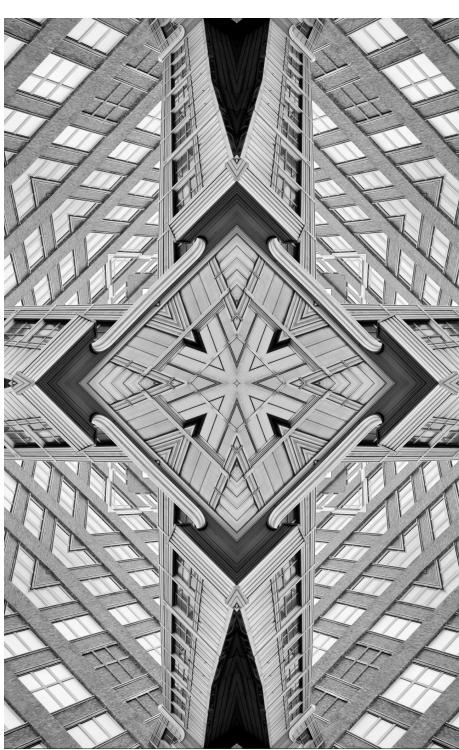


### Issue Brief

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### Pathways to Food Self-Sufficiency in Africa

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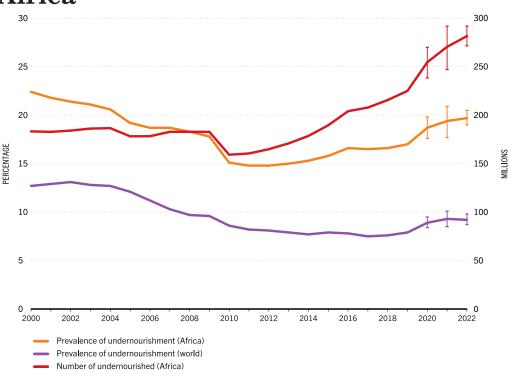
Africa is experiencing a food crisis on an unprecedented scale. More than 150 million people in the continent are anticipated to be in danger of increased levels of hunger in the immediate future because of the impacts of the conflict in Ukraine, compounded by climate-related variability and extremes, economic slowdowns, and the lingering consequences of the COVID-19 pandemic. Within this context, social and gender disparities are increasing, with women and girls disproportionately impacted by these disruptions. This brief makes a case for supporting smallholder farmers, particularly women farmers, who have little access to finance, technology, and markets. It argues that having secure access to land and ensuring fairness in land rights is essential for boosting food production, and calls attention to the need for greater investments in climate-smart agriculture.



## Challenges to Food Security in Africa

espite global attempts, Africa is not progressing as planned on achieving both, Sustainable Development Goal 2 (SDG 2, Zero Hunger) by 2030 and the Malabo Declaration for eradicating hunger and improving nutrition by 2025. Most recent numbers indicate that around 282 million people in Africa (approximately 20 percent of the population) suffered from hunger in 2022, marking a rise of 57 million from before the COVID-19 pandemic. Following a 10-year period of improvement from 2000 to 2010, the level of hunger in Africa increased in the subsequent years, reaching 19.7 percent in 2022 from 15.1 percent in 2010 (Figure 1). As of 2022, Eastern Africa has the largest number of undernourished people in the continent, at 134.6 million; Western Africa has 62.8 million, Central Africa, 57 million, and Northern Africa, 7.5 million. In 2022 alone, some 868 million people in Africa experienced moderate to severe food insecurity, of which 342 million suffered severe food insecurity.<sup>2</sup> There is evidence that women are bearing the brunt of the worsening food insecurity patterns. During the pandemic, women in sub-Saharan Africa, for example, suffered more than men, experiencing loss of livelihood, income, and education.<sup>3</sup>

