



Setting Scientific Priorities for Food Security and Nutrition in Africa

Outcome Document for Experts Consultative Roundtable

30th June 2020

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Abbreviations

ADB	African Development Bank
AfCFTA	African Continental Free Trade Area
AAS	African Academy of Sciences
AESA	Alliance for Accelerating Excellence in Science in Africa
AMCOST	African Ministerial Council on Science and Technology
AU	African Union Commission
AUDA-NEPAD	African Union Development Agency - New Partnerships for African Development
BecANet	Biosciences Eastern and Central Africa Network
BMI	Body Mass Index
CAADP	Comprehensive Africa Agriculture Development Programme
CCAFS	CGIAR- research program on Climate Change, Agriculture and Food Security
CGIAR	Consortium of International Agricultural Research Centers (formerly, Consultative Group for International Agricultural Research)
CSA	Climate-Smart Agriculture
COMESA	Common Market for Eastern and Southern Africa
COVID-19	2019 novel coronavirus
CPA	Consolidated Plan of Action
EWS	Early Warning Systems
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GNR	Global Nutrition Report
GODAN	Global Open Data for Agriculture Nutrition
HIV	Human immunodeficiency virus
NAB-Net	North African Network for Biosciences
NAFSIP	National Agriculture and Food Security Investment Plans
NUS	Neglected and underutilized crops
RA	Regenerative Agriculture
RECs	Regional Economic Communities
R&D	Research & Development
EAC	East African Community
SANBio	Southern African Biosciences Network
SIDA	Swedish International Development Cooperation Agency
STI	Science, Technology and Innovation
STISA	Science Technology Innovation Strategy for Africa
UN	United Nations
UNICEF	United Nations International Children's Fund
WABNet	West African Network for Biosciences

Executive Summary

As part of the scientific priority setting exercise on food security and nutrition, Alliance Accelerating Excellence in Science in Africa (AESAs), in partnership with the African Academy of Sciences (AAS), African Union Development Agency - New Partnerships for African Development (AUDA-NEPAD) and global partners, hosted an experts roundtable with scientific leaders in Africa. This engagement was aimed at reviewing scientific priorities set by the Sustainable Development Goals (SDGs), Agenda 2063, Science Technology and Innovation Strategy for Africa (STISA) 2024, and various other regional and international instruments relevant to this scientific priority area. The six-panelist expert roundtable held on the 30 June 2020, was attended by 58 people with diverse expertise in the area of food security and nutrition. The meeting successfully captured the attendees' contribution through a short interactive survey as well as a question and answer session.

Through a seven-member steering committee, a preliminary list of five priorities and 46 sub-priorities were drafted. The main priorities included: ensuring climate-resilient food systems; technologies,

innovations, and enterprises for enhancing food and nutrition security; achieving nutrition and health targets of the AU; priorities for achieving sustainable commercialization and production of indigenous foods and cross-cutting issues to advance food security and nutrition. These priorities were then converted to survey questions to identify key areas that will guide advocacy for investments towards discovering, developing, and delivering game-changing interventions that would transform lives through science on the African continent.

This outcome document captures the proceedings of that meeting through a literature synthesis exercise on the status of food security and nutrition in Africa, and identification of challenges and opportunities for investment within this strategic priority area. This document precedes the priority paper that will reflect the consensus of different stakeholders on key priorities to achieve the greatest return on investment in food security and nutrition. Additionally, this prioritization process has informed an Innovations Call by the Grand Challenges Africa programme at AESA in partnership with Sida.



Background

The first aspiration in the African Union's Agenda 2063 implementation plan for the 10 years between 2014 and 2023 advocates for "a prosperous Africa based on inclusive Growth and Sustainable Development" (AU, 2015). Under this aspiration, the goals set out include attaining a healthy and well-nourished citizenry by prioritizing health and nutrition. Moreover, this expectation aligns with the Sustainable Development Goals (SDGs) one to three of the United Nations (UN), on ending poverty and hunger, by ensuring food security and nutrition, sustainable agriculture as well as good health and well-being (AU, 2015; UN, 2012). Therefore, these goals cannot be reached without the transformation of the agricultural sector and the implementation of sustainable climate-resilient food systems.

Through the Science, Technology, and Innovation Strategy for Africa 2024 (STISA 2024), the African Union (AU) has set out priority areas which include eradication of hunger and achieving food security by 2025 (AU, 2013). With approximately 230 million African people suffering from food insecurity and up to 40 percent of children under five years being undernourished, it has become imperative to invest in Science, Technology and Innovation (STI) that contributes to agricultural development (AU, 2013). The first Ten-Year implementation plan of Agenda 2063 incorporates the National Development Plans of AU member states as well as the strategic plans of Regional Economic Communities (RECs) of the AU who are central to implementing the African Union Development Agency New Partnership for Africa's Development (AUDA-NEPAD) strategies and programmes.

