pdf (Visited on March 28, 2021).

roles, and socio-cultural constraints.⁴ Despite growing recognition of these differential vulnerabilities, women still have less economic, political, and legal power, making them less capable of coping with and more exposed to the adverse effects of climate change. The existing gender inequalities also worsen climate change impacts.⁵ According to the United Nations Development Programme (UNDP), “women comprise 70% of the world’s poor and depend more on natural resources for their livelihoods than men”.⁶ This dependence makes women more at risk of the adverse impacts of environmental degradation, such as soil erosion, deforestation, and depletion of water resources.

“Climate change is not gender neutral. Women bear the brunt of its impacts, disproportionately.”

- António Guterres, UN Secretary-General.⁷

Furthermore, environmental degradation can have direct health impacts on women. For example, women are more likely to suffer

⁴ United Nations Development Programme (UNDP), “Gender and Climate Change: Overview Report,” 2018, available at: <https://www.undp.org/content/dam/undp/library/gender/Gender%20and%20Environment/Gender-and-Climate-Change-Overview-Report.pdf> (Visited on March 08, 2020).

⁵ United Nations Framework Convention on Climate Change (UNFCCC), “Gender and Climate Change: Evidence and Experience,” 2017, available at: https://unfccc.int/sites/default/files/resource/GenderandClimateChange_English_Final.pdf (Visited on June 23, 2020).

⁶ United Nations Development Programme (UNDP), “Gender and Environmental Sustainability” available at: <https://www.undp.org/content/dam/undp/library/gender/Gender%20and%20Environmental%20Sustainability.pdf> (Visited on March 08, 2021).

⁷ António Guterres, “Remarks to the Security Council on the Maintenance of International Peace and Security: Addressing Climate-related Risks to International Peace and Security,” United Nations, 23 July 2020, available at: <https://www.un.org/sg/en/content/sg/statement/2020-07-23/remarks-the-security-council-the-maintenance-international-peace-and-security-addressing-climate-related-risks-international-peace-and-security-delivered> (Visited on June 22, 2021).

from respiratory diseases and other health issues due to exposure to indoor air pollution caused by burning biomass fuels for cooking and heating.⁸ They are also more likely to be exposed to toxic chemicals in their work, such as in the textile and agricultural industries.⁹ These environmental hazards can have long-term health impacts on women and their children.

“Climate change hits women hardest, but they have the potential to be agents of change and leaders in addressing the crisis.” - Phumzile Mlambo-Ngcuka, Executive Director of UN Women.¹⁰

Despite their disproportionate vulnerability to environmental degradation, women are key agents of change in addressing climate change. Women are often the primary caregivers in households and communities, and as such, they have a unique understanding of the impacts of climate change on their families and communities.¹¹ As a result, women often lead efforts to mitigate and adapt to climate change locally. For example, in many developing countries, women are leading efforts to promote sustainable agriculture, forest management, and adopting renewable energy technologies.¹² In addition to their role as community leaders, women are also playing a significant role in national and international climate change

⁸ United Nations Children’s Fund (UNICEF), (2019), “Water, sanitation and hygiene (WASH)”, available at: <https://www.unicef.org/wash/> (Visited on July 08, 2022).

⁹ World Health Organization (WHO). (2018). Household Air Pollution and Health. (Visited on March 20, 2023) <https://www.who.int/news-room/fact-sheets/detail/household-air-pollution-and-health> (Visited on March 08, 2019).

¹⁰ Phumzile Mlambo-Ngcuka, “Women Can Help Solve the Climate Crisis,” *Time*, 5 December 2019. available at: <https://time.com/5741395/women-climate-crisis/> (Visited on March 03, 2023).

¹¹ United Nations Environment Programme (UNEP). (2018). Women and Chemicals, available at: <https://wedocs.unep.org> (Visited on April 08, 2023).

¹² United Nations Framework Convention on Climate Change (UNFCCC). (2015). Gender and Climate Change, available at: <https://unfccc.int/topics/gender-and-climate-change> (Visited on June 08, 2020).

policymaking. According to a report by the Global Gender and Climate Alliance, women are underrepresented in climate change decision-making bodies, with only 12% of national climate negotiators being women.¹³ However, there is growing recognition of the importance of women's participation in climate change policymaking, as they bring unique perspectives and priorities to the table.¹⁴

Women are critical stakeholders in environmental sustainability and climate change. It is crucial that policymakers recognize the unique role of women in environmental sustainability and climate change and work to ensure their full participation and representation in decision-making processes. This article will explore the relationship between women, the environment, and climate change and talk about women's contribution to environment conservation and the urgent need for inclusiveness of gender perspective in mitigation, adaptation, and achieving SDG goals for a better future.

2. Women and the Environment

Women have a crucial role in managing natural resources on both family and community levels and are disproportionately affected by environmental degradation. Women are responsible for managing water, sources of fuel and food, forests, and agricultural land in communities worldwide. Developing countries rely heavily on women for food production, with women producing 60 to 80 percent of food. Still, they are often prevented from owning or leasing land and accessing loans or insurance due to inheritance

¹³ International Union for Conservation of Nature (IUCN). (2016). Women and Climate Change, available at: <https://www.iucn.org/resources/issues-briefs/women-and-climate-change> (Visited on May 07, 2020).

¹⁴ Global Gender and Climate Alliance (2013), "Women and Climate Change: Impacts and Responses" , available at: <https://www.gender-climate.org/wp-content/uploads/2013/03/Women-and-Climate-Change-Final-Report.pdf> (Visited on March 08, 2020).

laws and local customs.¹⁵ The role of women's voices and perspectives in sustainable development has been recognized by high-level UN conferences such as the 1992 Earth Summit and by grassroots movements like India's Chipko movement and Kenya's Green Belt Movement.

Aleksandra Koroleva, a Russian environmentalist, has worked as both a government official and a community organizer with Ecodefense, where she coordinated acts of civil disobedience to raise awareness of issues such as water pollution, nuclear waste, and the need for protected nature reserves.¹⁶ The Barefoot College in Tilonia, Rajasthan, trains women in solar engineering and ensures that this scientific knowledge remains, grows, and circulates within the community. The solar engineering projects have provided pathways for women to participate in solar electrification initiatives, breaking down gender barriers by teaching women traditionally male skills, providing lower-cost lighting, and reducing indoor pollution.¹⁷

According to the French language, the term "environment" comes from the word "environment" which means to surround.¹⁸ The environment encompasses water, air, land, and their interrelationships with human beings, other living organisms, and property. Historically, women were considered the weaker sex worldwide.¹⁹ Nevertheless, they have primarily been responsible for

¹⁵ United Nations Environment Programme (2016) "Women and the environment", available at: <https://www.unenvironment.org/regions/latin-america-and-caribbean/regional-initiatives/women-and-environment> (Visited on February 28, 202)

¹⁶ Ecodefense! (n.d.). "About us". available at: <https://www.ecodefense.ru/about/> (Visited on February 20, 2021).

¹⁷ Barefoot College. (n.d.). Women's empowerment. (Visited on March 20, 2023) <https://www.barefootcollege.org/what-we-do/womens-empowerment/> (Visited on February 28, 2023).

¹⁸ Merriam-Webster Dictionary. available at: <https://www.merriam-webster.com/dictionary/environment>. (Visited on February 28, 2023).

¹⁹ Merriam-Webster Dictionary, available at: <https://www.merriam-webster.com/dictionary/environment>. (Visited on March 28, 2023).

managing and conserving resources for their families, whether exploring water or protecting forest resources.²⁰ Policymakers and governments began recognizing the correlation between the environment and gender issues in the 1980s, leading to natural resources and environmental management changes with women's specific roles in mind.²¹ According to the World Bank, women are essential in managing natural resources, possess traditional and contemporary knowledge of the natural world, and contribute significantly to environmental rehabilitation and conservation.²² Women's interdependence with nature is supported by studies demonstrating their base and skills in natural resource management, superior management abilities, environmental sensitivity, and high ecological consciousness.²³

2.1 Concept of Ecofeminism

Ecofeminism is a branch of feminism that draws connections between the oppression of women and the degradation of the natural environment. Eco-feminists argue that patriarchal and capitalist systems are the root causes of women's exploitation and the destruction of nature.²⁴ Patriarchy is a social system that privileges men over women, and it is characterized by the

²⁰ Kalinda Griffiths. "The Interdependence of Women and Nature." United Nations. ,2013, available at: https://www.un.org/esa/socdev/csw/csw59/documents/Griffiths_Kalinda.pdf (Visited on March 02, 2020).

²¹ United Nations Environment Programme. "Gender and the Environment", 2013 available at: <https://www.unep.org/resources/report/gender-and-environment> (Visited on March 02, 2021).

²² World Bank. "Environment: Women in Development.", available at: <https://www.worldbank.org/en/topic/environment/brief/environment-women-in-development> (Visited on March 02, 2020).

²³ Poonam Tiwari and Anubha Srivastava, Role of Women in Environmental Conservation: A Review, *Journal of Environmental Protection* 4, no. 9 (2013): 1134-1141.

²⁴ G. Gaard, Ecofeminism revisited: Rejecting essentialism and re-placing species in a material feminist environmentalism. *Feminist Formations*, (2011) 24(2), 26-53.

subordination of women, the control of women's bodies, and the use of violence to maintain male dominance. Capitalism, on the other hand, is an economic system that prioritizes profit over people and the planet, and it is characterized by the exploitation of workers and the depletion of natural resources.