### Figure 1: Prevalence of Undernourishment in the World and Africa



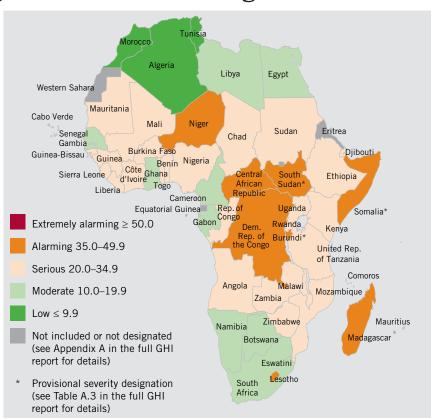
Source: FAO, AUC, ECA, and WFP (2023)4



## Challenges to Food Security in Africa

Globally, some 733 million people experienced hunger in 2023, or one out of every 11 people; in Africa, the number is one of every five. The 2024 ministerial meeting of the G20 Global Alliance Against Hunger and Poverty cautioned that the world is severely lagging in achieving SDG 2 by 2030 by 15 years. Regional patterns show differences: the percentage of people experiencing hunger is increasing in Africa (20.4 percent), whereas it is stagnant in Asia at 8.1 percent. More than half of all people afflicted with hunger reside in these two regions. At the current rate, approximately 582 million individuals globally will suffer from chronic hunger by 2030, with half of them residing in Africa. Of the nine countries in the world that are experiencing alarming levels of hunger, eight are in Africa (i.e., Burundi, Central African Republic, Democratic Republic of the Congo, Lesotho, Madagascar, Niger, Somalia, and South Sudan) (Figure 2).8

### Figure 2: Global Hunger Index - Africa



Source: Africa Brief, Global Hunger Index 20239



## Challenges to Food Security in Africa

The World Bank has reported that, from 2022 onwards, there was an annual increase in global food prices, mainly due to the impacts of the COVID-19 pandemic and the conflict in Ukraine. Globally, the cost of an affordable meal was US\$3.96 for each individual per day. However, even with an increase in food prices, the overall percentage of unaffordability slightly rose from 26.7 percent to 26.9 percent, with Sub-Saharan Africa seeing an increase from 69.3 percent to 70.3 percent. Description of the COVID-19 pandemic and the COVID-19 pandemic and the conflict in Ukraine. Description of the COVID-19 pandemic and the conflict in Ukraine. Description of the COVID-19 pandemic and the conflict in Ukraine. Description of the COVID-19 pandemic and the conflict in Ukraine. Description of the COVID-19 pandemic and the conflict in Ukraine. Description of the COVID-19 pandemic and the conflict in Ukraine. Description of the COVID-19 pandemic and the conflict in Ukraine. Description of the COVID-19 pandemic and the conflict in Ukraine. Description of the COVID-19 pandemic and the conflict in Ukraine. Description of the COVID-19 pandemic and the covide pandemic and the conflict in Ukraine. Description of the COVID-19 pandemic and the covide pandemic

Data from the Global Nutrition Targets 2030 indicates that Africa has made modest progress. Stunting continues to affect millions of under-five children in the continent. In 2023, around 148 million children under the age of five were stunted, which accounted for 22.3 percent of all children globally. Central Africa has the highest burden, at 37.9 percent, followed by Eastern and Western Africa, which have similar regional averages at 30.6 percent and 30 percent, respectively. In 2022, wasting prevalence in Africa was 5.8 percent, below the global rate of 6.8 percent. Southern Africa had the lowest rates, at 3.5 percent; Western and Northern Africa were around the global average; and Eastern Africa had 5 percent. Despite making progress towards the World Health Assembly 2030 goal on child wasting, every sub-region was off-track, except for Western Africa, which experienced a reduction in the incidence of child wasting.

Meanwhile, the prevalence of overweight children under five in Africa was 4.9 percent in 2022, which was lower than the global average of 5.6 percent. In comparison to other subregions, the prevalence was higher in Northern Africa and Southern Africa, at 12.3 percent and 11.4 percent, respectively. This increase in overweight rates in Northern Africa has been evident since 2015, whereas Southern Africa has seen a decline in overweight rates.<sup>13</sup>



## Drivers of Food ——Insecurity in Africa

he rapid rise in food insecurity levels in Africa is driven by a combination of climate change, conflict, the COVID-19 pandemic, and high costs of living. Conflict exacerbates the effects of external shocks such as climate change, inflation, and the disruptions to global grain supplies resulting from Russia's invasion of Ukraine. In 2021, armed conflicts were witnessed in 18 countries in sub-Saharan Africa. As of 2023, an estimated 82 percent of Africans facing food insecurity resided in conflict-affected countries. Evidence from Ethiopia and Malawi between 2011 and 2019 indicate a drastic reduction in food consumption score in populations exposed to conflict.