AUDA-NEPAD is responsible for brokering partnerships and resource mobilization for the implementation of the First Ten-Year Implementation Plan of Agenda 2063 (AU, 2015). In addition, AUDA-NEPAD works with a diverse group of stakeholders and partners in the Science, Technology and Innovation (STI) space. AESA is one of those stakeholders. It is a non-aligned, non-political, not-for-profit pan-African organization working in close collaboration with AUDA-NEPAD with a vision to transform lives through science. Part of this vision is to achieve the priorities set out in Agenda 2063, SDGs and STISA 2024. Hence, the AESA and AUDA-NEPAD are collaborating in engaging scientific leaders and policymakers in Africa with the view of building consensus around key scientific priorities that will give African countries the greatest return on investment. This document covers the outcomes from the experts' consultative roundtable on food security and nutrition convened on 30 June 2020 deliberating on priority questions towards achieving food security and nutrition targets for Africa. The consultation involved experts from diverse fields in the area of food security and nutrition and was attended by 58 attendees from across the continent and beyond. The two-hour consultation, backed by a series of meetings of the AESA adhoc committee on Food Security and Nutrition, informed the preliminary list of priority areas highlighted in this report. These priorities shall be further developed through a prioritization survey and in-depth synthesis of evidence into a policy paper for stakeholder engagement.

1. Current status of Food Security and Nutrition in Africa

257 million people are reportedly malnourished on the African continent, this makes up for approximately 20 percent of its population (AU, 2013; FAO, 2018). According to a 2016 Food and Agriculture Organization (FAO) report, the prevalence of hunger in Africa has increased largely due to climate variability, the political climate in certain countries, and an unstable global economy (Development Initiatives, 2017; FAO, 2018). Furthermore, the West and Central African regions are the most affected regions on the continent (Hedden et al, 2017). This has been as a result of the drop in the prices of crude oil and industrial minerals, the Ebola outbreak, and political instability in some countries in the region (FAO, 2019). Similarly, Southern and Eastern Africa have also recorded an increase in undernourished people, this has been due to the global decrease in commodity prices and the aftershock from the 2016 El Niño event (FAO, 2018). These developments imply that the target to decrease undernourishment to five percent by 2025 may not be reached (Hedden et al, 2017).

Good nutrition has been demonstrated to have a direct impact on the Gross Domestic Product (GDP) of a country (AUDA-NEPAD, 2019) whereas,

chronic malnutrition is directly proportional to a decline in socio-economic development (AUDA-NEPAD, 2019; Development Initiatives, 2017; Hedden et al, 2017). The prevalence of stunting, a form of malnutrition, is associated with decreased income, where every 10 percent increase in income per capita is linked to approximately 3 percent decrease in stunting and seven percent reduction in wasting (Development Initiatives, 2017; AUDA-NEPAD, 2019). As African countries develop there is an increasing number of the population falling into the middle class with an associated transition of diets from traditional foods that are high in fibre and nutrition to diets that consist of highly processed foods, which are often high in fats and sugar (AUDA-NEPAD, 2019; Covic & Hendriks, 2016). This transition in class and diet has led to an increase in non-communicable diseases (NCDs) and to a triple burden of malnutrition, which includes undernutrition, micronutrient deficiency, overweight, and obesity (Covic & Hendriks, 2016). For instance, the number of overweight African women increased by 10 percent from 1999 to 2015 (Figure 1). Simultaneously, the number of undernourished people increased by 52 percent in the period from 2009 to 2016 (Figure 2). The

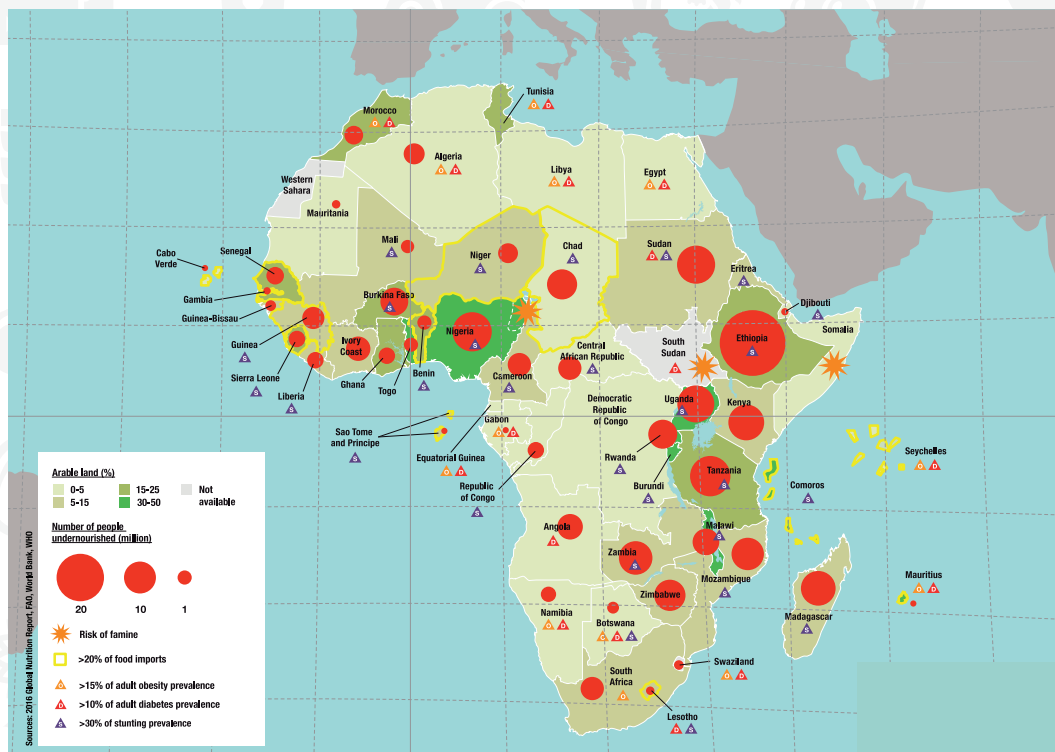
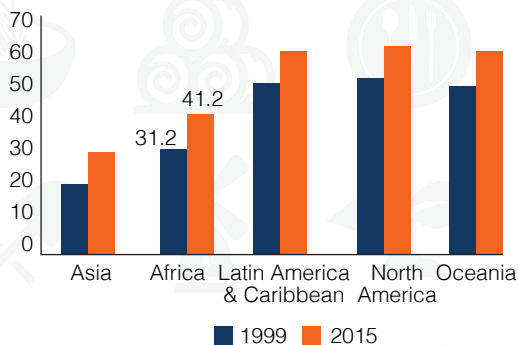