Eco-feminists argue that these systems work together to perpetuate environmental destruction and the oppression of women. For example, the destruction of the environment often involves the exploitation of women's labour, particularly in industries such as agriculture, forestry, and fishing. A study by the International Labour Organisation found that women in agricultural industries earn between 10 and 30 percent less than men.²⁵ Women are also disproportionately affected by environmental disasters, such as droughts, floods, and hurricanes,²⁶ which can lead to food shortages, displacement, and increased rates of violence against women.²⁷ Studies have also shown that women are more likely than men to suffer from the effects of climate change, such as increased rates of malnutrition and health problems.²⁸ A study by the United Nations found that women and girls are 14 times more likely to die

²⁵ ILO. (2011). Women, gender and green jobs. , available at: https://www.ilo.org/wcmsp5/groups/public/--ed_emp/documents/publication/wcms_157932.pdf (Visited on April 16, 2022).

²⁶ UN Women. (2018). Women and the environment. , available at: <https://www.unwomen.org/-/media/headquarters/attachments/sections/library/publications/2018/womenandtheenvironmentfactsandfigures.pdf?la=en&vs=438> (Visited on April 16, 2022).

²⁷ United Nations Development Programme. (2019). Gender and the environment. , available at: <http://www.undp.org/content/undp/en/home/librarypage/womens-empowerment/gender-and-the-environment.html> (Visited on June 15, 2021).

²⁸ UN Women. (2018). Women and the environment. , available at: <https://www.unwomen.org/-/media/headquarters/attachments/sections/library/publications/2018/womenandtheenvironmentfactsandfigures.pdf?la=en&vs=438> (visited on April 25, 2020).

in a natural disaster than men.²⁹ Additionally, women are often excluded from decision-making processes related to environmental policy, even though they are disproportionately affected by environmental degradation.³⁰ A United Nations Development Programme study found that women represent only 24% of national parliamentarians globally. This means that women's perspectives and experiences are often overlooked in policy discussions related to the environment.³¹

The eco-feminist movement has its roots in the feminist movements of the 1960s and 1970s, which focused on issues such as reproductive rights, workplace discrimination, and domestic violence. As feminist movements grew, some women began to connect these issues with environmental concerns, recognizing that the same systems that oppressed women were also responsible for environmental degradation. The term "ecofeminism" was coined by the French feminist Françoise d'Eaubonne in her 1974 book *Le Féminisme ou la Mort* (Feminism or Death), in which she argued that patriarchal societies were destroying the planet.^{32,33} Eco-feminists argue that addressing the root causes of environmental degradation and the oppression of women requires a fundamental transformation of society.³⁴ This transformation would involve dismantling patriarchal and capitalist systems and developing

²⁹UNISDR, Making women's resilience visible, (2015), available at: https://www.unisdr.org/files/44301_womensresiliencevisible.pdf (Visited on April 5, 2022).

³⁰ *Ibid.*

³¹ United Nations Development Programme. (2019). Gender and the environment, available at: <http://www.undp.org/content/undp/en/home/librarypage/womens-empowerment/gender-and-the-environment.html> (Visited on February 28, 2020).

³² Françoise d'Eaubonne, *Le Féminisme ou la Mort* (Paris: Pierre Horay, 1974).

³³ Greta Gaard and Lori Gruen, ed., *Ecofeminism: Feminist Intersections with Other Animals and the Earth* (New York: Bloomsbury Academic, 2014).

³⁴ Maria Mies and Vandana Shiva, *Ecofeminism* (Zed Books, London, 1993).

alternative, more sustainable, and equitable ways of living. Some eco-feminists advocate for a return to traditional, indigenous ways of living, prioritizing the interconnectedness of humans and the natural world and rejecting capitalist societies' exploitative and individualistic values.³⁵ Others argue for developing new, post-capitalist economic systems prioritizing people and the planet over profit. One example of a post-capitalist economic system that eco-feminists have proposed is the idea of a "caring economy."³⁶ A caring economy is one that prioritizes the well-being of people and the environment over profit. This type of economy would involve providing essential goods and services, such as healthcare, education, and childcare, as well as protecting and restoring the natural environment.³⁷

3. Women and Climate Change

3.1 Climate Change: A Human Rights Crisis

Climate change is increasingly recognized as a matter of social justice that threatens the ability of individuals to fully exercise their human rights. The United Nations Universal Declaration of Human Rights recognizes that every person has the right to life, liberty, and security of person and that all humans are born equal in dignity and rights.³⁸ Climate change impacts vital human rights, including the rights to life, health, food, water, sanitation, housing, development,

³⁵ Vandana Shiva, *Biopiracy: The Plunder of Nature and Knowledge* (South End Press, Boston, 1997).

³⁶ Gibson-Graham, Katherine, Jenny Cameron, and Stephen Healy (eds.), *Take Back the Economy: An Ethical Guide for Transforming Our Communities*, 131-148 (University of Minnesota Press, 2015).

³⁷ Karen Warren, *The Power and the Promise of Ecological Feminism*, *Environmental Ethics* 12, no. 2 (1990): 125-146.

³⁸ United Nations. Universal Declaration of Human Rights, available at: <https://www.un.org/en/universal-declaration-human-rights/> (Visited on March 08, 2021).

education, and participation in social, cultural, and economic spheres.³⁹

The United Nations Universal Declaration of Human Rights asserts that every person has the right to life, liberty, and security of the person in Article 3 and that all humans are born equal in dignity and rights. Article 19 also establishes that individuals are entitled to freedom of expression and opinion, including the right to receive and disseminate information and ideas through any media without interference or restrictions. Therefore, the Declaration stipulates that states must take effective measures against foreseeable or avoidable loss of life and ensure the right to life, equal access to information and education, and freedom to participate in their society's cultural and economic life.⁴⁰

The United Nations Universal Declaration of Human Rights (UDHR) also recognizes the right to an adequate standard of living, including food, clothing, and housing, in Article 25. Climate change can impact the realization of these rights, as natural disasters and extreme weather events, such as hurricanes, floods, and droughts, can cause loss of life, displacement, and damage to infrastructure and housing.⁴¹ Additionally, climate change can also affect the right to health, as it can exacerbate the spread of diseases and illnesses through altered weather patterns and ecological imbalances.⁴² Furthermore, the right to water and sanitation, recognized in Article 25 of the UDHR, can also be affected by climate change, for example, water scarcity can be exacerbated by droughts and

³⁹ United Nations Environment Programme. Climate Change and Human Rights, available at: <https://www.unep.org/resources/report/climate-change-and-human-rights> (Visited on May 8, 2022).

⁴⁰ United Nations General Assembly (1948), Universal Declaration of Human Rights, available at: <https://www.un.org/en/about-us/universal-declaration-of-human-rights> (Visited on March 18, 2023).

⁴¹ United Nations. (2016), "Human Rights and Climate Change", available at: https://www.ohchr.org/Documents/Publications/HR_and_climate_change.pdf (Visited on January 08, 2021).

⁴² *Ibid.*

changes in precipitation patterns, while floods can contaminate water sources and lead to waterborne diseases.⁴³ Additionally, climate change can impact the right to education, as children, particularly girls, may be forced to drop out of school to help with household chores or migrate due to climate-related disasters.⁴⁴ The right to participate in cultural life and the enjoyment of benefits from scientific progress and its applications, which are recognized in Article 27 of the UDHR, can also be impacted by climate change, as traditional knowledge and cultural practices may be lost due to environmental factors degradation and displacement caused by climate change.⁴⁵

Climate change affects vital human rights, including the rights to life, health, food, water, sanitation, housing, development, education, and participation in social, cultural, and economic spheres. It can even impact the right to self-determination in some communities. Additionally, the failure to address climate change can have intergenerational implications, depriving future generations of their basic human rights to a healthy and sustainable environment.⁴⁶

Everyone has the right to participate actively, freely, and meaningfully in decision-making and planning processes affecting global climate and weather. This participation should also encompass the right to receive a prior assessment of the consequences of proposed actions on climate change and human rights and the right to a fair hearing. Additionally, underrepresented groups have the right to participate in safeguarding their land, natural resources, property rights, and cultural heritage.⁴⁷ Climate

⁴³ *Ibid.*

⁴⁴ *Ibid.*

⁴⁵ *Ibid.*

⁴⁶ United Nations Population Fund, "Women, Girls, and Climate Change", available at: <https://www.unfpa.org/resources/women-girls-and-climate-change>, (Visited on March 17, 2023).

⁴⁷ United Nations Human Rights Office of the High Commissioner, "Climate Change and Human Rights", available at:

change exacerbates gender inequality and discrimination, negatively impacting women's rights. Many countries fail to give women the right to be informed about and participate in decision-making processes concerning changes to their physical and natural environments, including the land on which they depend for their health and survival. Women are frequently deprived of timely, clear, understandable, and accessible information without incurring financial burdens in many social contexts. These women are often denied the right to express and disseminate their opinions on climate change issues.⁴⁸

3.2 Climate Change and Women's Rights

Women contribute significantly to natural resource management and other productive and reproductive activities within households and communities. Despite this, authorities often do not acknowledge their role, leading to their exclusion from livelihood strategies adapted to changing environmental conditions. Several authors argue that society should recognize women's knowledge and skills and utilize them in strategies to mitigate the disastrous consequences of climate change. Allowing women to participate meaningfully in these policies would certainly improve the effectiveness and sustainability of climate change projects and programs.⁴⁹ Not only would acknowledging the role of women address existing social inequalities, but it would also fulfill international obligations to promote gender equality and empowerment.⁵⁰ Therefore, eco-feminists must foster a better

<https://www.ohchr.org/en/issues/environment/srclimatechange/pages/climatechangeandhumanrights.aspx>, (Visited on March 17, 2023).

⁴⁸ Usha Ramanathan, *Climate Change and Women's Human Rights: A Paradoxical Reality in India*, (Canadian Scholars' Press, Toronto, 2019).

