



GENDER AND CLIMATE CHANGE

Gender, climate change and food security

The interlinked challenges of climate change and food security are most evident in the agriculture sector, which (combined with land-use change) produces about a quarter of global greenhouse emissions. At the same time, climatic stresses on agriculture and food systems present formidable food security and livelihood challenges to millions. The climate challenge in agriculture requires integrated approaches that increase productivity, enhance adaptive capacity and cut back net emissions. The agency of rural female farmers is essential for enhancing agricultural productivity and realizing the Sustainable Development Goals (SDGs), including ensuring food security (SDG 2) and addressing the perils of climate change (SDG 13). Despite significant strides in addressing gender inequalities over the years, rural women are still among the most marginalized groups in society and are particularly vulnerable to current and future climate change and food insecurity. Given these close relationships, the response to climate change vis-à-vis the agricultural sector should therefore take into account gender dynamics and be gender-responsive.

Women improve agricultural productivity

In most parts of the world, women play a major role in agricultural production, a critical component of food security – women farmers bring to bear valuable knowledge in seed selection, vegetative propagation and the reproduction of plants and animals. A growing body of evidence in international development establishes that gender equality at the household and community levels leads to superior agricultural and development outcomes, including increases in farm productivity and improvements in family nutrition.¹ The McKinsey Global Institute (MGI) recently calculated the economic impact of closing the gender gap in labour markets in 95 countries (covering 93 percent of the world’s female population and 97 percent of its GDP) and concluded that the national GDPs of each country would increase by at least 9 percent and global GDP by as much as \$28 trillion or 26 percent.² Agriculture-specific data similarly shows strong correlation between women’s empowerment and agricultural productivity. Thus, according to the Food and Agriculture Organization (FAO), if women farmers were given the same access to resources (such as land and credit) as men, national agricultural production could rise by 2.5 to 4 percent and the number of malnourished people could be reduced by 12 to 17 percent.³ A recent comparative study in Nigeria, Tanzania, and Uganda also suggests that closing gender productivity gaps in these countries yields production gains of 2.8 percent, 8.1 percent, and 10.3 percent, respectively.⁴



Gender imbalances in agriculture

Women play a pivotal role in the three components of food security: food availability (production), food access (distribution), and food utilization.⁵ Women also play a role in a wide range of activities that support agricultural development, such as soil and water conservation, afforestation, and crop domestication. Men also play a crucial role in food production, often focused on cash crops. However, they face far fewer constraints than women. Men are more likely to have access to productive resources such as land, credit and extension services.⁶ In cases of crop failure due to harsh climatic conditions, cultural factors often make it easier for men to leave their farms in search of employment elsewhere, leaving women behind to struggle to feed their families and make ends meet. In many cases, women have diminished assets and resources to help them plan for and potentially avert the next crisis. Diverse gender-based barriers (including restrictive sociocultural inhibitions)⁷ in accessing land, financial services, social capital, credit and technology render women vulnerable to food insecurity (see Box 1: The gender gap in agriculture).⁸

Box 1 *The gender gap in agriculture*

- *Adverse environmental factors are expected to boost world food prices 30 to 50 percent in the coming decades and to increase price volatility, with harsh repercussions for poor households, including women-headed households.*
- *Although they predominate in world food production (50 to 80 percent), women own less than 20 percent of land.*
- *Gender productivity gaps in Nigeria, Tanzania, and Uganda are 18.6 percent, 27.4 percent, and 30.6 percent, respectively.*
- *Women receive only 5 percent of agricultural extension services worldwide.*
- *In most countries, the share of female smallholders who can access credit is 5 to 10 percentage points lower than that of male smallholders. This is partly attributable to the fact that women often do not have the necessary collateral.*
- *A World Bank study indicates that 155 of the 173 economies it covered (i.e., 9 in 10 countries) have at least one law impeding women's economic opportunities, including access to credit.*
- *If women farmers were given the same access to productive resources as men (e.g., land), the number of malnourished people could be reduced by 12 to 17 percent.*

Sources: UNDP (2015); FAO (2011a); FAO (2011b); World Bank Group (2015); Mukasa and Salami (2016)⁹

Agriculture – climate change interlinkages

The agricultural sector is predicted to come under substantial stress from climate change-induced increases in temperature, variability in rainfall, and extreme weather events that could trigger crop failures, pest and disease outbreaks, and the degradation of land and water resources.¹⁰ These impacts will be experienced acutely and increasingly in the poorest regions of the world where rain-fed agriculture is the mainstay of millions.¹¹ For example, early this year El Niño weather conditions disturbed rain patterns in the horn of Africa, driving up to 15 million people in the region to food aid and exposing up to 40 million people to droughts.¹²