Figure 1: food and Nutrition status map .credits AUDA-NEPAD



Source: Global Nutrition Report 2018

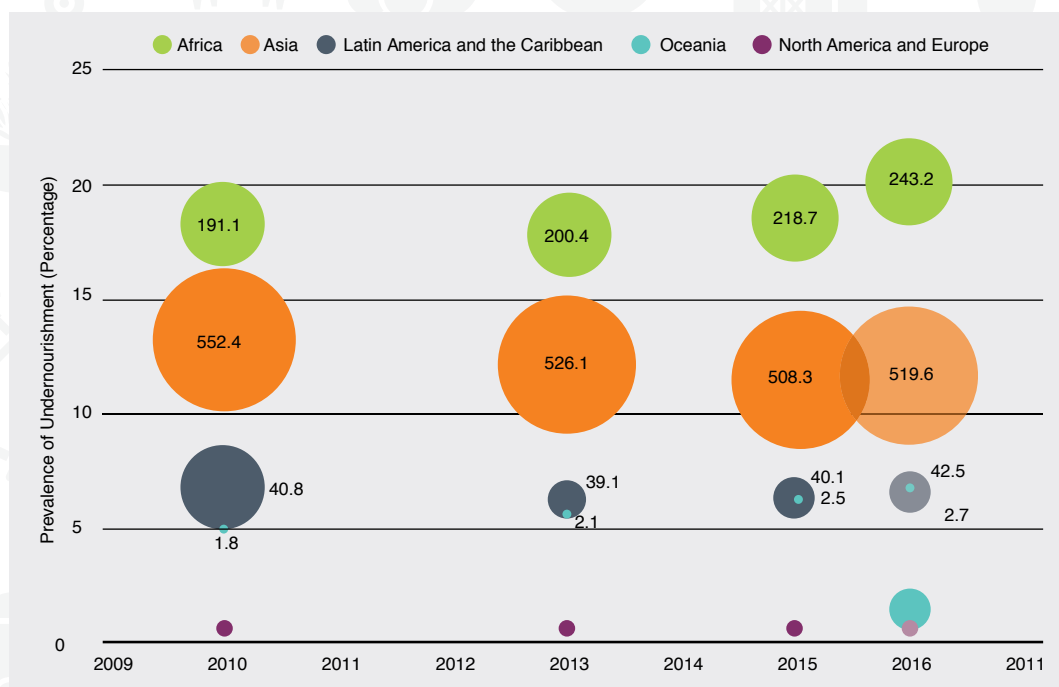
Figure 2: Trends of adult women overweight (BMI > 25kg/m²) for different continents with an observed 10 percent increase in the number of overweight women in Africa between 1999 and 2015

resulting trend is a multiple burden of malnutrition. These statistics then require scientists and other stakeholders to reflect not only how food is produced but also on how it is processed and accessed to meet the dietary needs of the population in an affordable and sustainable manner.

The agricultural sector and consequently the food systems of African countries determine the nutrition of its people. Africa currently meets only 15 percent of its food demands, and as a result, it is a net importer of agricultural products

