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Georgetown Institute for
Women, Peace and Security

Inclusive Adaptation:

*A Benefit Multiplier for Climate Action and
Women, Peace and Security*

CLARA CHIU, JESSICA M. SMITH, AND LAUREN OLOSKY

Authors

Clara Chiu, 2021-2022 Hillary Rodham Clinton Fellow, Georgetown Institute for Women, Peace and Security

Dr. Jessica M. Smith, Research and Policy Director, Georgetown Institute for Women, Peace and Security

Lauren Olosky, Analyst, Dalberg and Former Research Assistant, Georgetown Institute for Women, Peace and Security

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To contact the Institute or the authors of this report, email: giwps@georgetown.edu.

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Executive Summary

The impacts of climate change are sending shock waves through communities around the world. Scaled-up adaptation efforts that support those most impacted by the climate crisis are urgently needed.

Individuals on the frontlines, many of whom are women, are struggling to cope with the daily challenges of a warming planet, often in contexts with overlapping forms of insecurity, including poverty, conflict, gender inequality, and state fragility.¹ It is well documented that climate change exacerbates conditions that drive insecurity and violent conflict, with disproportionate impacts on women and girls. For this reason, climate change is becoming a critical consideration for the field of women, peace and security (WPS). To date, the field has largely focused on the gendered impacts and vulnerabilities of the climate crisis and paid less attention to the potential for inclusive climate response to address overlapping forms of insecurity. Climate change is widely understood as a risk multiplier, but this report shows how the meaningful inclusion of women in climate adaptation could be a *benefit* multiplier by strengthening climate response, gender equality, and security.

Research shows that the well-being of women goes hand in hand with the well-being of nations. Put differently, in countries where women are doing better, societies are more peaceful and stable—and better prepared to respond to the effects of climate change.² Given the interlinking dynamics of climate change and conflict, addressing insecurity in one area can have a stabilizing effect on other areas. For this reason, inclusive climate adaptation—interventions that address climate-driven insecurities while bolstering women's economic empowerment, expanding opportunities for women's livelihoods and education, and strengthening women's role in decision-making—can lead to both better climate outcomes and greater peace and security.

This report focuses on the widespread benefits of women's meaningful participation in local-level climate action within the agriculture and energy sectors, which are two key entry points for climate change adaptation. Significant resources are being mobilized to support sustainability within these sectors, which have historically generated negative climate impacts. Sustained efforts are needed to ensure women benefit equally from these investments. Importantly, women are not only beneficiaries of climate interventions; they also have a leading role to play in developing solutions. Inclusive approaches to climate adaptation can help interventions reach their fullest potential to address the devastating impacts of climate change, as well as other forms of insecurity that threaten peace and stability.

Through a comprehensive review of available literature, we identified several projects that offer illustrative examples of inclusive adaptation efforts within the agriculture and energy sectors.³ These projects highlight the benefits of inclusive approaches and offer models and practices that could be replicated or scaled up. For example, through training in climate-resilient agro-ecological techniques, a project with women farmers in West Africa allowed them to improve crop yields, save labor, and reduce water use. In Southern Egypt, introducing resilient agricultural practices,

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as well as women-targeted loan programs to fund small and mid-size enterprises, has been an effective climate adaptation intervention with widespread benefits for women's empowerment and reductions in community competition for resources. A private rural energy company in Bihar, India, partnered with SEWA, a national trade union of women workers from the informal economy, to establish a women-led energy cooperative to increase community access to energy and strengthen women's economic empowerment. In Tanzania, Nigeria, and Kenya, a nonprofit organization supports women entrepreneurs to address energy poverty and reliance on nonrenewable energy through the sale of solar-powered products and clean cookstoves, positively impacting communities and women's livelihoods.

Each of these examples underscores how women's meaningful participation in local-level adaptation can translate into greater economic empowerment and decision-making power. These aspects of women's inclusion are also central dimensions of peace and security.⁴ As the well-being of women increases, we can expect countries to become more stable and less prone to conflict. Thus, inclusive adaptation has the potential both to prevent and mitigate various forms of insecurity and to accelerate progress toward gender equality.



Woman testing soil health in Western Kenya.
Photo: © 2016 CIAT/Georgina Smith

The report identifies five key actions for inclusive adaptation that can increase the potential for interventions to generate positive outcomes for climate resilience, gender equality, and security.

- **Address barriers to inclusion to ensure that women have equal access to project participation and resources.** Gender analysis and community-based needs assessments should be used by project designers and implementers to identify barriers and incentives for engaging women in training for agro-ecological activities and clean energy use. Addressing these barriers in project design can significantly increase women's access to and control of resources, as well as their decision-making power, not only within climate interventions, but also more broadly, because these barriers often arise from structural and social forms of inequality.
- **Increase women's access to information, education, and technology.** To meaningfully participate in solutions, women must have access to information about climate change, education on what it means for their livelihoods, and technology that will allow them to effectively respond to its impacts. When women understand how climate change can affect them and why it is important to adapt their practices, they are more likely to be receptive to climate interventions. Expanding women's access to these critical resources can bolster livelihood security and strengthen women's decision-making power.
- **Provide training and support for women as entrepreneurs and design consultants.** Efforts to support women as entrepreneurs and design consultants can improve financial security, ensure that products meet community needs, and increase the likelihood that technology will be adopted. Mentorship and support networks can encourage women to take on leadership positions and strengthen their ability to meaningfully inform solutions.
- **Address critical gaps in knowledge through additional research and case studies.** More research is needed to inform gender-responsive interventions, to identify best practices that can be replicated and scaled up, and to promote investments in inclusive approaches that generate impact. Additional case studies from diverse geographical areas, including countries experiencing both conflict and climate impacts, are needed to create a richer evidence base. Participatory approaches that include women in generating knowledge about challenges and solutions within communities could surface important insights for policy and programming that may be overlooked by top-down research.
- **Obtain buy-in and funding for gender-responsive, community-centered climate solutions.** Key stakeholders including governments, the private sector, multilateral bodies, and civil society must work together with those most impacted by the climate crisis to create collective solutions and comprehensive responses. To generate impact, these efforts must be matched with adequate resourcing and dedicated funding mechanisms to ensure resources reach women.

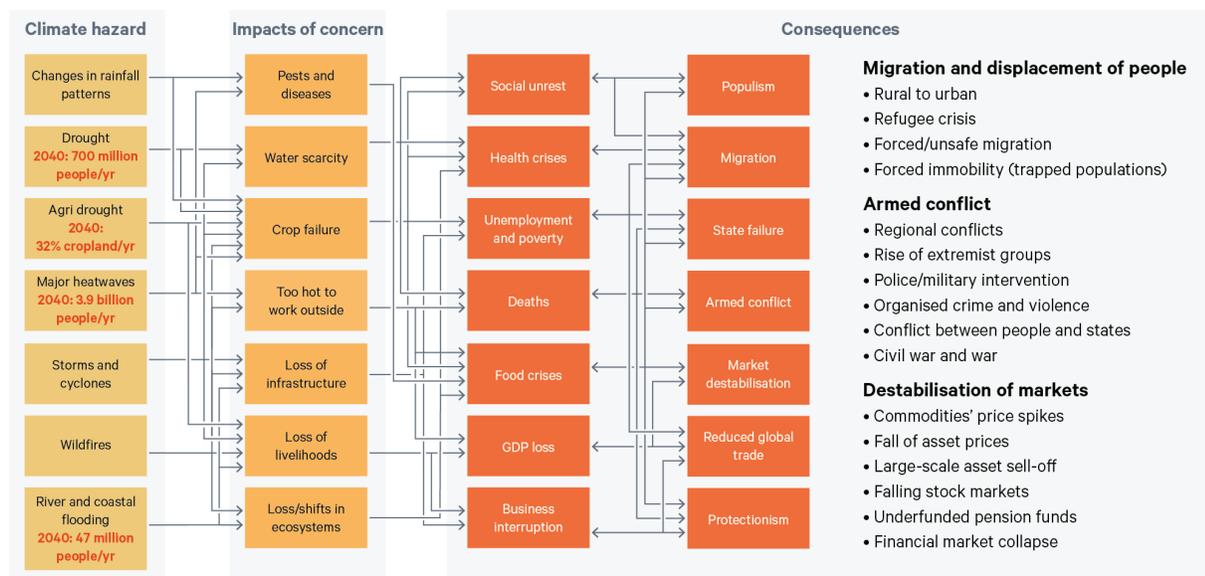
Investing in women is not only the right thing to do, it is also the smart thing to do. Inclusive approaches to local-level climate adaptation will lead to better outcomes, accelerate progress toward gender equality, and create a more secure and just planet for all.