While agriculture is highly prone to climate change, it also contributes to its effects. The Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) has underscored the criticality of low-emissions agriculture – currently the sector employs over 1 billion people (one in three of all workers)¹³ and accounts for up to 30 percent of greenhouse gas emissions (GHGs), making it the second major contributor of GHGs.¹⁴

While the interlinkages between climate change and agriculture pose complex overlapping and interrelated challenges, the improvement of food security and rural livelihoods and climate change adaptation and mitigation are not mutually exclusive ends. GHG mitigation in agriculture, when done right, could also produce food security and resilience co-benefits. One widely accepted approach that is currently being operationalized is ‘climate-smart agriculture’, which aims to sustainably improve agricultural productivity, enhance food security, boost farmers’ adaptive capacity and resilience to climate shocks *and* contribute to GHG mitigation.¹⁵ Such an approach employs a wide array of policy tools, techniques (such as agroforestry, conservation agriculture, and technology – e.g., biogas programmes) and investments to help facilitate the transition to high-production, resilient, sustainable and low-emission agriculture.

Box 2 Gender and agriculture in the pledges for climate action (INDCs)

As part of the requirements for compliance with the United Nations Framework Convention on Climate Change (UNFCCC) elaborated in Paris in 2015 (COP 21), over 160 Intended Nationally Determined Contributions (INDCs) were submitted, representing 190 countries.

Analysis of these INDCs made by the Research Program on Climate Change, Agriculture and Food Security (CCAFS) of the Consortium of International Agricultural Research Centers (CGIAR) shows that of 162 INDCs, 119 intend to make emissions reductions in agriculture, and 127 list agriculture as a priority for adaptation. Sixty-five countries mention gender in their submissions (35 in the context of adaptation, and 18 in relation to mitigation). Several additional countries made a general mention of gender, though not in relation to adaptation or mitigation. Only 15 countries included gender in the context of agricultural mitigation or adaptation.

Source: CCAFS (2016)¹⁶

Women are key to the success of climate-smart agriculture

The appeal of climate-smart agriculture is its balanced approach in seeking to improve livelihoods, increasing the productivity and resilience of poor communities, including rural women, while also providing mitigation benefits.¹⁷ However, existing gender imbalances in agriculture, as discussed above, mean that women are potentially at a comparative disadvantage in terms of participating in and benefiting from site-specific climate actions on the ground.¹⁸ Because gender-differentiated vulnerabilities to the impacts of climate change are the cumulative result of a complex array of sociocultural, structural and institutional inequities,¹⁹ climate-smart agriculture and similar efforts should seek to enhance the resource base of women and ensure that women's contributions to productivity and food security are broadly valued²⁰ – redressing gendered vulnerabilities and unequal power dynamics in agriculture would help ensure their efficacy and sustainability.

Box 3 Uganda: Closing the technology gender gap in agriculture

Farmer field schools have proved to be a participatory and effective way of empowering and transferring knowledge to women farmers. This was evident in Kenya, Uganda and Tanzania, where women who participated in these schools were more likely to adopt major technologies, including improved crop varieties, and livestock management and pest control techniques.

The sustainable rural livelihoods programme established in 2004 in eastern Uganda's Kamuli District was designed to improve food security, nutrition and health at the household and community levels. The programme employs farmer-to-farmer training and extension services to demonstrate and disseminate information on key management practices such as planting banana or cassava in ways that ensure productivity and control diseases; enhancing soil fertility through composting with manure; and growing and using nutrient-dense crops such as amaranth grain and sweet potatoes rich in vitamin A.

It also emphasizes the establishment of multiplication gardens and seed nurseries, post-harvest management and storage, the improvement of livestock breeding and feeding, the integration of nutrition and health with agriculture, farm enterprise development, marketing, and the strengthening of farmer groups. Women make up the majority of farm group members, leaders and trainers. They comprise about 58 percent of community-based rural development extension workers, 75 percent of community nutrition and health workers, 76 percent of committee members, and 71 percent of executive committee members.

The programme has resulted in the enhancement of women's human capital through training and experience gained in developing leadership skills, improved nutrition and health, and community-wide respect for their role as sources of valuable knowledge. The women are also involved in farm groups and emerging marketing associations. Another key result has been a significant increase in household food security.