⁴⁹ W. Neil Adger *et al.*, *Social-Ecological Resilience to Coastal Disasters*, (Science, Washington, D.C., 2005).

⁵⁰ Craig Leisher *et al.*, *Land and Water Conservation in East Africa: Conservation and Livelihoods Trade-Offs and Synergies*, (Routledge, London, 2016).

understanding of how climate change infringes women's human rights.⁵¹

The recognition of women's human rights has been an ongoing struggle throughout history. Women have been denied basic human rights and have had limited societal roles due to their gender. However, women have fought for their rights and have made significant progress towards achieving equality.⁵² The women's suffrage movement emerged in the 19th century, seeking to secure voting rights for women. In 1893, New Zealand became the first country to grant women the right to vote, followed by other countries such as Australia, Canada, and the United Kingdom.⁵³ In the 20th century, the feminist movement emerged, seeking to achieve equal rights for women in all spheres of life. The United Nations has played a crucial role in recognizing and protecting women's human rights. In 1979, the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) was adopted to eliminate discrimination against women in all areas of life, including political, social, and economic spheres.⁵⁴ Since then, various international declarations and treaties have been developed to protect women's human rights. The Beijing Declaration and Platform for Action in 1995 aimed to empower women and achieve gender equality. The United Nations Security Council Resolution 1325 in 2000 recognized the important role of women in peace and security.⁵⁵ According to the Vienna

⁵¹ Karen Warren, *The Power and Promise of Ecological Feminism*, (Environmental Ethics, Washington, D.C., 1990).

⁵² Rosenberg, J. (2020). Women's Rights Movement. , available at:<https://www.history.com/topics/womens-history/the-fight-for-womens-suffrage>. (Visited on May 08, 2021).

⁵³ Ibid.

⁵⁴ United Nations. (1979). Convention on the Elimination of All Forms of Discrimination against Women, available at: <https://www.un.org/womenwatch/daw/cedaw/>. (Visited on June 09, 2020).

⁵⁵ United Nations. (2000). United Nations Security Council Resolution 1325, available at:<https://www.un.org/womenwatch/osagi/wps/>. (Visited on March 08, 2023).

Declaration, safeguarding women's rights is essential to protecting human rights at large.⁵⁶ This Declaration addressed the inadequacies of the original 1948 document. Following the Vienna Declaration, the Program of Action at the Fifth World Conference of Women held in Beijing in 1995 recognized that women's sexual and reproductive freedoms are fundamental to human rights in general.⁵⁷ Women's reproductive rights include, the right to abortion, control over reproduction, birth control, protection against forced sterilization, the right to receive education on sexually transmitted infections, menstrual health, and protection against genital mutilation practices.⁵⁸

A growing body of evidence demonstrates that environmental degradation and climate change disproportionately impact women and girls across the world.⁵⁹ This reflects how gender inequalities intersect with socio-economic disadvantages, constraining women's rights and capabilities.⁶⁰ Some key areas where women experience amplified climate change burdens include:

3.2.1 Disaster Mortality

Multiple studies have documented higher female mortality rates from climate-related disasters like floods, cyclones, and storms. During the 1991 cyclone in Bangladesh, 90% of victims were

⁵⁶ United Nations General Assembly. "Vienna Declaration and Programme of Action", available at:<https://www.ohchr.org/en/professionalinterest/pages/vienna.aspx>. (Visited on April 05, 2020).

⁵⁷ United Nations. "Report of the Fourth World Conference on Women.", available at:<https://www.un.org/womenwatch/daw/beijing/pdf/Beijing%20full%20report%20E.pdf>. (Visited on April 25, 2022).

⁵⁸ International Women's Health Coalition. "Reproductive Rights are Human Rights", available at:<https://iwhc.org/resources/reproductive-rights-are-human-rights/>. (Visited on April 05, 2021).

⁵⁹ Shivani Chaudhry, *Gender Dimensions of Climate Change, in Climate Change and India: Governance and Policymaking* (2021).

⁶⁰ UN Women, *The Impact of Climate Change on Women and Children* (2020).

women.⁶¹ Analysis of disasters in 56 countries found significantly lower female survival rates compared to males.⁶² Reasons include lack of early warning access, mobility restrictions, and swimming ability.⁶³ After the 2004 Indian Ocean tsunami, male survivors outnumbered females by almost 3:1 in Indonesia and Sri Lanka.⁶⁴

3.2.2 Food Security

Women are more vulnerable to climate change-induced food insecurity. Female-headed households constitute 60-80% of the world's hungry population.⁶⁵ In India, 75% of anemia prevalence is among women driven by inadequate nutrition intake.⁶⁶ Rising temperatures, variable rainfall, and extreme events are decreasing agricultural yields and nutrition diversity, with women and children impacted the most.⁶⁷

3.2.3 Water Insecurity

Women bear primary responsibility for water collection in rural and poor urban households, resulting in major time and health burdens.⁶⁸ Climate disruptions like droughts are projected to increase women's water fetching time by up to 40% in some African nations, keeping away girls from school.⁶⁹ Water scarcity also hampers menstrual hygiene management, raising infection risks. In

⁶¹ Oxfam, *The Winds of Change: Climate Change, Poverty and the Environment in Malawi* (2002).

⁶² Kristie L. Ebi et al., *Gender Aspects of Health Impacts of Climate Change, in Global Climate Change and Public Health* (2014).

⁶³ Liana Sun Wyler & Pervaze A. Sheikh, *International Crisis and Disasters: U.S. Gender Issues* (Congressional Research Service Report, 2013).

⁶⁴ Oxfam International, *The Tsunami's Impact on Women* (2005).

⁶⁵ UN Women Watch, *Fact Sheet: Women, Gender Equality and Climate Change* (2009).

⁶⁶ Anemia Mukherjee, *Economic Cost of Anemia in India* (2019), in 107 *World Development Organization* 72-90 (2018).

⁶⁷ Ruth Meinzen-Dick et al., *Gender and Social Capital in Climate Change Adaptation in Gandhi's India: Gender and Water* 4, 96 (2019).

⁶⁸ UNDP, *Gender and Environment, in Gender and Climate Finance Policy Brief* (2016).

⁶⁹ UNESCO, *The United Nations World Water Development Report 2020: Water and Climate Change* (2020).

Orissa, 70% of girls reported missing school during menstruation due to a lack of clean water and toilets.⁷⁰

3.2.4 Health

Climate change is amplifying health risks in gendered ways.⁷¹ Heat stress mortality is significantly higher among women laborers in India.⁷² Indoor air pollution from solid cooking fuels causes 4.3 million premature deaths annually among women.⁷³ Migration and malnutrition impacts of crop failures, floods, etc., disproportionately affect maternal, sexual, and reproductive health.⁷⁴ Disease vectors like malaria already kill twice as many women as men in India.⁷⁵ Further spread due to warming and floods endanger women lacking healthcare access most.⁷⁶

3.2.5 Livelihoods

About 70% of the world's poor reliant on climate-sensitive livelihoods are women.⁷⁷ In India, 89% of female workers are in the highly climate-exposed agriculture sector and informal urban occupations.⁷⁸ Livelihood loss from declining land productivity, forests, fisheries, etc., leaves women with fewer income options

⁷⁰ Nidhiya Menon, "Gendered vulnerabilities to climate change: Insights from the semi-arid regions of Africa and Asia" (Act Adapt, 2021).

⁷¹ Kristie L. Ebi et al., "Gender Aspects of Health Impacts of Climate Change, in Global Climate Change and Public Health" (2014).

⁷² Anjali Jaiswal, "Women more vulnerable to heat stress, says new study - Down to Earth" (2020).

⁷³ WHO, *Inheriting a sustainable world: Atlas on children's health and the environment* (2017).

⁷⁴ Kristie L. Ebi et al., "Gender Aspects of Health Impacts of Climate Change, in Global Climate Change and Public Health" (2014).

⁷⁵ Rakhi Dandona et al., "Gender differentials and inequalities in malaria burden and access to care in India" (2021), *The Lancet Global Health*.

⁷⁶ Ruth Meinzen-Dick et al., "Gender and Social Capital in Climate Change Adaptation in Gandhi's India: Gender and Water" 96 (2019).

⁷⁷ UN Women Watch, Fact Sheet: Women, Gender Equality and Climate Change (2009).

⁷⁸ "Gandhi's India: Gender and Water" 96 (2019).

than men.⁷⁹ Post-disaster destitution drives negative coping, like risky migration, making women more vulnerable.⁸⁰

3.2.6 Natural Resource Access

Despite major contributions to agriculture, forests, fisheries, and livestock rearing, women lack secure rights over the threatened natural resources they depend on. Globally, women provide 43% of farm labor, but less than 20% of landholders are women.⁸¹ Biomass energy constitutes 40% of household energy in India, with women collecting 70-80% of fuelwood yet rarely holding forest rights.⁸² Such resource constraints limit women's climate adaptation capacities.

4. Gender Discrimination and Inequality in the Context of Climate Change

Climate change impacts are experienced differently by men and women due to underlying gender discrimination and persistent inequalities that constrain women's agency, rights, and opportunities in most societies.⁸³ This compounds women's climate vulnerabilities and shapes gender-differentiated capacities to respond to climate stresses.

4.1 Restricted Asset Ownership and Financial Resources

Due to patriarchal norms, women generally have inferior access to productive assets like land and housing that offer socio-economic security.⁸⁴ For instance, women own only about 15-20% of agricultural land globally despite providing over 40% of farm labor.⁸⁵

⁷⁹ IUCN, *Gender Issues in the IUCN Program 2017–2020* (2016).

