RSiS S. RAJARATNAM SCHOOL OF INTERNATIONAL STUDIES
Nanyang Technological University, Singapore

NTS INSIGHT

NTS Insight, no. IN24-03, August 2024

NTS Insight Special Series: 'Climate Change and the Women, Peace and Security Agenda'

Economic Impacts of Climatic Change on African Women

By **Hélène Maisonnave** [1] and **Martin Henseler** [2]

Photo Credit: Alliance of Bioversity International and CIAT/Flickr.com via Creative Commons

Abstract

Lower access to money and assets makes women less resilient against climate change impacts, like extreme weather events (floods, drought) and scarcity of resources such as water and food. In agriculturally based economies in Africa, most women work in the climate-sensitive agricultural sectors. Moreover, women face time poverty because they are the main ones responsible for domestic work, for example, childcare, collecting water and fuel, and food preparation. At the same time, women are extremely important for the current and future economic growth in developing economies. In Africa, all these women-specific challenges apply on a continent highly exposed to the impacts of climate change but are regionally heterogeneous. Understanding the region-specific impact of climate change on women is the key to designing effective and efficient policies to counteract the negative impacts on women.

Contents

Recommended citation: Hélène Maisonnave and Martin Henseler, Economic Impacts of Climatic Change on African Women, No. IN24-03 (Singapore: RSIS Centre for Non-Traditional Security Studies (NTS Centre), Nanyang Technological University Singapore. 2024).

[1] Université Le Havre Normandie, EDEHN UR 7263, Le Havre, France
Partnership for Economic Policy (PEP), Nairobi, Kenya
[2] Université Rouen Normandie, LERN UR 4702, Rouen, France
Partnership for Economic Policy (PEP), Nairobi, Kenya

Introduction

Climate change is one of the greatest challenges of our time: it affects every country to varying degrees (some positively, most negatively) and different dimensions of the economy. [3] Beyond the immediate human and material damage, climate change affects people's well-being mainly through agriculture, health and labour productivity. [4]

In developing countries, vulnerable groups are the most affected. [5] Poor social groups are the most affected by climate change because they are more dependent on natural resources and because they lack the capacity to adapt to climate change. [6]

Indeed, women are more vulnerable than men to changes caused by globalisation, economic crises, and environmental degradation. [7] Also, climate change is not gender-neutral. [8] Gender-specific social and economic barriers limit the ability to cope with climate change, especially for poor women. [9] In addition, women have unequal access to resources and may not have the assets that could enable them to adapt to climate change. [10] Climate change, therefore, threatens to exacerbate women's precariousness and increase their vulnerability. [11]

In most developing countries, and especially for countries in Africa, women work mainly in the agricultural sector, which is the sector most affected by climate change.[12] A decline in agricultural yields will affect the production of food that women provide for their families. At the national level, this may threaten the country's food security. The decrease in production also leads to a drop in agricultural income. Working mainly in climate-sensitive agriculture exposes women to income losses and increases women's vulnerability and poverty. Climate change impacts women in household roles and

---

[3] Javier Baez, Alejandro Fuente, and Indhira Santos, 'Do Natural Disasters Affect Human Capital? An Assessment Based on Existing Empirical Evidence', *Institute for the Study of Labor (IZA), IZA Discussion Papers*, 24 September 2010, https://doi.org/10.2139/ssrn.1672172.

[4] Eduardo Cavallo, 'Natural Disasters and the Economy — A Survey', *International Review of Environmental and Resource Economics* 5, no. 1 (30 May 2011): 63–102, https://doi.org/10.1561/101.00000039; Harriet Brookes Gray, Vis Taraz, and Simon D. Halliday, 'The Impact of Weather Shocks on Employment Outcomes: Evidence from South Africa', *Environment and Development Economics*, 9 September 2022, 1–21, https://doi.org/10.1017/S1355770X22000237; Sebastian Acevedo et al., 'The Effects of Weather Shocks on Economic Activity: What Are the Channels of Impact?', *Journal of Macroeconomics* 65 (September 2020): 103207, https://doi.org/10.1016/j.jmacro.2020.103207; Melissa Dell, Benjamin F Jones, and Benjamin A Olken, 'Temperature Shocks and Economic Growth: Evidence from the Last Half Century', *American Economic Journal: Macroeconomics* 4, no. 3 (1 July 2012): 66–95, https://doi.org/10.1257/mac.4.3.66; Marco Letta, Pierluigi Montalbano, and Richard S J Tol, 'Temperature Shocks , Short-Term Growth and Poverty Thresholds : Evidence from Rural Tanzania', *World Development* 112 (2018): 13–32, https://doi.org/10.1016/j.worlddev.2018.07.013; E. Somanathan et al., 'The Impact of Temperature on Productivity and Labor Supply: Evidence from Indian Manufacturing', *Journal of Political Economy* 129, no. 6 (1 June 2021): 1797–1827, https://doi.org/10.1086/713733.