Climate Change: A Threat to Women, Peace and Security

The current climate landscape is already showing clear signs of stress and disruption, which are predicted to become more dire. An alarming report by the Intergovernmental Panel on Climate Change (IPCC) concluded that human influence has warmed the Earth's climate at an unprecedented rate and that the world will grow more than 2°C warmer this century.⁵ Such a rise in temperature would pose serious risks to essential aspects of human life: it would increase exposure to severe drought in urban areas, lead to frequent severe heatwaves, and increase rates of infection for diseases such as malaria and dengue fever.⁶

Climate change is widely viewed as a threat multiplier,⁷ because it not only causes direct negative impacts on environmental systems (e.g., depletion of natural resources, rises in sea level, more frequent and severe natural disasters), but also drives secondary risks. As illustrated in figure 1, climate-induced loss of livelihoods can lead to political instability, population displacements, poverty, and hunger.⁸ These factors contribute to heightened state fragility,⁹ which can drive increases in violent conflict¹⁰ and thus pose a threat to peace and security.¹¹

Figure 1. Risk dynamics stemming from climate hazards



Source: Daniel Quiggin et al., "Climate Change Risk Assessment 2021," Chatham House, 2021, 36, <https://www.chathamhouse.org/sites/default/files/2021-09/2021-09-14-climate-change-risk-assessment-quiggin-et-al.pdf>.

Climate vulnerability and state fragility are interlinking and reinforcing: in 26 of the 39 states classified as highly fragile by the United States Agency for International Development (USAID) in 2018, a large proportion of the population faced significant climate risks.¹² This is unsurprising, as research shows that climate change, by straining natural resources and creating livelihood insecurity, can aggravate underlying tensions that exacerbate conflict.¹³ In turn, wars and other types of

violence, such as invasions and destruction of property, can degrade and diminish natural resources and reinforce climate risks.¹⁴ The link between climate vulnerability and state fragility is further demonstrated by the fact that many of the factors that undermine security, including poverty, weak governance, and political marginalization, are the same factors that reduce adaptive capacity to climate change.¹⁵ High levels of gender inequality can significantly contribute to political violence¹⁶ and create additional forms of insecurity. Research has also shown that states with pervasive gender inequality are more likely to go to war,¹⁷ be the first to use violence in interstate disputes,¹⁸ and suffer from intrastate conflict.¹⁹

Gender shapes how individuals experience and respond to the impacts of both climate change and fragility.²⁰ Preexisting vulnerabilities and patterns of discrimination rooted in structural inequalities—including discriminatory gender norms, gendered distribution of labor, and gendered access to healthcare, income, and livelihoods²¹—put women and other marginalized groups at a major disadvantage when absorbing and recovering from climate shocks. They also create added barriers to women’s participation in solutions and hinder decision-making power. For example, women are responsible for a disproportionate share of unpaid labor globally. In places that lack reliable access to electricity or running water, women are largely responsible for collecting water and fuel for households.²² Climate change increases the time required for these activities, which in turn increases women’s and girls’ exposure to gender-based violence and makes it harder for women to pursue other activities such as education or income generation, thereby perpetuating cycles of poverty and decreasing human security.

Gender shapes how individuals experience and respond to the impacts of both climate change and fragility.

Increased extreme climate disasters across the globe underscore the urgency for action. Current discourse on climate action largely focuses on mitigation, or drastically reducing or preventing greenhouse gas emissions. Adaptation, or the process of adjustment to actual or expected climate change and its effects,²³ remains underresourced and underemphasized. According to the United Nations Environment Programme (UNEP), “estimated adaptation costs, and likely adaptation financing needs in developing countries, are five to ten times greater than current international public adaptation finance flows.”²⁴ Climate change mitigation is essential, as it can reduce the severity and frequency of *future* climate impacts, but adaptation strategies are needed now to cope with *current* climate impacts.

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Communities that contribute the least to the climate crisis are some of the most vulnerable to its impacts.²⁵ The Global South is already at the forefront of the consequences of climate change, including droughts, flooding, and food insecurity.²⁶ Many of these impacts are widespread and irreversible,²⁷ and it is estimated that 85 percent of the world’s population resides on land impacted by human-induced climate change.²⁸ The prioritization of climate change mitigation and adaptation should not be viewed as an either/or dilemma—ambitious intervention is urgently needed on both fronts. This report emphasizes that adaptation at the local level must be supported alongside sweeping mitigation efforts by countries and corporations most responsible for climate impacts.²⁹ When this action is inclusive, it can serve as a benefit multiplier, leading to better climate outcomes and greater peace and security.

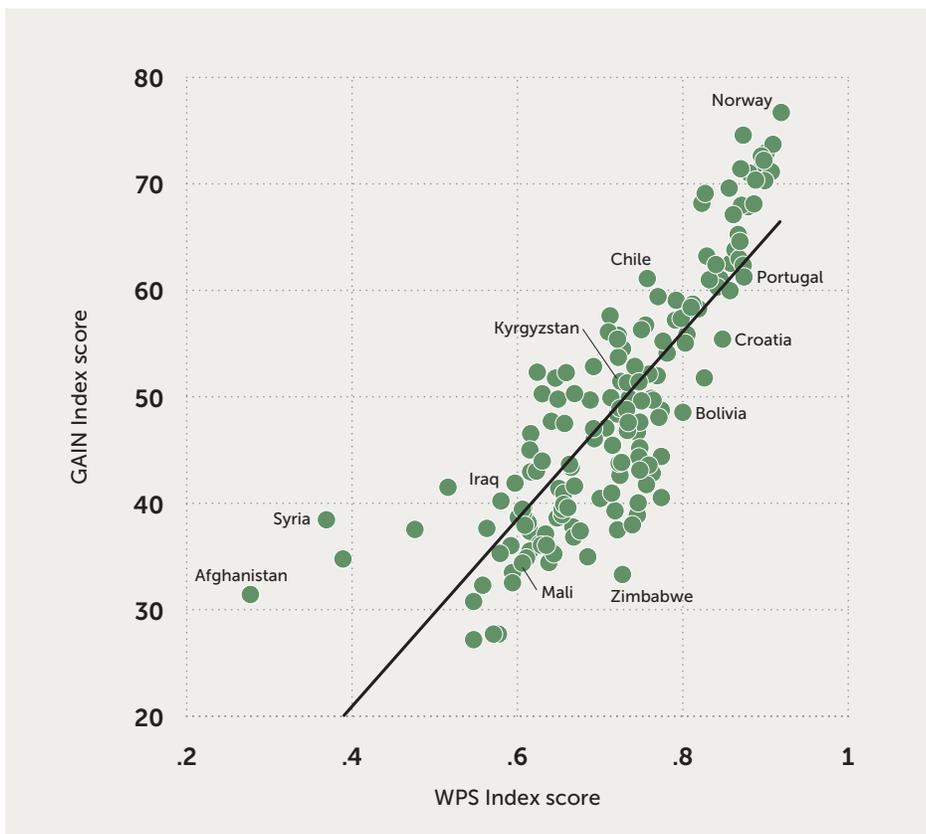
The inextricable link between climate change and fragility means that climate-driven insecurity must be addressed alongside conflict-driven insecurity. Climate change multiplies risk, though for some individuals and communities these risks are greater than others. Gender inequality creates heightened insecurity and uneven impacts of crises on women. Academics, policymakers, and practitioners working on issues of

women, peace and security (WPS) increasingly recognize climate change as a key driver of insecurity.³⁰ Climate action that promotes the inclusion of women has the potential to prevent and mitigate some of these risks and to bolster women’s well-being. These outcomes would positively benefit the goals of the WPS agenda,³¹ which calls for women’s meaningful inclusion in all aspects of conflict prevention, conflict resolution, and peacebuilding. WPS research finds that women’s inclusion in economic, social, and political opportunities is a key dimension of women’s well-being³² and that states where women are doing better are also more peaceful and stable.³³ Put differently, the well-being of nations and the well-being of women go hand in hand.³⁴ Moving the needle on gender equality is essential to successful climate response and to issues of peace and security.

Analysis from the 2021/22 WPS Index, which measures women’s well-being in 170 countries, found that countries that score better on the WPS Index are also better positioned to address climate change.

“Gender-responsive”³⁵ adaptation projects can accelerate progress toward gender equality while simultaneously addressing the security threat of climate change. Research shows a strong correlation between gender equality and “climate resilience.”³⁶ Analysis from the 2021/22 WPS Index, which measures women’s well-being in 170 countries, found that countries that score better on the WPS Index are also better positioned to address climate change (see figure 2).³⁷ These findings underscore why investing in women will be critical to effective climate change adaptation efforts.

Figure 2. Countries that do better on the WPS Index are less vulnerable to climate change and better prepared to respond



Source: Georgetown Institute for Women, Peace and Security and Peace Research Institute Oslo, *Women, Peace and Security Index 2021/22: Tracking Sustainable Peace through Inclusion, Justice, and Security for Women* (Washington, DC: GIWPS and PRIO), 51, <https://giwps.georgetown.edu/wp-content/uploads/2021/11/WPS-Index-2021.pdf>.