The economic consequences of climate change, conflicts, and the pandemic have also increased inequality and widened social divides. Moscow's exit from the Black Sea Grain agreement—which allowed 33 million metric tons of grain to be exported to worldwide markets towards decreasing food costs, particularly in Africa—has worsened the food insecurity forecast. El Niño climate patterns have previously led to reduced rainfall in Southern Africa, Western Africa, Sudan, and Ethiopia. There is increased pressure to raise interest rates to combat rising inflation. However, this has led to higher borrowing costs and increased debt-servicing expenses, which are especially challenging for developing countries with limited financial resources. Furthermore, food and fuel imports will become expensive, which could result in households being forced to reduce their food consumption.

The inadequate infrastructure in Africa also poses challenges for the digitalisation of the agricultural sector.<sup>20</sup> Just as limited access to technology can pose obstacles to digital transformation, inadequate access to funds for integrating digital tools and technology in agriculture can hinder digital transformation.



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griculture plays a crucial role in the economies and societies of Africa. The continent relies heavily on smallholder farms, with an estimated 33 million such farms as of 2021, which are vital for both food production and livelihoods.<sup>21</sup>

Agricultural productivity in Africa has been on the rise, with an average annual increase of 13 percent between 2015 and 2020. During the same period, there was improvement in trade, as seen in the 26-percent decrease in Africa's agricultural trade deficit from 2015 to 2020 and the increased market share (from 10.3 in 2015 to 12 percent in 2020) worldwide, driven by processed agricultural products.<sup>22</sup>

However, in the majority of African nations, agriculture is still defined by small-scale, low-tech, rain-fed farming. Therefore, farmers and food production systems are extremely susceptible to climate-related, economic, and other shocks. Crop yields have been decreasing due to droughts, cyclones, and floods; some countries in East Africa are experiencing cross-border pest attacks such as desert locusts, as well as animal diseases.<sup>23</sup>

The effect of the COVID-19 pandemic on input and output markets has had a severe impact on African farmers, intensifying the difficulties faced by African families in purchasing essential food items. Furthermore, the limited mobility due to the pandemic caused disruptions in food supply chains, particularly in the connection between rural and urban areas, thus impacting food availability. The pandemic resulted in a 60-percent increase in the number of individuals experiencing hunger or malnutrition in Africa.<sup>24</sup>

Nevertheless, the future outlook for African agriculture continues to be positive. A study from Sub-Saharan Africa emphasised that indigenous people commonly use climate-smart traditional farming techniques, such as applying organic manure and practicing mixed farming, to combat the impacts of climate change. These methods increase soil fertility and moisture retention while boosting crop productivity and resilience. Supporting and assisting small-scale farmers also contributes to a varied and sustainable food system and decreases the reliance on imported products.

As Africa undergoes rapid urbanisation, urban populations are seeking more and higher-quality food, which provides African smallholder farmers with the opportunities to grow their production for sale and boost their earnings. To leverage these opportunities, there is a need for investments in distribution systems, warehousing, cold storage, processing and packaging facilities, transport, energy, and water services.



# Women

omen in rural communities encounter multiple barriers to achieving success in the agriculture sector because of gender and power dynamics, restricted access to resources, technology, funding, and markets, and the disproportionate burden of domestic responsibilities.<sup>27</sup> In order to change Africa's food systems, it is essential to empower women and young people. The African Union's Agenda 2063 and United Nations SDGs are aimed at achieving food security and gender equality in African agriculture.<sup>28</sup> This equality is crucial for ensuring fair compensation, reducing poverty, and addressing productivity gaps between male and female farmers in Africa.

Despite attempts to tackle these disparities and their consequences, there are multiple restricting laws, regulations, and policy frameworks still in place.<sup>29</sup> In many African countries, women in agriculture face disadvantages in agribusiness programmes, culture, and traditions. For example, in South Africa, women subsistence farmers have low output and poor economic status due to a lack of access to productive resources and extension services. Similarly, in Ghana, women farmers have limited access to credit, labour, and fertilisers.<sup>30</sup> Moreover, African women, particularly rural smallholder farmers, have restricted opportunities to use dependable financial and banking services. In Sub-Saharan Africa, in 2021, 49 percent of women had a bank account compared to 61.4 percent of men.<sup>31</sup> This gender gap of 12.3 percent is higher than the worldwide average of 4.4 percent.<sup>32</sup>