[5] 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.* (Cambridge University Press, 2014); Jisung Park et al., 'Households and Heat Stress: Estimating the Distributional Consequences of Climate Change', *Environment and Development Economics* 23, no. 3 (June 2018): 349–68, https://doi.org/10.1017/S1355770X1800013X.

[6] Samuel Fankhauser and Thomas K. J. McDermott, 'Understanding the Adaptation Deficit: Why Are Poor Countries More Vulnerable to Climate Events than Rich Countries?', *Global Environmental Change* 27 (1 July 2014): 9–18, https://doi.org/10.1016/j.gloenvcha.2014.04.014; Stephane Hallegatte and Julie Rozenberg, 'Climate Change through a Poverty Lens', *Nature Climate Change* 7, no. 4 (April 2017): 250–56, https://doi.org/10.1038/nclimate3253; Nicholas Stern, 'Climate. Stern Review: The Economics of Climate Change', *New England Journal of Public Policy* 21, no. 2 (1 July 2007), https://scholarworks.umb.edu/nejpp/vol21/iss2/4.

[7] Fatma Denton, 'Climate Change Vulnerability, Impacts, and Adaptation: Why Does Gender Matter?', *Gender & Development* 10, no. 2 (1 July 2002): 10–20, https://doi.org/10.1080/13552070215903.

[8] Solomon Asfaw and Giuseppe Maggio, 'Gender, Weather Shocks and Welfare: Evidence from Malawi', *The Journal of Development Studies* 54, no. 2 (1 February 2018): 271–91, https://doi.org/10.1080/00220388.2017.1283016; Denton, 'Climate Change Vulnerability, Impacts, and Adaptation'; Amelia H. X. Goh, 'A Literature Review of the Gender-Differentiated Impacts of Climate Change on Women's and Men's Assets and Well-Being in Developing Countries:', *CAPRi Working Papers*, CAPRi working papers, 2012, https://ideas.repec.org/p/fpr/worpps/106.html; Gerald Nelson et al., *Climate Change: Impact on Agriculture and Costs of Adaptation*, *Food Policy*, 2009, https://doi.org/10.2499/0896295354; Agnes R. Quisumbing, Neha Kumar, and Julia A. Behrman, 'Do Shocks Affect Men's and Women's Assets Differently? Evidence from Bangladesh and Uganda', *Development Policy Review* 36, no. 1 (2018): 3–34, https://doi.org/10.1111/dpr.12235.

[9] Geraldine Terry, 'No Climate Justice without Gender Justice: An Overview of the Issues', *Gender and Development* 17, no. 1 (2009): 5–18, https://www.jstor.org/stable/27809203.

[10] Joshua Eastin, 'Climate Change and Gender Equality in Developing States', *World Development* 107 (1 July 2018): 289–305, https://doi.org/10.1016/j.worlddev.2018.02.021.

[11] Denton, 'Climate Change Vulnerability, Impacts, and Adaptation'.

[12] Dell, Jones, and Olken, 'Temperature Shocks and Economic Growth: Evidence from the Last Half Century'; FAO, 'FAO's Work on Climate Change - United Nations Climate Change Conference (Https://Www.Fao.Org/3/Ca7126en/Ca7126en.Pdf)' (Food and Agriculture Organization of the United Nations (FAO), 2019), https://www.fao.org/3/ca7126en/ca7126en.pd; Günther Fischer et al., 'Socio-Economic and Climate Change Impacts on Agriculture: An Integrated Assessment, 1990-2080', *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences* 360, no. 1463 (29 November 2005): 2067–83, https://doi.org/10.1098/rstb.2005.1744; Thomas W. Hertel and Stephanie D. Rosch, 'Climate Change, Agriculture, and Poverty', *Applied Economic Perspectives and Policy* 32, no. 3 (2010): 355–85, https://doi.org/10.1093/aepp/ppq016; 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.*

as workers, mainly in agricultural production. In fact, with the effects of climate change, domestic burdens risk increase for women, pushing them further away from paid employment. Furthermore, as women work mainly in the agricultural sector which is most impacted, it is their source of income which is threatened. Designing and implementing adaptation measures for Africa requires understanding the nexus between climate change, women and agriculture.

