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Capacity Building in Agriculture

**Regional Dialogue: African Food Systems**  
**Seventh Session of the Africa Regional Forum on Sustainable  
Development**  
**4 March 2021, Brazzaville, Congo**

**Background Paper\***  
**By**

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# 1. Introduction<sup>12345</sup>

## *Background*

1. With a view to accelerating the implementation of the Decade of Action to achieve the Sustainable Development Goals (SDGs) by 2030, the Secretary-General of the United Nations will convene a Summit on food systems within the context of the HPGA in September 2021 to help develop the future direction for global food systems and inspire necessary actions. The Summit will, in specific, explore how to rapidly transform food systems observing the principles and goals of the 2030 Agenda for Sustainable Development and identify pathways to leverage these transformations to accelerate overall progress for the 17 SDGs.

2. Dialogues are part and parcel of the Food Systems Summit process. They offer a dynamic way to engage stakeholders involved in food systems to explore their respective roles and how these could be linked to others to accelerate transformative actions in support of the SDGs. Dialogues are convened at four levels: global, regional, Member State, and independent dialogues. Regional dialogues are meant to chart the way for collective efforts towards addressing challenges facing food systems in an integrated manner. The present regional dialogue aims to examine drivers that shape African food systems' future pathway, highlighting complexity, challenges, and opportunities, pinpointing the importance of regionally coordinated actions, and formulating actionable measures towards accelerating food systems transformation. Against this backdrop, partners have decided to develop a position paper reflecting the state of play and the way forward for African food systems transformation.

## *Objectives*

3. The background paper is meant to intellectually stimulate an organized roundtable discussion on accelerating African food systems transformation. The ultimate goal of the paper is to provide a comprehensive overview of African food systems with a view to help accelerate Africa's agricultural transformation through highlighting drivers for change and well-aligned and coordinated efforts measurable actions. It specifically aims at:

- Providing a concrete overview of African food systems.
- Highlighting challenges that face African food systems and opportunities.
- Examining key drivers that shape the future of African food systems as well as the pathway for food systems transformation.
- Formulating strategic policy options and actionable measures leading to national food systems transformation, ideally, within a regional perspective.

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<sup>2</sup> Section 1 was developed by Anthony Egeru, Regional Universities Forum for Capacity Building in Agriculture (RUFORUM).

<sup>3</sup> Sections 3 and 4 were prepared by Ousmane Badiane, AKADEMIYA2063

<sup>4</sup> Gender was mainstreamed and integrated in sections 2, 3 and 4 by Jemimah Njuki (IFPRI, Africa Office).

<sup>5</sup> Paper, edited by Medhat El-Helepi (ECA), benefited also from inputs and reviews made by several colleagues, including, notably, Kafkas Caprazli (FAO), Laila Lokosang (AUC); Simplicie Nouala Fonkou (AUC); and Edward Addai (UNICEF), in addition to unknown contributors and reviewers, and earlier inputs to the annotated outline

### *Structure and Organization of the Paper*

4. The paper starts with a section that lays out the ground for the paper providing context, objectives and structure. The second section provides an overview of African food systems' state, notably, the state of food security and nutrition, farming systems, agricultural production, nutrition and food consumption; agricultural trade, agribusiness and agro-processing, and resilience status. Section three elaborates on some of the major challenges that face African food systems, along with hindrances and countering measures. The section also sheds light on opportunities. Section 4 highlights some of the major drivers that are set to shape the African food system's future. The report concludes by formulating a set of pragmatic, results oriented policy options or game changers to help pave the way for the region, in general, and its member states in specific to accelerate food systems transformation, in alignment with the goals of the 2030 Agenda for Sustainable Development and Agenda 2063

## **2. African Food Systems: Status**

### *Africa's food systems context*

5. Africa, a continent projected as the world's future for food, is under rapid change shaped by a number of economic, political, and social conditions happening on the continent. These transitions and megatrends are shaping and reshaping the place of food, how it is produced and resources deployed to produce it, where it is produced and for whom it is produced; in essence the food systems that today are dynamic and adaptive<sup>6</sup>. Conceptually, food systems describe the totality of multiple actors and interactions within and along the food value chain from input supply and production to transportation, processing, retailing, wholesaling, preparation, consumption, and disposal. A food system also includes the enabling policy environment and cultural norms around food<sup>7</sup>. These interactions within and among actors make food systems complex adaptive systems.

6. Food systems have evolved and emerged out of constant iterations of complexity, unpredictability and adaptiveness. Thus, they are representative of historical changes nested within agricultural revolutions such as the hunting and gathering transitions to crop farming, intensive organic agriculture displacing less productive forms of farming and the industrial farming that have rapidly engulfed the world with the intensification of food production through an industrial scale approach<sup>8</sup>. Despite growing market relations often characterized by spot exchange, the continent's food systems are rapidly evolving towards intensified production-driven systems. This pattern is being shaped by a few megatrends among which includes; the rise of the African middle class, rapid urbanization and consequent shifts in food demand and downstream modernization of the food systems, a rapid shift in the labour force from farming to non-farm jobs and rising competition over African farmland<sup>9</sup>.

7. Africa's food horizons remain in dire state in the overall as success achieved in other parts of the continent such as South Africa are not uniform and shared across the continent. This is partly arising from the intensive border controls and trade protectionism across the continent. These patterns keep the continent as a net food importer. By 2019, Africa expended US\$43 billion in food imports and further

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<sup>6</sup> Pinstrup-Andersen, P. (2010). The African Food System and Human Health and Nutrition: A Conceptual and Empirical Overview. In PINSTRUP-ANDERSEN P. (Ed.), *The African Food System and Its Interactions with Human Health and Nutrition* (pp. 1-13). Cornell University Press. Retrieved February 16, 2021, from <http://www.jstor.org/stable/10.7591/j.ctt7zd0x.8>.

<sup>7</sup> IFPRI, 2021. Food systems, IFPRI; <https://www.ifpri.org/topic/food-systems>.

<sup>8</sup> Moseley, W.G. 2018. Why it's important to recognise multiple food systems in Africa. <https://theconversation.com/why-its-important-to-recognise-multiple-food-systems-in-africa-97134>.

<sup>9</sup> Jayne, T. S., Meyer, F., & Traub, L. N. (2014). *Africa's Evolving Food Systems: Drivers of change and the scope for influencing them*. International Institute for Environment and Development, London.

projected that by 2030, this imports bill would reach US\$90 billion<sup>10</sup> pointing to two contrasting realities; both existing opportunities for African farmers as well as a potential unsustainable dependence situation for the continent. This trend should perhaps not be surprising considering that the continent's food self-sufficiency in the overall from the 1960s through to 2007 has been declining as Africa's capacity to meet its populations' food demand deteriorated. Overall, the continent's per capita food production declined partly because the region's population has been increasing and food production has not been matching up leading to a widening gap between production and the attendant consumption<sup>11</sup>. Three scenarios have played out from the 1960s through the 1970s to the present. Firstly, food aid from outside Africa contributed to food paths during the crisis periods of the 1960s through to 1990s. Secondly, food from comparatively cheaper and net imports countries, continues to play a significant role in narrowing the food production and consumption gap. Third, an inter-mix of unfair priced smallholder food supplies from African farmers augmented with imports alleviates the majority of persons from the continent from going hungry. These complex interactions and responses to food demand and supply in the Africa region are bound to be further aggravated by the complexities of climate change that are reshaping patterns in agricultural productivity and, subsequently, the redistribution of the hungry<sup>12</sup>, especially in the Sub-Saharan Africa region.

8. Beyond the three patterns afore mentioned, Africa's retail is dramatically shifting to the 'super market' mode. Never mind that those grocery stores in the informal and peri-urban settlements labelled 'super markets' are not the true definition of the supermarket, they represent a growth mindset and a change local purchasing and shopping habits. Despite the noticed growth, it is to be noted that most of the food is still passing through SMEs throughout the food value chain. They are contextual representation of the changing African reality. The expansion of global retail with the movement of large retailers from comparatively well-off countries and economies to less developed ones and a shift from urban centers to small and rural towns of relatively larger retailers is the most recent trend in Africa. This is bound to intensify as the continent's urbanization path intensifies, consumption patterns and preferences change, including a rise in consumption of processed foods. African smallholder farmers and retailers subsequently must compete with international agribusinesses for the expanding urban markets. It has previously been reported that rural-urban supply chains, particularly in Africa have grown by 600-800% over the last three decades<sup>13</sup> as the food systems respond to the rising demand in urban areas. This astronomical growth is attributed to the growth of urban food markets that offer the largest and fastest-growing commercial opportunity available to the continent's millions of smallholder farmers. This will likely expand the current 25 per cent post-farm employment opportunities in the agri-food system<sup>14</sup> and help absorb more unemployed youth.

9. A key feature of African food systems is the role of women. Women play critical roles across African food systems from production, processing, selling and as consumers. They grow food, reduce

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<sup>10</sup> Fox, L and Jayne, T.S. (2020). Unpacking the misconceptions about Africa's food imports. Brookings, <https://www.brookings.edu/blog/africa-in-focus/2020/12/14/unpacking-the-misconceptions-about-africas-food-imports/>

<sup>11</sup> Luan, Y., Cui, X., & Ferrat, M. (2013). Historical trends of food self-sufficiency in Africa. *Food Security*, 5(3), 393-405.