Research shows that improved access to financing helps small-scale farmers adopt sustainable agricultural methods, boost harvests, and expand income options, thereby supporting food security.<sup>33</sup> Having access to funding enables farmers to purchase better seeds, fertilisers, machinery, and technology, resulting in higher productivity. Additionally, inclusive policies, fair resource allocation, and financial assistance are crucial for addressing hunger and developing a sustainable agricultural system in Africa.<sup>34</sup>



aving secure access to land and ensuring fairness in land rights is essential for boosting food production, especially for disadvantaged communities. Countries that have implemented land reforms, such as Rwanda, have demonstrated that better land ownership rights lead to increased productivity. National strategies targeting food security, such as social safety nets and nutrition-sensitive programmes, have resulted in decreased hunger, as illustrated by Ethiopia's Productive Safety Nets Program (PSNP). Trade liberalisation and measures that support trade within Africa can increase the availability and affordability of food, thus reducing food insecurity. For instance, the African Continental Free Trade Area (AfCFTA) promotes increased regional market integration through trade. Collaboration among regions, such as AfCFTA and Comprehensive Africa Agriculture Development Programme (CAADP), helps in sharing knowledge, aligning policies, and enhancing cross-border food distribution.

Research from India and Bangladesh indicates that boosting public and private funding in agriculture, along with enhancing access to inputs, seeds, and technology, results in increased productivity and resilience.<sup>38,39</sup> Implementing advancements like climate-smart agriculture and digital tools has proven to enhance yields and resilience, particularly in areas prone to the consequences of climate change.<sup>40,41</sup>

Meeting the SDGs, especially the objective of Zero Hunger, requires funding in efficient, inclusive, and sustainable agricultural food systems. Yet, the obstacle of inadequate public investment in agriculture and food security persists. Global investment in agriculture has decreased in comparison to its impact on global production.<sup>42</sup> The Agriculture Orientation Index (AOI)<sup>c</sup> of the Food and Agriculture Organization, which assesses public funding in agriculture, decreased globally from 0.50 in 2015 to 0.45 in 2020, during the pandemic, and recovered to 0.48 in 2022.<sup>43</sup> In Africa, Northern Africa showed a marginal increase in AOI between 2015 and 2022, from 0.24 to 0.28. The AOI for Sub-Saharan Africa declined from 0.15 to 0.12 between 2015 and 2022.

a Initiatives that address the root causes of malnutrition and undernutrition.

b A social protection programme by the Government of Ethiopia targeting food-insecure households.

c The AOI measures the extent to which government expenditures in agriculture reflect (or not) the importance of agriculture in the overall mix of government outlays, and government contribution to the agriculture sector compared to the sector's contribution to Gross Domestic Product (GDP).



## nvestment,

However, increased agricultural investments alone will be insufficient to achieve SDG 2 in Africa; additional non-agricultural investments will be required. Climate change may result in an additional 16 million people facing the risk of hunger in Somalia, Ethiopia, and Kenya alone.<sup>44</sup> In Africa's Sahel region, 55 million people are likely to experience food insecurity in 2024.<sup>45</sup> In Niger, 82 percent of the population is struggling with inadequate food consumption, with 1.9 million under-five children suffering from severe malnutrition.<sup>46</sup> A projected 25 million Nigerians face high risk of food insecurity, compared to the 2023 estimate of 17 million at risk.<sup>47</sup> Improved agricultural research and development could prevent hunger for 55 million people in Africa.<sup>48</sup>



ith agriculture as the focus of Africa's strategy for economic development, the continent has the capacity to emerge as a leading global agricultural hub and a supplier of food products to other nations. The African Development Bank projects that Africa's food and agriculture market may grow to US\$1 trillion by 2030, up from US\$280 billion in 2023. 49 Agriculture in the continent relies on small-scale farmers who require better access to irrigation, technology, and assistance with storage and transportation. Small agricultural projects can benefit the community and, with the right support, provide sustainable financial opportunities. Changing Africa's food systems to accommodate climate change is no longer an option but an imperative, and requires the following:

- Prioritising investments in agriculture to enhance food security by providing resources for agriculture.
- Implementing more robust social safety nets, along with inclusive policy frameworks, to build a stronger food system that ensures lasting food security for all.
- Utilising adaptation and mitigation strategies to ensure that food systems
  are able to supply adequate nutritious food for everyone, despite the
  challenges presented by climate change.
- Increasing investments in climate-smart agriculture (and here, the role of governments, international organisations, and platforms such as the G20 will be crucial).
- Emphasising climate adaptation and peacebuilding for hunger amelioration.
- Making hunger and food self-sufficiency a political commitment for leaders across the continent as well as globally, in multilateral forums like the G20.©RF

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- DREA, "The Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods," African Union, June 26, 2014, https://www.resakss.org/sites/default/files/Malabo%20Declaration%20on%20 Agriculture\_2014\_11%2026-.pdf
- FAO, AO, AUC, ECA and WFP, *Africa Regional Overview of Food Security and Nutrition* 2023: Statistics and trends, Accra, Food and Agriculture Organization of the United Nations, 2023, https://openknowledge.fao.org/server/api/core/bitstreams/c6c81d5f-e337-4b3e-8330-555c9ed0e741/content
- 3 Chie Aoyagi, "Africa's Unequal Pandemic," July 2021, https://www.imf.org/external/pubs/ft/fandd/2021/07/africas-unequal-pandemic-chie-aoyagi.htm
- 4 "Africa Regional Overview of Food Security and Nutrition 2023: Statistics and trends, 2023"
- 5 FAO, IFAD, UNICEF, WFP and WHO, *The State of Food Security and Nutrition in the World* 2024 Financing to End Hunger, Food Insecurity and Malnutrition in All its Forms, Rome, World Health Organization, 2024, https://www.who.int/publications/m/item/the-state-of-food-security-and-nutrition-in-the-world-2024
- 6 G20 Brasil 2024, "G20 Global Alliance Against Hunger and Poverty," https://www.g20.org/en/tracks/sherpa-track/hunger-and-poverty
- World Health Organization, "Hunger Numbers Stubbornly High for Three Consecutive Years as Global Crises Deepen: UN Report," July 24, 2024, https://www.who.int/news/item/24-07-2024-hunger-numbers-stubbornly-high-for-three-consecutive-years-as-global-crises-deepen--un-report
- 8 Miriam Wiemers et al., *Africa Brief-Global Hunger Index The Power of Youth in Shaping Food Systems*, Global Hunger Index, 2023, https://www.globalhungerindex.org/pdf/en/2023/policy-brief-africa.pdf
- 9 "Africa Brief-Global Hunger Index The Power of Youth in Shaping Food Systems, 2023"
- 10 Bo Andree and John Dearborn, "4 Things We Learned Since Kicking Off Our Food Security Updates," World Bank Blogs, July 11, 2024, https://blogs.worldbank.org/en/agfood/4-things-we-learned-since-kicking-off-our-food-security-updates
- 11 World Bank, "Food Prices for Nutrition DataHub: global statistics on the Cost and Affordability of Healthy Diets," https://www.worldbank.org/en/programs/icp/brief/foodpricesfornutrition
- 12 Global Nutrition Report, 2022 Global Nutrition Report: Stronger Commitments for greater action, https://globalnutritionreport.org/
- UNICEF, WHO, World Bank, Levels and Trends in Child Malnutrition: UNICEF / WHO / World Bank Group Joint Child Malnutrition Estimates: Key Findings of the 2023 Edition, May 2023, New York, United Nations Children's Fund, 2023, https://data.unicef.org/resources/ jme-report-2023/