Women's Vulnerability to Climate Change in Africa

Africa is highly exposed and is the most vulnerable continent to the negative impacts of climate change.[13] Given the great geographic diversity and economic development of the continent, the effects of climate change are different across the continent. As in other parts of the world, Africa is experiencing rising temperatures, with recent decades showing warming trends comparable to other continents. This has resulted in more frequent and intense heatwaves, particularly affecting the Sahel and Southern Africa. The continent is facing severe droughts and water scarcity, especially in Southern Africa, which has experienced multi-year droughts, significantly affecting agriculture and water supplies. Rising sea levels are affecting African coastlines, particularly in West Africa, where coastal erosion is a major problem. In North Africa, coastal areas such as Egypt's Nile Delta are vulnerable to sea level rise and saltwater intrusion, threatening agriculture and freshwater resources. Droughts and erratic weather patterns have led to crop failures and reduced agricultural productivity. The Horn of Africa, for example, faces ongoing famine risks due to prolonged droughts. All these consequences are particularly important as African economies depend highly on climate-sensitive agricultural production. Poverty and inequality are high in many countries on the continent, and many low and lower-middle-income countries in Africa are conflict-affected.[14]

In Africa, women obtain important economic and social roles in households and as workers. Women are usually responsible for domestic tasks, including childcare, water, and wood collection for the household. [15] Thus, they are responsible for raising and educating current and future workers. They work primarily in agriculture, the sector that is highly affected by climate change but is very important for economic growth and food supply. In Sub-Sahara Africa (SSA), agriculture contributes about 23% of the total gross domestic product (GDP) of the region, and more than 50% of the labour force is made up of women.[16] Less financial and time resources and less access to production factors make it difficult for women to adapt agricultural production to climate change. [17] Furthermore, ownership and decisions on productive resources like land or livestock herds are dominated by men.[18] Therefore, women's decision power on climate change adaptation measures is small. [19] Lack of ownership and access, and social norms limit women from making management decisions towards climate change adaptation, such as increasing plot size of land.[20] Larger production area

[13] African Development Bank, 'Climate Change in Africa', Text, African Development Bank Group (African Development Bank Group, 28 November 2019), https://www.afdb.org/en/cop25/climate-change-africa.

[14] L Jaramillo et al., 'Climate Challenges in Fragile and Conflict-Affected States', IMF Staff Climate Note 2023/001 (nternational Monetary Fund, Washington, DC, 2023), https://www.imf.org/en/Publications/staff-climate-notes/Issues/2023/08/24/Climate-Challenges-in-Fragile-and-Conflict-Affected-States-537797.

[15] Quisumbing, Kumar, and Behrman, 'Do Shocks Affect Men's and Women's Assets Differently?'

[16] Lutz Goedde, Amandla Ooko-Ombaka, and Gillian Pais, 'Winning in African Agriculture', McKinsey and Company, 2019, https://www.mckinsey.com/industries/agriculture/our-insights/winning-in-africas-agricultural-market; OECD, 'Agriculture in Sub-Saharan Africa: Prospects and Challenges for the next Decade' (Paris: OECD, 4 July 2016), https://doi.org/10.1787/agr_outlook-2016-5-en.

[17] Markus Goldstein and Christopher Udry, 'The Profits of Power: Land Rights and Agricultural Investment in Ghana', *Journal of Political Economy* 116, no. 6 (2008): 981–1022, https://doi.org/10.1086/595561; Kate Grantham, Gillian Dowie, and Arjan de Haan, eds., *Women's Economic Empowerment: Insights from Africa and South Asia*, 1st ed. (London ; New York : Ottawa: Routledge, 2021); Stephanie Seguino and Maureen Were, 'Gender, Development and Economic Growth in Sub-Saharan Africa', *Journal of African Economies* 23, no. suppl_1 (1 January 2014): i18–61, https://doi.org/10.1093/jae/ejt024.

[18] Abubakari Ahmed et al., 'Adaptation to Climate Change or Non-Climatic Stressors in Semi-Arid Regions? Evidence of Gender Differentiation in Three Agrarian Districts of Ghana', *Environmental Development* 20 (November 2016): 45–58, https://doi.org/10.1016/j.envdev.2016.08.002; Neha Khandekar et al., 'Perceptions of Climate Shocks and Gender Vulnerabilities in the Upper Ganga Basin', *Environmental Development* 31 (September 2019): 97–109, https://doi.org/10.1016/j.envdev.2019.02.001.