⁸⁰ Internal Displacement Monitoring Centre, *Global Estimates 2015: People Displaced by Disasters* (2015).

⁸¹ World Bank, *Gender in Agriculture Sourcebook* (2009).

⁸² IFC, *Biomass Gasification based Power Generation in India: A Financial Analysis* (2015).

⁸³ UN Women, *The Impact of Climate Change on Women and Children* (2020).

⁸⁴ UNDP, *Gender, Climate Change and Food Security* (2016).

⁸⁵ UN Women, *Turning Promises into Action: Gender Equality in the 2030 Agenda for Sustainable Development* (2018).

While women and men have equal land rights by law in most countries, these are not implemented in over 60% of nations.⁸⁶ Lack of land titles reduces their climate resilience options like stress-resilient cropping, soil conservation, etc.⁸⁷ Lower ownership of other assets like livestock further limits adaptation capacities.⁸⁸ Additionally, financial exclusion severely restricts women's climate change coping capacities. Only about 37% of women worldwide have individual bank accounts, 11% lower than men.⁸⁹ Poor access to credit inhibits investments in alternate livelihoods during climate shocks.⁹⁰ Lack of insurance prevents recovery from climate disasters and uncertainties.⁹¹ Such asset and financial constraints dramatically reduce women's economic staying power in times of climate crisis.

4.2 Time Poverty and Domestic Burdens

Women undertake the major share of unpaid domestic work across regions. On average, women spend two and a half times more time on domestic tasks than men.⁹² Daily tasks like collecting biomass fuel, fetching water, and rearing livestock become more arduous with climate change pressures on local environments.⁹³ Girls also face greater school dropout risks as household adaptation responses to stressors like droughts involve sending daughters to

⁸⁶ UN Women, *Gender and Climate Change Under the Gender Action Plan (GAP)* (2018).

⁸⁷ UNDP, *Gender, Climate Change and Food Security* (2016).

⁸⁸ P.K. Aggarwal et al., "The climate-gender-poverty nexus: Reflections on the gender dimensions of climate change and poverty in Asia" (2009), UNDP-APRC Working Paper.

⁸⁹ World Bank, *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution* (2017).

⁹⁰ Oxfam, *Gender Issues in Climate-Smart Agriculture* (2017).

⁹¹ Kristie L. Ebi et al., Gender aspects of health impacts of climate change, in *Global Climate Change and Public Health*, 401 (2014).

⁹² UN Women, *Time to Act on Gender, Climate Change and Disaster Risk Reduction: An overview of progress in the Pacific region with evidence from The Republic of Marshall Islands, Vanuatu and Samoa* (2016).

⁹³ Lamissa Bangali et al., *The impact of disasters and crises on agriculture and food security 2017* (2018), FAO.

supplement family incomes.⁹⁴ In rural and urban areas, girls may have to walk up to 15km more daily to fetch water due to scarcity, reducing time for education or livelihoods.⁹⁵

Moreover, gendered social expectations assign women primary responsibility for care work, including caring for the sick and elderly.⁹⁶ This exacerbates women's work burdens during climate-induced health crises, from malnutrition to malaria outbreaks.⁹⁷ The resulting time poverty undermines women's economic and political participation central to climate action.

4.3 Exclusion from Decision Making

Women remain drastically underrepresented in climate change decision-making from the household to international levels. At the UNFCCC Conferences of Parties, the share of female national delegates averaged around 31% during 2017-2021.⁹⁸ In India, few women hold leadership positions, even in local forest management and water user groups that shape community resilience⁹⁹

Such exclusion from environmental governance often reflects wider socio-political marginalization. Women occupy only about 25% of national legislative seats globally.¹⁰⁰ Lack of voice and agency in turn, prevents gender issues from being adequately addressed in climate policies and programs. Promoting women's leadership is vital to evolving climate solutions that equitably respond to women's needs and priorities.

⁹⁴ UNICEF, *Unless we act now: The impact of climate change on children* (2015).

⁹⁵ GGCA, *Gender and Climate Change: A Closer Look at Existing Evidence* (2016).

⁹⁶ UN Women Watch, *Women, Gender Equality and Climate Change* (2009).

⁹⁷ WHO, *Gender, climate change and health* (2014).

⁹⁸ Women Deliver, *Women's Rights at COP26: Key Asks from the Climate Justice Movement* (2021).

⁹⁹ Bina Agarwal, "Participatory exclusions, community forestry, and gender: An analysis for South Asia and a conceptual framework", *29 World development* 1623-1648 (2001).

¹⁰⁰ UN Women, *Facts and Figures: Leadership and Political Participation* (2020).

4.4 Information, Technology and Training Gaps

Women often lack equitable access to climate-relevant information, technologies, and training that support adaptation. For instance, only about 15% of extension officers globally are women, limiting outreach to female farmers.¹⁰¹ Traditional exclusion from quality education also constrains women's climate awareness.

In India, a study showed only 27% of women farmers received some climate-smart agriculture training versus 57% of men.¹⁰² There is also a significant gender gap in access to resilient agricultural technologies like sprinklers and climate-tolerant seeds that require secure land tenure.¹⁰³ Such biases diminish women's capacity to implement protective climate actions.

4.5 Violence and Health Risks

Climate shocks and scarcity worsen the risks of violence and health impacts for women. Climate change also amplifies risks of maternal undernutrition, infections, and gender-based violence for women.¹⁰⁴ Economic stressors like crop failure and livestock loss increase domestic violence.¹⁰⁵ Early marriage of girls also rises as a negative household coping mechanism during climate adversity.¹⁰⁶ Further, disasters heighten risks of sexual exploitation and abuse in temporary shelters when protective social networks break down.¹⁰⁷ Relief shelter conditions after climate disasters raise safety

¹⁰¹ Neelam Pandey, "Mainstreaming gender into climate change policies and actions: Challenges and opportunities", *20 Local Environment 193-210* (2015).

¹⁰² Sulagna Maitra, "Gender issues in climate change discourse: theory versus reality", *2 Earth Perspectives 1-12* (2015).

¹⁰³ Bina Agarwal, "Food Security, Productivity and Gender Inequality" (2018), IEG Working Paper No. 335.

¹⁰⁴ WHO, *Gender, climate change and health* (2014).

¹⁰⁵ Anuj Sharma, *et al.*, "Gender-based violence before, during and after cyclones: Critical insights, in *Disaster Prevention and Management*" (2016).

¹⁰⁶ OXFAM, *The winds of change: Climate change, poverty and the environment in Malawi* (2002).

¹⁰⁷ Sarah Bradshaw, "Women, girls and disasters: A review for DFID", 84 (2013).

concerns and health access barriers for women.¹⁰⁸ Women's reproductive health is also threatened by climate disruptions. Deforestation increases sexual violence risks when women venture further to collect biomass.¹⁰⁹ Heat exposure and disasters hamper maternal health.¹¹⁰ Discrimination in food allocation causes malnutrition disproportionately among mothers and daughters.¹¹¹ Thus, gender compounds wider health vulnerabilities.

In summary, women enter climate crises facing structural disadvantages rooted in socio-cultural gender discrimination. Transforming unequal gender relations is imperative to dismantle barriers women face as stakeholders in climate action. Integrated policies are needed targeting the gender gaps in rights, resources and opportunities that enhance women's climate vulnerabilities. Only gender-transformative climate solutions can be truly equitable, resilient and just.

4.6 Disaster-Related Gender Disparities

In the 2015 Nepal earthquakes, women and children accounted for 55% of the fatalities.¹¹² Factors contributing to this gender disparity included male migration for work, traditional gender roles confining women to their homes, and women prioritizing caregiving responsibilities during evacuation. Similarly, during the 2004 Indian

¹⁰⁸ Relief shelter conditions after climate disasters raise safety concerns and health access barriers for women.

¹⁰⁹ WHO, *Gender, climate change and health* (2014).

¹¹⁰ Kristie L. Ebi, et al., "Gender aspects of health impacts of climate change, in *Global Climate Change and Public Health*", 401 (2014).

¹¹¹ UN Women Watch, *Women, Gender Equality and Climate Change* (2009).

¹¹² Government of Nepal National Planning Commission, *Nepal Earthquake 2015: Post Disaster Needs Assessment. Vol. B: Sector Reports*, (Nepal Kathmandu, 2015), available at: <https://www.worldbank.org/content/dam/Worldbank/document/SAR/nepal/PDNA%20Volume%20A%20Final.pdf> (Visited on February 11, 2022).

Ocean Tsunami, women experienced considerably higher mortality rates compared to men.¹¹³

5. The Pandemic's Impact on Women and the Environment

The COVID-19 pandemic has significantly impacted women's lives and the environment. Women have been disproportionately affected by the pandemic, both in terms of health and socio-economic consequences. At the same time, the pandemic has highlighted the critical link between human activity and the natural environment, emphasizing the need for a more sustainable and equitable world.

The pandemic has had a devastating impact on women's health, with women making up a majority of frontline healthcare workers and caregivers. According to the World Health Organization (WHO), women account for 70% of the global healthcare workforce, putting them at higher risk of exposure to COVID-19.¹¹⁴ Furthermore, women have been more likely to experience severe COVID-19 symptoms and death, with studies showing that women have a higher mortality rate than men.¹¹⁵

The pandemic has also exacerbated existing gender inequalities, with women more likely to experience job losses and reduced work hours due to the economic downturn caused by COVID-19. The International Labour Organization (ILO) estimates that women's employment is 19% more at risk than men's employment as a result

¹¹³ Maila D.H. Rahiem, Husni Rahim, & Robin Ersing, "Why did so many women die in the 2004 Aceh Tsunami? Child survivor accounts of the disaster," *International Journal of Disaster Risk Reduction*, vol. 55 (2021), 102069, ISSN 2212-4209, available at <https://www.sciencedirect.com/science/article/pii/S2212420921000352>, accessed on (Visited on March 16, 2020).