<sup>12</sup> Thornton, P. K., Jones, P. G., Ericksen, P. J., & Challinor, A. J. (2011). Agriculture and food systems in sub-Saharan Africa in a 4 C+ world. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 369(1934), 117-136.

<sup>13</sup> Reardon, T., Echeverria, R., Berdegué, J., Minten, B., Liverpool-Tasie, S., Tschirley, D., & Zilberman, D. (2019). Rapid transformation of food systems in developing regions: highlighting the role of agricultural research & innovations. *Agricultural systems*, 172, 47-59.

<sup>14</sup> AGRA, 2020. Feeding Africa's Cities Opportunities, Challenges, and Policies for Linking African Farmers with Growing Urban Food Markets

food losses, make diets more diverse and agricultural produce more marketable along the agri-food value chains. Women comprise more than 50% of the agricultural workforce in the region and are also the predominant labour providers in agribusinesses and agro-industries. Yet, in many parts of Africa women continue to face significant social and economic discrimination. They often lack access to productive resources, agricultural inputs, information, finance, services, markets, social protection as well as technological and entrepreneurial know-how. Women for example represent less than 15 percent of all landowners, where data is available. Women often have only tenuous access to land - farming with short-term agreements from family or traditional authorities.

10. These fragile rights can disappear preventing women from planning ahead or engaging in long term investments in farming. In terms of access to finance, according to the Global Findex Database updated in 2017, the gender gap in financial inclusion in developing economies remains unchanged since 2011 – at 9 percentage points. Only 35% of women in Sub-Saharan Africa had a bank account in 2017, compared to 45 per cent of men<sup>15</sup>. And compared to male farmers, female farmers typically manage smaller plots of land and have less access to agricultural information, financial services, and other key resources. Studies have shown productivity gaps of ranging from 13 per cent in Uganda to 25 percent in Malawi<sup>16</sup>. In addition, many rural women are the primary caretakers in their households, which means they face heavy workloads that undermine their productive capacity and overall well-being. Governments have also not been consistent in making investments on gender equality in food systems. A recent gender audit<sup>17</sup> of 38 NAIPs shows that the level of gender budgeting varies, with less than 10 per cent being targeted towards promoting women’s empowerment (and specific activities that reinforce gender capacities or support women-specific programmes) and less than 10 per cent towards programmes with a minimal level of gender sensitiveness

### *State of food and nutrition security in Africa*

11. Globally, traction has been gained, reducing hunger and poverty as well as improving food and nutrition security. However, there remain significant concerns. There remain some 795 million people suffering from hunger, with two billion suffering from micronutrient deficiencies and/or other forms of over-nourishment<sup>18</sup>. From the Africa region, progress against hunger had been made but lost between 2014-2018 period. This lag in further addressing hunger and nutritional challenges has meant that some 256 million people in the continent remain hungry, representing an increase of some 44 million people from the 2014 period<sup>19</sup>.

12. A disproportionate distribution of the undernourished population across the continent is observed with the 17 million of the 256 million being from North Africa and 239 million being from sub-Saharan Africa. This regional outlook in part also masks in-country and in-region differences across the continent. For example, in Eastern Africa, Burundi, Eritrea, Somalia, South Sudan and Sudan had more than half the population of the food insecure in 2019. Countries in particular; Burundi and Somalia are projected to undergo essentially no change in the share of the population that is food insecure by 2029. All these affected countries are part of the food insecurity flashpoint countries assessed in 2017 as dependent on food aid and of the 37 countries assessed as dependent on food aid, 28 of them were

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<sup>15</sup> Findex Database, 2017.

<sup>16</sup> O’Sullivan, M., Rao, A., Banerjee, R., Gulati, K., Vinez, M. 2014. Levelling the field: improving opportunities for women farmers in Africa (English). Washington DC; World Bank Group.

<sup>17</sup> FAO, ECA and AUC. 2020. Africa Regional Overview of Food Security and Nutrition 2019. Accra. <https://doi.org/10.4060/CA7343EN>.

<sup>18</sup> FAO. 2017. The future of food and agriculture – Trends and challenges. Rome.

<sup>19</sup> FAO, ECA and AUC. 2020. Africa Regional Overview of Food Security and Nutrition 2019. Accra. <https://doi.org/10.4060/CA7343EN>.

from Africa<sup>20</sup>. These disturbing patterns across the continent have raised concerns among the African leaders for increased commitment to reverse the situation.

13. There are also gender patterns in food insecurity and undernourishment. Women are disproportionately vulnerable to food insecurity as well as economic and environmental shocks. For example, the prevalence of anaemia is highest in women in Africa at 36 per cent. Furthermore, harmful social norms and stereotypes on what women can or should do persist in many parts of the world, but these are difficult to address through conventional interventions. Food taboos that are detrimental to women's health and nutrition are still prevalent in many countries. Overall, the persisting food insecurity challenge in the sub-Saharan Africa region presents a real challenge towards achieving the zero hunger for all as expressed in the Sustainable Development Goals in particular, ending all forms of malnutrition.

14. However, as earlier mentioned, trade flows provide an interim opportunity to address emerging domestic food demand patterns, especially food deficits. This is a short-term measure to addressing Africa's food security needs partly because the intracontinental flows continue to reveal an increase in the export shares of the emerging cash products and processed food products while the shares of more traditional export products are contracting. The rising flows in intracontinental exports in food products is particularly important in closing continental food gaps in the areas experiencing astute deficits. Further, this intracontinental trade in agricultural products is larger than the official data showing that there is, for example, informal cross-border trade in staple food accounts for 30% of the total trade in West Africa<sup>21</sup>. With this pattern of informal trade already happening, it provides an impetus for accelerating the African Continental Free Trade Agreement (AfCFTA) that has revealed the potential that exists within the continent. What is clear now is that at the local level, the ordinary people are moving faster than the pace at which the politicians and decision leaders. Accelerating the AfCFTA has indeed the potential to fortify the continent's resilience towards food security.

15. There are certainly enough examples to provide adequate lamentations about the African food security challenge but, there are also illustrations of good practices that the continent could capitalize on as well as those that need to be harnessed to strengthen the continent's ability to provide and cushion its citizenry from constant abyss of food insecurity. Africa on average imports about 40% of its food under unfair terms of trade that have eliminated tariff protection at frontiers<sup>22</sup>. Accordingly, African countries have neither a regional nor a continental market that is stable, and which, as a consequence, persistently keeps smallholder farmers in the continent in perpetual 'farming poverty'. In this regard, achieving intra-continental food security will begin by correcting these imbalances within the continent and this could be the first and significant achievement that AfCFTA could deliver. This could allow locally grown food crops some level of protection as well as develop and build-up intra-Africa regional markets. Secondly, African governments need to rise to the occasion beyond the political rhetoric of good laws and policies to radically support local farmers overcome challenges and vagaries in agriculture to become regionally and internationally competitive. One vexing issue is for the use of subsidies in farming. While European and/or an American farmer to receives subsidies, it is deemed a terrible practice if it is to be applied to African farmers. Regardless of the arguments advanced against pursuing this course of action, it is the Africans and African Union's responsibility to take leadership

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<sup>20</sup> Hunger and Food Scarceness in Africa. Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo, Djibouti, DR Congo, Eritrea, Ethiopia, Guinea, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Nigeria, Sierra Leone, Somalia, South Sudan, Sudan, Swaziland, Uganda, and Zimbabwe. <https://www.sos-usa.org/about-us/where-we-work/africa/hunger-in-africa>.

<sup>21</sup> Bouët, Antoine, Odjo, Sunday Pierre, and Zaki, Chahir, eds. 2020. Africa Agriculture Trade Monitor 2020. Washington, DC: International Food Policy Research Institute (IFPRI).

<sup>22</sup> Sasson, A. (2012). Food security for Africa: an urgent global challenge. *Agriculture & Food Security*, 1(1), 1-

for a change of action. There's the common African saying, 'your neighbor will not fill your granary'; thus, addressing persistent food insecurity will have to be an Intra-Africa issue, and solutions should be found within the continent.

16. The empowerment of women and the removal of gender-based constraints are also essential for food and nutrition security and resilience of African food systems. When rural women have better access to resources, services, economic opportunities and decision making have more food, their nutrition status improves, rural incomes increase and food systems become more efficient and sustainable. An AfDB study estimated quantitatively that closing the gender productivity gap would yield production gains of 2.8 per cent in Nigeria, 8.1 per cent in Tanzania, and 10.3 per cent in Uganda<sup>23</sup>.

17. To promote nutrition-delivering food systems, investments must go beyond traditional main crops and focus on other crops that are nutritionally important in the food systems, often managed by women, including vegetables, grain legumes and climate resilient crops such as sorghums and millets, which for a long time have suffered massive under investments.