Bolstering Women’s Inclusion Through Local-Level Climate Adaptation

Successful climate adaptation can address existing impacts and avert worsening conditions, preventing further harm to the environment while bolstering peace and security. For example, frequent droughts and diminishing resources impact livelihoods and are linked to higher rates of intimate partner violence³⁸ and early marriage.³⁹ Adaptation measures to address water scarcity, such as efficient drip-irrigation, can help communities maintain their livelihoods even in the midst of climate hazards. By preventing loss of livelihoods, adaptation measures can decrease the likelihood of gender-based violence, social unrest, market destabilization, and displacement,⁴⁰ ultimately reducing the likelihood of conflict. In this way, inclusive adaptation can function as a form of conflict prevention.

Women’s inclusion in local-level climate adaptation efforts also opens the door to educational, professional, and leadership opportunities that may have been previously inaccessible. By taking advantage of these opportunities, women can become more economically empowered and financially independent, giving them greater agency and decision-making power. These positive outcomes for women also have positive implications for community stability, resilience, and self-reliance.⁴¹

Just as including women in these efforts can strengthen positive outcomes, failing to do so can have negative consequences. Poorly designed adaptation projects can actually create more exposure and sensitivity to climate change impacts than if no intervention had been undertaken at all—this is known as maladaptation.⁴² For example, in an attempt to adapt to increased flooding, a flood control project in Bangladesh removed floodplains that had been an important source of food and income. When flooded areas disappeared, landless, poor women could no longer sell aquatic resources, like snails, to farmers and fishermen, and

“Adaptation actions do not automatically have positive outcomes for gender equality, and efforts are needed to change unequal power dynamics and to foster inclusive decision making for climate adaptation to have a positive impact for gender equality.”

- IPCC

A girl observes cattle at a shared water point in Amboseli, Kenya, where her family was drawing water for their home. In her community, families rely on selling livestock for income. Heavy drought has resulted in livestock migrating to greener pastures or dying due to deteriorating health, leading to a lack of income to send children to school.

Photo: © Claire Metito/Lensational



lost access to aquatic weeds and plants that supported their household's nutritional intake.⁴³ This loss of resources and access reduced their livelihood security. As noted in a recent IPCC report, "adaptation actions do not automatically have positive outcomes for gender equality, and efforts are needed to change unequal power dynamics and to foster inclusive decision making for climate adaptation to have a positive impact for gender equality."⁴⁴

The agriculture and energy sectors are powerful entry points for engaging women in climate change adaptation efforts in ways that simultaneously build resilience against climate change and strengthen the conditions for peace and security. There is growing support for the idea of investing in these two sectors, with policymakers recognizing "climate-smart agriculture"⁴⁵ and clean energy as key areas for climate action.⁴⁶ Both sectors have historically generated a large share of negative climate impacts, including significant greenhouse gas emissions. In 2021, the UN Climate Conference (COP26) launched the large-scale Agriculture Innovation Mission for Climate (AIM for Climate), which has already garnered billions of dollars of funding for investments in climate-smart agriculture by 2025.⁴⁷ Additionally, renewable energy investments accounted for an estimated 70 percent of worldwide power-generation investments in 2021.⁴⁸

The following sections explore the agriculture and energy sectors in greater detail, focusing on gendered drivers of insecurity and opportunities to address them through inclusive local-level adaptation. In particular, they discuss how climate change is impacting these two sectors, the gender and security implications of these impacts, and opportunities for more effective climate action. Spotlighted projects within these sectors illustrate how women's inclusion in climate adaptation can not only strengthen the success of climate interventions, but also increase the well-being of women and communities.

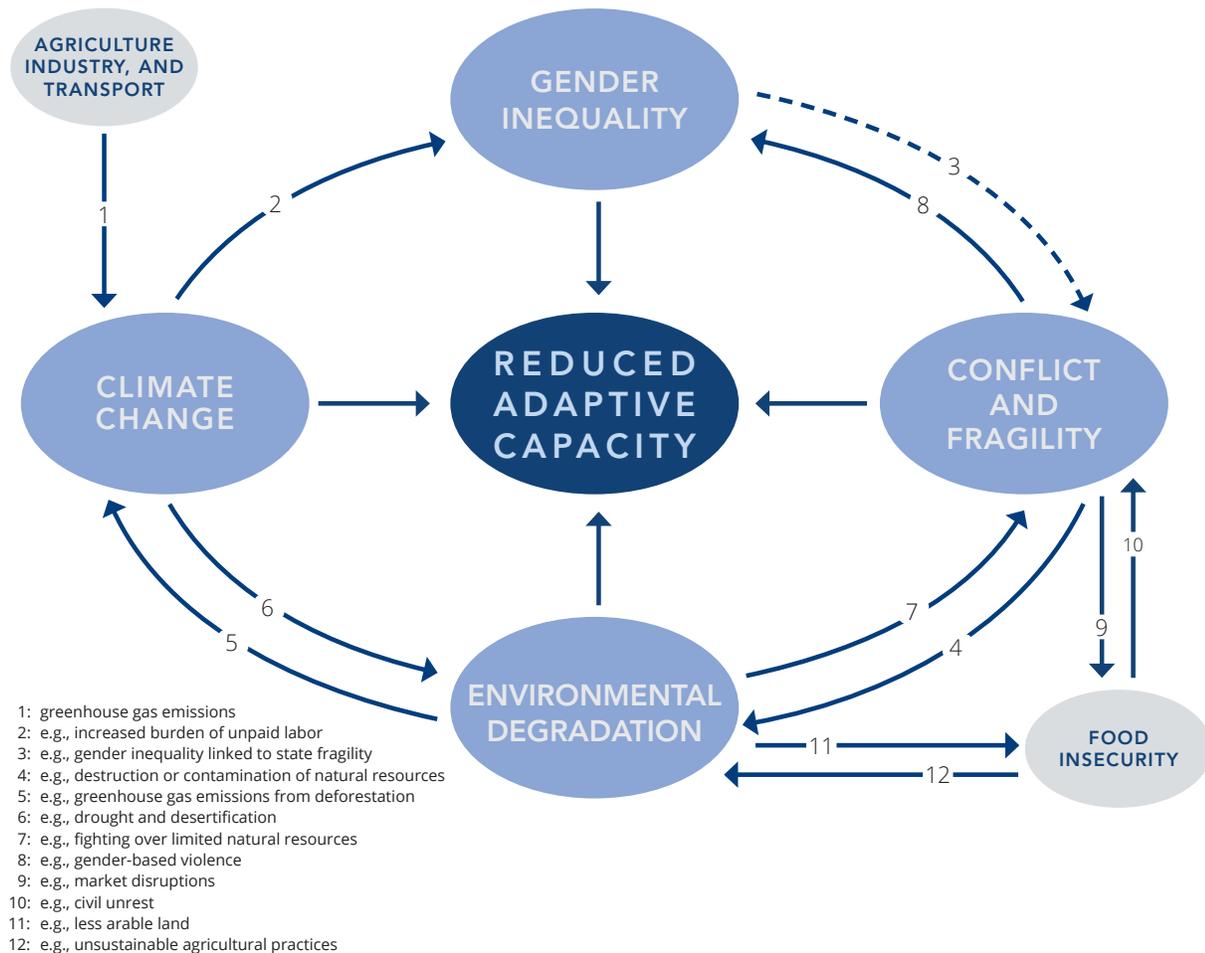
Women from SEWA engaging in climate-smart agriculture in India.
Photo: SEWA



Climate and Gendered Impacts of Current Practices

The agriculture sector is one of the largest drivers of emissions and contributes significantly to climate change. Agricultural activities such as producing, storing, processing, packaging, transporting, preparing, and serving food all release greenhouse gases into the atmosphere.⁴⁹ In 2018, global emissions due to agriculture totaled a hefty 9.3 billion metric tons of CO₂ equivalent.⁵⁰ Today, agriculture, forestry, and land use account for 22 percent of total greenhouse gas emissions, with agriculture accounting for 96 percent of that combined amount.⁵¹ Climate change, in turn, puts strains on the agriculture sector. Droughts, floods, irregular precipitation patterns, and heatwaves can directly disrupt agricultural cycles, increase desertification and nutrient deficiency in soils, and result in significant crop losses,⁵² which necessitates adaptation at the local level. These impacts create climate-driven insecurity that disproportionately impacts women (see figure 3).