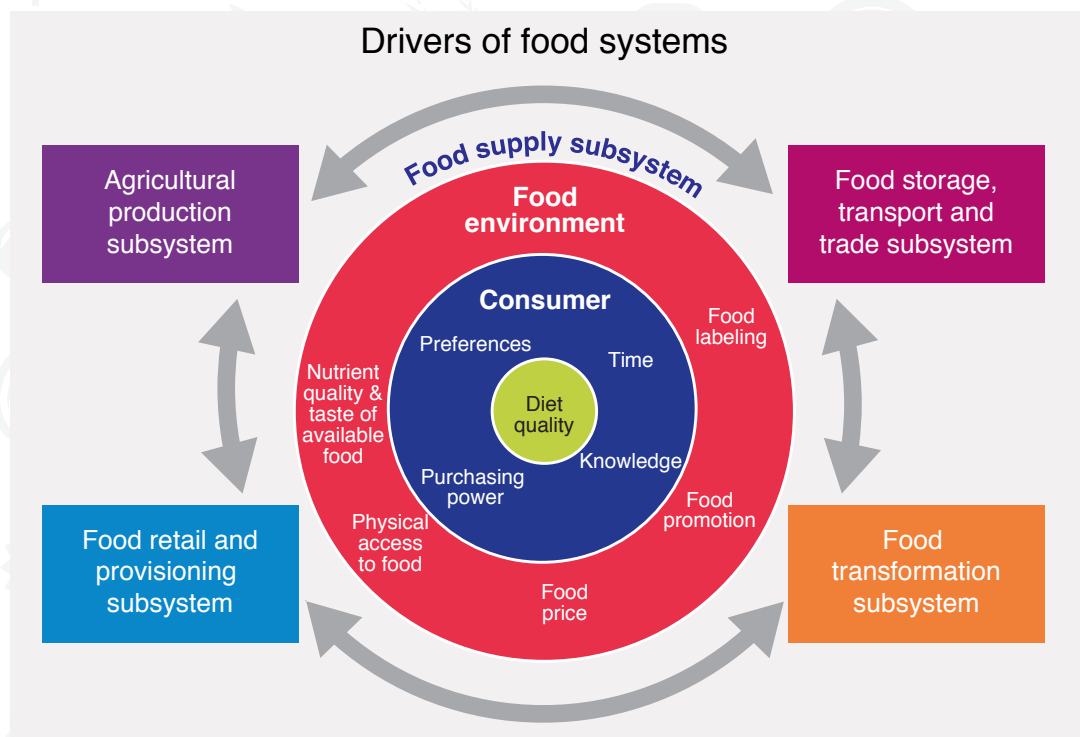
even though it holds 60 percent of the world's arable land (AUDA-NEPAD, 2019; Development Initiatives, 2017; Hedden et al, 2017). Due to prevailing environmental conditions and the pressure of food systems on the climate such as greenhouse gas emissions, soil degradation, and a large water footprint, the issue of food security and nutrition becomes a complex issue requiring a multisectoral approach (AUDA-NEPAD, 2019; Development Initiatives, 2017; FAO, 2015). Importantly, consumers are now central to the design of food systems because as their buying power, knowledge, and preferences change, so do the structures of food systems (Figure 3).

Furthermore, the nutrition transition which "is the shift in dietary consumption and energy expenditure that coincides with economic, demographic, and epidemiological changes" (AUDA-NEPAD, 2019) has led policymakers to develop nutrition strategies that look at addressing nutrition across the whole value chain, i.e "from farm to folk". Food production strategies that prioritise soil health to ensure maximum nutrition of plants; post-harvest strategies and storage systems that minimise foodborne diseases and wastage, in addition to, access to nutritious affordable foods is essential in achieving food security and nutrition (AUDA-NEPAD, 2019; Covic & Hendriks, 2016; Hedden et al, 2017).



Source: FAO 2018

Figure 3: Prevalence of undernourished children from 2010 to 2016 for different continents.



Adapted from Eggersdorfer et al (2016)

Figure 4: The drivers of food systems are a key consideration in the formulation of food security and nutrition strategies.

2. The Policy Framework for Food Security and Nutrition in Africa

In the prioritizing exercise with food and nutrition experts from across Africa, AESA set out to identify opportunities in which it can invest to achieve the food security and nutrition targets set out by the African Union. This exercise was undertaken whilst recognizing the work accomplished through the AU strategies such as the Comprehensive Africa Agriculture Development Programme (CAADP), the African Regional Nutrition Strategy 2015–2025 (ARNS 2015–2025), Scaling Up Nutrition (SUN) Movement, SDGs and Agenda 2063. It is noteworthy that African governments made a recommitment to the CAADP programme in 2014 through the Malabo Declaration on Nutrition Security for Inclusive Economic Growth and Sustainable Development in Africa (Covic & Hendriks, 2016; AUDA-NEPAD, 2019). The Malabo declaration encourages a 10 percent budgetary allocation to developing national agriculture and food security investment plans (NAFSIPs or NAIPs) that allow countries to adequately plan and track agricultural sector growth (Covic & Hendriks, 2016; AUDA-NEPAD, 2019). AUDA-NEPAD Nutrition and Food Systems Strategic Programme's vision is to reduce hunger and malnutrition by 25 percent by 2025. Through its Implementation Plan (2019 to 2025), the agency has set out seven flagship programmes with an overall goal to:

- align and harmonize food security and nutrition programmes in Africa at different levels towards achieving Africa's food security and nutrition vision and goals;
- use agriculture as an entry point to promote coordination, complementarity, and synergies,

as highlighted in the seven Dakar Principles (on Multisectoral Coordination for Effective Delivery on Nutrition) (AUDA-NEPAD, 2019) between and across the different initiatives that seek to address the burden of malnutrition in Africa; and

- promote the development of human resources and research capacity to support nutrition action at a national and continental level.

The flagship programmes include Maternal and young child nutrition; Food fortification and biofortification; Dietary diversity; Home-grown school feeding; Food safety and quality management; Governance of food; environments to address NCDs. Interlinkages between communicable diseases, NCDs, maternal and child health, as well as socio-economic development. As a resource partner of AUDA-NEPAD AESA, through its Steering Committee on Food Security and Nutrition synthesized the contributions of food and nutrition experts into priorities and sub priorities to inform investment in research that will give AU member states the highest return on investment by 2025 while also responding to the goals of AUDA-NEPAD. Some of the strategic areas highlighted by the experts included: ensuring climate-resilient food systems; achieving nutrition and health targets of the AU; achieving food security and nutrition through investment in technologies, innovations, and enterprises; harmonizing food policies with climate change and nutrition policies and building sustainable food systems for indigenous foods.