### *Africa's One trillion-dollar business is in agriculture and agribusiness*

18. Economies that in the last four decades prospered in Africa have done so through the exploitation of the mineral wealth, especially oil and gas locally dubbed as 'black gold'. Now the continent is in motion with fast transforming agricultural and agribusiness sector that is rapidly causing excitement as well as central focus for investors and investment prioritization to shift to the 'new oil' set to drive the continent and offer the US\$1 trillion by 2030. Agribusiness is undoubtedly the case for the new Africa and African farmers and people could benefit immensely from this sector through the potential of inclusive growth that it could drive. However, a radical transformation shift is required for the continent to move from the current doldrums of significant importation of food from outside Africa amounting to US\$35 billion annually and projected to soar to US\$110 billion by 2025. This certainly is good for those that are exporting to Africa but it is a challenge for the continent because; (i) it continues to undermine potential progress of smallholder farmers, keeping them in poverty-farming poverty for years; (ii) the continent is donating millions of jobs to export destination countries and as such off-farm jobs that could be created within the continent across the diverse value chains remain marginal; and, (iii) Africa remains constantly kept in the unfavourable balance of trade and trade deficits.

19. Africa with a 60 per cent global share of arable land is in a strategic position to cement a global leadership in agriculture and agribusiness and become the food and agribusiness center of the world. But, realizing this dream requires that appropriate and strategic investments are undertaken. For example, the agribusiness investment leaders have pointed out that there is urgent need to invest at least US\$45 billion annually in order to harness the power of agriculture and to move-up the value chain to create jobs and wealth. This will represent a significant shift from the current US\$7 billion invested in the sector. Taking this strategic investment angle could unlock the continent's fortunes in such a way that Africa could become a net exporter of agricultural commodities, replacing the current S\$110 billion worth of imports and at the same time double its market share value for selected processed commodities<sup>24</sup>.

20. It is thus apparent that a performance boost on the continent is required for the US\$1 trillion potential to be unlocked. This performance is needed to cross the diverse value chains on the continent across its complex geographies that act against it by increasing farm and operational costs for the

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<sup>23</sup> Mukasa, A.N. and A.O. Salami. 2016. "Gender productivity differentials among smallholder farmers in Africa: A cross-country comparison", Working Paper Series No. 231, African Development Bank, Abidjan, Cote d'Ivoire

<sup>24</sup> African Development Bank Group, AfDB. 2018. Africa agribusiness, a US\$1 trillion business by 2030. <https://www.afdb.org/en/news-and-events/africa-agribusiness-a-us-1-trillion-business-by-2030-18678>



millions of smallholder farmers that feed the continent. Focusing on value chains is transformative. For example, Africa is the leading global importer of rice, expending about US\$3.5 billion annually in rice imports. Addressing the rice value chain alone has the immense financial unlocking it does to the rice dependent communities. In Senegal, for example, rice is produced in various irrigation systems and in Ghana investments to reduce the associated high costs of production<sup>25</sup> could make the locally produced rice competitive and the rice value chain more profitable. Within this context, it is evident that shifting Africa's food systems currently valued at US\$313 billion to US\$1 trillion by 2030 requires a consistent investment and policy environment in the short and medium term<sup>26</sup>.

21. The African Continental Free Trade Agreement (AfCFTA) as inaugurated, offers the continent a promise of US\$2.5 trillion combined GDP. The agreement seeks to enhance trade in goods within its various protocols by addressing tariff liberalization, non-tariff barriers, rules of goods origins, trade in services, competition, and intellectual property. Intra-African agricultural trade remains low within the 20% margin, most of which is dominated by South Africa and Southern African Development Community (SADC), accounting for nearly half (47%) of the trade volumes and margins. If South Africa is removed from this equation, the intra-Africa trade is worryingly low with a limited number of products generally trade among countries. This seemingly strange situation is orchestrated by a myriad of situation including, among others; (i) mismatch between supply and demand with a lack of diversification; (ii) supply-side constraints and capabilities, including the cost of and lack of access to necessary inputs, outdated technology and production methods, and the lack of knowledge transfer, know-how and information; (iii) the cost of transportation and inefficient infrastructure (transportation networks, information and communication technology, electricity, irrigation and warehousing, and cold storage); (iv) trade barriers including tariff and non-tariff barriers<sup>27</sup>. There is also tremendous potential for integrating women into the AfCFTA and there is an objective on gender mainstreaming. This will however need deliberate and intention implementation and a monitoring system to track women's engagement and any barriers and constraints that they face. The importance of mainstreaming gender in AfCFTA national strategies cannot be overemphasized with women represent the bulk of informal cross boarder traders. About 70 per cent of the informal cross border traders in the Southern African Development Community (SADC) region are women. In West and Central Africa, informal cross-border trade among women represents more than 60 per cent and generates about 40 to 60 per cent of the Gross Domestic Product (GDP) of the countries concerned.

22. Africa's post-harvest handling, distribution, processing and packaging, and structural challenges including infrastructure, affected the quality of agricultural goods and traded volumes in Africa. These bottlenecks for example facilitate the growth of aflatoxins making the products unfit and unsafe for the market and consumption. Aflatoxins are a menace in African foods and are thus a significant threat to Africa's agro and food industry. It has previously been documented that traded maize in East Africa has severely high aflatoxin contamination of up to 90 per cent in traded maize and up to 99 per cent exposure level to aflatoxin in West Africa<sup>28</sup>. This high contamination has a high health risk exposure, creates economic losses to smallholder farmers that produce the bulk of the produce

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<sup>25</sup> World Bank Group, 2013. Africa's Agriculture and Agribusiness Markets Set to Top US\$ One Trillion in 2030; <https://www.worldbank.org/en/news/feature/2013/03/04/africa-agribusiness-report>

<sup>26</sup> World Bank Group, 2013. Africa's Food Markets Could Create One Trillion Dollar Opportunity by 2030. <https://www.worldbank.org/en/news/press-release/2013/03/04/africas-food-markets-could-create-one-trillion-dollar-opportunity-2030>

<sup>27</sup> Sandrey, R., Viljoen, W., Ntshangase, T., Mugrefya, M., Potelwa, Y., Motsepe, T., ... & Maiketso, J. (2018). Agriculture and the African Continental Free Trade Area. TRALAC. Online, available at: <https://www.tralac.org/publications/article/13757-africanagricultural-production.html>.

<sup>28</sup> Chauhan, N. M. (2017). Aflatoxin: A Risky Menace for African's Food Commodities. Aflatoxin: Control, Analysis, Detection and Health Risk.

across the region as their crop often gets rejected by international buyers as well as local processors that have traction for volumes and quality standards. Thus, this lack of standards and lower quality adherence affects the overall potential volume in the trade as well as the match to realizing the US\$1 trillion- dollar business potential across the continent, and it generally compromises the overall continental focus to attaining health and nutrition especially in sub-Saharan Africa.

### *Africa's farming systems: a context for food systems development*

23. Africa is home to some of the most complex farming systems reflecting the continent's complex geography, climate, soils and even markets. The continent has fifteen farming systems delineated with several sub-systems. Nearly 70 per cent of Africa's smallholder farmers subsist on the five farming systems, including; Highland Perennial, Maize-Mixed, Cereal Root and Tuber Crops, Agro-pastoral, and Highland Mixed<sup>29</sup>. In the sub-Saharan Africa region, nearly 16 per cent of the land area is dominated by the maize mixed farming system, mostly in the eastern, central, and southern regions. This farming system provides for more than 100 million people, of whom 58 million live on less than \$1.25 a day. This accounts for about 23 percent of the total rural poor in the SSA region. Meanwhile, the highlands of eastern and southern Africa have some of the most smaller and fragmented systems, such as the highland perennial and high-land mixed systems that cover just 2 percent of the land area but are home to 11 per cent and 6 per cent of SSA rural poor. Conspicuously, the agropastoral farming system accounts for 18 per cent of the rural poor in the SSA, while the root and tuber crop system account for 11 per cent and the cereal-root crop mixed system (10 per cent)<sup>30</sup>. Adding to the complexity is the social dimensions of smallholder agriculture, agropastoral and fisheries sector. Who manages the farms, men or women, older or younger farmers, their education levels, their closeness to markets also determines the level of technologies and other resources, and the efficiency and productivity of these systems.

24. The diverse and complex farming systems in the continent are a result of complex evolution but compound the challenge of developing the agricultural sector and food systems in the continent. Firstly, the vast majority of the hungry and food insecure in the continent reside in rural areas; secondly, effective food systems require productive and resilient farming systems. Thus, farming and food systems are part of designing and implementing zero hunger programs. Further, supporting diverse integrated farming systems facilitates diverse diets, which is associated with reduced malnutrition<sup>31</sup>.

25. Besides, agricultural productivity on the continent, which is a strong primer for food security, can only be realized when the complex farming systems are considered. Failure to consider these investments into new technologies and science to increase crop yields will become futile. Productivity trends and returns to investment vary across the farming systems and countries in the Africa region.

### *Building resilience in Africa's food systems*

26. Food security remains a major concern for Africa today and into the foreseeable future. Firstly, because food demand on the continent is currently growing at an average rate of 3% per annum; and secondly, the continent's population that is nearly growing at the same rate will nearly double from its current state to an estimated 2.4 billion by 2050. These people need to be fed not only in sufficient food but nutritionally rich and fulfilling diets. Amidst this rising demand, the continent is already a net importer importing an estimated 40 per cent of its food share and facing a myriad of interacting and

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<sup>29</sup> Garrity, D., Dixon, J., & Boffa, J. M. (2012). Understanding African farming systems. Food Security in Africa: bridging research and Practise, 1-50.