Figure 3. Climate, gender, and security dynamics



To compensate for crop losses, farmers engage in intensive and unsustainable agricultural practices, including agro-chemical use and water resource exploitation.⁵³ These practices are largely driven by the adoption of high-yield crop varieties that multinational agricultural corporations produce and promote; in many places, environmentally devastating practices have become the industry standard.⁵⁴ Although these practices may help food production in the short term, they ultimately contribute to environmental degradation and cause irreparable damage that lowers future adaptive capacity. Strains on the agriculture sector due to climate change and unsustainable practices drive food insecurity and create shocks to global food systems that exacerbate the vulnerability of food-insecure people. Frequent extreme weather events such as floods and forest fires not only result in crop and livestock losses, but also affect the local population by destroying homes and displacing large numbers of people. These shocks disrupt the farming cycle and deprive millions of people of adequate food.⁵⁵ Reduced food production can increase food prices, making food even less accessible to those with lower incomes.

Women are disproportionately affected by food insecurity and tend to buffer the impacts through extreme strategies: reducing their own consumption to feed others, collecting wild food, migrating or selling assets, and even taking on risky jobs.⁵⁶ In certain countries, such as India, gender norms dictate that women and girls eat last, after men and boys have been fed.⁵⁷ When food is scarce, this practice further heightens food insecurity for women and girls.

Barriers to Women's Inclusion and Why They Must be Overcome

Women farmers play a vital role in the agriculture sector.⁵⁸ However, there are significant gender gaps in access to crucial assets, such as land and agricultural technologies, which create barriers to inclusion and equal participation in the sector. Women are also disadvantaged by global market dynamics and unequal access to information. In a globalized market dominated by large, multinational agricultural companies, small shareholder farmers and local food producers—many of whom are women—find it hard to compete. This inability to compete fairly has negative repercussions for both effective climate change adaptation and women's empowerment.

In sub-Saharan Africa, women perform 48 percent of agricultural labor, but make up only 15 percent of agricultural landholders.⁵⁹ In Asia (excluding Japan), the respective figures are 42 percent and 11 percent.⁶⁰ Globally, women have less secure land tenure and less decision-making power over land than do men.⁶¹ According to CGIAR (the Consortium of International Agricultural Research Centers), even when women do have access to land for agricultural production, whether rented, allocated, or purchased, that land "is generally of lesser quality and a smaller plot compared to men."⁶²

Land serves as a crucial social asset for cultural identity, economic and political power, and participation in decision-making. As noted in a study by the Swedish International Development Cooperation Agency, "land can serve as a base for food production and income generation, as collateral for credit and as a means of holding savings for the future."⁶³ For women, land rights provide protection and can help equalize the balance of power in a household; research shows that when women own land, rates of domestic violence are lower and women are better able to exit violent relationships and negotiate safe sex.⁶⁴ Furthermore, access to land tenure can mitigate women's vulnerability to climate-related forced displacement.⁶⁵ Gender-responsive investments in sustainable agriculture represent a significant opportunity to address barriers to women's land tenure and strengthen gender equality in the agriculture sector. Women's land tenure is beneficial not just for women: women's land ownership is associated with families being better fed, better educated, healthier, and more likely to achieve long-term financial stability.⁶⁶ These outcomes for women can also enhance overall community security and the stability of countries.

In addition to barriers to land tenure, women farmers lack equal access to agricultural technologies that can increase crop yields. For example, research from Latin America has found that land with irrigation access is mainly owned or worked by men, putting women at a significant disadvantage during periods of drought.⁶⁷ With greater access to productive resources, women can bolster their resilience to climate change and improve the yields from their plots, which not only supports women's economic empowerment, but also has positive implications for food security. The UN Food and Agriculture Organization has estimated that if women had the same access to productive resources as men, they could increase yields on their farms by 20–30 percent, which could reduce the number of hungry people in the world by 12–17 percent.⁶⁸

Unequal access to information is another major challenge for smallholder farmers. For women, this information gap is closely intertwined with social inequalities that create a gendered digital divide. In Ghana, for example, limited access to mobile phones and strong network connections inhibits women's utilization of climate information services,⁶⁹ which deliver information that is invaluable for smallholder farmers, who farm some of the most vulnerable and marginal climate landscapes, including hillsides, deserts, and floodplains.⁷⁰

Smallholder farmers also often lack access to spot and future prices for commodities, impairing their ability to sell their commodities effectively, and these disparities are even greater for women. International donors and local organizations, such as the Self Employed Women's Association (SEWA) based in India, have sought to address this information gap. SEWA advocates for the rights of low-income, self-employed women workers from the informal economy across 16 states in India and in neighboring countries.⁷¹ A SEWA initiative to provide local men and women farmers timely spot and future prices for commodities in crops helped farmers decide which crop to grow in their fields and which crop to sow, improving agricultural performance.⁷²

Strengthening the role of women in local-level climate adaptation is crucial to the success of climate interventions in the agriculture sector and an important opportunity to shore up the well-being of women and communities. Increasing women's access to land, productive resources, and relevant agricultural information and training can increase women's empowerment,⁷³ enhance community stability,⁷⁴ and decrease environmental degradation.⁷⁵ As resources are mobilized, interventions should be informed by inclusive approaches that promote women's leadership and actively engage diverse stakeholders in identifying solutions that are locally meaningful and positively impact the community. As the status of women improves, it can have a stabilizing effect with regard to both climate-driven insecurity and state fragility.

“I am from Gujarat and learnt to make natural pesticides through SEWA. I am happy to share that my production has increased and pesticide expenses have been reduced by 80 percent. I don't have to use chemical pesticides, which has had a positive impact on my health. I bought a cow and motorbike, which also helped increase my income. All thanks to the [SEWA] trainings that helped us learn and gave me confidence to apply this knowledge on my own farm.”

— Vinobhaben, cotton farmer and SEWA member in Gujarat, India



Women practicing climate-smart agriculture in Western Kenya.
Photo: C. Schubert

Spotlight on Inclusive Projects

The following projects show how the agriculture sector can serve as a key entry point for successful climate adaptation interventions and for bolstering women's inclusion. They illustrate the ways in which women serve as benefit multipliers when centered in these interventions, simultaneously addressing climate impacts and strengthening the conditions for peace and security.

Egypt

In Southern Egypt, introducing resilient agricultural practices, as well as women-targeted loan programs to economically empower women and fund small and mid-size enterprises in a gender-responsive and culturally sensitive manner, has been an effective and sustainable climate adaptation intervention with widespread benefits for women's empowerment and reductions in community competition for resources.

Southern Egypt is the poorest region in the country, with 45 percent of households living below the national poverty line.⁷⁶ By 2050, Southern Egypt could lose at least 30 percent of its food production capacity due to climate change impacts.⁷⁷ Fifty-five percent of households in the region rely on agriculture for a living,⁷⁸ and women are largely responsible for raising livestock, running small-scale agro-businesses, and completing post-harvest activities in this region.⁷⁹ To build resilience against climate change-induced food insecurity and socioeconomic distress, the World Food Programme (WFP) implemented a project financed by the Adaptation Fund,⁸⁰ designed to create resilient food security systems in the region. In addition to interventions introducing heat-tolerant crop varieties, modifying irrigation and fertilization schedules, and improving post-harvest practices, the project also included culturally sensitive activities specifically aimed at engaging women.⁸¹

Gender-responsive measures included enhancing women's safety by minimizing the distance between training venues and women's homes, allowing for flexible timing of sessions, and offering women-only training sessions for those women who did not feel comfortable participating in sessions with men. In partnership with local nongovernmental organizations, home visits by women volunteers were organized to maximize outreach to women.

The project reportedly reached 26,117 women with small loans and trained 29,260 women on risk reduction for livestock. Husbandry loans to raise animals enabled women to generate income and become more economically empowered.⁸² Increasing women's access to finance and income-generating activities helped women to cover their families' health and education expenses and improve living standards. It also enabled them to purchase food

commodities—including poultry, other types of meat, milk, and eggs—that they could not afford previously.⁸³ Some women used the money generated from the projects to create additional streams of income, such as cloth trading.

The benefits of women's economic empowerment generated by this project reached beyond the immediate household, as women's enhanced financial stability reduced community competition for resources, most notably, irrigation water.⁸⁴ Partnerships with other donors, NGOs, and public institutions have expanded the impact of the project and strengthened national capacity for gender-responsive climate action. The WFP is now replicating and scaling up the successful adaptation practices piloted in this project with the support of the Adaptation Fund.

India

In Gujarat, a state on the western coast of India, a voiced-based agro-advisory information system on weather, pests, and markets allowed women farmers to adapt to the impacts of climate change-induced weather events and guided women farmers to make strategic agricultural decisions based on future crop prices. Consequently, women farmers were able to grow more profitable crops and improve their lives.