¹¹⁴ World Health Organization (WHO), *Women, Gender Equality and COVID-19*, 2021, available at: <https://www.who.int/emergencies/disease-outbreak-news/item/2020-DON-01> (Visited on March 28, 2022).

¹¹⁵ C. Wenham, J. Smith, and R. Morgan, "COVID-19: The gendered impacts of the outbreak," *The Lancet* 395(10227): 846-848 (2020).

of the pandemic.¹¹⁶ Women are also more likely to work in sectors that have been hit hard by the pandemic, such as hospitality, retail, and tourism.

The economic impact of the pandemic has also affected women's ability to access healthcare, education, and other essential services. The UN estimates that up to 47 million women and girls could be pushed into poverty as a result of the pandemic.¹¹⁷ This has led to a significant increase in domestic violence, with the UN reporting a 60% increase in domestic violence cases in some countries during the pandemic.¹¹⁸

The pandemic's impact on the environment has been complex and varied, with some positive and negative outcomes. One of the most significant positive impacts has been the reduction in greenhouse gas emissions and air pollution due to reduced transportation and industrial activity. According to the International Energy Agency (IEA) report, global carbon emissions are estimated to have fallen by 6% in 2020 due to the pandemic.¹¹⁹

However, the pandemic has also highlighted the vulnerability of many communities to environmental disasters, such as floods, storms, and wildfires. As the world focuses on fighting the pandemic, it has become more challenging to address the ongoing

¹¹⁶ International Labour Organization (ILO), *Women at Work: Trends 2021*, 2021, available at: https://www.ilo.org/global/publications/books/WCMS_832088/lang-en/index.htm (Visited on April 08, 2022).

¹¹⁷ United Nations (UN), *COVID-19 and Human Rights: We are all in this together*, 2021, available at: https://www.un.org/sites/un2.un.org/files/un_policy_brief_on_covid_and_human_rights_-_may_2020.pdf (Visited on May 6, 2022).

¹¹⁸ United Nations (UN), *Violence against Women and Girls: The Shadow Pandemic*, 2021, available at: <https://www.unwomen.org/-/media/headquarters/attachments/sections/library/publications/2021/vawg-covid-19-web-final.pdf?la=en&vs=5006> (Visited on March 18, 2022).

¹¹⁹ International Energy Agency (IEA). *Global Energy Review 2021*, available at: <https://www.iea.org/reports/global-energy-review-2021/co2-emissions> (Visited on June 15, 2022).

climate crisis, which continues to pose a significant threat to global food security and water resources. According to the Food and Agriculture Organization (FAO), an estimated 821 million people suffered from hunger in 2018, and the COVID-19 pandemic could push an additional 130 million people into hunger.¹²⁰

The pandemic has highlighted the urgent need for a comprehensive approach to address the interrelated challenges of gender inequality and environmental degradation. Investing in women's rights and gender equality can have a significant impact on both environmental sustainability and public health.¹²¹ Women's education and access to resources can improve food security and increase resilience to climate change.¹²² Involving women in decision-making processes related to climate action can also lead to more effective and equitable solutions.¹²³

Furthermore, the pandemic has provided an opportunity to rethink our relationship with the natural world and create a more sustainable and resilient future. Governments and businesses around the world have introduced policies and initiatives to promote green recovery and accelerate the transition to a low-carbon economy. For example, the European Union has proposed a €750 billion recovery package called "Next Generation EU," which aims to support the recovery of member states' economies through

¹²⁰ Food and Agriculture Organization (FAO). *The State of Food Security and Nutrition in the World 2020*, available at: <http://www.fao.org/3/ca9692en/CA9692EN.pdf> (Visited on March 15, 2023).

¹²¹ United Nations Environment Programme, "Gender and Environment", available at: <https://www.unenvironment.org/explore-topics/gender-and-environment> (Visited on February 05, 2021).

¹²² Food and Agriculture Organization of the United Nations, "Gender," available at: <http://www.fao.org/gender/gender-home/gender-and-food-security/en/> (Visited on May 05, 2022).

¹²³ United Nations Framework Convention on Climate Change, "Gender and Climate Change," available at: <https://unfccc.int/topics/gender/workstreams/gender-and-climate-change> (Visited on April 05, 2022).

investments in green technologies and sustainable infrastructure.¹²⁴ The €750 billion package is designed to support the recovery of EU member states' economies from the economic impact of the COVID-19 pandemic through investments in green technologies and sustainable infrastructure. The package includes a mix of grants and loans to support investments in areas such as renewable energy, sustainable transport, energy-efficient buildings, digital transformation, and innovation. The package is intended to support the EU's broader goal of achieving climate neutrality by 2050 and promoting a more sustainable and resilient economy. Similarly, many countries have introduced policies to promote renewable energy, reduce plastic waste, and protect biodiversity.¹²⁵

It is very evident that the COVID-19 pandemic has highlighted the critical link between human activity, the environment, and gender equality. Women have been disproportionately affected by the pandemic, and climate change continues to pose a significant threat to global food security and water resources, with women being particularly vulnerable. However, the pandemic has also provided an opportunity to build a more sustainable and equitable world by investing in women's rights, promoting green recovery, and accelerating the transition to a low-carbon economy. As we look towards the future, it is essential to address the interrelated challenges of gender inequality and environmental degradation and work towards a more resilient and sustainable future for all.¹²⁶

¹²⁴ European Commission, "Next Generation EU," available at: https://ec.europa.eu/info/strategy/recovery-plan-europe_en (Visited on February 28, 2021).

¹²⁵ World Wildlife Fund, "Environmental Policy," available at: <https://www.worldwildlife.org/pages/environmental-policy> (Visited on March 05, 2022).

¹²⁶ United Nations Development Programme, "COVID-19 and the SDGs", available at: <https://www.undp.org/content/undp/en/home/coronavirus/sdgs-covid-19.html> (Visited on March 05, 2023).

6. Realizing the Sustainable Development Goals through Gender-Responsive Climate Action

The Sustainable Development Goals (SDGs) are a set of 17 goals adopted by all United Nations Member States in 2015, aiming to achieve sustainable development and leave no one behind.¹²⁷ One of the most important interconnections between the SDGs is gender equality and climate action.¹²⁸ Gender equality is not only a fundamental human right but also a necessary foundation for a peaceful, prosperous, and sustainable world. Empowering women and achieving gender equality are key to combating the effects of climate change and achieving the Sustainable Development Goals (SDGs). Here are some key reasons why gender equality is crucial for achieving all the SDGs and fighting against climate change:

Women disproportionately face climate change impacts like poverty, resource constraints, and care burdens.¹²⁹ Their vulnerability is compounded by exclusion from climate decision-making.¹³⁰ Mainstreaming gender is imperative for effective climate policies and unlocking women's potential as change agents. An integrated analysis reveals how each SDG intersects with gender and climate:

SDG 1 (No Poverty) - Climate extremes push more women into poverty by eroding assets and livelihoods.¹³¹ Women's poverty curtails their capacity to cope with climate shocks and stresses.¹³²

¹²⁷ UNDESA, *The 17 goals* (2022).

¹²⁸ UN Women, *Turning Promises into Action: Gender Equality in the 2030 Agenda for Sustainable Development* (2018).

¹²⁹ OECD, *Women and Climate Change in the ACT Alliance: Insights from Kenya and Ethiopia* (2020).

¹³⁰ IUCN, *The Environment and Gender Index 2021* (2021).

¹³¹ UNDP, *Gender, Climate Change and Food Security* (2016).

¹³² Oxfam, *Suffering the Science: Climate Change, People and Poverty* (2009).

SDG 2 (Zero hunger) - Women farmers are vital for food production but lack climate adaptation resources like credit, insurance, and stress-resilient seeds.¹³³

Climate disruptions exacerbate women’s household nutritional deficits, undermining food security.¹³⁴

Fig. 1: Gender equality relationship with other SDGs Goal



Source: Google

SDG 3 (Good Health) - Climate change escalates health risks for women, from respiratory disease to mental stress, while constraining their access to healthcare.¹³⁵ Pregnancy-related mortality rises with heat, floods, etc. due to women’s vulnerabilities.¹³⁶

SDG 4 (Quality Education) - Girls are pulled from schools early to assist families during climate disasters and stresses.¹³⁷ Damage to

¹³³ FAO, Training Guide: Gender and Climate Change Research in Agriculture and Food Security for Rural Development (2013).

¹³⁴ WHO, *Gender, Climate Change and Health* (2014).

¹³⁵ UNDP, *Human Development Report 2007/2008* (2007).

¹³⁶ UNFPA, *The State of World Population 2020* (2020).

¹³⁷ Brookings Institute, *Girls’ education and climate change* (2021).

educational infrastructure from extreme weather events disproportionately harms girls.¹³⁸

SDG 5 (Gender Equality) - Climate change impacts reflect and amplify existing gender inequalities.¹³⁹ Women's empowerment is pivotal for inclusive, equitable climate solutions.¹⁴⁰

SDG 6 (Clean Water and Sanitation) - Women bear primary responsibility for water collection facing heightened challenges with climate variability.¹⁴¹ Reduced water access due to climate change undermines women's health, hygiene, and domestic burdens.¹⁴²

SDG 7 (Affordable and Clean Energy) - Women are trapped in energy poverty with income, asset, and technological constraints on energy access.¹⁴³ Clean cooking solutions yield major health dividends but often bypass women.¹⁴⁴

SDG 8 (Decent Work and Economic Growth) - Climate change threatens women's informal livelihoods and lack of social protection.¹⁴⁵ Transitioning to a green economy can create employment opportunities that benefit women.¹⁴⁶

SDG 9 (Industry, Innovation, and Infrastructure) - Women have limited input into climate-resilient infrastructure design and

¹³⁸ Save the Children, *Beyond the Shadows: How education can adapt to climate change* (2020).

