What do we know about THE FUTURE OF FOOD SYSTEMS IN WEST AND CENTRAL AFRICA?

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Key messages

- Food systems in West and Central Africa (WCA) are challenged by slow growth in productivity and incomes and by climate change.
- Urbanization and related trends are creating new opportunities for the region's agricultural value chains to meet nutrition and employment needs, including those of women and young people.
- Climate change poses a significant threat to future agricultural production in the region, and dependence on food imports is mostly projected to increase.
- Foresight studies that account for the future can help guide the transformation of food, land, and water systems in WCA in response to climate change. However, new analyses are needed to address the multidimensional nature of the region's challenges.

RECENT TRENDS AND CHALLENGES

Countries in West and Central Africa (WCA) are facing immense pressure to meet the growing food, nutrition, employment, and other needs of their increasing urban populations (OECD, UNECA, and AfDB 2022). The region's vulnerability to climate change and low adaptive capacities due to socioeconomic and physical characteristics make it hard to respond effectively to these challenges (Fuller et al. 2018; Partey et al. 2018).

In the last 10 years, WCA's total population increased by 29 percent, compared to a 10 percent increase in the world's population, while WCA's urban population increased by 45 percent, versus 19 percent globally (FAO 2022a). The strong growth in urbanization (along with population growth) has been driving higher demand in the region for cereals, animal-source foods, and other food types associated with more urbanized diets (EUC 2019; Kruseman et al. 2020; Latino, Pica-Ciamarra, and Wisser 2020).

The demographic changes have occurred alongside poor economic performance across the region, characterized by slow economic growth, low incomes, and high rates of unemployment and underemployment, particularly in rural areas (AfDB 2019, 2020; Musibau, Shittu, and Yanotti 2022). An estimated 90 million of the region's 600-plus million people live in poverty (CGIAR 2022). Although progress has been made in the past two decades, hunger and malnutrition are still high in the region and have been exacerbated in the last few years by effects of the COVID-19 pandemic and the war in Ukraine (Chadare et al. 2022; FAO 2022b; Udmale et al. 2020).

Low agricultural productivity, weak local markets for agricultural and food products, and negative effects of global climate change on the natural resource base constitute major threats to the future of food security and livelihoods in WCA (CGIAR 2022). A combination of high temperatures that are above global averages, extreme climate events, civil conflicts, food insecurity, and economic hardship may have already contributed to the displacement of an estimated 17 million people in the region over the last two decades (Padgham, Jabbour, and Dietrich 2015; Filho, Olaniyan, and Alverio 2022; WFP 2017).

LATEST FORESIGHT RESEARCH

Given the myriad interacting demographic, sociocultural, political, infrastructural, technological, and environmental challenges that WCA faces, it will be important for decision-makers to better understand the transformation trends of the region's food, land, and water systems, and how these trends and their impacts are likely to evolve in the coming decades.

Climate change may be the most important long-term driver in the context of which other trends (such as migration and urbanization) and interventions (including policies and investments) will need to be addressed (OECD, UNECA, and AfDB 2022; CGIAR 2022). This chapter highlights some of the key studies relevant to the discourse. These studies analyzed the potential effects of climate change on agricultural land and production in WCA (Akpoti et al. 2022; Ugbaje, Odeh, and Bishop 2019; Manners et al. 2021; Zabel, Putzenlechner, and Mauser 2014); the impacts of income and population growth on food security (Jalloh et al. 2013); and linkages of future land use to food security in the region under alternative scenarios, including climate change (de Lattre-Gasquet, Moreau, and Okul 2018).

Akpoti et al. (2022) used a spatially explicit modeling approach and an ensemble of spatially downscaled and bias-corrected climate data to project changes in areas suitable for rice production in West Africa, compared to the baseline, for four time periods between 2030 and 2080. The projected changes, which result from variations in temperature and precipitation brought about by climate change, are on the order of 22–33 percent losses in rice area under the lowest reduction scenarios and more than 50 percent in the extreme case. The study suggested that strong adaptation measures along with technological advancement and adoption will be needed to address these adverse effects.