- "Caroline Delgado et al., *Food insecurity in Africa: Drivers and solutions*," Stockholm International Peace Research Institute, 2023, https://www.sipri.org/sites/default/files/2023-01/2301 sipri rpp food insecurity in africa 1.pdf
- 15 IISS, "The Armed Conflict Survey 2022: Sub-Saharan Africa Regional Analysis," https://www.iiss.org/en/online-analysis/online-analysis/2022/11/acs-2022-sub-saharan-africa/#:~:text=A%20number%20of%20coups%20were%20staged%20in,the%20 CAR%2C%20Djibouti%2C%20Guinea%2DBissau%2C%20Madagascar%20and%20Niger.
- "Unresolved Conflicts Continue to Drive Africa's Food Crisis," Africa Center for Strategic Studies, October 16, 2023, https://africacenter.org/spotlight/unresolved-conflicts-continue-to-drive-africas-food-crisis/
- James Muriuki et al., "The Impact of Conflict on Food Security: Evidence from Household Data in Ethiopia and Malawi," *Agriculture & Food Security* 12, no. 1 (2023): 41.
- Joseph Glauber et al., "End of the Black Sea Grain Initiative: Implications for sub-Saharan Africa," August 7, 2023, https://www.ifpri.org/blog/end-black-sea-grain-initiativeimplications-sub-saharan-africa/
- World Food Programme, "El Nino Outlook 2023-24," September 2023, https://docs.wfp. org/api/documents/WFP-0000152700/download/
- 20 David Mhlanga and Emmanuel Ndhlovu, "Digital Technology Adoption in the Agriculture Sector: Challenges and Complexities in Africa," *Human Behavior and Emerging Technologies* 2023, no. 1, September 14, 2023, https://onlinelibrary.wiley.com/doi/10.1155/2023/6951879
- 21 African Development Bank Group 2021, "Chapter 2: Feed Africa," https://www.afdb.org/sites/default/files/news documents/chap2-ader 2021 en v15.pdf
- African Development Bank Group 2021, "Annual Development Effectiveness Review 2021," https://www.afdb.org/sites/default/files/news documents/ader 2021 en v17.pdf
- Enoch Yeleliere et al., "Farmers Response to Climate Variability and Change in Rainfed Farming Systems: Insight from Lived Experiences of Farmers," *Heliyon* 9, no. 9 (2023), https://www.sciencedirect.com/science/article/pii/S2405844023068640
- 24 Eileen Bogweh Nchanji and Cosmas Kweyu Lutomia, "Regional Impact of COVID-19 on the Production and Food Security of Common Bean Smallholder Farmers in Sub-Saharan Africa: Implication for SDG's," Global Food Security 29, 2021, 100524.https://www.sciencedirect.com/science/article/pii/S2211912421000341
- David John Okoronkwo et al., "Climate Smart Agriculture? Adaptation Strategies of Traditional Agriculture to Climate Change in Sub-Saharan Africa," Frontiers in Climate 6 (2024): 1272320, https://www.frontiersin.org/journals/climate/articles/10.3389/fclim.2024.1272320/full
- WWF, "Adapting Africa's Food Systems: A Necessity for Sustainable Future," March 12, 2024, https://africa.panda.org/?47522/Adapting-Africas-Food-Systems-A-Necessity-



- for-Sustainable-Future#:~:text=Supporting%20smallholder%20farmers%20helps%20 to,%2C%20biodiversity%2C%20and%20environmental%20stewardship.
- 27 DIVAGRI, "Empowering Women and Youth in African Agriculture," https://divagri.org/empowering-women-and-youth-in-african-agriculture/
- 28 African Union, "Linking Agenda 2063 and the SDGs," https://au.int/en/agenda2063/sdgs
- 29 "Interrogating Gender Inequalities in African Cities," March 8, 2022, https://www.africancities.org/interrogating-gender-inequalities-in-african-cities/
- Johnson A. Adebayo and Steven H. Worth, "Profile of Women in African Agriculture and Access to Extension Services," *Social Sciences & Humanities Open* 9, 2024: 100790.
- 31 "Financial Inclusion in Sub-Saharan Africa—Overview," World Bank, April 17, 2024, https://www.worldbank.org/en/publication/globalfindex/brief/financial-inclusion-in-sub-saharan-africa-overview
- World Bank Group, "Sub-Saharan Africa," https://genderdata.worldbank.org/en/regions/sub-saharan-africa#:~:text=In%202021%2C%2049%25%20of%20women,in%20the%20past%2012%20months.
- Anja Gassner et al., "Poverty Eradication and Food Security through Agriculture in Africa: Rethinking Objectives and Entry Points," *Outlook on agriculture* 48, no. 4 (2019): 309-315, https://journals.sagepub.com/doi/10.1177/0030727019888513
- 34 Giacomo Branca et al., "Promoting Sustainable Change of Smallholders' Agriculture in Africa: Policy and Institutional Implications from a Socio-Economic Cross-Country Comparative Analysis," *Journal of Cleaner Production* 358 (2022): 131949.https://www. sciencedirect.com/science/article/pii/S095965262201558X
- Emmanuel Muyombano and Margareta Espling, "Land Use Consolidation in Rwanda: The Experiences of Small-Scale Farmers in Musanze District, Northern Province," *Land Use Policy* 99, 2020: 105060, https://www.sciencedirect.com/science/article/abs/pii/S0264837719324834
- Kibrom A. Abay et al., "Social Protection and Resilience: The Case of the Productive Safety Net Program in Ethiopia," *Food Policy* 112 (2022): 102367, https://www.sciencedirect.com/science/article/pii/S0306919222001361
- 37 United Nation Economic Commission for Africa, "The AfCFTA, Boosting Regional Integration Through Trade," August 29, 2023, https://www.uneca.org/stories/the-afcfta%2C-boosting-regional-integration-through-trade
- 38 Asian Development Bank, "Bangladesh's Agriculture, Natural Resources, and Rural Development Sector Assessment and Strategy," March 2023, https://www.adb.org/sites/default/files/institutional-document/864661/bangladesh-agriculture-sector-assessment-strategy.pdf