<sup>30</sup> Garrity, D., Dixon, J., & Boffa, J. M. (2012). Understanding African farming systems. Food Security in Africa: bridging research and Practise, 1-50.

<sup>31</sup> Dixon, J., Garrity, D. P., Boffa, J. M., Williams, T. O., Amede, T., Auricht, C., & Mburathi, G. (Eds.). (2019). Farming systems and food security in Africa: Priorities for science and policy under global change. Routledge.

complex constraints inhibiting the growth and performance of its food systems. For the last two and half decades, climate change has received attention as a disruptive challenge to Africa's food systems and constitutes a more threat to food security and poverty reduction effort on the continent. The continent's food systems are not yet out of the hook of climate change, in fact there are intensifying and compound effects of the climate crisis, including; the devastating droughts in Southern Africa and West Africa to cyclones and flooding in East Africa. These extreme weather events have a high cost and are threatening crops and livestock, thereby risking millions of Africans' food security<sup>32</sup>.

27. Recent outbreak of the global COVID-19 pandemic has further exacerbated the inequities on the continent's food security situation and exposed how vulnerable Africa's food systems are to system-level shock. But, progress must be made in adapting Africa's food systems to shocks and rather challenging and uncertain future. Building food systems resilience is an emergent property of system-level dynamics that is now an imperative for which African governments need to strengthen enabling environment through improved policies and investments in agricultural public goods, scale-up digital solutions for agriculture, and develop innovative financing schemes through public-private partnerships<sup>33</sup>. It is also time to put the investments where they are most needed; for example, African governments channeling millions of dollars in public support to climate-smart agriculture (CSA) investments; investing in skills to grow the current 2 per cent of the students' population that specialize in agriculture despite the sector's 32 per cent contribution to the continent's GDP; and, strengthening use of big data to drive smarter farm-level decisions on water management, fertilizer use, deploying drought-resistant crop varieties and accessing markets within and away<sup>34</sup>. These investments could be catalytic in shaping the performance and resilience of Africa's food systems.

### **3. Challenges and opportunities of African food systems**

28. Despite decades of decline and stagnation, growth in African economies has picked up substantially since the early 2000s and a new optimism has emerged about the potential of food systems on the continent. Yet, African food systems continue to face several challenges, including extreme weather events and climate change, limited levels of yield-increasing technologies, dependency on rainfed agriculture and low levels of irrigation, and most recently the COVID-19 pandemic.

#### *The search for resilient food systems in the face of a changing climate*

29. Climate change presents significant challenges to African agriculture and threatens recent progress in increasing productivity and reducing poverty and hunger. The combination of rising temperatures and changing precipitation patterns is projected to result is a broad range of impacts, including increases in the frequency of weather volatility and extreme weather events, rising sea levels, changes in the incidence of agricultural pests and diseases, and adverse effects on crop productivity. Climate change is expected to leave more than 38 million more people at risk of hunger in Africa south of the Sahara in 2050 than would otherwise be the case, particularly in Eastern Africa. And there is evidence that women are experiencing this in different ways than men, and resilience strategies need,

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<sup>32</sup>Ehui, S. and Klytchnikova, I.I. 2020. Doing more—and better—for Africa's food system in the face of climate change; <https://blogs.worldbank.org/climatechange/doing-more-and-better-africas-food-system-face-climate-change>.

<sup>33</sup> Braimoh, A. (2020). Building Resilient Food Systems in Africa. *One Earth*, 3(3), 282-284.

<sup>34</sup> Ehui, S. and Klytchnikova, I.I. 2020. oing more—and better—for Africa's food system in the face of climate change; <https://blogs.worldbank.org/climatechange/doing-more-and-better-africas-food-system-face-climate-change>

therefore, to take this into account. In addition, the rate of malnutrition in children under five years of age is projected to increase from about 22 to 24 per cent—an increase of more than 4 million children.<sup>35</sup>

30. With the growing threat to food security, policies and practices that promote adaptation to rapidly changing climate conditions will be required to address climate change impacts on African food systems. A critical intervention is the adoption of improved agricultural technologies for sustainable intensification. For instance, research shows that no-till farming and nitrogen-efficient crop varieties show the most significant promise under changing climate conditions in 2050, compared to a scenario without adopting these technologies.<sup>36</sup> Widespread adoption of other climate-smart practices, such as integrated soil fertility management to address deteriorating soil quality, drought- and heat-tolerant crop varieties, integrated crop-livestock management, agroforestry, and, and conservation agriculture, should also be encouraged.<sup>37</sup>

31. Furthermore, while these climate-smart practices show promise in terms of higher productivity and improvements to food security, their adoption by poor smallholder farmers in Africa south of the Sahara is constrained by insecure land tenure, poor by poor access to resources and information, markets, and risk-management tools. Significant investments in research and technology, together with institutional and physical infrastructure, will be needed to overcome these barriers.<sup>38</sup>

***Stumping out chronic vulnerability and protecting livelihoods among the poor and marginalized***

32. Another key intervention will be the scaling up of social protection programmes to protect livelihoods in the face of risks related to climate variability, conflicts and other shocks, such as the COVID-19 pandemic. The pandemic effects on livelihoods point to the importance of safety nets to ensure the well-being of vulnerable populations in the face of unexpected shocks.<sup>39</sup>

33. Targeted social safety nets and health- and nutrition-specific programmes can help increase communities and households' resilience in times of crises. Research has shown that safety nets programs that are properly designed can greatly accelerate progress in African countries with high rates of maternal and child undernutrition and mortality, with even greater benefits for national economies and global health. For example, the Ethiopia Productive Safety Net Programme, a large-scale social protection intervention aimed at improving food security and stabilizing asset levels through a mix of public-works employment and unconditional cash and food transfers, successfully improved household

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<sup>35</sup> Wiebe, Keith D.; Sulser, Timothy B.; Mason-D'Croz, Daniel; and Rosegrant, Mark W. 2017. The effects of climate change on agriculture and food security in Africa. In *A thriving agricultural sector in a changing climate: Meeting Malabo Declaration goals through climate-smart agriculture*, eds. Alessandro De Pinto and John M. Ulimwengu. Chapter 2, pp. 5-21. Washington, D.C.: International Food Policy Research Institute (IFPRI). [http://dx.doi.org/10.2499/9780896292949\\_02](http://dx.doi.org/10.2499/9780896292949_02).

<sup>36</sup> Wiebe, Keith D.; Sulser, Timothy B.; Mason-D'Croz, Daniel; and Rosegrant, Mark W. 2017.

<sup>37</sup> Nkonya, Ephraim M.; and Koo, Jawoo. 2017. The unholy cross: Profitability and adoption of climate-smart agriculture practices in Africa south of the Sahara. In *A thriving agricultural sector in a changing climate: Meeting Malabo Declaration goals through climate-smart agriculture*, eds. Alessandro De Pinto and John M. Ulimwengu. Chapter 8, pp. 103-113. Washington, D.C.: International Food Policy Research Institute (IFPRI). [http://dx.doi.org/10.2499/9780896292949\\_08](http://dx.doi.org/10.2499/9780896292949_08).

<sup>38</sup> Wiebe, Keith D.; Sulser, Timothy B.; Mason-D'Croz, Daniel; and Rosegrant, Mark W. 2017.

<sup>39</sup> Badiane, Ousmane; Collins, Julia; and Ulimwengu, John M. 2020. The past, present and future of agriculture policy in Africa. In *2020 Annual trends and outlook report: Sustaining Africa's agrifood system transformation: The role of public policies*. Resnick, Danielle; Diao, Xinshen; and Tadesse, Getaw (Eds). Chapter 2, Pp. 9-25. Washington, DC, and Kigali: International Food Policy Research Institute (IFPRI) and AKADEMIYA2063. [https://doi.org/10.2499/9780896293946\\_02](https://doi.org/10.2499/9780896293946_02).

food security between 2008 and 2012.<sup>40</sup> These social protection measures can have greater impacts on nutrition and household wellbeing if they are targeted at women. In Nigeria, for example, cash transfers in smaller more regular disbursements targeted at women yielded positive impacts on women's work, household food security, and asset investment. This gendered design of cash transfers and other social protection is being adopted in countries such as Togo and Burkina Faso. Additionally, agricultural interventions, such as weather-based crop and livestock insurance, can increase certainty and security, and assurance to a minimum income stream to rural households.<sup>41</sup>

### ***Overcoming a persistent slow rate of adoption of improved production technologies***

34. The expanded use of modern inputs, such as improved seeds, irrigation, and mechanization, also contribute to increased agricultural productivity, but the intensity of input use in Africa still lags behind that of other regions.<sup>42</sup> African seeds systems are still struggling to produce and distribute high-quality varieties in sufficient quantities to reach a critical mass of smallholder farmers. Public research and development systems lead the way while appropriate policies and regulatory frameworks are putting in place to enable the private sector to play a driving role in the development of competitive supply chains. The fertilizer sector is faced with significant challenges related to not just costs but also quality. The recent experience with government programmes, including subsidy schemes, has not been very successful in raising access to modern fertilizers. This is because the cost of fertilizers is more a symptom than the root cause. The real problem is systemic and rooted in the absence of a critical mass of operators capable of investing sufficiently to build and operate a cost-effective production, procurement and distribution infrastructure network. Future strategies have to focus on enabling private sector-based systems through adequate institutional, policy and regulatory arrangements, including using government procurement to stimulate private sector investment and the emergence of competitive enterprises.