Source: FAO, The State of Food and Agriculture (2011a)²¹

Key Messages

- **Undertake the reform of laws that restrict women's ownership of and/or access to productive resources.** Gender equality is a fundamental right, but it also makes economic sense – improving women's access to land, credit and other productive resources would increase the productivity of land and help boost food security as well as overall well-being at household and community levels. The rural poor, especially women, should have secure tenure or similar rights of access to land and other productive resources.
- **Adopt a gender-responsive approach in climate-smart agricultural initiatives.** Climate change necessitates a new approach to agriculture that employs policy and agro practices that enhance food security, promote adaptation and resilience, and yield mitigation co-benefits. Because gender imbalances in the sector affects how men and women contribute to and benefit from climate-smart agriculture, the latter should be closely attuned to the unique needs and means of women and men.
- **Ensure that technologies and extension services cater to women's needs.** New technologies (e.g., drought-resistant crops, irrigation practices) and existing ones will be adopted and/or adapted more effectively when they are suitable to the needs of women. Rural women also need to benefit from access to agricultural extension and climate information services.
- **Gather sex-disaggregated data in agriculture and food security.** Sex-disaggregated data on access to land and land tenure security, finance, extension services and agricultural tools, etc., would be helpful for gender-responsive policy design and monitoring. Gender analysis and gender-sensitive tools also need to be employed throughout the project cycle for all adaptation and mitigation actions for the agriculture sector.





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REFERENCES

1. See Farnworth, C. R. and Colverson, K. E., 'Building a gender-transformative extension and advisory facilitation system in Sub-Saharan Africa', *Journal of Gender, Agriculture and Food Security* 1, no. 1 (2015), pp. 20–39.
2. McKinsey Global Institute (MGI), 'The Power of Parity: How Advancing Women's Equality Can Add \$12 Trillion to Global Growth', McKinsey & Company, September 2015.
3. Food and Agriculture Organization of the United Nations (FAO), *The State of Food and Agriculture: Closing the Gender Gap for Development* (Rome: FAO, 2011a).
4. Mukasa, A. and Salami, A., 'Gender equality in agriculture: What are really the benefits for sub-Saharan Africa?' *Chief Economist Complex* | AEB 7, no. 3 (2016).
5. World Bank, 'Gender in Agriculture Sourcebook', Washington, D.C., 2009.
6. FAO, *The State of Food and Agriculture* (2011a).
7. Dankelman, I., ed., *Gender and Climate Change: An Introduction* (London: Earthscan, 2010).
8. FAO, *The State of Food and Agriculture* (2011a).
9. United Nations Development Programme (UNDP), 'UNDP and Climate Change: Zero Carbon, Sustainable Development', 2015; World Bank Group, *Women, business, and the law 2016: Getting to equal* (Washington, D.C.: World Bank, 2015); and FAO, *The State of Food and Agriculture* (2011a). FAO, *The State of Food Insecurity in The World: How does international price volatility affect domestic economies and food security?* (Rome: FAO, 2011b); Mukasa and Salami, 'Gender equality in agriculture' (2016).
10. FAO, *The State of Food Insecurity in The World* (2011b).
11. World Bank, *Turn Down the Heat: Climate Extremes, Regional Impacts, and the Case for Resilience*, A report for the World Bank by the Potsdam Institute for Climate Impact Research and Climate Analytics (Washington, D.C.: World Bank, 2013).
12. Parker, H. et al., 'Gender, agriculture and water insecurity', Overseas Development Institute (ODI) Insights, London, March 2016.
13. FAO, 'FAO Statistical Yearbook 2012'.
14. Richards, M. B. et al., 'Agriculture's contributions to national emissions', CCAFS Info Note, CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), Copenhagen, Denmark, 2015. The Intergovernmental Panel on Climate Change (IPCC) estimates emissions from agriculture-related deforestation (which include methane and nitrous oxide emissions from livestock, manure management, flooded rice cultivation, agricultural soils and fertilizers, and the burning of crop residues) and other land-use changes at 24 percent of global GHG emissions in 2010. See IPCC, *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects*. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Field, C. B. and Barros, V. R. et al., eds. (Cambridge, U.K. and New York: Cambridge University Press, 2014).
15. FAO, 'Climate-Smart Agriculture Sourcebook', Rome, 2013.
16. CCAFS, 'Agriculture's prominence in the INDCs: Data and maps', ccafs.cgiar.org/agricultures-prominence-indcs-data-and-maps (accessed 20 August 2016).
17. See FAO, 'Climate-Smart Agriculture Sourcebook' (2013).
18. Nelson, S. and Huyer, S., 'A Gender-responsive Approach to Climate-Smart Agriculture: Evidence and guidance for practitioners', Global Alliance for Climate-Smart Agriculture (GACSA), FAO, CCAFS, April 2016.
19. UNDP, *Gender, Climate Change and Community-Based Adaptation* (New York: UNDP, 2010); see FAO, *The State of Food Insecurity in The World* (2011b).
20. Huyer, S. et al., 'Supporting women farmers in a changing climate: five policy lessons', CCAFS Policy Brief 10, Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), October 2015.
21. FAO, *The State of Food and Agriculture* (2011a).



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