AUDA-NEPAD Nutrition and Food Systems Strategic flagship programmes



Maternal and young child nutrition;



Food fortification and biofortification;



Dietary diversity; Home-grown school feeding;



Food safety and quality management; Governance of food

3. Opportunities for Investments in Food Security and Nutrition in Africa

3.1 Ensuring climate-resilient food systems

The current food system faces several challenges that hinder countries from achieving the goal of reaching zero hunger by 2030. These challenges include an inability to produce the quantity of food to feed the growing population, lack of financial and physical access to safe and nutritious food, lack of equitable and equal access to food, and most critical climatic changes which in turn have deleterious effects on productivity and agrobiodiversity (Steiner et al., 2020). Food security can only be achieved by creating sustainable food systems, able to withstand current and future climatic and non-climatic stressors. The global community has failed to take the actions required to decrease the rate at which the earth is warming and meeting the target of 1.5°C warming appears to be unlikely under current policies. Climate change and food systems exist in a dual nature, whereby the existing food systems negatively impact the environment and simultaneously, changes in the climate such as increase in temperatures, decrease agricultural yields (Development Initiatives, 2017). Moreover, poor land management practices which often result in degradation of soils and water-related challenges, translates in billions of lost revenues which further exuberates the instability of food production systems and income loss (Development Initiatives, 2017; FAO, 2015).

These challenges present an opportunity for the global community to invest in priorities that ensure that we are building the resilience of the predicted 500 million small scale food producers by 2030 (Steiner et al., 2020) and that the agrifood systems are resilient to the adverse effects of climate change. For instance, the Consortium of International Agricultural Research Centres research program on Climate Change, Agriculture and Food Security (CAAFS) have set out actions that can be taken to transform current food systems. These actions focus on four areas that are envisioned to create climate-resilient food systems (Steiner et al., 2020) – (i) Restructuring farming and rural livelihoods to deal with greenhouse gas emissions, reducing inequality by addressing gender and social inclusion and incentivising climate-resilient practices that meet dietary needs; (ii) Reducing the risk of livelihoods, farms and value chains by mitigating the impact of extreme weather events and variable weather by developing and implementing reliable early warning systems and providing communities access to these systems as well as climate resilient practices; (iii) Emission reductions from diets and value chains, which requires a huge reduction in food loss and waste, and lastly; (iv) Realignment of policies, finance, support to social movements, and innovation to build more resilient and sustainable food systems.

Opportunities for Investments in Food Security and Nutrition in Africa

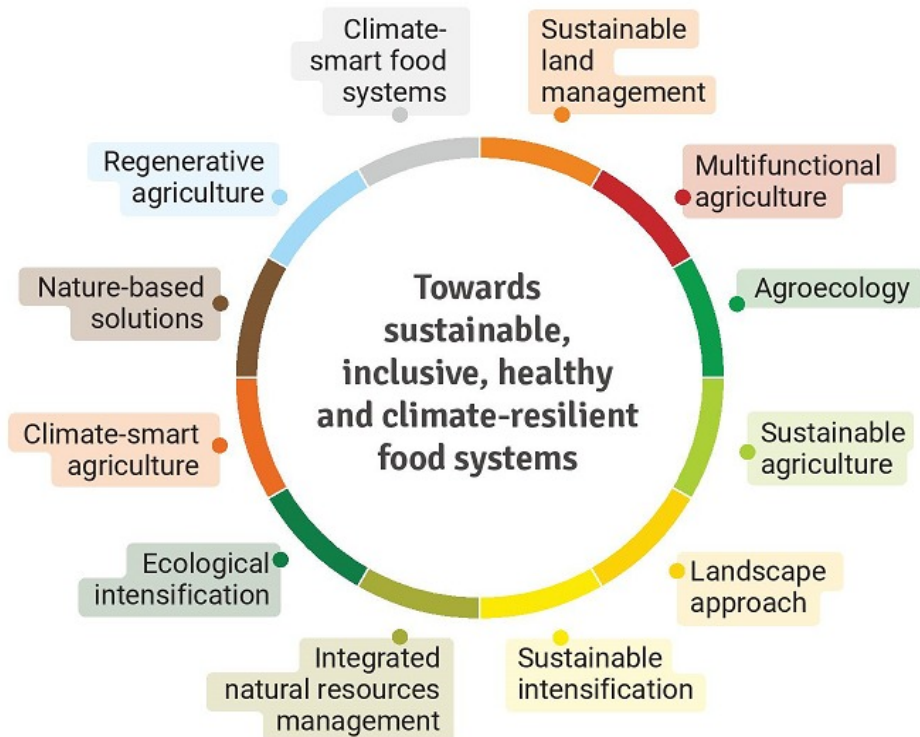


Through CAADP, AU member states adopted the African Climate-Smart Agriculture (CSA) Coordination Platform and endorsed the AU vision to have at least 25 million farm households practicing CSA by 2025. Investment in R&D that contributes to scaling up the adoption of these initiatives will be beneficial to smallholder farmers and contribute to sustainable agricultural food systems. AESA will prioritize investments in accessible and acceptable options for scaling up climate-smart agricultural practices including reducing emissions from agriculture, preventing loss of biodiversity, preventing soil degradation, soil nutrient depletion, and improving soil fertility. Other investments include the provision of accessible and acceptable options for scaling up practices that protect the environment (including but not limited to those in Figure 5) and promoting accessible and acceptable options for enhancing conservation of agrobiodiversity. AESA intends to highlight and enhance interventions that increase the resilience of agri-food systems to climate-related shocks including droughts, pests, floods, and pandemics such as the COVID-19 pandemic. Further, agricultural practices that reverse the

negative impacts of intensive agriculture while at the same time combating acute and chronic food insecurity will also be prioritized.