### ***Securing land tenure***

35. There is strong evidence that secure land tenure contributes to productive and environmentally-beneficial agricultural investments that can contribute to climate change mitigation as well as adaptation.<sup>43</sup> Women's land tenure security has further benefits in empowering women and reducing the gender gap in agricultural investment, especially in long-term investments such as soil fertility management and tree planting.<sup>44</sup> Recognizing these issues, the African Union adopted a Declaration on Land Issues and Challenges in Africa, and many African governments have engaged in legislative/regulatory and administrative/institutional land governance reforms using a continuum-of-land-rights approach suited to protecting land rights of vulnerable groups such as women because it involves localized recording and documentation of

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<sup>40</sup> Malabo Montpellier Panel. 2017. Nourished: How Africa can build a future free from hunger and malnutrition. Dakar, Senegal: International Food Policy Research Institute (IFPRI) and Malabo Montpellier Panel. <http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/131407>.

<sup>41</sup> Wouterse, Fleur Stephanie and Taffesse, Alemayehu Seyoum (Eds). 2018. Boosting growth to end hunger by 2025: The role of social protection. ReSAKSS Annual Trends and Outlook Report 2017-2018. Washington, DC: International Food Policy Research Institute (IFPRI). <https://doi.org/10.2499/9780896295988>.

<sup>42</sup> Sheahan, Megan. and Barrett, Christopher. B. 2017. Ten Striking Facts about Agricultural Input Use in Sub-Saharan Africa. *Food Policy*, 67: 12–25. <https://doi.org/10.1016/j.foodpol.2016.09.010>

<sup>43</sup> Higgins, D. T. Balint, H. Liversage and P. Winters. (2018). Investigating the impacts of increased rural land tenure security: A systematic review of the evidence. *Journal of Rural Studies* 61: 34-62.

<sup>44</sup> Meinzen-Dick, R. S., A. R. Quisumbing, C. R. Doss and S. Theis. (2019). Women's land rights as a pathway to poverty reduction: A framework and review of available evidence. *Agricultural Systems* 172(June):72-82. <http://dx.doi.org/10.1016/j.agsy.2017.10.009>

rights (including secondary or derived rights), adapting and expanding existing tenure and land administration systems where possible, and introducing new ones selectively. However, population pressure, commodification of land, and commercialization of agriculture often reduces tenure security, particularly for women.<sup>45</sup> Thus, particular efforts are needed to ensure that tenure security reforms are not only passed, but implemented, including provisions for legal literacy and ensuring that women and marginalized groups know their land rights.

***The road to adapted mechanization technologies across food system value chains***

36. Africa still has the least mechanized food systems in the world. Farmers across Africa have 10 times fewer mechanized tools per farm area than farmers in other developing regions, and access has not grown as quickly as in other regions.<sup>46</sup> Also, the development of agricultural equipment markets remains impeded by constraints related to importing or manufacturing equipment. However, some countries have experienced more dynamic growth in mechanization by emphasizing equipment rental or service hiring markets, such as in Ethiopia and Malawi, and by carrying out interventions to increase mechanization in the form of public-private partnerships.<sup>47</sup> Mechanization in African food systems needs rethinking and fresh strategies. The success of mechanization in African countries will be about technology and organizational innovations, such as reliable services and cooperation arrangements for and with farmers. Opportunities for mechanization must be harnessed at each stage of the agricultural value chain. When done right, the mechanization of agricultural value chains in Africa can and should be employment-enhancing and need not be labour-replacing.<sup>48</sup>

37. Irrigation use is also low in Africa. Yet, evidence shows that average yields on irrigated areas are ninety percent higher than in nearby rainfed areas. Moreover, research findings demonstrate that one of the critical factors that stimulated agricultural productivity growth during the Green Revolution in India was increased public investments in irrigation.<sup>49</sup> Expanded investments in irrigation must be coupled with better policies for the sustainable use of available water resources to maximize agricultural output per unit of water used. By adopting high-efficiency irrigation technologies or by improving water management, water-use efficiency can be increased.<sup>50</sup> As the Pedal Pump (PEP) - a mechanical irrigation tool for tapping into wells, rivers, lakes or even small ponds, to facilitate water supply to farms and homes is one of such technologies which is already being used in some African countries, including Kenya, Tanzania, Senegal, Niger, Burkina Faso, Uganda, and Mozambique. The pump is very valuable since it does not depend on fossil fuels and only draws relatively small amounts of water. An

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<sup>45</sup> Ghebru, H. 2019. Women's land rights in Africa. In *2019 Annual trends and outlook report: Gender equality in rural Africa: From commitments to outcomes*, eds. Quisumbing, Agnes R.; Meinzen-Dick, Ruth Suseela; and Njuki, Jemimah. Chapter 4, Pp. 44-56. Washington, DC: International Food Policy Research Institute (IFPRI). [https://doi.org/10.2499/9780896293649\\_04](https://doi.org/10.2499/9780896293649_04)

<sup>46</sup> Malabo Montpellier Panel. 2018. Mechanized: Transforming Africa's agriculture value chains. Dakar, Senegal: International Food Policy Research Institute (IFPRI) and Malabo Montpellier Panel. <http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/132766>.

<sup>47</sup> Badiane, Ousmane; Diao, Xinshen; and Jayne, Thomas. 2021. Africa's unfolding agricultural transformation. In *Agricultural development: New perspectives in a changing world*, eds. Keijiro Otsuka and Shenggen Fan. Part Two: Regional Issues in Agricultural Development, Chapter 5, Pp. 153-192. Washington, DC: International Food Policy Research Institute (IFPRI). [https://doi.org/10.2499/9780896293830\\_05](https://doi.org/10.2499/9780896293830_05).

<sup>48</sup> Malabo Montpellier Panel. 2018.

<sup>49</sup> Sheahan, Megan and Barrett, Christopher. B. 2017. Ten Striking Facts about Agricultural Input Use in Sub-Saharan Africa. *Food Policy*, 67: 12–25. <https://doi.org/10.1016/j.foodpol.2016.09.010>

<sup>50</sup> Ringler, Claudia. 2017. Investments in irrigation for global food security. Washington, D.C.: International Food Policy Research Institute (IFPRI). <https://doi.org/10.2499/9780896292543>.

average of 60liters of water can be extracted per minute from a depth of three meters using the pedal pump. According to a study in Magoma, Tanzania, with PEP's use, average farm size was tripled, 58 per cent of farmers had diversified their crops, and farmers had doubled their yield, on average.<sup>51</sup>

### *The promise of digital and biotechnologies and the transformation of food systems*

38. While Africa has witnessed tremendous growth in the adoption and use of information and communication technologies, digital innovations need to move beyond large-scale farming operations to benefit more smallholder farmers, improve food and nutrition security, build climate resilience, and expand the inclusion of youth and women. Access and delivery of holistic digital agriculture technologies, innovations, and data to transform business models and practices across agricultural value chains is critical. Digital innovations can help enhance access to e-extension services and markets by smallholder farmers and support access to mechanization services among farmers. Today's digital technologies can, for example, help to overcome the complete lack of information about growing conditions. Remotely sensed data enables tracking changes in vegetation cover, weather data, and other parameters related to cropping activities in real-time. Recent developments in machine learning and computer modelling make it possible to track and predict crop production using such data. Digital technologies can also help overcome challenges hampering access to good quality agricultural data, from measuring arable land, planted areas, crop yields to the spatial distribution of harvested quantities.<sup>52</sup> For these to work for all including women, there is a dire need to invest in closing the gender digital gap.

39. Biotechnology, including improved breeds and seed varieties, has not been widely embraced across Africa. Increased support for the adoption of biotechnology, particularly among smallholders, including the new generation of farmers emerging across Africa, requires accelerated action. Scientists are designing and developing livestock breeds and crop varieties with higher yields, additional nutrients (e.g. in biofortified crop seeds, roots and cultivars), and enhanced tastes through crop biotechnology and genomics. The power of modern agricultural biotechnology and genomics in transforming African food systems into a force of economic growth, creating wealth in the rural space and beyond, feeding an African population expected to reach 2.2 billion people by 2050, and conserving resources for future generations cannot be ignored.

40. Despite challenges and uncertainties surrounding the adoption of biotechnology adoption, there appears to be a significant potential for capturing large economic, social, and environmental payoffs from the use of biotechnology products in the farming systems across Africa. In West Africa, for instance, farmers can benefit significantly from the adoption of Bt Cotton. However, the share of farmers that stand to gain from the introduction of Bt cotton technology will be primarily influenced by whether or not national governments and technology innovator support appropriate incentives and address institutional and socio-economic issues that may limit benefits to be captured by the poor small farmers in West Africa. Knowledge flows to and from farmers will play a critical role in the proper deployment of the technology.<sup>53</sup> Furthermore, there is a need to build laboratory capacity and technical expertise in Africa to harness and safely deploy biotechnology for communities and the environment.

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<sup>51</sup> Malabo Montpellier Panel. 2018.

