Gender, Agriculture, and Climate Change

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Climate change affects rural women’s and men’s ability to secure their livelihoods. At the same time, it poses new challenges for the agricultural sector in reducing poverty and food insecurity and in transforming itself into a strong engine for sustainable economic growth. Climate change is likely to exacerbate inequalities between women and men if efforts to integrate gender concerns in climate change responses are neglected (Skinner 2011). Already, in view of the increased climate variability, there is a pressing need to adopt gender-sensitive approaches in order to achieve food security and poverty reduction (FAO 2011). This AES Note examines the nexus between Gender, Agriculture, and Climate Change, discusses how and why women and men are differently affected by climate change and why addressing gender inequality is crucial to addressing climate change impacts. It also offers recommendations for gender-sensitive responses to climate change.

AGRICULTURE VIS-À-VIS CLIMATE CHANGE

Agriculture is affected by climate change, yet it also contributes to climate change and can reduce the impact of climate change. FAO estimates that by 2050, feeding 9 billion people will require a 60 percent increase in food production, a task that becomes even more challenging under changing climate conditions (OECD-FAO 2012). Crops, livestock, forests, and fisheries are highly sensitive to variations in temperature and rainfall as well as to more-extreme climate events (such as, heat waves, droughts, floods). The Intergovernmental Panel on Climate Change estimates that agriculture is directly responsible for at least 14 percent of all greenhouse gas emissions, with deforestation and forest degradation accounting for another 17 percent (IPCC 2007).

While climate change is a global phenomenon, its impacts are felt locally. Developing countries are expected to be hit the hardest by climate change, not least because agriculture represents the primary source of income and livelihood for 75 percent of the world’s poor and because their national, local, and household capacity to cope with climate change impacts is limited (IFAD 2002, World Bank 2008, WRI 2009). Although poor smallholders are hardest hit by climate change, they are the group least responsible for it. When a family’s livelihood strategy is altered by climate change, all its members are affected; however, the effects are different for women and men and, as a result, women’s coping responses are also different from those of men. A good example comes from Cameroon on how climate change can spur agricultural innovation. In Cameroon, women experiencing high post-harvest losses because of heavy rainfall are harnessing their indigenous knowledge by turning crops into processed foods that last longer and have a better market value (Fordham et al. 2001).

At the same time, agriculture can also be part of the solution: crops “grab” carbon dioxide from the atmosphere and use it for their growth. Production systems that retain extensive crop cover for a long period of time and that store carbon in the soil can be a powerful solution to capturing greenhouse gases from the atmosphere and thus reducing climate change effects. Climate-smart agriculture (CSA) uses a holistic and integrated approach which relies on a package of technologies and practices to meet food security goals and to address poverty while adapting to and/or mitigating climate change.
Mitigation seeks to reduce greenhouse gas emissions and/or enhance the removal of these gases from the atmosphere through carbon sinks. This can include growing more trees or the use of improved feeding practices for livestock.

Adaptation refers to adjustments in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities (IPCC 2007 Glossary). Adaptation practices include developing and growing more drought-resistant crops, building terraces, or using compost and mulch to increase soil moisture.

Resilience is the ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner (FAO 2013).

Adaptive capacity is essential to resilience. It encompasses two dimensions: recovery from shocks and response to changes in order to ensure the ‘plasticity’ of the system. For example, the organization of seed systems enables farmers who have lost a crop to have seeds for the next season. It also enables them to have access to seeds that are adapted to new conditions (FAO 2013).

In practice, CSA means:

- Judicious use of in-organic and organic fertilizers, as well as crop varieties and livestock breeds that are more adapted to a changing climate
- Improving water management techniques to conserve and use water more efficiently
- Practicing agro-forestry, where woody perennials are integrated with agricultural crops and/or livestock
- Crop rotation, biogas production from livestock manure, mulching, intercropping, integrated crop-livestock management and improved grazing to help conserve water and sequester carbon in the soil
- Better weather forecasting, early warning systems, and insurance to help farmers reduce risk.