3.2 Technologies, innovations, and enterprises for enhancing food security and nutrition

Within the framework of STISA 2024, STI policies have been established by AU member states at country and regional level through the Science and Technology Consolidated Plan of Action (CPA). However, many African countries have not operationalized them. AESA proposes investment in research that delivers viable technologies to accelerate the achievement of specific food security and nutrition targets and leverage on options offered by the Fourth Industrial Revolution (4IR). These include digital decision support tools for agronomic practices, weather information, marketing, soil fertility, irrigation, managing post-harvest loss and readiness for harvesting. One of the priorities should be in agribusiness models that will attract and retain the youth in meaningful employment while meeting food security and



Source: Steiner et al, (2020)

Figure 5: Terms used to describe approaches for transforming food systems.

nutrition targets. Different stakeholders are called upon to leverage the most viable and diverse technologies that lead to increased interest from Africa's youth to ensure a younger farmer base, as the average age of African farmers is 59 years old in contrast to the average age of the African population which is 24.

Investments should also go towards innovative solutions that promote the consumption of diversified and sustainable food systems which promote dietary patterns high in nutrient-dense foods (such as fruits, vegetables, legumes, whole grains and insects) and which mitigate against nutrition losses in the value chain essential to consumer needs of different income brackets. In addition, AESA will support research that promotes innovations, which minimize pre and post-harvest losses, and food waste through consumption patterns. Additionally, the creation of functional and sustainable food value chains especially including those of indigenous, neglected, and underutilized species (NUS) is key to delivering on food sovereignty.

The COVID-19 pandemic has exposed existing gaps in terms of disaster readiness with respect to food systems. Therefore, focus should be on technologies that address disruptions in the agrifood systems such as demand and supply chains, responding to pandemics and natural disasters, and normal fluctuations within food systems. Another priority is to promote advances that decrease contamination of food such as aflatoxins or other sources of foodborne diseases.

Lastly, there is need to invest in research that improves crops through emerging technologies that can enhance the current food and nutrition systems. Examples include synthetic biology, tissue culture, aquaponics, aeroponics, vertical farming, crop sensors, biofortification, genetic modification and crop breeding. Strategies for fortifying foods with all nutrients including micronutrients that are in line with international standards should equally be considered and promoted.

3.3 Achieving nutrition and health targets of the African Union

Under the Nutrition and Food Systems Implementation Plan of 2019 to 2025, AUDA-NEPAD set out to decrease the scourge of malnutrition in concert with effects of climate

change, access to food, and reversing the adverse effects of the transition to unhealthy diets which cause hidden hunger (AUDA-NEPAD, 2019; Covic & Hendriks, 2016). Commitment is required in determining nutrition-sensitive agricultural policies that ensure interventions to nutrition that have multiplier effects such as promoting sustainable food production, increasing socio-economic development, decreasing the burden on health systems, fostering equity and inclusion, and promoting stability to ensure peace and security. This is in line with Agenda 2063 as well as the SDGs.

Stakeholders should invest in research to develop measures for access to nutritious and affordable foods by low-income communities that tackle multiple burdens of malnutrition and undernutrition. These measures should equally mitigate against negative impacts of the nutrition transition. Research strategies that can help to better understand dietary patterns and drive consumer food choices towards nutrient-dense foods as well as implementing incentives that attract industry to scaling up biofortification in the agriculture sector and related value chains for low-income markets must be prioritized. Products from these strategies should be affordable, nutritious, and within the taste preferences of these communities.

There should be targeted activities that mitigate community-specific constraints to improve the nutrition of specific groups such as infants, children, pregnant and lactating women, ill individuals or convalescents, and the elderly. National-level investments are required to driven measures to change the perspective of industry to produce foods that are nutrient-dense with limited fat, sugar, and salt to promote better consumer choices as well as innovative ways to deliver structured feeding programmes for vulnerable communities such as school feeding programmes and in humanitarian situations. At a continental level, further research and coordination should inform the development of food desert maps and associated interventions. AESA recognizes that researching the potential for indigenous food systems in preventing the surge of non-communicable diseases, malnutrition, undernutrition, obesity, and overweight in Africa is essential to food security and nutrition, especially in rural communities and hence, should be prioritized.



Credit: Getty Images

3.4 Priorities for achieving sustainable commercialization and production of indigenous foods

The African Ministerial Council on Science and Technology (AMCOST) established in November 2003 under AUDA-NEPAD and the African Union (AU), has developed policies and set priorities for STI for AU member states. AMCOST leads the continent in policy implementation of the CPA. This plan of action is based on three pillars namely STI capacity building, knowledge production, and technological innovation. These three pillars are agreed upon by AU member states to be essential for the successful implementation of STISA 2024 (AU, 2013). The second priority of STISA 2024 seeks to prevent and control disease to ensure well-being and refers to traditional medicine as one of the research areas (AU, 2013).