<sup>52</sup> Racine Ly, Khadim Dia. 2020. Application of Remote Sensing and Machine Learning for Crop Production Forecasting During Crises. Covid-19 Bulletin No. 4, August. Kigali. AKADEMIYA2063. <https://www.akademiya2063.org/uploads/Covid-19-Bulletin-004.pdf>.

<sup>53</sup> Falck-Zepeda, Jose & Horna, Daniela & Smale, Melinda. 2007. The Economic Impact and the Distribution of Benefits and Risk from the Adoption of Insect Resistant (Bt) Cotton in West Africa. IFPRI Discussion Paper 00718. Washington, D.C.: International Food Policy Research Institute (IFPRI).

### ***Taking to scale research-proven food science technologies to increase nutrient content of African diets***

41. A specific area of biotechnology worth special attention, are two cutting-edge research in agricultural and food science technologies, notably; biofortification and industrial food fortification. Industrial food fortification is adding nutrients (that don't naturally occur in the food) to foods during processing, in order to improve nutrition and add health benefits. Examples of such foods are milk fortified with vitamin D, fruit juices with calcium and rice kernel with zinc.

42. Biofortification is the process of conventionally breeding staple food crops that are naturally enriched with micronutrients. It complements industrial food fortification, supplementation and dietary diversification as AU strategies for making nutrition-sensitive agriculture a reality and an enduring conventional practice. To date, Africa has played a strong leadership role with 38 countries testing and/or growing biofortified staples (cassava, maize, sweet potato, beans and pearl millet) and 14 countries have included biofortification in their policies and programmes. Evidence is accumulating showing that with increased use of biofortified crops comes reduction in anaemia, diarrhoea, night blindness and improved cognitive and physical performance. It is in this regard that the second and third Specialized Technical Committees on Agriculture, Rural Development, Water and Environment recommended taking to scale these nutrition enhancing technologies to scale so that they benefit larger populations, with specific focus on the poor and the vulnerable who often to have access to the niche markets or lack purchasing power.

### ***Overcoming the energy deficit in African food systems***

43. Technologies to generate and deliver energy for the transformation of food systems in Africa are also urgently needed. Africa faces the highest costs of electricity provision globally, and large shares of the population, particularly in rural areas, remain unconnected to energy grids.<sup>54</sup> Recent statistics from the International Energy Agency revealed that 580 million people in Africa lacked access to electricity (three-quarters of the global total) in 2019. Further, that number is expected to rise in 2020 for the first time in years.<sup>55</sup>

44. Policies that explore promising off-grid and mini-grid solutions that could meet the needs of farmers, agro-industries and households in remote areas should be explored.<sup>56</sup> Expanding access to alternative energy sources, such as solar, wind, and biogas, can help boost food security in Africa by accelerating sustainable agricultural development, improving water security, accelerating rural and economic growth.<sup>57</sup> Zambia's commitment to strengthen and diversify its energy supply through fiscal incentives, including reduced import duties, is noteworthy. The country, for example, has taken a cluster-based approach to agricultural electrification through "farm blocks" that are equipped with basic infrastructure and complemented by industrial cluster zones for agricultural processing. To meet increased energy demand and connect rural areas to electricity, the government seeks to expand electrification using a combination of grid extension and off-grid solutions.

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<https://www.ifpri.org/publication/economic-impact-and-distribution-benefits-and-risk-adoption-insect-resistant-bt-cotton>.

<sup>54</sup> Badiane, Ousmane; Collins, Julia; and Ulimwengu, John M. 2020.

<sup>55</sup> Ringler, C. and W. Brent. 2020. Why the G20 needs to focus on energizing food systems in Africa. <https://www.ifpri.org/blog/why-g20-needs-focus-energizing-food-systems-africa>.

<sup>56</sup> Badiane, Ousmane; Collins, Julia; and Ulimwengu, John M. 2020.

<sup>57</sup> Ringler, C. and W. Brent. 2020.



### *The imperative of improved sector governance of more integrated African food systems*

45. Responses to food system challenges across Africa require changes and a transformative agenda that are embedded in longer-term strategic frameworks. The alignment and enhancement of strategies and continent-wide frameworks with shared vision, goals, and principles—such as the Comprehensive Africa Agriculture Development Programme (CAADP) of the African Union (AU), the Malabo Declaration Agenda, the African Continental Free Trade Area, and, in general, the AU’s Africa Agenda 2063—have to be at the core of global efforts to advance food systems in Africa. Also critical are mutual accountability country processes, including the CAADP biennial reviews and the agriculture joint sector reviews. Comprehensive and differentiated policy reforms for integrated food systems across Africa, and improvements in governance and management for better outcomes remain critical. Lastly, African leaders should raise efforts to meet commitments related to agricultural spending, intra-African trade, and investments in climate-smart agriculture.

## **4. Drivers for transformation in African food systems: Levers of change**

46. Marked by decades of economic and agricultural growth stagnation, African food systems have undergone rapid changes since the turn of the century. The main drivers behind these are changes range from the longest sustained economic recovery, rapid urbanization, steady population growth, emerging technologies, deepening globalization, and a changing climate. Each of these drivers are reviewed briefly below.

### *Sustained, broad-based economic recovery*

47. The strong economic recovery observed across the African continent—with considerable growth acceleration since the early 2000s—is striking. However, African economies have not yet caught up with their growth trajectories of the 1960s.<sup>58</sup> Real per capita GDP has increased by over one third, on average between 2000 and 2014, with faster growth of up to 100 percent or more in some countries. Many countries across Africa have seen sustained growth in the agricultural sector, about 4.7 per cent per year on average between 2000 and 2018, after decades of stagnation.<sup>59</sup> Yet, despite significant decreases in recent years, hunger and malnutrition levels have remained unacceptably high. How to sustain and accelerate the current growth recovery is thus a major challenge facing African countries today. The successful transformation of African food systems is key for addressing this challenge.

### *Emerging medium- and large-scale farmers*

48. African food systems are evolving—a development which is central to Africa’s unfolding economic transformation. In some countries, the number of medium- and large-scale farms increases accounting for a sizeable and rising portion of total farmland. Agricultural commercialization is increasingly attracting private investments. In areas with growing numbers of medium-scale farms,

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<sup>58</sup> Badiane, Ousmane; Collins, Julia; and Ulimwengu, John M. 2020. The past, present and future of agriculture policy in Africa. In 2020 Annual trends and outlook report: Sustaining Africa’s agrifood system transformation: The role of public policies. Resnick, Danielle; Diao, Xinshen; and Tadesse, Getaw (Eds). Chapter 2, Pp. 9-25. Washington, DC, and Kigali: International Food Policy Research Institute (IFPRI) and AKADEMIYA2063. [https://doi.org/10.2499/9780896293946\\_02](https://doi.org/10.2499/9780896293946_02).

<sup>59</sup> Badiane, Ousmane; Diao, Xinshen; and Jayne, Thomas. 2021. Africa’s unfolding agricultural transformation. In Agricultural development: New perspectives in a changing world, eds. Keijiro Otsuka and Shenggen Fan. Part Two: Regional Issues in Agricultural Development, Chapter 5, Pp. 153-192. Washington, DC: International Food Policy Research Institute (IFPRI). [https://doi.org/10.2499/9780896293830\\_05](https://doi.org/10.2499/9780896293830_05).

large-scale traders are also increasing investments and expanding operations. The economic landscapes in which smallholder farmers in Africa have traditionally operated are shifting rapidly.

### ***Rapid urbanization and growth of rural towns***

49. Urbanization in Africa has reached other regions' levels and has continued to grow at a relatively faster rate of close to 4 per cent. According to projections of the UN Population Fund, the level of urbanization in Africa is expected to reach 50 per cent by 2020 and 65 per cent by 2050. While there were only two African cities with more than a million inhabitants in 1950, the number of cities jumped to fifty in 2010 and is expected to nearly double by 2025. Furthermore, as the number of cities increases, less concentration is observed. Rather than large metropolitan areas becoming larger, urbanization is being driven by the emergence of many small cities. In West Africa, for instance, large metropolitan areas account for only 40 per cent of the urban population, while the remaining 60 per cent reside in secondary and tertiary cities in rural areas and around or along highways to large cities.<sup>60</sup>

50. The rapid urbanization and transformation of food systems to feed Africa's growing cities are reshaping farmers access to markets, starting with those closest to towns and moving outward into remote areas. The rise of secondary cities has expanded market access and extended value chains into previously hard-to-reach areas.

### ***Globalization, food trade, and changing diets***

51. Africa is experiencing a widening food import gap. This growing external deficit in agriculture and food is a sign of demand growing faster than production due to higher economic growth, demographic pressure, and increased urbanization. This high level of imports is exposing the continent to relatively high volatility that agricultural markets typically experience.<sup>61</sup> Globalization and the growth of the large-scale food industry, including supermarkets and expansion of mass marketing, rising incomes, and changing employment pressures that lead to changes in eating and activity behaviors, are all significantly driving change in dietary patterns and associated health conditions. These are closely linked with urbanization, as changing environments and preferences interact to influence diets and nutrition. Diet habits are changing across Africa with implications for food systems. To be sure, there is a widespread increase in consumption of refined foods, such as refined grains, or highly processed foods and non-traditional staple foods. Also, the consumption of sugar, salt, fats, and oils has been on the rise. While there has been some shift towards high-quality diets, the consumption of poor-quality diets—the number one risk factor in the global burden of disease—remains prevalent in African countries. These diet changes and their impacts on nutrition are strongly linked to increasing burdens of obesity and diet-related chronic diseases, such as diabetes and heart disease.<sup>62</sup>

### ***Rise of the staples processing sector***

52. The rapid transformation of traditional staples' value chains driven by fast-paced urbanization and rising incomes is the most dramatic change facing African smallholders. Rapid urbanization and rising incomes are growing Africa's middle-class, which is fueling higher demand for agricultural products and local foods. Changing diets associated with rising incomes and urbanization are boosting demand for processed foods, such as couscous, millet flour, and garri (cassava flakes). Increasingly,

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<sup>60</sup> Transforming agriculture, forthcoming.