Women from SEWA engaging in climate-smart agriculture in India. Photo: SEWA

The mean temperature in Gujarat could rise by 5°C by the end of the 21st century,⁸⁵ causing serious damage to the economy, which is heavily dependent on agriculture.⁸⁶ Heat stress and grassland deterioration undercut crop productivity, so a significant rise in temperature would pose a major threat to the agriculture sector.⁸⁷ Increases in the variability and frequency of extreme weather events due to climate change create challenges to strategic decision-making for all farmers,⁸⁸ but these challenges are especially pronounced for women, who often lack access to key information. In rural India, four out of every five women in the workforce are employed in agriculture.⁸⁹

Women farmers in India face additional barriers to financial inclusion, including difficulty accessing microcredit⁹⁰ and limited access to capacity-building opportunities, technical education, healthcare, market information, and material resources such as tools and equipment.⁹¹

To address this challenge, SEWA, which works closely with women smallholder farmers, collaborated with agricultural experts to design a voice-based agro-advisory system to make information widely accessible to women, regardless of literacy level.⁹² With greater access to information on weather, pests, and markets, women farmers could make more strategic decisions about their crops. One woman who participated in the pilot program commented, “As soon as I received [a] message from SEWA about unseasonal rain, I acted and saved my crop. Thanks to the voice message, we sold our harvest, paid off our debts and made good profit. . . . Now all the fellow villagers have subscribed to this service.”⁹³

By directly addressing information and technology gaps, this project reduced barriers to women’s inclusion within the agriculture sector, allowing women to make more strategic agricultural decisions. Through the project, women’s decision-making power and ability to protect their livelihoods increased, strengthening women’s economic security, which benefits not only women, but also their families and communities.

Colombia

A project to promote climate-resilient agricultural management and sustainable water management helped communities in Córdoba, Colombia, adapt to climate impacts. Improvements in resource management were achieved through renewed promotion of local ancestral knowledge combined with ecological training. Time saved with the introduction of rainwater tanks, an adaptive measure, gave women the opportunity to assume leadership roles in their community.



Woman coffee grower in Tablón de Gómez, Colombia.
Photo: UN Women/Ryan Brown

In Córdoba, a department in the north of Colombia, intensifying tropical storms and floods are increasing threats to food security and clean water access in rural communities,⁹⁴ where women bear the primary responsibility for water collection for their families. Gendered distributions of labor, including responsibilities for fetching water, limit the time women have to invest in education or job training.⁹⁵ Although peace accords were signed in 2016, conflict-related sexual violence in Colombia remains prevalent.⁹⁶ As water scarcity increases due to the impacts of climate change, women will have to stand in longer lines for water, walk further distances to collect it—which increases their risk of gender-based violence—and pay more for it.⁹⁷

To address threats of food and water insecurity in Córdoba, the organization ASOBONGO designed a project that utilized local ancestral knowledge regarding locally adapted seeds and small livestock species, supported climate-resilient agriculture, and promoted sustainable water management. ASOBONGO trained 200 families in restoring ancient crops and making organic fertilizer from compost, which not only increased crop yields, but also contributed to natural carbon storing in the soil and soil fertility. To strengthen water management and protect clean water sources, ASOBONGO introduced ecological sanitation into communities and built nine rainwater tanks to allow for regular irrigation. Beyond the positive climate impacts of sustainable agriculture and water management, the introduction of rainwater tanks decreased water-gathering time burdens on women. Less time spent gathering water could increase women’s safety by reducing their risk to gender-based violence. The time saved on water gathering allowed women in the project to take on leading roles in community water committees,⁹⁸ increasing their decision-making power and inclusion in the community.



A woman farmer in Burkina Faso grows vegetables in the dry season using simple irrigation techniques. By selling the crops she has earned enough money to send her children to school.
Photo: CGIAR/P. Casier

West Africa

Through training in climate-resilient agro-ecological techniques, women farmers in West Africa were able to improve crop yields, save labor, and reduce water use. This project exemplifies the importance of increasing women's access to education, training, and technology to advance climate-smart agriculture and strengthen women's livelihoods.

Although the number of large-scale conflicts in West Africa⁹⁹ has declined dramatically in the past two decades, political violence, long-standing ethnonational conflict, drug trafficking, maritime piracy, and violent extremism remain serious threats and destabilize the region.¹⁰⁰ In northeast Nigeria, the Boko Haram insurgency has exacerbated climate change-induced food insecurity by destroying smallholder farmers' productive assets and forcibly displacing them from their land.¹⁰¹ Heightened fragility and conflict have disproportionate gendered impacts and increase women's vulnerability and exposure to sexual and gender-based violence.¹⁰²

Supporting women farmers can strengthen food security and reduce impacts on climate-vulnerable ecosystems, shoring up community resilience and reducing potential livelihood insecurity. UN Women has been working towards these goals in West Africa by training women in climate-resilient agro-ecological

techniques. In Mali, UN Women trained 11,000 women on soil restoration techniques, alternating crop systems, and natural pesticide and organic fertilizer use.¹⁰³

In Nigeria, in collaboration with local partners, UN Women trained 2,500 women smallholder rice farmers on improved rice production technology through high-yielding, short-cycled seeds and motorized irrigation systems. Although women are disproportionately impacted by climate change, as noted by a woman farmer in Senegal, "women did not take climate change into account and the ways in which it could impact their production. The UN Women programme indicated the need to adapt our existing cultivation methods and trained women farmers on the appropriate temperature for rice cultivation."¹⁰⁴ These trainings allowed women to improve their yields and, with the new techniques and improved technology, save labor by 37 percent and reduce water usage by 10 percent.¹⁰⁵

This project shows how education, together with economic empowerment, can promote women's inclusion in the agriculture sector. In countries experiencing climate- and conflict-driven forms of insecurity, such as Nigeria, inclusive adaptation can be an entry point to address the drivers of both threats by strengthening the well-being of women and the role they can play in their communities.

Investing in women is an investment in greater peace and security and in a more sustainable future. These projects illustrate the benefits of inclusive approaches to adaptation in the agriculture sector and offer promising models for stakeholders with a vested interest in developing effective climate interventions at the local level. Ensuring women's meaningful inclusion within this sector can translate into broader gains for women and communities.

Climate and Gendered Impacts of Current Practices

The green transition includes a substantial influx of resources to support clean energy technology and practices. If these resources are directed toward inclusive interventions, the energy sector has the potential to serve as a powerful entry point to advance the role of women as leaders in addressing the climate crisis. Research shows women are disproportionately impacted by energy poverty, with less access to electricity and clean fuels and technologies for cooking. Increasing women's access to clean energy sources such as solar power could significantly improve health outcomes and open up opportunities for education and income-generating activities. Women's inclusion is also key to the success of local-level climate adaptation efforts and the well-being of communities.

Electricity

As of 2019, fossil fuels accounted for more than 80 percent of global energy consumption¹⁰⁶ and the vast majority of the world's carbon emissions. Carbon dioxide produced by human activities—most notably, the burning of fossil fuels—is the single largest contributor to global warming.¹⁰⁷

While energy consumption contributes to climate change, climate change, in turn, threatens the traditional energy sector and energy grid. Big, centralized power plants and one-way power flows characterize the conventional energy model for providing electricity. Today, climate change-induced extreme weather events make blackouts more common and increase strains on electrical systems.¹⁰⁸ These problems, coupled with insufficient energy service, reduced grid reliability, and extended building times, are making the conventional energy model increasingly inefficient and unreliable.¹⁰⁹

Historically, international development institutions have focused on conventional large-scale fossil fuel infrastructure to deliver economic benefits to low-income countries by extending the central power grid. In recent years, multilateral development banks (MDBs) have begun gradually shifting away from fossil fuels and toward clean energy. However, in 2020, combined contributions from nine MDBs still reached over \$3 billion in direct support for fossil fuels.¹¹⁰ Furthermore, since the start of the COVID-19 pandemic, governments in G20 countries have committed over \$347 billion for unconditional fossil fuels¹¹¹ through more than 286 policies.¹¹²

In addition to exacerbating climate change, reliance on fossil fuels drives “energy poverty”—that is, the absence of choice in accessing “adequate, affordable, reliable, high quality, safe and environmentally benign energy services.”¹¹³ According to the World Bank, 789 million people—about half of whom live in fragile and conflict-affected settings—are currently living without electricity.¹¹⁴ If dependence on fossil fuels continues, accessibility will further decrease as finite supplies dwindle and prices rise. This would have disproportionate impacts on women who already face additional barriers to accessing energy. Research from South Africa has shown that female-headed households are more vulnerable to energy poverty than male-headed households.¹¹⁵

The traditional electrical grid, which runs largely on fossil fuels, is centralized and utilizes top-down approaches to deliver energy to communities. That is, after power is generated at large power plants, it travels across long distances through high-voltage transmission lines to local distribution areas via substations, and then through distribution wires to users.¹¹⁶ Access to energy in this model can be expensive and unreliable. It has at least three major drawbacks compared with bottom-up renewable energy models: electricity does not extend to many rural communities; the system is susceptible to corruption and misuse, with large private sector clients enjoying preferential treatment over low-income areas; and the grid faces increased risks of outages due to climate shocks.