[19] Philip Antwi-Agyei, Andrew J. Dougill, and Lindsay C. Stringer, 'Impacts of Land Tenure Arrangements on the Adaptive Capacity of Marginalized Groups: The Case of Ghana's Ejura Sekyedumase and Bongo Districts', *Land Use Policy* 49 (December 2015): 203–12, https://doi.org/10.1016/j.landusepol.2015.08.007; Khandekar et al., 'Perceptions of Climate Shocks and Gender Vulnerabilities in the Upper Ganga Basin'.

[20] Edward R. Carr, 'Men's Crops and Women's Crops: The Importance of Gender to the Understanding of Agricultural and Development Outcomes in Ghana's Central Region', *World Development* 36, no. 5 (1 May 2008): 900–915, https://doi.org/10.1016/j.worlddev.2007.05.009.

allows for more harvest and for more farm management options to apply climate adaptation praxis for example, crop variation, reduced management intensity or fallow.[21] Besides limited access to resources (land, fertiliser, credits), women also lack access to production technologies and know-how (climate water smart technologies), information and training such as in mobile phone services. [22] They have no or little decision power to apply climate-resistant management for example, in agro-biodiversity management.[23] Another concern is that women find it more difficult to change their economic activity from climate-sensitive agriculture to a non-agricultural sector. Women are less mobile than men and have less education, making it challenging for them migrate in search of other jobs. Very often, women are stuck in agricultural activities and are often left behind by men in rural areas. [24]

Women are also at risk of losing agricultural income and their jobs given that they work in a climate-sensitive sector making it difficult for them to produce enough food for their families. Already facing the disadvantages of lower salaries compared to men, women's economic security is compromised in climate change scenarios. In addition to what is mentioned above, unpaid domestic activities, which falls squarely on their shoulders, reduce women's time on paid work.[25] Climate change, therefore, threatens to exacerbate women's economic precariousness and increase their vulnerability.[26]

In Africa, many households rely on rain-fed agriculture to produce food and generate household income. Rising temperatures, insufficient rainfall, and land degradation negatively impact agricultural yields from crops and livestock and jeopardise food security and household income.[27] Access to productive resources like farmland and animals or credit helps support food and income security. [28] However, women have less access to land, animals and credits than men. As a result, female-headed households face higher income and food insecurity than male-headed households.[29] In rural areas, the food security gap between female and male-headed households is higher than in urban areas. [30]

Climate change-induced disasters (e.g., storms or floods) impact women and female-headed households more than men. Mortality rates tend to be higher for women because social norms dictate particular behaviour from women and therefore they are often not taught to swim or climb. In some areas, cultural or religious sensitivities, for example the female traditional dress code (which can include a full covering of their bodies, for example, burqas) can reduce women's mobility. Furthermore, women's responsibility for livestock and children as well as the elderly in their homes force them to remain to rescue/care for those less able than them. This can compromise their safety as well, in disastrous situations.[31]

---

[21] Markus Goldstein and Christopher Udry, 'The Profits of Power: Land Rights and Agricultural Investment in Ghana', *Journal of Political Economy* 116, no. 6 (2008): 981–1022, https://doi.org/10.1086/595561.

[22] Samuel T. Partey et al., 'Gender and Climate Risk Management: Evidence of Climate Information Use in Ghana', *Climatic Change* 158, no. 1 (January 2020): 61–75, https://doi.org/10.1007/s10584-018-2239-6.

[23] Khandekar et al., 'Perceptions of Climate Shocks and Gender Vulnerabilities in the Upper Ganga Basin'; Kurt B. Waldman and Robert B. Richardson, 'Confronting Tradeoffs Between Agricultural Ecosystem Services and Adaptation to Climate Change in Mali', *Ecological Economics* 150 (August 2018): 184–93, https://doi.org/10.1016/j.ecolecon.2018.04.003.

[24] Samuel Nii Ardey Codjoe, Lucy Kafui Atidoh, and Virginia Burkett, 'Gender and Occupational Perspectives on Adaptation to Climate Extremes in the Afram Plains of Ghana', *Climatic Change* 110, no. 1–2 (January 2012): 431–54, https://doi.org/10.1007/s10584-011-0237-z; Khandekar et al., 'Perceptions of Climate Shocks and Gender Vulnerabilities in the Upper Ganga Basin'; Walter Leal Filho et al., 'Understanding Responses to Climate-Related Water Scarcity in Africa', *Science of the Total Environment* (Elsevier B.V., February 2022), https://doi.org/10.1016/j.scitotenv.2021.150420.