GENDER INEQUALITY VIS-À-VIS CLIMATE CHANGE

A focus on women is warranted because of the evidence of their greater vulnerability to climate change impacts. Their differential vulnerability vis-à-vis men relates to the prevailing gender asymmetry in the lack of access to assets, services, and voice, which emerges from the socially and culturally defined roles of women and men in agriculture. Not only are there gender-differentiated impacts of climate change in agriculture, with men and women producers facing different risks and vulnerabilities, but men and women farmers also contribute differently to climate change and have different ways of coping with it, adapting to it, and mitigating its impacts. There is enough evidence to suggest that women farmers have a higher exposure to climate risks compared to men, because:

- **Women have fewer endowments.** Most women are landless, and when they do own or lease land, their plots tend to be small and of poor quality. In Brazil, for example, women own as little as 11 percent of the land, and in Kenya, women account for only 5 percent of registered landholders. In Ghana, the mean value of men’s landholdings was three times that of women’s landholdings (World Bank 2011a). These plots require more labor, which women often provide in addition to working on the family farm. Similar patterns are observed regarding livestock, with women owning fewer and smaller animals. Women also have less access to credit or cash to afford fertilizers, pesticides, and improved seeds, or to cover their capital and running costs to set up a business.

- **Women have fewer entitlements and less access to services.** Women coping with the effects of climate change are also hampered by restrictions and limited rights in the community. For example, a study in Andhra Pradesh, India, showed that only 21 percent of women surveyed compared to 47 percent of men received information on cropping strategies for coping with climate variability (Lambrou and Nelson 2010). Women also tend to have less access to the information, education, and extension services they need to respond to climate change. Only recently have women’s voices become stronger in international fora. While women have already made use of valuable adaptation and mitigation strategies, they have not yet been supported fully by an enabling policy environment.

- **Women are less mobile.** When climate change effects occur, there is often a renegotiation of gender roles within a household, with family members usually relying on each other to pool the resources they need to support themselves and their children and relatives (Lambrou and Nelson 2010). For example, men will often seek to migrate to find work outside agriculture during droughts, while women remain behind to tend the crops and livestock and supervise the children who may be pulled out of school to do household chores (IOM 2009).

Climate change is also expected to increase the frequency and intensity of extreme weather events. There is already evidence that these events affect women and men differently. In Bangladesh, in 1991, Cyclone Gorky caused tremendous damage and killed more than 140,000 people. Female fatalities outnumbered male fatalities by 14 to 1 (World Bank 2011b). Subsequently, Bangladesh took
steps to address the cultural reasons why women were reluctant to use cyclone shelters by creating safe spaces for women in the shelters, providing separate toilets, and training women as early warning leaders. These and other disaster preparedness measures reduced the overall death toll when Cyclone Sidr hit in 2007, whereby the ratio of female to male fatalities was reduced to 5:1.

Women can also constitute part of the solution in building climate resilience (World Bank 2011b), as the capacity to adapt to and to mitigate climate change has proven to have a gender dimension. Capitalizing on both women’s and men’s active participation in decision-making processes and utilizing their skills and knowledge not only promotes gender equality but also contributes to designing and implementing more effective and sustainable agricultural policies in the face of climate change.

**ADDRESSING GENDER INEQUALITY IS CRUCIAL TO ADDRESSING CLIMATE CHANGE IMPACTS**

The WDR on Gender Equality and Development (2012) indicated that correcting the market and institutional failures underpinning gender inequality can yield substantial gains in productivity and produce broader economic benefits in an environmentally sustainable way. This is especially important in regions hit hard by climate change, where opportunities to empower women economically tend to be even greater (GTZ 2010, Ahmad 2012).

A strong gender approach to adaptation to climate change is one that recognizes the potential of both women and men to make effective choices and to transform those choices into desired outcomes. These efforts build on and support women’s agency, alongside men’s. They empower women by not only developing their capacity to harness new or traditional adaptation and/or mitigation technology, but also harnessing opportunities such as literacy programs, educational and training programs, enhancing women’s primary and reproductive health care, reducing child mortality rates, and addressing domestic violence.

