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EDITED AND REVIEWED BY
Patrick Meyfroidt,
Université Catholique de Louvain, Belgium

*CORRESPONDENCE
Mulala Danny Simatele
✉ mulala.simatele@wits.ac.za

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Editorial: Climate change, land, energy and food security: perspectives from Sub-Saharan Africa

Mulala Danny Simatele[1,2]*, Henry Bikwibili Tantoh[3] and Felix Kwabena Donkor[4]

[1]Global Change Institute (GCI), University of the Witwatersrand, Johannesburg, South Africa, [2]School of Geography, Archaeology and Environmental Studies, University of the Witwatersrand, Johannesburg, South Africa, [3]Department of Environmental Sciences, School of Ecological and Human Sustainability, College of Agricultural and Environmental Sciences University of South Africa (UNISA), Johannesburg, South Africa, [4]Department of Development Studies, Nelson Mandela University, Gqeberha, South Africa

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Editorial on the Research Topic
Climate change, land, energy and food security: perspectives from Sub-Saharan Africa

The current food system feeds the greater proportion of the global population and support the livelihood and wellbeing of the global populace importantly overall food production has spike since 1961 by about 30% (Mbow et al., 2019). This has been promoted by increased usage of chemical fertilizer and irrigation despite this global hunger surpassed 828 million in 2021 (Food and Agriculture Organization, 2022). Moreover, the World Health Organization indicates that over 2 million people are lacking the essential micronutrient they require in order to have healthy lives (World Health Organization, 2022). This has however been aggravated by the effects of climate change for example, climatic drivers comprising those associated with temperature, rainfall and compound factors that merge with other variables to intensify food insecurity (Donkor et al., 2019, 2022). These are forecasted to have cross cutting impacts on the different dimensions of food security, i.e., availability, access, utilization, and stability (Food and Agriculture Organization, 2018b). In light of the challenges of the global food system, The United Nations Food and Agriculture organization (FAO) calls for about 50% increase in food production by 2050 to meet nutritional needs as well as global hunger (Food and Agriculture Organization, 2018a). However, this could equally increase greenhouse gas (GHG) production and further degrade the environment especially regarding biological diversity. The articles from this volume showed that the effects of climate change affect food systems and thus food security directly. However, mitigation can also increase the contestation for resources required for agriculture purposes such as water and land climate change response measures that employ land based approaches that rely on biomass production could increase the demand for land thereby exacerbating food insecurity (Mbow et al., 2019).

Climate change comes with direct and indirect impacts on the agricultural value chain. Thus, climate variability is faulted for affecting food security across all its dimensions namely, access availability, utilization and stability. This comes with socioeconomic implications. The effects cascade from the climate to the ecosystem, the productive domain, to the

socio-economic causing a number of cumulative risks. However, exposure to risks serves as a disincentive for investing in production systems with dire consequences on overall productivity, returns and sustainability. The overall impact of climate change on food security is dependent on the scale or extent and on the susceptibility of food systems. Moreover, susceptibility can worsen when systems or households are confronted with recurrent shocks that diminish their assets portfolio and ability to cope. In many communities across Africa women play a critical role in households' ability to manage their resources, this is a point which is echoed by authors in this Research Topic. In this regard, Tantoh et al. stress the need to address the peculiarity of gender on climate change by considering the gaps in gender research to engender more innovative solutions. Furthermore, food security and sustainable livelihoods can be enhanced when women gain unhindered access to land and are involved in decision making process (Tantoh et al.). This will go a long way to promote sustainable and productive rural economies. It is noteworthy that effective adaptation to climate change is knowledge intensive. Hence, Ebhuoma opine on the essence of integrating indigenous knowledge systems coupled with seasonal climate forecasts (SCF) to enable informed decision making. In addition, the improved governance of natural resources and harnessing of the natural infrastructure will help reinforce climate resilience as well as facilitate the sustainable development of developing countries especially in Africa (Siakwah and Torto). Ultimately the outcomes of this Research Topic raise awareness that climate change is worsening food insecurity and poor nutrition of the most vulnerable. This becomes more urgent when one considers that the Leave No One Behind Agenda of the Sustainable Development Goals (SDGs) is in the final decade of action. The findings and recommendations in this Research Topic will help in addressing climate change impacts, which are undermining progress toward the eradication of hunger and malnutrition. This comes with additional benefits toward reinforcing climate change adaptation and mitigation across sectors. The outcome has also highlighted some of the pathways and requisite actions for addressing the impacts of climatic change on food. The insights shared from the technical to the social will help stakeholders to be well-grounded in their interventions. Ultimately, this special issue's Research Topic; contributes to the debate on addressing climate change impacts on energy resources and the consequences on food security and nutrition.

Author contributions

MS: conceptualization. MS, HT, and FD: methodology, formal analysis, and writing as well as review and editing. All authors contributed to the article and approved the submitted version.

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References

Donkor, F. K., Howarth, C., Ebhuoma, E., Daly, M., Vaughan, C., Pretorius, L., et al. (2019). Climate services for development: The role of early career researchers in advancing the debate. *Environ. Commun.* 13, 561–566. doi: 10.1080/17524032.2019.1596145

Donkor, F. K., Mitoulis, S.-A., Argyroudis, S., Aboelkhair, H., Canovas, J. A. B., Bashir, A., et al. (2022). SDG final decade of action: Resilient pathways to build back better from high-impact low-probability (HILP) events. *Sustainability* 14, 15401. doi: 10.3390/su142215401

Food and Agriculture Organization. (2018a). *Future of Food and Agriculture: Alternative Pathways to 2050.* Rome: Food and Agriculture Organization of the United Nations, 228.

Food and Agriculture Organization. (2018b). *The Future of Food and Agriculture: Trends and Challenges*. Rome: Food and Agriculture Organization of the United Nations, 180.

Food and Agriculture Organization. (2022). *The State of Food and Agriculture-Leveraging Agricultural Automation for Transforming Agrifood Systems*. Food and Agriculture Organization. Available online at: https://www.fao.org/publications/home/fao-flagship-publications/the-state-of-food-and-agriculture (accessed February 20, 2023).

Mbow, C., Rosenzweig, C., Barioni, L. G., Benton, T. G., Herrero, M., Krishnapillai, M., et al. (2019). "Food security," in *Climate Change and Land: An IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems*, eds P. R. Shukla, J. Skea, E. Calvo Buendia, V. Masson-Delmotte, H. O. Pörtner, D. C. Roberts, et al. Available online at: https://www.ipcc.ch/srccl/chapter/chapter-5/

World Health Organization. (2022). *WHO Global Strategy for Food Safety 2022-2030: Towards Stronger Food Safety Systems and Global Cooperation.* World Health Organization. Available online at: https://www.who.int/publications/i/item/9789240057685 (accessed December 11, 2022).