Although fossil fuels were once considered the cheapest energy option, this is no longer the case, as the price of renewable energy has sharply declined in the last decade as a result of improved technologies and competitive supply chains.¹¹⁷ A report issued in 2021 by the International Renewable Energy Agency (IRENA) found that costs for electricity from utility-scale solar energy fell 85 percent between 2010 and 2020, and that today, “new solar and wind projects are increasingly undercutting even the cheapest and least sustainable of existing coal-fired power plants.”¹¹⁸

Transitioning to clean energy, such as solar power,¹¹⁹ offers an efficient and reliable model that can have positive impacts on both climate change and energy poverty. Solar power can increase communities’ access to energy, especially in remote rural areas, because it can operate well on a “microgrid.”¹²⁰ Microgrids invert top-down energy systems and build the grid from the bottom-up,¹²¹ starting at the community level. Rather than operating from a larger, more centralized energy grid located far away, microgrids can stand on their own, enabling communities to be self-reliant and unaffected by central power outages. This reliability can help overcome many of the challenges faced by traditional electrification strategies¹²² and can make energy more affordable and accessible to communities. In the traditional top-down energy model, where community energy access tends to be more limited, discriminatory gender norms can lead to prioritizing men’s access to electricity over women’s access. In contrast, the bottom-up solar model can provide plentiful energy for everyone, which has outsized benefits for women and girls, who are disproportionately impacted by energy poverty.

“New solar and wind projects are increasingly undercutting even the cheapest and least sustainable of existing coal-fired power plants.”

- IRENA

Cooking

Energy poverty extends beyond access to electricity. Currently, 2.6 billion people do not have access to clean fuels and technologies for cooking, which has both climate and gendered implications. Instead, they use pollution-generating open fires or simple stoves fueled by kerosene, biomass (wood, animal dung, and crop waste), and coal.¹²³

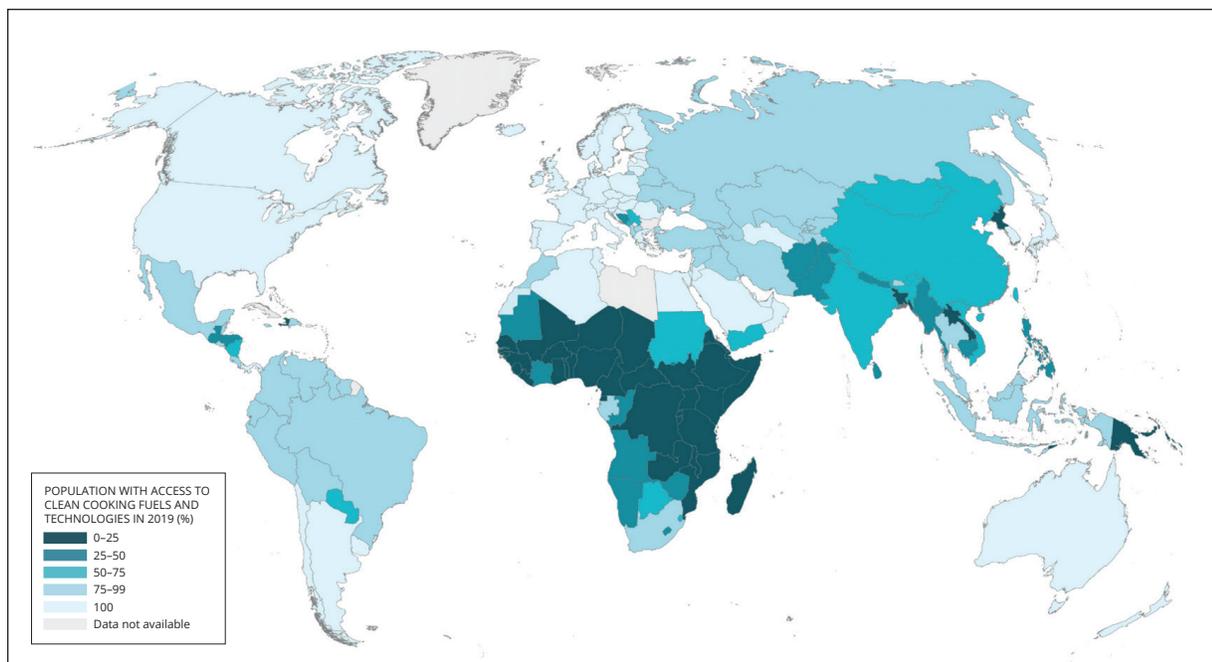
The use of such fuels leads to increased deforestation and carbon emissions. Analysis by the international organization Sustainable Energy For All found that between 2010 and 2019, progress toward Sustainable Development Goal 7.1.2, which aims to increase access to clean cooking, slowed in most Asian and African countries.¹²⁴

Figure 4 shows how access to cooking technologies is heavily shaped by geography. This form of energy poverty is harmful not only to the planet but also to women and girls. At the community level, women are often responsible for providing fuel for their households,¹²⁵ and they face security risks, including gender-based violence, when they leave their homes to collect it.¹²⁶ Exposure to violence is also a major concern in IDP camps. For example, between August and December 2020, almost half of the cases of rape documented by the UN Refugee Agency in Kaya, Burkina Faso—which is home to numerous IDP camps¹²⁷—happened while women were collecting wood.¹²⁸ In addition to the physical dangers posed, this burdensome task

also consumes significant amounts of time. For example, a study conducted in India, Bangladesh, and Nepal found that women in South Asia spend up to 20 or more hours per week on energy collection.¹²⁹ Time spent on energy collection takes time away from other activities such as education or income-generation, further entrenching cycles of gender inequality.

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Figure 4. Percent of population with access to clean cooking fuels and technologies by country, 2019



Source: International Energy Agency, International Renewable Energy Agency, United Nations Statistics Division, World Bank, and World Health Organization, *Tracking SDG 7: The Energy Progress Report* (Washington, DC: World Bank, 2021), 56, https://trackingsdg7.esmap.org/data/files/download-documents/2021_tracking_sdg7_report.pdf.

Beyond the constraints and dangers of energy collection, the use of nonrenewable fuel for cooking and heating creates health risks for women and girls. In addition to being inefficient, these fuels and technologies produce high levels of household air pollution with a range of health-damaging pollutants. These include black carbon, which has small soot particles that penetrate deep into the lungs.¹³⁰ The problem is pervasive. According to the World Health Organization, 4.3 million people die every year as a result of indoor air pollution, mainly women and children, who spend the most time near the domestic hearth.¹³¹

Research has shown that high-efficiency clean cookstoves¹³² can reduce cooking times by 50 percent while increasing fuel efficiency by 30 percent.¹³³ Transitioning to clean energy is an investment in women and in the future of the planet. It can simultaneously increase sustainability, reduce energy poverty, and improve women's lives.¹³⁴ The resulting increase in women's well-being has positive implications for peace and security.



Solar engineer making a solar cooker in Rajasthan, India.
Photo: Knut-Erik Helle

Barriers to Women's Inclusion and Why They Must be Overcome

While the negative environmental impacts of fossil fuels are broadly recognized and momentum toward clean energy investments is growing, concerted efforts must be made to ensure these investments also benefit women. Women face significant barriers to equal access and participation in the energy sector. According to a report by IRENA, in 2019 women held only 22 percent of traditional energy jobs and 32 percent of renewable energy jobs.¹³⁵

In addition to increasing women's representation in the energy sector, women's access to clean energy must be expanded. Increased access to electricity has positive implications for women, especially with regard to women's economic empowerment and girls' ability to stay enrolled in school. Research has found that self-employed rural women with energy access make double the income of their counterparts who lack energy access, and this gap is even wider in urban settings.¹³⁶ Furthermore, a study conducted in South Africa found that rural electrification increased women's employment by almost 10 percent; another study found that the comparable figure for Nicaragua was 23 percent. Research from Brazil shows that girls in rural areas with electricity access are 59 percent more likely than those without electricity access to complete primary education by the time they are 18 years old.¹³⁷

Women have valuable insights to contribute to the design, maintenance, and socialization of new technologies, and engaging women as key actors in all aspects of clean energy can strengthen interventions. For example, failure to consult women in the design of clean cookstoves in Nigeria resulted in a product that was not large or sturdy enough to feed large families, so women did not use the stoves.¹³⁸ By centering women in design efforts, such mistakes can be avoided and products can be designed that are actually useful to women. Additionally, promoting the role of women in clean energy efforts can help other women transition to clean energy, because women better understand the energy needs and preferences of other women. For example, the company Bidhaa Sasa, based in Kenya, sells products such as solar lamps, radios, and efficient cookstoves by using women-to-women direct selling techniques. This approach has resulted in 70 percent of the company's clients being women and helps women overcome distrust in new technologies.¹³⁹

In 2019 women held only 22 percent of traditional energy jobs and 32 percent of renewable energy jobs.

Self-employed rural women with energy access make double the income of their counterparts who lack energy access, and this gap is even wider in urban settings.