The CPA encompasses three strategic areas, namely: research and development (R&D), programmes for improving policy conditions and building innovation strategies, and implementation, governance, and funding. Currently, there are 13 programme areas within the research and development priority area. The AUDA-NEPAD African Biosciences Initiative (ABI) is one of the 13 programmes that emanated from the CPA. The objectives of this programme include conservation and sustainable use of biodiversity, safe development and application of biotechnology, and securing and using Africa's indigenous knowledge

base. There are currently four networks created to support AU member states to use technology and related innovations to eradicate poverty and achieve sustainable development (AU, 2013). The four regional networks are Southern African Network for Biosciences (Sabia); Biosciences Eastern and Central Africa (BecANet); West African Network for Biosciences (WABNet); and North African Network for Biosciences (NABNet). These networks have existing frameworks consisting of centers of excellence known as nodes and databases of scientists from diverse expertise in biosciences including nutrition experts. An example of programmes that have been implemented is the BIOFISA programme of the SANBio network which funds commercialization of innovative products through joint calls with organizations in SADC in the thematic area of human and animal health and nutrition (SANBio, 2015). This programme funds research calls on diverse themes in innovation in the biosciences space and conducts training on intellectual property rights and commercialization. One of the existing centers of excellence is the indigenous knowledge systems (IKS) node which is a multidisciplinary platform that includes fields such as intellectual property rights (including access and benefit-sharing) human and animal health; food security; natural resource management and climate change amongst other things. The work done through the BIOFISA programme since inception in 2009 includes basic research in efficacy studies and nutritional value of indigenous foods and medicines as well as studies on fortification of staple foods

Science and Technology Consolidated Plan of Action (CPA) strategic areas:



with approximately USD132,000 invested thus far. In other regions, it is noted that the EAC has incorporated promoting the use and development of indigenous knowledge and technology in its mandate and developed a regional Bioeconomy strategy. There is currently no public information available on programmes in the other regional networks apart from the southern and eastern parts of Africa. This can be rolled out through the RECs in the West, Central, and North Africa. A renewed commitment to supporting and promoting research within the existing legal frameworks established through the ABI programme that govern the production and commercialization of indigenous foods are therefore required.

A key gap in the area of indigenous knowledge products is the creation of sustainable value chains for food products emanating from this knowledge. A strategy to invest in research that is focused on closing the gaps in value chains on food safety and other such initiatives to minimize foodborne diseases and aflatoxin contamination in storage and food waste.

Research investigating strategies that improve productivity in indigenous agrifood systems including indigenous crops and livestock should be emphasized including research on market value chains for these indigenous foods and activities that maximize nutrition entering the supply chain of indigenous foods through activities such as awareness on importance and benefits of these foods. The priority should be on the building of

sustainable food systems that ensure food security and nutrition and create the best employment outcomes, especially in rural households. This priority also includes investment in research of safety and efficacy tests of foods as medicine. There is need for basic sciences research on indigenous crops, promoting the development of germplasm of nutrient-dense indigenous crops and underutilized species, and creating new food production and propagation capabilities. The investment in research on products emanating from indigenous knowledge should take into consideration issues around access and benefit-sharing for communities who own the respective knowledge in accordance to the Nagoya Protocol on Access and Benefit-sharing and subsequent national frameworks (CBD, 2014).

3.5 Cross-cutting issues to advance Food Security and Nutrition

To maximize investment in the area of food security and nutrition, AESA recognizes that there are cross-cutting priority areas including prioritizing policies that promote access to affordable nutritious food by vulnerable groups, inter-Africa trade, capacity-building initiatives in the area of food security and nutrition, development of structures that promote advances in agrifood systems, rural-urban divide; and gender-responsive strategies (Steiner, 2020).