- 39 J-PAL, "Improving Agricultural Information and Extension Services to Increase Small-Scale Farmer Productivity," September 2023, https://www.povertyactionlab.org/policy-insight/improving-agricultural-information-and-extension-services-increase-small-scale
- 40 C.M. Onyango et al., "Precision Agriculture for Resource Use Efficiency in Smallholder Farming Systems in Sub-Saharan Africa: A Systematic Review," *Sustainability 13*, no. 3, 2021: 1158.
- 41 R. Fisk et al., "Systemic Social Innovation: Co-Creating a Future Where Humans and All Life Thrive," *Humanistic Management Journal* 4, 2019: 191-214
- 42 Stephen Morgan, Keith Fuglie, and Jeremy Jelliffe, "World Agricultural Output Growth Continues to Slow, Reaching Lowest Rate in Six Decades," USDA Economic Research Service, December 5, 2022, https://www.ers.usda.gov/amber-waves/2022/december/world-agricultural-output-growth-continues-to-slow-reaching-lowest-rate-in-six-decades/
- FAO, "Government Expenditures in Agriculture (2001–2022): Global and Regional Trends," January 6, 2024, https://www.fao.org/statistics/highlights-archive/highlights-detail/government-expenditures-in-agriculture-(2001-2022)/en
- 44 "Climate Crisis: Hunger in the Horn of Africa," Save the Children, https://www.savethechildren.org/us/what-we-do/emergency-response/horn-of-africa-climate-crisis#:~:text=For%20millions%20of%20children%20affected,to%20the%20 Children's%20Emergency%20Fund.
- WFP USA, "Worsening Hunger Grips West and Central Africa Amid Persistent Conflict and Economic Turmoil," April 12, 2024, https://www.wfpusa.org/news-release/worsening-hunger-grips-west-and-central-africa-conflict-economic-turmoil/
- Integrated Food Security Phase Classification, "NIGER: Acute Malnutrition Snapshot," January – December 2023, https://www.ipcinfo.org/fileadmin/user\_upload/ipcinfo/docs/ IPC\_Niger\_Acute\_Malnutrition\_2022Aug2023Jul\_Snapshot\_English.pdf
- 47 UNICEF, "25 Million Nigerians at High Risk of Food Insecurity in 2023," January 16, 2023, https://www.unicef.org/press-releases/25-million-nigerians-high-risk-food-insecurity-2023#:~:text=This%20is%20a%20projected%20increase,drivers%20of%20this%20 alarming%20trend.
- 48 Daniel Mason-D'Croz et al., "Agricultural Investments and Hunger in Africa Modeling Potential Contributions to SDG2–Zero Hunger," World Development 116,2019: 38-53, https://www.sciencedirect.com/science/article/pii/S0305750X18304340#:~:text=2.4.&text=The%20additional%20public%20 investments%20included,2030%20(billion%202005%20USD).
- 49 WEF, "Unlocking Africa's \$1 Trillion Food Economy: The Role of Global Aid and Sustainable Technology," April 24, 2024, https://www.weforum.org/agenda/2024/04/unlocking-africas-1-trillion-food-economy/