¹³⁹ UN DESA, *The World's Women 2020: Trends and Statistics* (2020).

¹⁴⁰ IUCN, *The Environment and Gender Index 2021* (2021).

¹⁴¹ UNESCO, *United Nations World Water Development Report 2020* (2020).

¹⁴² WHO, *Gender, Climate Change and Health* (2014).

¹⁴³ ENERGIA, *Why a gender perspective is key to successful energy access programs* (2019).

¹⁴⁴ Clean Cooking Alliance, *Why gender matters* (2022).

¹⁴⁵ International Labour Organization, "A quantum leap for gender equality: For a better future of work for all" (2019).

¹⁴⁶ UNEP, *Green Economy Report: A Preview* (2010).

planning.¹⁴⁷ Innovations often neglect women's needs and traditional knowledge.¹⁴⁸

SDG 10 (Reduced Inequalities) - Climate change entrenches gender, economic and social divides.¹⁴⁹ Inclusive climate action centered on social justice principles can bridge inequalities.¹⁵⁰

SDG 11 (Sustainable Cities and Communities) - Women in informal settlements face heightened climate risks with inadequate housing, services, and tenure.¹⁵¹ Participatory urban governance and planning are key to resilience benefitting women.¹⁵²

SDG 12 (Responsible Consumption and Production) - Women are drivers of household consumption choices influencing emissions.¹⁵³ Sustainable waste management innovations by women entrepreneurs promote a circular economy.¹⁵⁴

SDG 13 (Climate Action) - Women's representation in climate policy spaces remains below parity, undermining inclusion.¹⁵⁵ Realizing women's knowledge and leadership is vital for effective, equitable solutions.¹⁵⁶

SDG 14 (Life Below Water) - Climate change threatens women's livelihoods dependent on marine resources.¹⁵⁷ Women's

¹⁴⁷ Huairou Commission, *Localizing Paris: Integrating Gender Equality Principles and Priorities in Climate Change Planning at the Local Level* (2019).

¹⁴⁸ UNESCO, *UNESCO Science Report: the gender gap in science* (2021).

¹⁴⁹ Mary Robinson Foundation, *Women's Participation - An Enabler of Climate Justice* (2013).

¹⁵⁰ Plan International, *Weathering The Storm: Adolescent Girls and Climate Change* (2013).

¹⁵¹ Huairou Commission, *\$42 billion climate solution* (2022).

¹⁵² WEDO, *Local Leaders: Rethinking leadership, rethinking climate change* (2020).

¹⁵³ European Institute for Gender Equality, *Gender in environment and climate change* (2020).

¹⁵⁴ GA Circular, *How These Women Eco-Entrepreneurs Are Closing the Loop* (2019).

¹⁵⁵ IUCN, *The Environment and Gender Index 2021* (2021).

¹⁵⁶ UN Women, *Time to Act on Gender, Climate Change and Disaster Risk Reduction* (2016).

¹⁵⁷ FAO, *Gender dimensions in fisheries and aquaculture* (2020).

participation strengthens local fisheries governance and adaptation.¹⁵⁸

SDG 15 (Life on Land) - Environmental degradation exacerbates women's labor across forests, farms, and livestock.¹⁵⁹ Women's stewardship of nature promotes biodiversity conservation and regeneration.¹⁶⁰

SDG 16 (Peace, Justice and Strong Institutions) - Climate stresses trigger violence against women while eroding social cohesion.¹⁶¹ Inclusive climate institutions upholding women's rights are imperative.¹⁶²

SDG 17 (Partnerships for the Goals) - Cross-sectoral actions linking gender, climate, and development are essential.¹⁶³ Women's groups offer critical knowledge for multi-stakeholder climate initiatives.¹⁶⁴ At last, it can be said that the 2030 Agenda cannot be achieved without empowering women and girls as change agents in climate action. Gender equality and women's empowerment are integral to achieving the SDGs and addressing the impacts of climate change. The interlinkages between women, climate change, and the SDGs are evident in each of the 17 goals, highlighting the need for a gender-responsive approach to sustainable development. By promoting gender equality and empowering women, we can build a more sustainable and equitable future for all.

¹⁵⁸ USAID, *Improving Gender Equity in Coastal Resources Management* (2020).

¹⁵⁹ FAO, *Training Guide: Gender and Climate Change Research in Agriculture and Food Security for Rural Development* (2013).

¹⁶⁰ UN Environment, *Towards a Pollution-Free Planet* (2017).

¹⁶¹ UNDP, *Strengthening Post-Disaster Reconstruction with Local Women Entrepreneurs* (2018).

¹⁶² Mary Robinson Foundation, *Women's Participation - An Enabler of Climate Justice* (2013).

¹⁶³ UNESCAP, *Gender, the Environment and Sustainable Development in Asia and the Pacific* (2021).

¹⁶⁴ Huairou Commission, *Localizing Paris: Integrating Gender Equality Principles and Priorities in Climate Change Planning at the Local Level* (2019).

Table 1: Types of Vulnerabilities due to climate change and its Differentiated impact on Women

Vulnerabilities	Differentiated impact on women due to climate change
Economic	<ul style="list-style-type: none"> • Women are more likely to work in agriculture and fishing, which are highly vulnerable to climate change impacts, such as droughts, floods, and ocean acidification. • Women often have limited access to productive resources, such as land, credit, and technology, which reduces their adaptive capacity. • Women are disproportionately represented in low-wage and informal jobs, which are less likely to have access to social protections during climate-related disruptions.
Social	<ul style="list-style-type: none"> • Women and girls are often responsible for household water and fuel collection, which becomes more difficult during droughts or extreme weather events. • Women and girls are at higher risk of gender-based violence during and after disasters due to disrupted social norms and services, increased poverty, and weakened protection mechanisms. • Women often have limited mobility and decision-making power, which reduces their ability to access and respond to climate-related risks and opportunities. • Women are often responsible for caring for the sick, elderly, and children, who are more vulnerable to climate-related health impacts.
Mental	<ul style="list-style-type: none"> • Women are more likely to experience anxiety, depression, and post-traumatic stress disorder following climate-related disasters, due to increased caregiving

Vulnerabilities	Differentiated impact on women due to climate change
	<p>responsibilities, social and economic stress, and loss of community support networks.</p> <ul style="list-style-type: none"> • Women and girls often experience greater stress and mental health impacts due to the loss of livelihoods and social support networks during and after climate-related disasters.
Ecological	<ul style="list-style-type: none"> • Women have traditional ecological knowledge that can help inform climate change adaptation strategies, but decision-makers often overlook and undervalue this knowledge. • Women are often involved in ecosystem management and restoration efforts, which can disrupt climate change impacts, such as changes in rainfall patterns, flooding, and sea-level rise. • Women often rely more on ecosystem services for their livelihoods and well-being, such as fuelwood, water, and medicinal plants, which are vulnerable to climate change impacts.
Political	<ul style="list-style-type: none"> • Women are often underrepresented in decision-making positions related to climate change adaptation and mitigation due to cultural and institutional barriers, lack of access to education and training, and gender stereotypes. • Women’s perspectives and experiences of climate change impacts are often overlooked or dismissed in decision-making processes, leading to less effective and equitable policies and interventions. • Women’s participation and leadership in climate change adaptation and mitigation

Vulnerabilities	Differentiated impact on women due to climate change
	efforts can help increase the effectiveness, equity, and sustainability of these efforts.
Physical	<ul style="list-style-type: none"> • Women are often more physically vulnerable to climate change impacts, such as heat stress, due to differences in body composition, workloads, and clothing requirements. • Women and girls are often more vulnerable to vector-borne diseases, such as dengue fever and malaria, which are likely to increase with climate change. • Women and girls often have limited access to reproductive health services during and after disasters, which can lead to increased maternal mortality and morbidity. • Women and girls are often more likely to suffer from malnutrition during and after disasters due to reduced access to food and healthcare services.

7. Women as Change Agent

Agroecology: Women hold rich indigenous knowledge of climate-resilient farming and nutrition.¹⁶⁵ A study by the Food and Agriculture Organization of the United Nations found that African women farmers are more likely to use traditional knowledge and practices to adapt to climate change than men farmers.¹⁶⁶ This is because women have a deeper understanding of the local environment and are more likely to be familiar with climate-resilient

¹⁶⁵ International Center for Research on Women, *Women's Knowledge and Collective Power: Climate Change and Gender in Africa*, 2014.

¹⁶⁶ Food and Agriculture Organization of the United Nations, *The State of Food Security and Nutrition in the World*, 2019.

crops and practices.¹⁶⁷ Women's knowledge and practices can be used to develop more sustainable and resilient agricultural systems.

Water Management: Women's participation enhances village resource sustainability many fold. A study by the World Bank found that women's participation in water management can lead to increased water availability and improved sanitation.¹⁶⁸ This is because women are more likely to be responsible for collecting water and managing household water use. Women's participation in water management can help to ensure that everyone has access to clean water, even during times of drought.

Energy: Clean cooking initiatives require women-centered design for health gains. Indoor air pollution from cooking with biomass fuels is a major cause of respiratory diseases, such as pneumonia and lung cancer. Women and girls are disproportionately affected by these diseases.¹⁶⁹ Clean cooking initiatives designed with women's needs in mind can help reduce indoor air pollution and improve health outcomes for women and girls, for example, clean cooking initiatives should provide access to cleaner fuels and stoves that are safe and easy to use.