[25] Diane Elson, 'Labor Markets as Gendered Institutions: Equality, Efficiency and Empowerment Issues', *World Development* 27, no. 3 (1 March 1999): 611–27, https://doi.org/10.1016/S0305-750X(98)00147-8; Marzia Fontana and Yana Van Der Meulen Rodgers, 'Gender Dimensions in the Analysis of Macro-Poverty Linkages', *Development Policy Review* 23, no. 3 (2005): 333–49, https://doi.org/10.1111/j.1467-7679.2005.00290.x.

[26] Denton, 'Climate Change Vulnerability, Impacts, and Adaptation'.

[27] Jane Kabubo-Mariara and Fredrick K. Karanja, 'The Economic Impact of Climate Change on Kenyan Crop Agriculture: A Ricardian Approach', *Global and Planetary Change* 57, no. 3 (1 June 2007): 319–30, https://doi.org/10.1016/j.gloplacha.2007.01.002.

[28] Alem meta Assefa Agidew and K. N. Singh, 'Determinants of Food Insecurity in the Rural Farm Households in South Wollo Zone of Ethiopia: The Case of the Teleyayen Sub-Watershed', *Agricultural and Food Economics* 6, no. 1 (2018), https://doi.org/10.1186/s40100-018-0106-4.

[29] Peter Asare-Nuamah, 'Climate Variability, Subsistence Agriculture and Household Food Security in Rural Ghana', *Heliyon* 7, no. 4 (2021): e06928, https://doi.org/10.1016/j.heliyon.2021.e06928.

[30] Byela Tibesigwa and Martine Visser, 'Assessing Gender Inequality in Food Security among Small-Holder Farm Households in Urban and Rural South Africa', *World Development* 88 (2016): 33–49, https://doi.org/10.1016/j.worlddev.2016.07.008.

[31] Nibedita S. Ray-Bennett, 'Disasters, Deaths, and the Sendai Goal One: Lessons from Odisha, India', *World Development* 103 (2018): 27–39, https://doi.org/10.1016/j.worlddev.2017.10.003.

Social Norms, Domestic Chores and Long-term Effects

Social norms and women's social status determine women's vulnerability to climate change. [32] Women who are single, widowed, divorced, or separated experience a reduction in land access and, thus, in income and food supply. [33] As mentioned above, they are particularly vulnerable to climate change impacts such as natural disasters or reductions in agricultural production. [34]

Time poverty caused by domestic chores determines the time women can spend on remunerative activities. [35] For example, after repeated droughts, water may become scarce, and therefore, the distance and collection time may increase. Consequently, women's available time for paid work will be reduced, which will contribute to the increase in the wage gap already large to the disadvantages faced by women. Indeed, women are often concentrated in lower-paying sectors such as agriculture, informal trade, and domestic work, while men are more likely to be in higher-paying sectors like industry, technology, and formal services. Within sectors, women tend to occupy lower-level positions and have less access to managerial or technical roles that offer higher pay. Women often have fewer years of work experience due to interruptions for childbearing and family care responsibilities. This affects their career progression and earning potential.

Besides direct effects, climate change indirectly affects children's education, and these effects are likely to last even longer. On the one hand, following a reduction in household income because of a natural disaster, the ability to pay school-related costs may be reduced, and the decision to send the child to school may be questioned. Furthermore, a decrease in income may be accompanied by a reduction in the quantity, quality, and diversity of food served to children, [36] which, in the long term, affects children's health and learning abilities. The lack of resources and food, and increased domestic burden is likely to be at the expense of girls. [37]

Such discrimination may result in the next generation of women remaining poor and vulnerable, as girls who have not been adequately educated will be less likely find paid work as adults. This may reinforce the current occupational and sectoral bias of the labour market and reduce paid employment opportunities for women in the long term.[38] It is crucial to understand the impacts of climate change better to reduce or avoid negative impacts on women and children in the short term and the long-term economic growth. Also, designing and assessing appropriate public policies counteracting these impacts of climate change is vital.

---

[32] Matilda N. Azong and Clare J. Kelso, 'Gender, Ethnicity and Vulnerability to Climate Change: The Case of Matrilineal and Patrilineal Societies in Bamenda Highlands Region, Cameroon', *Global Environmental Change* 67, no. January (2021): 102241, https://doi.org/10.1016/j.gloenvcha.2021.102241.

[33] Ayala Wineman, 'Women's Welfare and Livelihoods Outside of Marriage: Evidence from Rural Tanzania', *Review of Economics of the Household* 17, no. 3 (2019): 993–1024, https://doi.org/10.1007/s11150-018-9404-6.