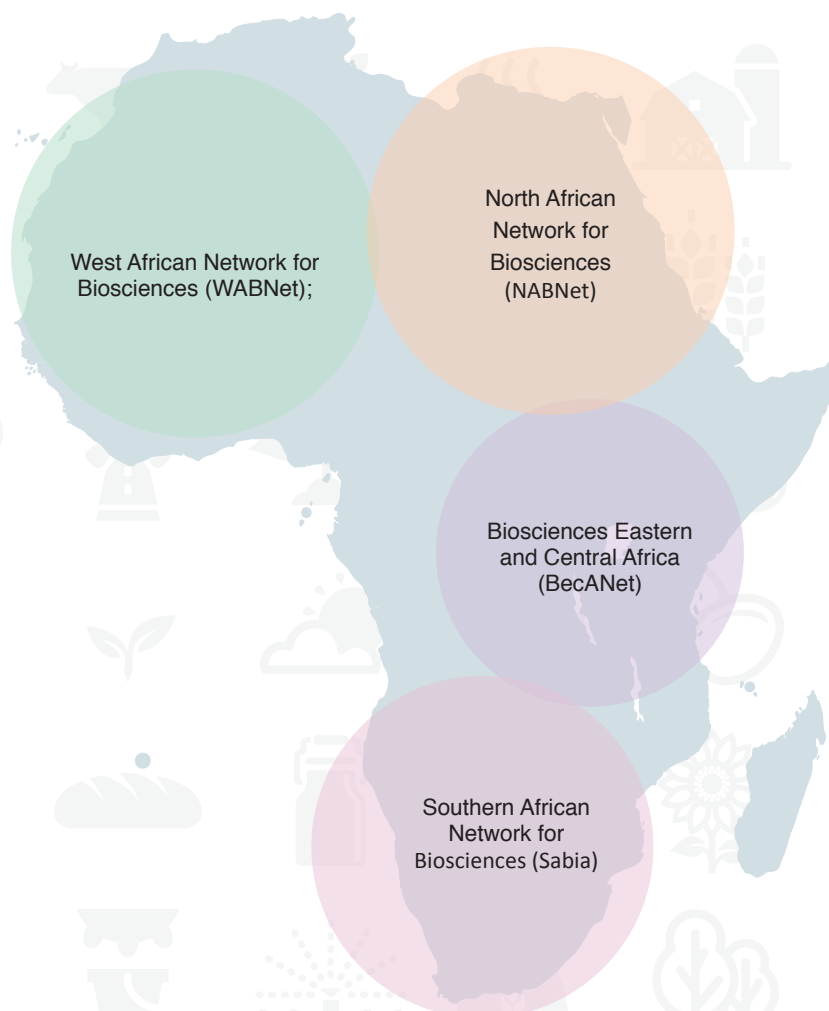
An important framework for promoting regional trade is the recently established African Continental Free Trade Area (AfCFTA), which came into force

in May 2019. AESA commits to promoting inter-Africa trade through investment in incentives and regulatory instruments that will ensure market integration of nutrient-dense foods. These incentives include value addition, understanding functional tax incentives, government subsidies on production costs, and industry protection on African products at the expense of their non-African counterparts.

Investments are required in the design of incentives that attract and retain young men and women such as homegrown solutions to food insecurity, training facilities for new generations of actors in the agri-food systems such as young farmers, traders, innovators, and researchers. This must be supported by the identification of in policy instruments that prevent African countries from tackling negative multiplier effects. These effects may be those factors that prevent sustainable food production, those that do not support socio-economic development, and those that do not decrease the burden on health systems.

AU member state supported networks using technology and related innovations to eradicate poverty and achieve sustainable development

To build capacity within the area of food security and nutrition, commitments are required at national, regional and continental level to invest in centers of excellence in R&D in agriculture, food, and nutrition. Promoting and enhancing knowledge management and inter-Africa collaboration that enables researchers to create linkages of databases for studying agrifood systems and diets, documenting traditional agri-food systems, data sharing, data science capabilities among other synergies. There is also needed to enhance coordination and cohesiveness by building a free online database of researchers across the continent and investing in activities that promote regional exchange visits to regional centers of excellence and issue joint degree awards relating to pan-African food security and nutrition expertise. These priorities are all reflected in the pan-African commitments to promoting utilization of agriculture, food and nutrition as a factor for socio-economic development; equity and inclusion; stability and ensuring peace and security.



4. Conclusion and Way Forward

Highlights for this consultation pointed to three major needs for the continent. First is the need to align and harmonize the vision and goals of the various existing research and development programmes on food security and nutrition in Africa. This should include among other things, strategies to ensure food sovereignty, improve indigenous food systems as an avenue for dealing with non-communicable diseases such as through government regulations, private sector investments, scientific advances in safety, and efficacy of indigenous crops and animals that can be used as nutraceuticals.

Second, is the need for innovation and private sector engagement in advancing food security and nutrition visions of African countries. For instance, digitalization of agriculture, will not only increase productivity, but it will also broaden the opportunities presented for employment creation (especially for women and youth) and adoption of more sustainable practices. On the other hand, creating markets for alternative protein sources such as edible insects and promoting the production of nutritious locally available foods that reverse the impact of nutrition transition. Innovations are also required in the use of big data and infrastructure development to address current challenges in the agri-food system including those relating to production, processing, access, and nutrition density.

Third, there is a need to develop the human resource and research capacity to support actions at a national and continental level. This must include

among other things capacity for multidisciplinary research to deal with the complexity of the agri-food systems such as climate, land degradation, the triple burden of malnutrition, global food prices, social inequalities among others. In this regard, priorities should also focus on empowering communities, especially those who are marginalized to lead in driving the SDGs and in so doing, creating employment opportunities, especially for women and youth.

Following this consultation, AESA has embarked on a process of further clarifying the above preliminary priorities by way of surveys and in-depth evidence synthesis. Building up on the experts' consultation, a prioritization survey was designed and administered, which will enable a wide audience, using the '*wisdom of the crowds*' model, to offer their opinion on what should be the focus in accelerating the achievement of food security and nutrition targets in Africa. The outcome of this process will be a policy paper targeting policy makers at national and regional level as a call to action towards recommitting investments towards research and development in the areas of agriculture, food and nutrition. This prioritization process will also guide resource mobilization efforts for the various stakeholders to meet the highlighted priority areas, hence initiating and strengthening existing collaborations towards achieving the said targets. Additionally, this process will be informing an Innovations Call by the Grand Challenges Africa programme at AESA in partnership with SIDA.

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