Early Warning Systems: Women's inputs strengthen preparedness, lowering mortality. Early warning systems can help to save lives by providing information about impending natural disasters. Women are often the first to notice changes in the weather, and they can play a key role in disseminating early warning information to their communities. A study by the World Bank found that early warning systems can reduce mortality from natural disasters by up to 30%.¹⁷⁰ By including women in designing and implementing early warning systems, we can make them more effective in reaching the people who need them most.

¹⁶⁷ United Nations Development Programme, *Gender and Natural Resource Management: Livelihoods, Mobility and Interventions*, 2012.

¹⁶⁸ World Bank, *Water and Sanitation Program: Women in Water Management*, 2011.

¹⁶⁹ United Nations Development Programme, *Clean Cooking Solutions for Sustainable Development*, 2015.

¹⁷⁰ World Bank, *Natural Disaster Hotspots: A Global Risk Analysis*, 2005.

Disaster Resilience: Women-led rebuilding leverages resourcefulness for recovery. Women are often the ones who are left to rebuild their homes and communities after a disaster. They are also more likely to be affected by a disaster's economic and social impacts. Women-led rebuilding initiatives can help to ensure that communities are more resilient to future shocks. These initiatives can also help to empower women and improve their economic opportunities.¹⁷¹ For example, women-led rebuilding initiatives can focus on using local materials and labor, which can help to reduce costs and build community resilience.

Climate Leadership: Enhancing women's policymaking roles improves social inclusion. Women are often excluded from decision-making processes about climate change. This is despite the fact that they are disproportionately affected by climate change.¹⁷² By increasing women's participation in climate policymaking, we can ensure that their voices are heard and that climate solutions are more inclusive. Gender-responsive climate action is essential for building a more sustainable and equitable future.¹⁷³

8. Women at the Forefront of Environmental Activism

Across geographies, women have been at the vanguard of grassroots environmental movements defending nature and mobilizing climate action. Their approaches embody interconnected ethics of care, justice, and sustainability.

8.1 Prominent Female Environmentalists Leading Global Movements

(a) Wangari Maathai and the Green Belt Movement

Wangari Maathai founded the Green Belt Movement in Kenya in 1977, which has planted over 51 million trees and empowered women through income-generating nurseries and environmental

¹⁷¹ United Nations Development Programme, *Women's Leadership in Disaster Risk Reduction*, 2017.

¹⁷² United Nations Development Programme, *Gender and Climate Change: Overview Report*, 2013.

¹⁷³ World Bank, *Gender Equality and Development*, 2012.

education.¹⁷⁴ This grassroots initiative has reforested large parts of Africa, combatting desertification and soil erosion. Maathai became the first African woman awarded the Nobel Peace Prize in 2004, recognizing her contribution to sustainable development, democracy, and peace.

(b) Lois Gibbs and Love Canal

Lois Gibbs led efforts since the late 1970s to investigate toxic dumping in Love Canal, New York, and mobilize citizen action despite corporate and government inaction.¹⁷⁵ Her pioneering environmental justice advocacy sparked national outrage over polluted communities, spurring the creation of a federal Superfund cleanup program. Gibbs later founded the Center for Health, Environment, and Justice, supporting grassroots activism against environmental health threats.

(c) Berta Cáceres and Anti-Dam Activism

Berta Cáceres co-founded the National Council of Popular and Indigenous Organizations of Honduras (COPINH), leading Lenca communities to fight illegal appropriation of their traditional lands and rivers for multinational dam projects.¹⁷⁶ She was assassinated in 2016 for her non-violent resistance but inspired a transnational movement for climate justice and corporate accountability.

(d) Greta Thunberg and the School Strikers Movement

At age 15 in 2018, Greta Thunberg initiated the School Strike for Climate outside the Swedish Parliament, sparking a global movement of youth civil disobedience demanding urgent climate

¹⁷⁴ The Green Belt Movement, *Our Story*, available at: <https://www.greenbeltmovement.org/who-we-are/our-story> (Visited on May 8, 2021).

¹⁷⁵ Sierra Club, *Lois Gibbs and the Love Canal*, available at: <https://vault.sierraclub.org/sierra/199705/gibbs.asp> (Visited on March 10, 2020).

¹⁷⁶ Goldman Environmental Foundation, *Berta Cáceres 2015*, available at: <https://www.goldmanprize.org/recipient/berta-caceres/> (Visited on April 15, 2021).

action.¹⁷⁷ Her persistent lobbying of world leaders to address intergenerational climate inequities has spotlighted policy laggards and shifted public discourse.

(e) Rachel Carson's Silent Spring

Marine biologist Rachel Carson documented indiscriminate pesticide use's environmental and public health hazards in her seminal 1962 book *Silent Spring*, countering chemical industry propaganda.¹⁷⁸ By igniting grassroots ecological awareness, she pioneered modern environmentalism and spurred the establishment of the US Environmental Protection Agency.

8.2 Women-Led Conservation Initiatives Worldwide

(a) Mothers of Plaza de Mayo and Pesticide Regulation

The Mothers of Plaza de Mayo in Argentina expanded their demands from seeking justice for the disappeared in the country's Dirty War to lobbying against hazardous pesticides causing health issues and congenital disabilities in the 1980s.¹⁷⁹ Their activism succeeded in getting pesticide aerial spraying banned nationally.

(b) Marina Silva's Sustainability Reforms in Brazil

As environment minister from 2003-2008, Marina Silva, Brazil's first Indigenous cabinet member, created conservation areas protecting large Amazon regions, advanced sustainability policies, and reduced deforestation rates through participatory monitoring.¹⁸⁰ Her environmental leadership has empowered forest communities and mobilized climate action across Latin America.

¹⁷⁷ Fridays for Future, Greta Thunberg, available at: <https://fridaysforfuture.org/greta-thunberg/> (Visited on May 10, 2022).

¹⁷⁸ NRDC, *The Story of Silent Spring*, available at: <https://www.nrdc.org/stories/story-silent-spring> (Visited on June 15, 2022)

¹⁷⁹ Latin American Studies, *Mothers of Plaza de Mayo*, available at: <https://www.latinamericanstudies.org/argentina/plaza-de-mayo.htm> (Visited on May 24, 2021).

¹⁸⁰ Goldman Environmental Foundation, Marina Silva 1991, available at: <https://www.goldmanprize.org/recipient/marina-silva/> (Visited on June 15, 2020).

(c) The Green Belt Movement's Pan-African Reach

Drawing inspiration from Wangari Maathai's initiative, the Green Belt Movement has catalyzed women-led tree planting and sustainable land management projects across Sub-Saharan Africa.¹⁸¹ Over 15 million trees have been planted in Kenya alone since 1977, enabling community reforestation, agriculture, and livelihood activities led by rural women.

8.3 Eco-feminist Movements for Environmental Justice

(a) Standing Rock Sioux Tribe against the Dakota Pipeline

Standing Rock Sioux women like LaDonna Brave Bull Allard established protest camps in 2016 against the Dakota Access oil pipeline threatening Indigenous water sources and sacred sites.¹⁸² Their leadership of massive demonstrations demanding environmental justice and Indigenous rights created global ripples of solidarity.

(b) Reoccupation of Ancestral Lands in Kenya

In Kenya, the Kasigau women's group reoccupied 5,000 acres of ancestral grazing land in 2017 that a colonial British company took over decades ago.¹⁸³ Their successful protests led the government to return the land, now operated as a community-owned wildlife conservancy providing livelihoods for locals.

(c) Extinction Rebellion's Civil Disobedience Campaign

Co-founded in Britain in 2018 by activists including Gail Bradbrook and Clare Farrell, Extinction Rebellion has mobilized mass civil

¹⁸¹ The Green Belt Movement, *Who We Are*, available at: <https://www.greenbeltmovement.org/who-we-are/our-story> (Visited on June 12, 2020).

¹⁸² Sierra Club, *Women Lead Fight Against Dakota Pipeline*, available at: <https://www.sierraclub.org/sierra/2017-2-march-april/feature/women-lead-fight-against-dakota-pipeline> (Visited on July 23, 2021).

¹⁸³ Cultural Survival, *Victory for Ogiek Women in Kenya*, available at: <https://www.culturalsurvival.org/news/victory-ogiek-women-kenya> (Visited on May 24, 2020).

disobedience to demand urgent climate action.¹⁸⁴ This decentralized, women-led movement using nonviolent resistance has spread worldwide, pushing governments through direct action.

(d) Spreading Climate Literacy

Women scientists like paleoclimatologist Jacquelyn Gill are engaging wider publics on climate change research through initiatives like “The Wikieducator Project” training college educators.¹⁸⁵ Katharine Hayhoe, an atmospheric scientist and evangelical Christian, promotes faith-based environmental stewardship.¹⁸⁶ Their efforts are building climate literacy and mobilization.

8.4 Indian Women at the Helm of Eco-Activism

(a) Legacy of Early Environmental Struggles

Indian women have a long legacy of environmental activism. Amrita Devi led protests against tree felling in 1731 that cost her life but saved the forest.¹⁸⁷ In the 1970s, Gaura Devi mobilized women to ‘hug trees’ and stop their cutting, sparking the Chipko movement. Their pioneering actions inspired nationwide forest conservation efforts.

(b) Medha Patkar and the Narmada Bachao Andolan

Activist Medha Patkar founded the Save Narmada Movement in 1985, opposing the Sardar Sarovar dam’s displacement of lakhs of

¹⁸⁴ Extinction Rebellion, *About Us*, available at: <https://extinctionrebellion.us/about-extinction-rebellion/> (Visited on March 8, 2022).