Spotlight on Inclusive Projects

Transitioning to clean energy can be a powerful way to address climate change and the security threats it poses—if interventions are gender-responsive and approaches are community-centered.¹⁴⁰ The following projects are small-scale interventions that highlight how the adoption of clean energy—in the form of solar power—can help women adapt to climate change and gain access to reliable energy. The projects further demonstrate the beneficial impact of community-centered approaches that promote women’s engagement in the design, implementation, and adoption of solar power and clean cookstoves.¹⁴¹ The examples below show how inclusive approaches can create widespread benefits for both climate change adaptation efforts and for issues at the heart of the WPS agenda, including women’s inclusion, empowerment, and resilience.

Tanzania, Nigeria, and Kenya

In Tanzania, Nigeria, and Kenya, a nonprofit organization supports women entrepreneurs to address energy poverty and reliance on nonrenewable energy through the sale of solar-powered products and clean cookstoves, which has positive impacts on communities and on women’s livelihoods.

Energy poverty disproportionately impacts women and girls: solid fuels take time to collect and have negative environmental and health impacts. Lack of access to electricity is also correlated with lower incomes and lower educational attainment levels.¹⁴² To address this problem, the nonprofit organization Solar Sister works in Tanzania, Nigeria, and Kenya to support emerging women entrepreneurs by supplying them with durable, affordable solar-powered products and clean stoves.¹⁴³ As women entrepreneurs earn income through clean energy sales, individual and community well-being improve due to the financial, educational, and health benefits associated with clean energy.¹⁴⁴

Interviews with 257 Solar Sister customers and entrepreneurs in more than 20 rural villages in Tanzania found significant positive results: over 90 percent of parents reported improvements in their children’s academic performance thanks to solar-powered lamps providing extra hours of light during which to study; respondents stopped experiencing cough, cold, and flu-like health symptoms associated with kerosene lamps; and survey respondents saved an average of 27 days of productive time per year by not having to travel to purchase kerosene and by having more hours of light throughout the day.¹⁴⁵ Furthermore, the money saved by not purchasing kerosene went toward food and water, education, and savings. Women entrepreneurs with Solar Sister also reported increases in their agency, status, and control over resources.¹⁴⁶ To date, Solar Sister has helped over 7,000 clean energy entrepreneurs to kickstart their businesses financially.¹⁴⁷ Similar projects have been implemented by organizations in other countries, which is a testament to the replicability and scalability of this successful model.¹⁴⁸

“Solar Sister is changing the narrative that women should just be beneficiaries of climate change adaptation projects—women should be at the forefront of energy prosperity.”

— Olasimbo Sojinrin, Nigeria Country Director at Solar Sister



Solar Sister Entrepreneur Felicia Abiola-Ige demonstrating light to potential customers.
Photo: © SolarSister

Solar Sister Entrepreneur Felicia Abiola-Ige is a science teacher at a secondary school in Oyo town, Nigeria. She and her teenage daughter Opeyemi go to schools, churches, cooperatives, hospitals, and homes to advertise solar products and drum up business. As a teacher, she uses her networks in the education sector to talk about solar and sell products. She also believes it is essential for more women to get involved in solar businesses: “We are the ones who need this energy! The children come to us asking for light, for food. The more women we get into this business the better.” — Felicia Abiola-Ige

Increasing women's access to entrepreneurial opportunities in the renewable energy sector can not only improve their livelihoods, but also disrupt gendered cycles of fragility that are perpetuated by energy poverty. When women's economic empowerment increases, it can have a positive impact on the well-being of families and communities for generations to come.

Ghana

In Ghana, a company offering solar-powered home electricity systems used gender analysis to create employment opportunities for women and increase the accessibility of its solar products to women customers to close energy gaps.

In Ghana, PEG Africa (PEG) offers an important private sector example of how gender-responsive engagement in solar energy can increase adoption of the technology and promote the role of women in clean energy transition efforts. Employing over 400 people, PEG is a rapidly expanding enterprise that provides solar-powered electricity solutions to customers in parts of West Africa that are not yet electrified.¹⁴⁹ With technical assistance from Power Africa—a US government partnership aimed at doubling access to electricity in sub-Saharan Africa—PEG identified how to best create employment opportunities for women¹⁵⁰ and increase the

accessibility of its solar home products to women customers.¹⁵¹

In response to findings from agender analysis, PEG launched various initiatives, including a pilot mentorship program to develop female leaders, which both mentors and mentees rated as a success. It also made efforts to promote women's leadership in the company, which helped decrease the gender pay gap by 24 percent. PEG recognized the value women sales agents bring in terms of first-hand experience of the gendered impact of energy access, particularly in the home, and increased women-to-women outreach by creating new field staff positions for women sales representatives. Women sales agents are able to leverage this understanding to connect with women customers and increase women's adoption of clean energy.¹⁵²

This initiative shows how a gender-responsive approach can create tangible shifts in leadership demographics and corporate culture, increase revenue, and accelerate progress toward gender equality. PEG's efforts yielded major results: the initiatives led over a 12-month period to a 14 percent increase in female leadership within the company, with women comprising 44 percent of the senior management team, compared with 30 percent before implementation of the initiative. The increase in female leadership at PEG coincided with a 60



A Solar Sister Entrepreneur in southwest Nigeria shows a customer a clean cookstove.
Photo: SolarSister | Ultrashot

percent growth in revenue, as well as a 26 percent increase in earnings before interest and taxes.¹⁵³

The positive outcomes generated by PEG's efforts to increase women's leadership, decision-making power, and access to energy demonstrate how inclusive approaches can translate into benefits not only for women, but also for companies and communities.

India

A private rural energy company in Bihar, India, partnered with the organization SEWA to establish a women-led energy cooperative to increase community access to energy and strengthen women's economic empowerment.

To increase community access to clean energy, in 2013 SELCO India, a service company that provides rural energy, teamed up with SEWA to install 400 home systems of solar lighting. When SELCO began their project in 2013, almost 90 percent of households lacked connectivity to a conventional energy grid in Bihar, a rural state in the east of India. Under these conditions, women in Bihar spent a sizable portion of their income on generators and the kerosene and diesel fuels needed to operate them.¹⁵⁴

The goal of this partnership was to establish a fully operational women's energy cooperative that could become an independent energy service provider in Bihar to thousands of off-grid households. Three significant outcomes resulted from this initiative: three local energy service centers were established with the capacity to sell, install, and service energy systems; approximately 20 local women technicians were trained to install and maintain energy products well beyond short-term use; and approximately 50 women entrepreneur-owned microservice centers were established to provide charging capacity for mobile phones and lighting rental services in 50 communities.¹⁵⁵



Woman in solar engineer class in Rajasthan, India.
Photo: Knut-Erik Helle

In addition to generating benefits associated with extending energy access to women, including greater access to education and increased income generation, this project strengthened the role of women in their communities as entrepreneurs, skilled technicians, and service providers. These outcomes can accelerate progress toward gender equality, climate resiliency, and security.

These projects highlight inclusive practices that can improve future projects aimed at expanding clean energy access in a gender-responsive way. To maximize the positive impacts of climate interventions within the clean energy sector—in terms of climate outcomes and their potential to foster greater peace and security—concerted efforts should be made to promote women's leadership, increase women's access to new technologies, and ensure women benefit equally from clean energy investments. When women thrive, communities thrive. As the status of women improves through opportunities like those created in these projects, it strengthens the possibility for a more prosperous and secure future.

Conclusion And Recommendations

Time is running out to address the climate crisis; there is an urgent need to move from rhetoric to action. This is true for both large-scale mitigation efforts and investments in inclusive local-level adaptation, which is desperately needed in communities already experiencing the effects of climate change. Inclusive climate action in the agriculture and energy sectors can address overlapping forms of insecurity, promote gender equality, and strengthen the conditions for peace and security. Growing ambition among global leaders and a motivated private sector present a critical window of opportunity to act. There is also momentum among a broad range of countries to “build back better”¹⁵⁶ in response to the COVID-19 pandemic and strengthen community resilience to climate change.¹⁵⁷ Helping communities adapt and prepare for climate impacts is not just a moral imperative, it is also a smart economic investment: research suggests that investing \$1.8 trillion globally in weather warning systems, infrastructure, dry-land farming, mangrove protection, and water management could yield \$7.1 trillion in total net benefits.¹⁵⁸ An opportunity to take bold, sweeping climate action exists, but it can only be fully realized if women and girls are included. Fortunately, countries can leverage existing adaptation frameworks—such as the National Adaptation Plan (NAP) process—to make adaptation initiatives gender-responsive. For example, the NAP Global Network has partnered with a social enterprise called Lensational, which uses participatory photography to empower women from marginalized groups. This project, which started in Kenya and Ghana and is currently expanding to other countries, supports women to document their lived experiences of climate change and their visions for climate resilience. Importantly, this ongoing project creates opportunities for women to share their insights and priorities directly with national-level decision-makers to inform NAP processes and promote gender-responsive, locally-led adaptation.¹⁵⁹

When women are meaningfully included, climate interventions are more effective. Gender-responsive approaches also produce better outcomes for communities and greater progress toward gender equality. The agriculture and energy sectors are two key entry points for climate action that addresses drivers of insecurity and promotes the well-being of women and communities. Research across both sectors shows that when climate projects are gender-responsive, culturally sensitive, and locally centered, they are more likely to be adopted by communities and are more effective at strengthening local climate resilience and climate adaptation. Gender-responsive climate interventions can also reduce poverty, increase access to education, and decrease exposure to gender-based violence. These results can, in turn, bolster women’s economic empowerment, resiliency, and inclusion in society, all of which have positive implications for peace and security.