<sup>61</sup> Bouët, Antoine, Odjo, Sunday Pierre, and Zaki, Chahir, eds. 2020. Africa Agriculture Trade Monitor 2020. Washington, DC: International Food Policy Research Institute (IFPRI). <https://www.resakss.org/sites/default/files/AATM-Report-2020-final-1009.pdf>.

<sup>62</sup> Hawkes, Corinna; Harris, Jody; and Gillespie, Stuart. 2017. Changing diets: Urbanization and the nutrition transition. In 2017 Global Food Policy Report. Chapter 4. Pp 34-41. Washington, DC: International Food Policy Research Institute (IFPRI). [https://doi.org/10.2499/9780896292529\\_04](https://doi.org/10.2499/9780896292529_04).

consumers across Africa are demanding for foods to be processed with higher quality and ready to cook or eat—with ease of preparation. Projections show that African food markets are expected to grow six fold by 2025, most of the expansion being driven by urban demand for processed staples. Already, urban centers account for half to two-thirds of total food demand. The share of processed foods is expected to increase five to tenfold between 2010 and 2040. By that time processed foods will account for nearly 75 per cent of staple foods demand. Furthermore, Africa’s total urban food market is projected to reach \$150 billion by 2030, and smallholder farmers could capture as much as \$30 billion of that total.<sup>63</sup>

53. These trends are spurring the rapid rise of an emerging and dynamic processing sector. The rise of the processing sector is accompanied by a lengthening of the value chains of agricultural staples. From traditionally short chains limited to home-based processing and confined predominantly to rural areas, the changing value chains now primarily supply small towns and large urban centers with a range of branded ready-to-cook and ready-to-eat products. The urban-based value chains are fueled by the introduction of new processes, sometimes mechanized, of producing and distributing traditional foods outside of the household setting through specialized enterprises.<sup>64</sup>

54. The emerging processing sector provides new employment opportunities in processing, distribution, packaging, and marketing across food value chains, as well as increased incomes for farmers. However, the small and medium enterprises undertaking these new activities face significant challenges. Rising numbers of firms combined with low levels of innovation will lead to a situation with an abundance of small firms with persistently low productivity and profitability and limited ability to drive agricultural transformation. Strengthening the links between producers and processors is a critical intervention to facilitate firm growth and benefit smallholder farmers.<sup>65</sup>

#### ***Raising demand for animal source foods***

55. Animal agriculture is one of the fastest-growing economic sectors across the African continent. It could help answer some of Africa’s most pressing challenges, including food and nutrition security, employment, climate adaptation, and gender equality. Africans are eating more animal products, as their population grows and their incomes rise. In 2013, the average person on the continent annually consumed around 20kg of meat and 45kg of milk—by 2050 this is projected to increase to more than 25kg of meat and almost 65kg of milk. Africa’s domestic livestock sector has been expanding as a response. Animal agriculture already contributes between 30 and 80 percent of agricultural GDP across Africa, and in some countries, it is the fastest-growing agricultural sub-sector. In response to the growing demand, producers and other actors will make significant investments in the livestock value chains and the impacts on livelihoods, public health and environment will be unprecedented.

#### ***Digitalization and the growing agri-tech industry***

56. The use of digital technologies, innovations, and data is transforming food systems in Africa. Digital technologies, services, and tools now offer numerous opportunities to agriculture value chain actors to make more informed decisions, increase productivity and incomes and achieve improved nutrition and health outcomes. For many farmers, access to output and input markets has increased as a digital revolution allows markets to connect faster.<sup>66</sup> Data from digitalization efforts offer opportunities

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<sup>63</sup> Transforming agriculture, forthcoming.

<sup>64</sup> Transforming agriculture, forthcoming.

<sup>65</sup> Badiane, Ousmane; Diao, Xinshen; and Jayne, Thomas. 2021.

<sup>66</sup> Badiane, Ousmane; Diao, Xinshen; and Jayne, Thomas. 2021.

to design better-informed policies for the transformation of food systems. The digitalization of food systems across Africa presents new opportunities for the use of digital and data-driven technologies at each segment of agriculture value chains, which can guide and support decisions on production methods, value chain optimization and storage methods to avoid food waste and loss.<sup>67</sup>

57. The private sector is already playing a major role in accelerating the development of promising technologies and solutions in the food and agriculture sector. Innovation funds, often in the form of grants, are now being used to create innovative activity platforms by providing incentives to improve collaboration and the quality of services offered. From 2016 to 2018, US\$19 million was invested in agriculture technology in Africa, and agri-tech startups grew by 110 per cent—an indication of a growing African agri-tech industry. Placing digitalization at the center of food system transformation strategies and policies will be key to harness its cross-cutting innovative power.<sup>68</sup>

## 5. African game changers solutions: Key messages

### *Integrated policy making, cross-institutional collaboration and private sector engagement, a cornerstone for food systems transformation*

58. Africa is not on track for meeting the Sustainable Development Goal (SDG) 2 targets to end hunger and ensure access by all people to safe, nutritious and sufficient food all year round and end all forms of malnutrition. The number of hungry people on the continent has risen by 47.9 million since 2014 and now stands at 250.3 million, or nearly one-fifth of the population. Of these 15.6 million people are in Northern Africa and 234.7 million in sub-Saharan Africa. The gradual deterioration of food security has been caused by various, often overlapping, calamities including conflict, weather extremes, and economic slowdowns. A continued worsening of food security is expected for 2021 as the measures to contain the COVID-19 pandemic are further impeding food security and food markets. Integrated policy formulation and implementation, based on multi-institutional inputs and cross-sectoral collaboration that also engages the private sector, can ensure that benefits from economic growth, across all sectors and including the food sector, will benefit the most marginalized and contribute to the growth of supply and demand for nutritious and sustainably produced food for domestic and export markets<sup>69</sup>.

### *Seizing the potential of small- and medium-sized actors operating post-farm gate*

59. A food system approach, based on an integrated policy approach, is particularly helpful to address the complex linkages between food supply chains, economic inclusion, healthy diets and environmental sustainability. While agriculture accounts for about a fifth of GDP in African countries, the food economy is even larger. For example, in Western Africa, agriculture accounts for 28 per cent of GDP, but the food economy accounts for about 36 per cent of the subregion's GDP.<sup>70</sup> Much of this economic activity is off-farm in marketing and processing, accounting for about 40 percent of value added in West Africa. Despite the growing discourse on the importance of the middle-segment of the value chain, there continue to be important policy gaps that fail to leverage value chain actors' potential beyond the farm-gate. Due to the rural embeddedness in the local community fabric, small and medium

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<sup>67</sup> Malabo Montpellier Panel. 2019. Byte by byte: Policy innovation for transforming Africa's food system with digital technologies. Dakar, Senegal: International Food Policy Research Institute (IFPRI); ZEF (Center for Development Research University of Bonn); and Imperial College London. <https://doi.org/10.2499/9780896296848>.

<sup>68</sup> Malabo Montpellier Panel. 2019.

<sup>69</sup> FAO, ECA and AUC (2020). Africa Regional Overview of Food Security and Nutrition 2019. Accra. <https://doi.org/10.4060/CA7343EN>

<sup>70</sup> Allen, T. and P. Heinrigs (2016), "Emerging Opportunities in the West African Food Economy", West African Papers, No. 1, OECD Publishing, Paris. <https://doi.org/10.1787/5j1vfj4968jb-en>.

enterprises can better adapt essential services, such as transportation, food processing and distribution to local circumstances. In doing so, these small and medium sized firms make important grassroots investments in rural areas; in addition to connecting farmers to markets, adding value locally to agricultural produce, and creating employment opportunities that are inclusive of women and young people<sup>71</sup>.