[34] Tibesigwa and Visser, 'Assessing Gender Inequality in Food Security among Small-Holder Farm Households in Urban and Rural South Africa'.

[35] Emmanuel Akyeampong and Hippolyte Fofack, 'The Contribution of African Women to Economic Growth and Development in Post-Colonial Africa: Historical Perspectives and Policy Implications', *Policy Research Working Papers*, Policy Research Working Papers, July 2013, https://doi.org/10.1596/1813-9450-6537; Naila Kabeer and Luisa Natali, 'Gender Equality and Economic Growth: Is There a Win-Win?', *IDS Working Papers* 2013, no. 417 (2013): 1–58, https://doi.org/10.1111/j.2040-0209.2013.00417.x; Seguino and Were, 'Gender, Development and Economic Growth in Sub-Saharan Africa'.

[36] Yirgu Fekadu et al., 'Factors Associated with Nutritional Status of Infants and Young Children in Somali Region, Ethiopia: A Cross- Sectional Study', *BMC Public Health* 15, no. 1 (2 September 2015): 846, https://doi.org/10.1186/s12889-015-2190-7.

[37] Khandekar et al., 'Perceptions of Climate Shocks and Gender Vulnerabilities in the Upper Ganga Basin'; Carolyn Kousky, 'Impacts of Natural Disasters on Children', *The Future of Children* 26, no. 1 (2016): 73–92, https://www.jstor.org/stable/43755231; Céline Nauges and Jon Strand, 'Water Hauling and Girls' School Attendance: Some New Evidence from Ghana', *Environmental and Resource Economics* 66, no. 1 (1 January 2017): 65–88, https://doi.org/10.1007/s10640-015-9938-5; Ardyn Nordstrom and Christopher Cotton, 'Impact of a Severe Drought on Education: More Schooling but Less Learning', SSRN Scholarly Paper (Rochester, NY, 15 May 2020), https://doi.org/10.2139/ssrn.3601834.

[38] Mary Borrowman and Stephan Klasen, 'Drivers of Gendered Sectoral and Occupational Segregation in Developing Countries', *Feminist Economics* 26, no. 2 (2 April 2020): 62–94, https://doi.org/10.1080/13545701.2019.1649708; Elson, 'Labor Markets as Gendered Institutions'; Stephan Klasen, 'What Explains Uneven Female Labor Force Participation Levels and Trends in Developing Countries?', *The World Bank Research Observer* 34, no. 2 (1 August 2019): 161–97, https://doi.org/10.1093/wbro/lkz005; Stephan Klasen, 'The Impact of Gender Inequality on Economic Performance in Developing Countries', *Annual Review of Resource Economics* 10, no. 1 (2018): 279–98, https://doi.org/10.1146/annurev-resource-100517-023429.

Recent Research

Although the impacts of climate change on women are comparable in Africa, regionally, there are differences. African countries have different geographic, economic and social conditions. Thus, the regional economic and social conditions are different between the countries. Designing and implementing mitigation policies to counteract the gendered impacts of climate change requires considering these differences. In a recent research initiative facilitated by the Partnership for Economic Policy (PEP) research network[39] and funded by Global Affairs Canada (GAC), [40] the gendered impacts of climate change and adaptation measures were analysed in five African countries: Burkina Faso, Nigeria, Cameroon, Tanzania and Malawi. In each country, local researchers focused on relevant identified aspects of climate change impacts. As a stakeholder-oriented exercise, they assessed policy measures counteracting the negative impacts in collaboration with local policymakers. [41]

The impact analysis results and policy recommendations illustrate the similarities and differences between the countries. The studies on Nigeria and Cameroon focused on the problems of poverty, inequality, and food insecurity caused by climate change-induced yield reduction. In Cameroon, particularly, women in rural areas are impacted.[42] In Burkina Faso, rainfall variability reduces female farmers' productivity and women's agricultural income.[43] Researchers in Tanzania and Malawi focussed on the impacts of agricultural praxis (soil erosion control measures, organic fertiliser, and improved seeds and climate-smart agriculture) to improve female farmers' agricultural productivity and to reduce women's climate-driven disadvantages.[44]

Different gendered policy options were assessed and recommended to local policymakers, corresponding to the country-specific problems. In Burkina Faso and Nigeria, the researchers recommended a land reform that would provide women with more access to land and cash transfers to compensate for losses in agricultural income. In Cameroon and Nigeria, input subsidies were recommended to improve and counteract women's decreased productivity caused by rainfall varieties [45] and measures to increase crop diversification. [46] From the Tanzanian and Malawian case study, the researchers recommend fostering agricultural praxis towards soil protection and climate-smart agriculture as adaptation strategies to reduce the impacts of droughts. [47]