“At Lensational we always say the women we work with are the real experts. Our role is to simply facilitate the best conditions for their stories to be heard. However, it is not enough to just elevate their voices – that’s important too, but we must also get them to the right tables where their stories can be heard and contribute to meaningful change. Action and partnerships like we have with the National Adaptation Plan Global Network allow us to do just that.”

— Lydia Wanjiku, CEO of Lensational



Catherine, a Lensational photographer in Amboseli, Kenya, documents the burden of drought on women in her community. While men migrate with cattle in search of pastures, women stay behind assuming full responsibility to provide for children and protect livestock.
Photo: © Claire Metito/Lensational



Students in solar home system servicing course in Bangladesh.
Photo: © ILO/Alan Dow/BMET

The projects highlighted in this report illustrate the benefits of inclusive adaptation efforts at the local level: interventions are more effective, women are more empowered, and communities are more secure. Projects from Africa, South Asia, and Latin America provide concrete examples of how the agriculture and energy sectors can serve as key entry points to promote the role of women in climate adaptation efforts. These initiatives offer inclusive models and gender-responsive approaches that can be replicated and scaled up.

Solutions do not exist in a vacuum. It is therefore essential that stakeholders across fields and sectors join together to advance an inclusive response to the climate crisis. The benefits of gender-responsive climate action will only reach their potential with adequate resourcing. Although climate finance is increasing, it is not growing quickly enough to keep pace with the rapid rate of climate change. Adapting to current climate change impacts and building climate resilience are essential for addressing the security threat posed by climate change, but adaptation is chronically underfunded and receives less attention and fewer resources than mitigation. The Organisation for Economic Co-operation and Development found that only 20 percent of climate finance mobilized in 2019 went to adaptation projects.¹⁶⁰ Gender-responsive climate funding is even more dismal: according to a 2016 report by the United Nations Development Programme, only 0.01 percent of funding worldwide supports projects that address both climate change and women's rights.¹⁶¹ Although women are already making a difference around the world, additional resources are essential to enable them to have a greater impact, to identify and scale up solutions, and to sustain efforts to dismantle barriers to women's inclusion.

An opportunity to take bold, sweeping climate action exists, but it can only be fully realized if women and girls are included.

To promote women's overall inclusion in local climate change adaptation, this report identifies five key actions that policymakers, donors, practitioners, and academics can take to advance these efforts:

- **Address barriers to inclusion to ensure that women have equal access to project participation and resources.**

Gender analysis and community-based needs assessments should be used by project designers and implementers to identify barriers and incentives for engaging women in agro-ecological activities and clean energy use and to inform project design. Within the agriculture sector, concerted efforts should be made to increase women's control of food and other production resources, such as land and natural resources. Clean energy interventions should work to expand women's access to durable and affordable solar-powered products and

appliances, such as solar lamps, cookstoves, water heaters, dryers, furnaces, and fans, which are powered by sunlight either directly or through electricity generated by solar panels. When women are included, adaptation efforts are more effective and communities are more secure. Addressing barriers to women's inclusion in climate action can also advance gender equality, because those obstacles are often rooted in social and structural forms of inequality.

- **Increase women's access to information, education, and technology.**

To meaningfully participate in solutions, women must have access to information about climate change, education on what it means for their livelihoods, and technology that will allow them to effectively respond to its impacts. Technological innovations within the agriculture sector include bioengineered heat-tolerant crops, and climate-resilient rural infrastructure, such as efficient water conservation technologies. Addressing information gaps is also necessary to promote women's access to regular, timely, and relevant information related to food production and marketing, weather, pests, and markets. The project in West Africa illustrates why women's education must be a central aspect of project design and implementation: when women understand how climate change can impact their livelihoods and why it is important to adapt their practices, they are more likely to be receptive to climate interventions. Educating women on climate-resilient agro-ecological techniques—including modifying irrigation and fertilization schedules, soil conservation, and sustainable post-harvest practices—can increase their food production capacity and reduce greenhouse gas emissions. In addition to generating better climate outcomes, increasing women's access to information, education, and technology bolsters livelihood security and strengthens women's decision-making power.

- **Provide training and support for women as entrepreneurs and design consultants.**

Efforts to support women as entrepreneurs and design consultants can improve financial security, ensure that products meet community needs, and increase the likelihood the technology will be adopted, particularly by women consumers. Mentorship programs and support networks for women in the clean energy sector can help new women entrepreneurs generate income through the sale of solar-powered products and efficient cookstoves. Strengthening the role of women in climate solutions can lead to better outcomes, and as illustrated by the PEG Africa project, more women in leadership positions can also lead to an increase in company profits while accelerating progress toward gender equality.

- **Address critical gaps in knowledge through additional research and case studies.**

Diverse case studies and data related to women's contributions to climate change mitigation and adaptation efforts are severely lacking. More research is needed to inform gender-responsive interventions, to identify best practices that can be replicated and scaled up, and to promote investments in inclusive approaches that generate impact. Additional case studies from diverse geographical areas, including countries experiencing both conflict and climate impacts, are needed to create a richer evidence base. To develop interventions that are locally meaningful, participatory approaches, which include women in generating knowledge about challenges and solutions within communities, should be used to surface insights for policy and programming that may be overlooked by top-down research.

- **Obtain buy-in and mobilize resources for gender-responsive, community-centered climate solutions.**

Key stakeholders—including governments, the private sector, multilateral bodies, and civil society—must work together with those most impacted by the climate crisis to create collective solutions and comprehensive responses. The voice-based agro-advisory system in Gujarat shows how technical experts and the private sector can partner to create better outcomes. Additionally, measures are needed to expand women’s access to finance, especially local microfinance. Innovative solutions and collective efforts must be matched with adequate resources to generate impact and dedicated funding mechanisms are needed to ensure these resources reach women.

We cannot address the climate crisis without women. In addition to creating more effective climate action, inclusive adaptation has the potential to both mitigate and prevent conflict. Beyond being a moral imperative, research shows that women’s inclusion is a prerequisite for sustainable peace. Many of the places most acutely impacted by climate change are also experiencing fragility and conflict—both of which disproportionately affect women. Inclusive adaptation efforts can address overlapping drivers of insecurity that threaten peace and stability. As resources are mobilized to address the climate crisis, women must benefit equally from investments. Centering women in local-level climate change adaptation efforts can strengthen climate resilience, promote the well-being of women and communities, and create a more secure and just future for all.



Rural solar engineer in Rajasthan, India.
Photo: Knut-Erik Helle

Endnotes

- 1 Jessica Smith, Lauren Olosky, and Jennifer Grosman Fernández, "The Climate-Gender-Conflict Nexus: Amplifying Women's Contributions at the Grassroots," Georgetown Institute for Women, Peace and Security (GIWPS), 2021, <https://giwps.georgetown.edu/wp-content/uploads/2021/01/The-Climate-Gender-Conflict-Nexus.pdf>.
- 2 GIWPS and Peace Research Institute Oslo (PRIO), *Women, Peace and Security Index 2021/22: Tracking Sustainable Peace through Inclusion, Justice, and Security for Women* (Washington, DC: GIWPS and PRIO), <https://giwps.georgetown.edu/wp-content/uploads/2021/11/WPS-Index-2021.pdf>.
- 3 Despite limited available reports, we aimed to feature diverse projects across different geographies, cultures, and years. Featured projects include those funded by large, international development organizations, as well as examples from small women-centered initiatives that may not have had the resources to conduct formal project evaluations. Projects were selected for their potential to offer valuable insights and good practices that could inform inclusive adaptation efforts. Notably, there is a tendency for research on the gender dimensions of climate and security to focus on rural communities in the Global South and all of the selected projects in this report take place in the Global South. See Elizabeth Smith, "Gender Dimensions of Climate Insecurity," *SIPRI Insights on Peace and Security*, no. 2022/4, March 2022, 28, https://www.sipri.org/sites/default/files/2022-03/sipriinsight2204_gender_dimensions_of_climate_insecurity.pdf. Given that none of the selected projects take place in the Global North, the insights and recommendations in this report may be less applicable to those contexts.
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