***Food safety to drive investments in infrastructure, traceability systems and market access***

60. There are many food safety-related challenges associated with food systems transformations characterized by a number of issues related to poor infrastructure, weak food safety hazard control systems, lack of packaging laboratory networks, and inadequate staffing in the public and private sectors. The economic cost of unsafe food varies across countries according to their level of economic development. At country-level it is important to recognize the need for effective investment, a better understanding of the cost of reducing the burden of unsafe food, and the achievable impact on the country's food security, public health, and economy. A transparent and constructive dynamic between food safety authorities and the food industry is fundamental in enabling public confidence in the food supply. The assurance of reliable and effective enforcement of regulation is fundamental to building a credible system. However, it is important that countries consciously seek a productive balance between enforcement, and facilitation and support to value chain actors to meet requirements. An infusion of public and private sector investment in food safety control systems will also be required if small and medium agro-industries fully exploit market opportunities. Public sector support for the clustering of agribusinesses within specific geographic areas (e.g. technology parks) with assured food safety infrastructure and access to output and input markets is also a more common policy option in the Africa region large investments.<sup>72</sup>

***Investment in digitalization infrastructure and capacity building as a game-changer for food systems transformation***

61. Technology is critical to affecting change and driving food systems transformation. It brings Africa countries together, reduces trade barriers and offers a window of opportunity to 'digital native' youth entrepreneurs at the vanguard of innovation applied to different economic sectors. For agriculture, digitalization is rapidly becoming a game changer in boosting productivity, profitability and resilience to climate change. An inclusive, digitally-enabled agricultural transformation can drive meaningful livelihood improvements for Africa's smallholder farmers, pastoralists and small and medium sized agri-food enterprises. It could drive greater engagement in the agri-food sector from women and youth and create employment opportunities across the food system. There has been significant growth in digitalization for agriculture (D4Ag) over the last ten years. However, despite growth, progress towards D4Ag has been somewhat slow to serve the smallholders that produce 80% of Africa's agricultural output. Nevertheless, the opportunity is there. Agriculture is expected to be a trillion-dollar market by 2030, ripe for innovation that will drive greater efficiency, sustainable increases in productivity, yield and income<sup>73</sup>.

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<sup>71</sup> FAO 2021 forthcoming.

<sup>72</sup> FAO, WHO, WTO, AUC (2019). The burden of foodborne diseases and the benefits of investing in safe food. <http://www.fao.org/3/CA2809EN/ca2809en.pdf>

<sup>73</sup> Tsan, Michael; Totapally, Swetha; Hailu, Michael; Addom, Benjamin K. (2019). The Digitalisation of African Agriculture Report 2018–2019. Wageningen, The Netherlands: CTA/Dalberg Advisers. <https://cgspace.cgiar.org/handle/10568/101498>

### ***Land management is a prerequisite for food system transformation and peace and security***

62. The importance of good management of land for food systems transformation, and peace and security is recognized by African Heads of State in the African Union's 'Declaration on Land Issues and Challenges in Africa, which urges member states to "take note of the steps outlined in the Framework and Guidelines on Land Policy in Africa for their land policy development and implementation strategies."<sup>74</sup> The Framework and Guidelines reflect a consensus on land issues and serve as a basis for African governments' commitment in land policy formulation and implementation and a foundation for popular participation in improved land governance.<sup>75</sup> Empowering women, including through greater access and control over land and productive resources, is essential step towards closing the gender gap in agriculture, leading to considerable gains in productivity and production. Enhancing women's income opportunities would also improve the welfare of children and improve food security and nutrition, in addition to attaining enhanced health and education outcomes.

### ***Promoting intra-Africa trade in agricultural goods and services***

63. Intra-Africa trade should continue to be promoted by fostering the adoption of national AfCFTA strategies and the African Union-endorsed guidelines to develop regional agricultural value chains. More focus should be given to value addition and integrating household farmers, who produce the bulk of the agricultural product in Africa. Implementing AfCFTA to increase intraregional and extra-regional trade is vital to the agricultural transformation of Africa. This would be enhanced by reducing non-tariff measures and other regulatory and administrative barriers, and developing regional value chains. Improving infrastructure and trade services would facilitate trade significantly, as well as agro-industry, to make agriculture more sustainable. Mainstreaming gender in AfCFTA national strategies is essential given the critical role of women in cross-border trade.

64. Free-flow and Regulated Food Trade: Fast-tracking of the establishment of the regional food trade consistent with existing AU Summit decisions and protocols by both the African Continental Free Trade Area and Regional Economic Communities, and expedited implementation of trade facilitation measures, including transportation, logistics, food safety controls, flexible borders and sub-national boundaries for easy passage of food from production points to market points.

65. Modernized, Conducive and Accessible Food Markets: Establishment and expanding modernized food markets to become accessible to both vendors and consumers across demographic and social groups.

### ***Promoting financing and responsible investment in food systems***

66. There is a compelling need to create and enhance necessary appropriate policy and institutional conditions, and support systems, that facilitate private investment in agriculture, agribusiness and agro-industries, covering processing, packaging, convenient storage and transportation systems to ensure safety, nutrient content and quality of food. Food systems transformation can be achieved by implementing appropriately designed long-term inclusive strategies, good governance, establishing innovative public-private partnerships, and ensuring strong political will for better results.

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<sup>74</sup>AUC (2009). Declaration on Land Issues and Challenges in Africa. Assembly/AU/Decl.1(XIII) Rev.1. <https://au.int/en/decisions-103>

<sup>75</sup> AUC-ECA-AfDB Consortium (2010). FRAMEWORK AND GUIDELINES ON LAND POLICY IN AFRICA Land Policy in Africa: A Framework to Strengthen Land Rights, Enhance Productivity and Secure Livelihoods. [https://www.un.org/en/land-natural-resources-conflict/pdfs/35-EN-%20Land%20Policy%20Report\\_ENG%20181010pdf.pdf](https://www.un.org/en/land-natural-resources-conflict/pdfs/35-EN-%20Land%20Policy%20Report_ENG%20181010pdf.pdf)

67. African countries should commit to CAADP financing. African Union member State and Governments should mobilize financing institutions and private sector actors to invest in agriculture, and to stimulate sustainable, affordable financing to agriculture.

68. There is a dire need to mobilize global and continental political and institutional support and efforts to improve food systems for all, with focus on children and youth, in support of healthy and sustainable diets.

***Necessary conditions for accelerating African food system transformation***

69. Modernization of food systems: Develop and implement a comprehensive continental strategy for broader modernization, technology driven and sustainable agro-industrialization of food production systems based on each Member State's comparative advantage, in the specific subsectors of crop, livestock and fisheries.

70. Advancing African food systems should take into consideration Africa's peculiarity, including recurrent and heightened climate variability, wide-spread land degradation; chronic desert locust infestations; natural disasters; conflict, especially in fragile States; and humanitarian emergencies, which have all adversely affected African food systems distracting the implementation of Malabo–CAADP commitments on many fronts.

71. A radical shift in food systems transformation approach is urgently needed applying more "system thinking", in a broad spectrum of areas including policies, regulations, business models and culture<sup>76</sup>.

72. Guaranteeing national leadership is critical in advancing the food systems agenda by putting in place evidence-based policies and strategies that enhance institutional capacities and capabilities for accelerated transformation to sustainable food and nutrition systems. Indeed, transforming agriculture in Africa would essentially require transforming existing food systems into efficient, green, resilient and sustainable systems. Improving nutrition outcomes calls for African leadership to prioritize nutrition governance.

73. Young people should be engaged meaningfully. There is a huge opportunity for youth engagement within the agenda of the summit and follow up actions. The role children and adolescents themselves can play in improving their food environments needs to be harnessed. Engaging youth meaningfully in this process acknowledges that young people can be both recipients and active participants of food system transformation and should be met at their own platforms.

74. Empowering women in African food systems is critical to end the productivity gap along food value chain, achieving expected gains in production, productivity, food security and nutrition outcomes.

***Investing in resilient food systems addresses multiple risks, including climate change and disaster-proof food systems infrastructure***

75. The COVID-19 pandemic has compounded existing vulnerabilities in food systems, revealing fragilities in how food is produced, delivered and consumed. The COVID-19 challenge is also an opportunity and catalyst for Africa for a renewed and stronger commitment to reconfigure and implement strategies and approaches – making necessary shifts from “business as usual” – to integrate better prevention and treatment of malnutrition and undernourishment, and better bridge development

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<sup>76</sup> FAO (2021). “Transforming Agri-Food Systems Is Powerful Lever for Achieving Global Goals.” <http://www.fao.org/news/story/en/item/1377484/icode/> .

and emergency, and to reposition the vulnerable, especially children, youth, women, refugees and internally displaced persons at the forefront of adapted policies and interventions.

76. The COVID-19 pandemic necessitates transforming African food systems in a way that supports more diverse, affordable, sustainable and healthy diets with strong food safety and resilient ecosystem considerations. This would need the adoption of holistic, multisectoral approaches working towards food systems that acknowledge and address both underlying issues of food insecurity as well as acute protracted factors, such as climate hazards and conflicts.

*Invest in nutrition-oriented food systems*

77. There is a need to identify, renew and implement longer-term actions across multiple systems –food, health, water and sanitation, education and social protection-- in the food system to facilitate sustained access to nutritious affordable and nutritious foods, essential nutrition services and positive nutrition practices in all contexts.

78. Address affordability of nutritious foods. Nutritious and safe foods are critical determining factors of healthy growth and development in children and youth. While unaffordability of nutritious foods is a major barrier to diet quality, the increased cost of sustainably-produced foods further reinforces economic barriers to achieving healthy and sustainable diets, particularly in the context of Africa with the majority of countries are low- and middle-income. Supporting policy and fiscal measures across ministries should be identified to support food affordability (i.e. subsidies for healthy and sustainable foods; taxation for unhealthy foods; procurement policies for healthy school meals) and should be elevated in the discussions at the summit. The Summit and follow up actions should pay equal food security and agriculture dimensions, and better food and nutrition.