Ugbaje, Odeh, and Bishop (2019) similarly showed for maize that, relative to the current situation where more than 90 percent of West Africa is at least moderately suitable for production, agricultural suitability will decline in at least 43 percent of that region under future climate change, mostly due to changes in temperature. Under the worst-case scenario simulated in that study, only about 15 percent of the West African region remains suitable

for maize production by 2080. A similar study analyzing crop suitability in Central Africa indicated that climate change will be somewhat favorable to root-, tuber-, and banana-based systems under specified agronomic practices, with widespread negative impacts seen only for potato production (Manners et al. 2021). This result supports projections from an earlier global study showing that the importance of root, tuber, and banana crops for food security will likely increase in the world's poorest regions (Petsakos et al. 2019). For West Africa, it is likely that land suitability for agriculture would worsen in the northern part and should improve somewhat in the southern part of the region by 2071–2100, with a similar trend also likely for Central Africa (Zabel, Putzenlechner, and Mauser 2014).

These studies generally agree that climate change will affect agricultural productivity and total food production, which have implications for poverty, food security, and nutrition. An earlier study showed that malnutrition could increase across the region under persisting conditions of low incomes and high population growth (Jalloh et al. 2013). Further, Rigaud et al. (2021) estimated that due to climate change, West Africa alone could ultimately see the internal displacement of as many as 32 million people by 2050. A different study linking changes in agricultural land and production to food importation and food self-sufficiency further buttresses projections of food security impacts of climate change in WCA. Using an analytical framework that combined quantitative and qualitative approaches, de Lattre-Gasquet, Moreau, and Okul (2018) showed that even where arable and permanent crop areas as well as pastures and meadows increase in WCA, overall food and animal feed production is likely to be insufficient, and food and animal feed import dependence is likely to increase. The exception in that study was a regionalization scenario in which West African states have joined to form regionally governed blocs. In this scenario, import demand was projected to decline, particularly for animal products. These results derived from the study's accounting for future scenarios of urbanization and rural transformation, dietary changes, and climate change and sustainability, among others.

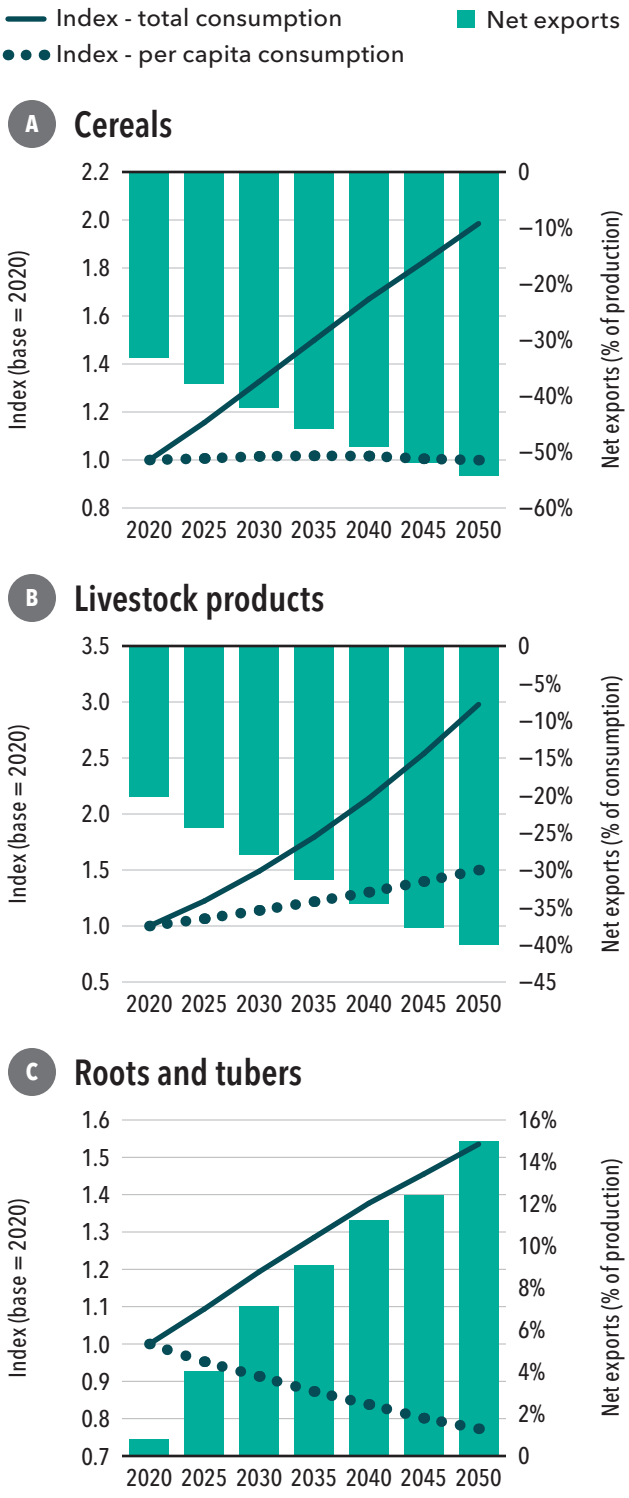
The studies raise questions about what governments, civil society, and other decision-makers in the region may need to do to position their countries to meet future food security challenges. They also highlight the relevance to national planning (including on land use) of accounting for multiple scenarios of future change.