As agriculture is transformed into a more commercially oriented and globally integrated sector, there is a risk that women farmers are being left out and remain in traditional, small-scale, low-productivity agriculture and therefore more susceptible to the impacts of climate change. To include women in the emerging market economy, policies and interventions must seek to overcome the formal and informal institutional barriers to women’s participation and firm ownership in climate-smart agriculture. Diversifying rural revenues away from agriculture in order to increase resilience to climate change could create additional opportunities for women. Nature-based tourism is one such activity which can help spur economic activities in which women are predominant. In Morocco, a USAID-financed rural tourism pilot project assisted a women’s cooperative to diversify its argan oil products and get higher revenues for women through better marketing (USAID 2006).

**FURTHER ACTION IS NEEDED**

- Research is needed to better understand how climate change is affecting men and women farmers, especially their use of and access to resources, distribution of benefits, labor allocation and participation in decision-making processes at all levels. Research could inform policy makers about the different local, indigenous, and traditional adaptation and mitigation knowledge men and women rely on in responding to climate change.

- Collecting data disaggregated by sex, adopting participatory research tools, and implementing gender and social analysis can capture gender differences to inform technology development and design more effective policy responses.

- Gender perspectives need to be integrated into policy and decision-making. For example, gender equality and women’s empowerment in mitigation finance should be reinforced. Some of the existing funds can ensure that women are benefiting (such as the Clean Technology Fund under the Climate Investment Funds).

- Adaptation finance—such as the Special Climate Change Fund and the newly established Green Climate Fund—can bring in the gender dimension. While National Adaptation Programmes for Action (NAPAs), that help countries prioritize and implement their climate change adaptation actions, mostly recognize the vulnerability of women to climate change effects; few incorporate women as key stakeholders in defining their activities, and fewer commit to mainstreaming gender in their action plans. Eritrea, Malawi, and Mauritania are some exceptions to the rule, having engaged women’s groups in the development of their countries’ NAPAs and their projects target women stakeholders (UNFPA-WEDO 2009).
RECOMMENDATIONS

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<th>Program design</th>
<th>Policy</th>
<th>Implementation and outreach</th>
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<td>Climate-responsive agricultural projects are more effective when they include broad enabling efforts to support, for instance, women’s rights to land, as often it is laws and regulations that place women in a disadvantaged position.</td>
<td>Use affirmative action strategies like supportive structures that link local, national, and international policy processes, including support for participation of women’s groups, as instruments to ensure the inclusion of women in climate change policy making and in adaptation and mitigation projects.</td>
<td>Use agricultural advisory services, farmer field schools, water user associations, and other community groups to encourage women to tap their social capital in self-empowering organizational structures for policy dialogue and advocacy about gender equality and in defining their needs in income-generating activities. Enlisting the collaborative support of men is key.</td>
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<td>Focus on specific vulnerable households (such as widows or disabled people) which will effectively increase poverty reduction and minimizes the devastating impact of climate change effects.</td>
<td>Encourage the accountability of local and national institutions by supporting the examination of their climate change agendas in combination with women’s inclusion at the policy and project levels.</td>
<td>Encourage projects to have gender-disaggregated monitoring and evaluation indicators.</td>
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<td><strong>SOURCES</strong></td>
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———. 2013. Climate Smart Agriculture Sourcebook. Rome: FAO.


This AES Note is based on the Gender in Agriculture Sourcebook’s (2009) Module 17 on Gender, Agriculture, and Climate Change. It was prepared by Nilufar Ahmad, Lamia El-Fatal, Eija Pehu, Pirkko Poutiainen, and Marianela Vyzaki. Reviews were provided by Anne Kuriakose, Ademola Braimoh, and David Treguer. The Module is also available online as an e-learning course at http://www.genderinag.org/sites/genderinag.org/files/E-Learning_Course/module-17/story.html