¹⁸⁵ Big Think, *Meet the Scientist Teaching AI to Think like a Geologist*, available at: <https://bigthink.com/technology-innovation/jacquelyn-gill-ai-think-geologist?rebelltitem=1#rebelltitem1> (Visited on May 28, 2021).

¹⁸⁶ Katharine Hayhoe, available at: <https://www.katharinehayhoe.com/about-page.html> (Visited on May 23, 2022).

¹⁸⁷ Down to Earth, *Women and Forest Rights*, available at: <https://www.downtoearth.org.in/coverage/women-and-forest-rights-21668> (Visited July 24, 2022).

locals.¹⁸⁸ Through Gandhian civil resistance, she spotlighted impacts on women, farmers, Adivasis, and the environment, securing major rehabilitation concessions throughout the project continues.

(c) Sunita Narain and the Centre for Science and Environment

Sunita Narain has driven national debates on pesticides, air pollution, waste management and climate justice through evidence-based research and advocacy at the Center for Science and Environment.¹⁸⁹ Her leadership has advanced environmental policy reforms in India using a gender lens.

(d) Vandana Shiva and Navdanya

Seed saver, eco-feminist, and environmentalist Vandana Shiva founded Navdanya in 1984 to promote biodiversity conservation, organic farming, and farmers' rights, particularly for women.¹⁹⁰ With over a million members, this grassroots movement has enhanced women's climate resilience across India through ecological alternatives.

(e) Contemporary Women Conservationists

Rashida Bee and Champa Devi Shukla, Bhopal gas survivors, have for over 30 years fought for environmental justice from corporations.¹⁹¹ Activist Sumaira Abdulali has championed the protection of coastal ecosystems, leading beach cleanups and anti-plastic campaigns.¹⁹² Licypriya Kangujam, an 11-year-old climate activist, has advocated worldwide for intergenerational climate justice and India's net zero

¹⁸⁸ The Right to Livelihood Award, Medha Patkar Laureate 1989, <https://www.rightlivelihoodaward.org/laureates/medha-patkar/> (Visited on August 14, 2021).

¹⁸⁹ Centre for Science and Environment, About Us, available at: <https://www.cseindia.org/about-us> (Visited on June 18, 2021).

¹⁹⁰ Navdanya, Dr Vandana Shiva, available at: <https://navdanya.org/site/vandana-shiva/> (Visited on August 12, 2021).

¹⁹¹ Al Jazeera, Bhopal Gas Leak Survivors Still Wait for Justice, available at: <https://www.aljazeera.com/news/2019/12/3/bhopal-gas-leak-survivors-still-wait-for-justice-35-years-on> (Visited on May 12, 2020).

¹⁹² Hindustan Times, Meet Sumaira Abdulali, available at: <https://www.hindustantimes.com/static/meet-sumaira-abdulali-the-crusader-who-brought-noise-pollution-laws-to-india/> (Visited on May 16, 2021).

policy.¹⁹³ A new generation of Indian women continues leading the sustainability movement.

(f) Some more Examples

Solar Sister has trained over 2,600 women in Sub-Saharan Africa as clean energy entrepreneurs, providing solar lamps and clean cook stoves in rural communities.¹⁹⁴ Based in India, Barefoot College has trained over 100,000 women worldwide as solar engineers under its Women Barefoot Solar Initiative, including in Africa, Latin America, and Asia.¹⁹⁵

La Via Campesina, led by Elizabeth Mporu, has mobilized women farmers worldwide to advance agroecology and food sovereignty through small farmer networks spanning 81 countries.¹⁹⁶ The Rural Women's Assembly meets annually to build climate resilience among grassroots women farmers globally through agroecology training, seed-saving, and policy advocacy.¹⁹⁷

Marshall Islands women leaders like President Hilda Heine have raised international awareness of climate threats facing small island nations, like sea level rise, calling for accelerated global action.¹⁹⁸ Grenadian women's groups planted mangrove forests to reduce

¹⁹³ Business Insider, Licypriya Kangujam, available at: <https://www.businessinsider.in/india/people/8-year-old-lilly-from-india-challenging-world-leaders-to-act-on-climate-change/articleshow/86577679.cms> (Visited on March 14, 2021).

¹⁹⁴ Solar Sister, *What We Do*, available at: <https://solarsister.org/what-we-do/> (Visited on March 18, 2021).

¹⁹⁵ Barefoot College, Women Barefoot Solar Engineers, available at: <https://www.barefootcollege.org/solution/women-barefoot-solar-engineers/> (Visited on June 12, 2020).

¹⁹⁶ La Via Campesina, Women, available at: <https://viacampesina.org/en/women/> (Visited on August 23, 2021),

¹⁹⁷ Rural Women's Assembly, About Us, available at: <https://ruralwomensassembly.com/about-us> (Visited on July 19, 2020).

¹⁹⁸ UNFCCC, *First Female President Calls for Urgent Climate Change Action*, available at: <https://unfccc.int/news/first-female-president-of-marshall-islands-calls-for-urgent-climate-change-action> (Visited on March 16, 2021).

coastal erosion and protect shorelines after Hurricane Ivan in 2004 under education programs led by Susan Wong.¹⁹⁹

Under Dr. Vandana Shiva's leadership, Navdanya has trained over 500,000 men and women farmers, especially in northern India, in organic farming, seed saving, and food sovereignty over the past three decades.²⁰⁰ Rajendra Singh co-founded the NGO Tarun Bharat Sangh in 1975, facilitating women-led village forest regeneration and water harvesting initiatives in arid rural Rajasthan that have brought rivers back to life.²⁰¹

Women members of Mahila Housing Sewa Trust have enhanced access to drinking water in slums across four states by installing community rooftop rainwater harvesting systems benefitting over 50,000 households.²⁰² Tribal women from villages in Odisha and Jharkhand earn livelihoods as green energy entrepreneurs under Gram Oorja training programs on assembling small solar lighting systems.²⁰³ In Karnataka, female-led self-help groups (SHGs) of the micro-finance organization Myrada have financed domestic biogas plants, helping rural communities access clean cooking energy.²⁰⁴

The above examples highlight women's vital contributions worldwide in leading grassroots environmental movements

¹⁹⁹ CANARI, Grenada's Coastal Ecosystems Get a Helping Hand, available at: <https://canari.org/grenadas-coastal-ecosystems-get-a-helping-hand/> (Visited on May 18, 2021).

²⁰⁰ Navdanya, Dr Vandana Shiva, available at: <https://navdanya.org/site/vandana-shiva/> (Visited on December 15, 2021).

²⁰¹ Tarun Bharat Sangh, Rajendra Singh, available at: 'The Waterman of India', <https://www.tarunbharatsangh.in/about-us.php?id=founder> (Visited on June 14, 2021).

²⁰² Mahila Housing Trust, Roofwater Harvesting, available at: <https://mahilahousingtrust.org/roof-water-harvesting/> (Visited on September 23, 2020).

²⁰³ Gram Oorja, Women's Empowerment through Clean Energy, available at: <https://www.gramoorja.in/> (Visited on October 16, 2021).

²⁰⁴ The Hindu, How SHGs lighting up villages, available at: <https://www.thehindu.com/news/national/karnataka/how-shgs-lighting-up-villages/article7978129.ece> (Visited on July 12, 2021).

deploying innovative, context-specific solutions that enhance climate resilience while empowering communities.

9. Conclusion

The relationship between women, the environment, and climate change is complex and multifaceted. Women and girls are disproportionately affected by environmental degradation and climate change due to social, economic, and cultural factors. Climate change is a global problem that affects everyone, but it significantly impacts marginalized communities, including women and girls. The effects of climate change, such as rising temperatures, sea-level rise, and extreme weather events, exacerbate existing social inequalities, putting women's human rights at risk. Women are often the primary caregivers in families and communities and bear the brunt of the impacts of environmental degradation, such as water scarcity, food insecurity, and health problems. Climate change also exacerbates gender-based violence and discrimination, with women and girls facing increased risks of sexual violence and exploitation in the context of disasters and displacement. To address these issues, it is crucial to incorporate a gender perspective into climate change policies and strategies. This means recognizing the differentiated impacts of climate change on women and men and ensuring that women's voices and perspectives are included in decision-making processes related to climate change. It also means addressing the root causes of gender inequality, including unequal access to resources, education, and economic opportunities, which exacerbate women's vulnerability to environmental degradation and climate change.

A human rights-based approach to climate change recognizes that every person has the right to a safe, healthy, and sustainable environment. Climate justice seeks to address the unequal distribution of the benefits and burdens of climate change, with a focus on protecting the rights and interests of marginalized communities, including women and girls. This approach requires strong partnerships between governments, civil society, and the

private sector to ensure that climate change policies are inclusive, transparent, and accountable.

There are many ways to promote women's rights and gender equality in the context of climate change. One key strategy is to invest in women's leadership and participation in climate action, including in decision-making processes at all levels. This means providing training, capacity-building, and mentorship opportunities for women and girls to become climate leaders in their communities, organizations, and governments.

Another strategy is to ensure that climate change policies and strategies prioritize the needs and priorities of women and girls, including their access to resources, such as water, land, and energy, and their ability to participate in sustainable livelihoods. This means developing gender-sensitive indicators to monitor the impact of climate change policies on women and girls and ensuring that funding mechanisms for climate action prioritize women's needs and priorities.

In conclusion, the relationship between women, the environment, and climate change is complex and requires a comprehensive approach that recognizes the differentiated impacts of climate change on women and men. A human rights-based approach to climate change is essential to ensure that everyone's rights are protected in the context of environmental degradation and climate change. To achieve climate justice, it is crucial to promote women's rights and gender equality and ensure that women's voices and perspectives are included in decision-making processes related to climate change.