Recent results from an updated version of IFPRI's International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT, Version 3.4) show that the region could become more dependent on imports to meet its food consumption requirements by 2050 (Figure 1). The IMPACT results are based on a business-as-usual (BAU) scenario that involves (1) middle-of-the-road changes in socioeconomic trends; and (2) climate change, represented through the Representative Concentration Pathway 7 (RCP 7) and the IPSL-CM5A-LR Earth System Model (IFPRI 2024). For cereals, net imports could increase to reach about 50 percent of cereal consumption requirements by 2045 under the BAU scenario (Figure 1a). However, per capita consumption would remain relatively constant over the years. It is likely that climate change could reduce yields, possibly reducing per capita consumption and food security. These projections also imply rising net imports of livestock products, which could reach about 40 percent of consumption by 2050 (Figure 1b). Per capita consumption is also projected to increase over time, due in part to rising incomes and changing diets. The region is projected to become a net exporter of roots and tubers over the projection period (Figure 1c). These rising net exports for roots and tubers would be associated with a reduction in per capita consumption within the region. Such a trend implies that the region will need to increase domestic production to meet the demand for both domestic and export markets. Multiple scenarios indicate that it is likely that per capita consumption of key staple foods in WCA could decrease significantly under climate change, with negative implications for food and nutrition security in the region.

KEY GAPS AND OPPORTUNITIES FOR FORESIGHT RESEARCH

Foresight studies for WCA generally agree that climate change will have significant impacts on agricultural and food systems in the region, from crop suitability and agricultural productivity to food and animal feed production, food import dependence, and migration. These impacts can be small or large and negative or positive for the different crop, livestock, and food systems and/or geographies. Indications are that emerging demographic and socioeconomic trends will interact with biophysical changes to generate increased challenges to the future

FIGURE 1 Projected trends for consumption and net exports for (a) cereals, (b) livestock products, and (c) roots and tubers: West and Central Africa



Source: Authors, using data from IFPRI (2024).

food security of WCA. However, these interactions have often not been explicitly or fully analyzed. It is not obvious what the impacts (for example, on nutrition, food security, and employment) will be under climate change of ongoing trends related to urbanization or dietary change, or how the important trade-offs that emerge between these impacts should be managed. While indications of increased food dependence exist in the region, there are very few quantitative regionwide simulations to show whether these will have negative or positive impacts for WCA overall; that is, beyond meeting the foremost or initial objectives of food security. In addition, most foresight studies targeting WCA have not considered weather extremes or the biotic impacts linked to climate change.

Additional quantitative analyses are thus needed to link alternative scenarios of future climate change – characterized by changes as well as extremes in temperature, precipitation, and other abiotic indices – not just to agricultural production, but also to biotic impacts and to agricultural value chains and food systems in their entirety. That way, the interactions of climate change with demographic (including urbanization and migration), socioeconomic (including gender and youth), technological, and environmental factors and impacts in WCA can be more adequately captured. Finally, there may be incentives to explore synergies between quantitative and qualitative foresight approaches to support the governance and implementation of sustainable food systems transformation in WCA.

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Related chapters on the future of food system drivers and impacts, regional and national perspectives, food commodities, and foresight tools are available in our Table of Contents.

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