Most African countries are low and lower-middle-income economies, where the primary impact of climate change affects women via the agricultural sector. As an upper-middle-income country such as South Africa, other sectors besides agriculture can create gendered impacts. Sectors impacted by changes in the price of water or agricultural commodities can create responses in sectors which employ many women. For instance, in the tourism sector, prolonged droughts and water shortages can affect the availability of water for both local populations and tourists. This can lead to

---

[39] Partnership for Economic Policy, 'Women Bear Negative Impacts of Climate Shocks Disproportionately', *Blog by the Partnership for Economic Policy (PEP)* (blog), 2024, https://www.pep-net.org/news/women-bear-negative-impacts-climate-shocks-disproportionately.

[40] Global Affairs Canada, 'Global Affairs Canada – Home', GAC, 17 September 2020, https://www.international.gc.ca/global-affairs-affaires-mondiales/home-accueil.aspx?lang=eng.

[41] Ramos E. Mabugu et al., 'Co-Modelling for Relief and Recovery from Covid-19 Crisis in Zimbabwe', *IDS Bulletin*, 2023.

[42] Khadijat Busola Amolegbe et al., *Gendered Effects of Crop Diversification and Climate Shocks on Household Food Security Status in Nigeria*, PEP Working Paper Series, 2023, https://ideas.repec.org//p/ags/aesc23/334551.html; Célestin Sikube Takamgno et al., *The Gender Impact of Public Climate Change Adaptation Policies on Food Security in Cameroon*, PEP Working Paper Series ([Nairobi] : PEP, Partnership for Economic Policy, 2023).

[43] Farida Koinda et al., *Effects of Rainfall Variability on Agriculture in Burkina Faso : A Gender-Sensitive CGE Analysis*, PEP Working Paper Series ([Nairobi] : PEP, Partnership for Economic Policy, 2023).

[44] Rosemary Botha et al., *Gender of Plot Manager, Adoption of Erosion Control Strategies and Crop Productivity in the Face of Drought : Evidence from Malawi*, PEP Working Paper Series, 2023; J Mkupete and J Davalos, *Implications of Climate-Smart Agriculture Technology Adoption on Women's Productivity and Welfare in Tanzania*, PEP Working Paper Series, 2023.

[45] Célestin Sikube Takamgno et al., 'Une Politique de Subvention Des Prix Des Engrais Pour Atténuer Les Effets Climatiques Sur Les Femmes et Sur La Sécurité Alimentaire Au Cameroun', PEP Policy Brief No. 263 July 2023, July 2023.

[46] Khadijat Busola Amolegbe et al., 'Policy Options for Gender-Focused Crop Diversification to Mitigate Climate Shocks on Food Security in Nigeria', PEP Policy Brief No. 261 April 2023, March 2023, https://portal.pep-net.org/document/download/38271.

[47] Ruth Magreta et al., 'Examining Gender Disparities in the Adaptation of Climate Change Mitigation Strategies at Plot Level in Malawi', PEP Policy Brief No. 262 April 2023, February 2023, https://portal.pep-net.org/document/download/38272; J Mkupete et al., 'Climate-Smart Agriculture Technologies Bridge the Gender Productivity Gap and Improve Food Security in Tanzania', PEP Policy Brief No. 260 February 2023, 2023, https://portal.pep-net.org/document/download/38215.

an increase in the production costs, leading to retrenchments of workers. Therefore, even in South Africa, with a highly developed economy, climate change is likely to increase gendered inequality, which is already historically high.[48] Effects of climate change are not only felt in agriculture, and women can also be impacted if they work in sectors that suffer from the effects of climate change, such as sectors linked to tourism.

Thus, gendered policies need to consider sectoral interdependencies in countries with many gender-relevant sectors linked to each other.[49] Indeed, understanding interdependencies helps in the optimal allocation of resources. For example, improving women's access to agricultural land without simultaneously addressing their access to credit, training, and markets may not yield the desired outcomes in poverty reduction and food security. Policies that consider sectoral interdependencies are more likely to be effective because they address multiple dimensions of gender inequality. Without considering interdependencies, policies may have unintended negative consequences. Gender inequalities are often deeply embedded in social, economic, and political structures. Policies that do not consider these systemic factors may fail to address the root causes of inequality.

Conclusion

Women in certain parts of Africa tend to be more vulnerable to the impacts of climate change. The impacts of climate change are complex and regionally different, as they depend strongly on the geographical and socio-economic context. Also, the effectiveness of adaptation measures depends on the regional, geographic, and socio-economic context. Unfortunately, women have less resilience than men and less possibility of adapting as household actors or agricultural workers under climate change scenarios.

Good knowledge of the region and the society-specific impacts can help to assess policy measures to improve women's economic empowerment and food security. Often, such pro-gender policies automatically improve other objectives, such as improving water or energy supply, health, education, access to transport and services and improved infrastructure. Policies that support women's involvement in environmental decision-making can lead to more sustainable practices, such as improved water management and sustainable agriculture. Gender-responsive policies can enhance community resilience to climate change. Women are frequently on the front lines of managing climate impacts, and empowering them with resources and knowledge can lead to more effective adaptation strategies. Gendered climate change adaptation measures can add up to improving overall gender equality, and addressing multiple sustainable development objectives at the same time.

[48] Sulla,Victor,Zikhali,Precious, 'Overcoming Poverty and Inequality in South Africa : An Assessment of Drivers, Constraints and Opportunities', Text/HTML (World Bank Group, 2018), http://documents.worldbank.org/curated/en/530481521735906534/Overcoming-Poverty-and-Inequality-in-South-Africa-An-Assessment-of-Drivers-Constraints-and-Opportunities.

[49] M Henseler and H Maisonnave, 'The Economic Impacts of Climate Change on Women in South Africa', 2022.

About the Authors

Hélène Maisonnave [a, c]

[a] Université Le Havre Normandie, EDEHN UR 7263, Le Havre, France

[c] Partnership for Economic Policy (PEP), Nairobi, Kenya

Hélène Maisonnave is Professor of Economics at the University of Le Havre Normandy. Hélène holds a PhD in Economics from the University of Nice Sophia Antipolis. She is specialised in development economics, with main interests in gender inequality, climate change impacts and model-based policy analysis. From 2012 to 2017, Hélène was the Research Director of the Modelling Policies and Impact Analysis (MPIA) group for Partnership for Economic Policy (PEP) at Laval University in Québec. Hélène also worked as a researcher at the European Commission Joint Research Centre in Sevilla and at the Financial and Fiscal Commission (FFC) in South Africa. Hélène is affiliated with the research centre EDEHN (Equipe D'Economie – le Havre Normandie), of which she was the research director from 2019 to 2023. Helene is also affiliated with the global research network Partnership for Economic Policy (PEP).

Martin Henseler [b, c]

[b] Université Rouen Normandie, LERN UR 4702, Rouen, France

[c] Partnership for Economic Policy (PEP), Nairobi, Kenya

Martin Henseler is a graduate engineer in horticultural science, and oriented his doctoral study to agricultural science with a focus on agricultural economics. He is a researcher at the Laboratoire d'Economie Rouen Normandie (LERN) at the University of Rouen Normandy and also works as an independent researcher. Martin works on agricultural, environmental and development topics. Prior to his current activities, Martin worked as a researcher for the Le Havre University Normandy, Thünen Institute, and the European Commission. Martin is affiliated with the global research network PEP (Partnership for Economic Policy).

About the Centre for Non-Traditional Security Studies

The **S. Rajaratnam School of International Studies (RSIS)** is a think tank and professional graduate school of international affairs at the Nanyang Technological University, Singapore. An autonomous school, RSIS' mission is to be a leading research and graduate teaching institution in strategic and international affairs in the Asia Pacific. With the core functions of research, graduate education, and networking, it produces cutting- edge research on Asia Pacific Security, Multilateralism and Regionalism, Conflict Studies, Non-Traditional Security, Cybersecurity, Maritime Security, and Terrorism Studies.

NTS Centre conducts research and produces policy-relevant analyses aimed at furthering awareness and building the capacity to address non-traditional security (NTS) issues and challenges in the Asia Pacific region and beyond. The Centre addresses knowledge gaps, facilitates discussions and analyses, engages policymakers, and contributes to building institutional capacity in Sustainable Security and Crises. The NTS Centre brings together myriad NTS stakeholders in regular workshops and roundtable discussions, as well as provides a networking platform for NTS research institutions in the Asia Pacific through the NTS-Asia Consortium.

For more details, please visit www.rsis.edu.sg and http://www.rsis.edu.sg/research/nts-centre. Join us at our social media channels at www.rsis.edu.sg/rsis-social-media-channels or scan the QR code.