Public Policy in Africa Initiative

Leaving no one behind:

A policy blueprint for eradicating hunger in Sub-Saharan Africa

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Abstract:

The issue of hunger has become persistent in Sub-Saharan Africa (SSA). This policy blueprint aims to provide a comprehensive approach to addressing this problem. It outlines a set of policy recommendations that will guide policymakers and stakeholders in their efforts to achieve food security, improve nutrition, and eradicate hunger in the region.

Introduction

Hunger remains a persistent challenge in SSA, with millions of people suffering from food insecurity and malnutrition (Chiaka & Zhen, 2021). This is a significant problem in the region that requires urgent attention as it challenges the region's progression towards sustainable development. This challenge of hunger and food insecurity in the region is further compounded by the confluence of co-existing problems such as climate change and socio-economic inequalities which create a complex web of vulnerabilities (Tamasiga et al., 2023). The severity of the problem of hunger is highlighted as follows:

1. Prevalence of Undernourishment:

According to Food and Agriculture Organization (FAO) estimates in 2021, approximately 239 million people in SSA were undernourished, defined as insufficient calorie intake caused by not eating enough food (McGuire, 2013). This accounts for nearly 21.8% of the region's population (FAO, 2021).

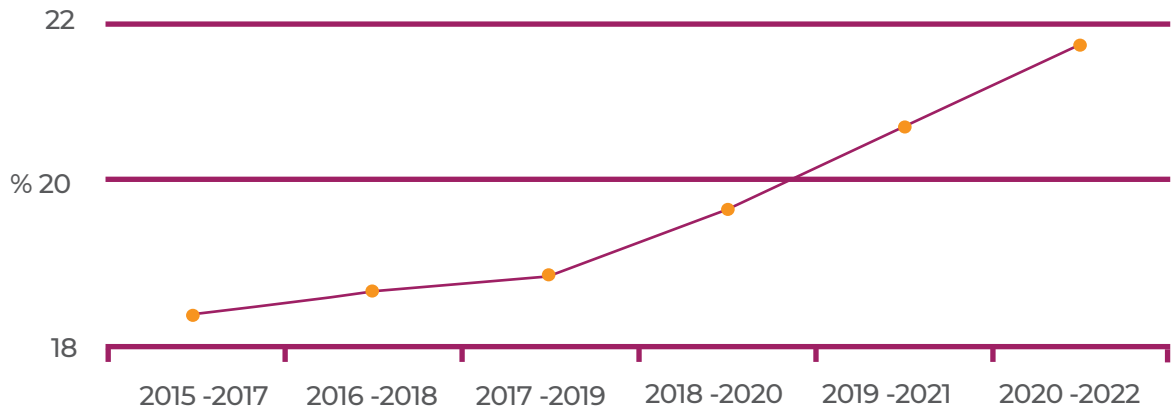


Figure 1: Prevalence of Undernourishment (in percent) in Sub-Saharan Africa (including Sudan) from 2015 to 2022 (FAOSTAT, 2023)

2. Malnutrition and Stunting:

Malnutrition (nutritional deficit, excess, or imbalance) is a global issue (Figure 2) that particularly affects children in SSA. About 34.8% (approximately 200 million) of children under the age of five suffered from stunted growth in 2021, which indicates chronic malnutrition (UNICEF, 2020).

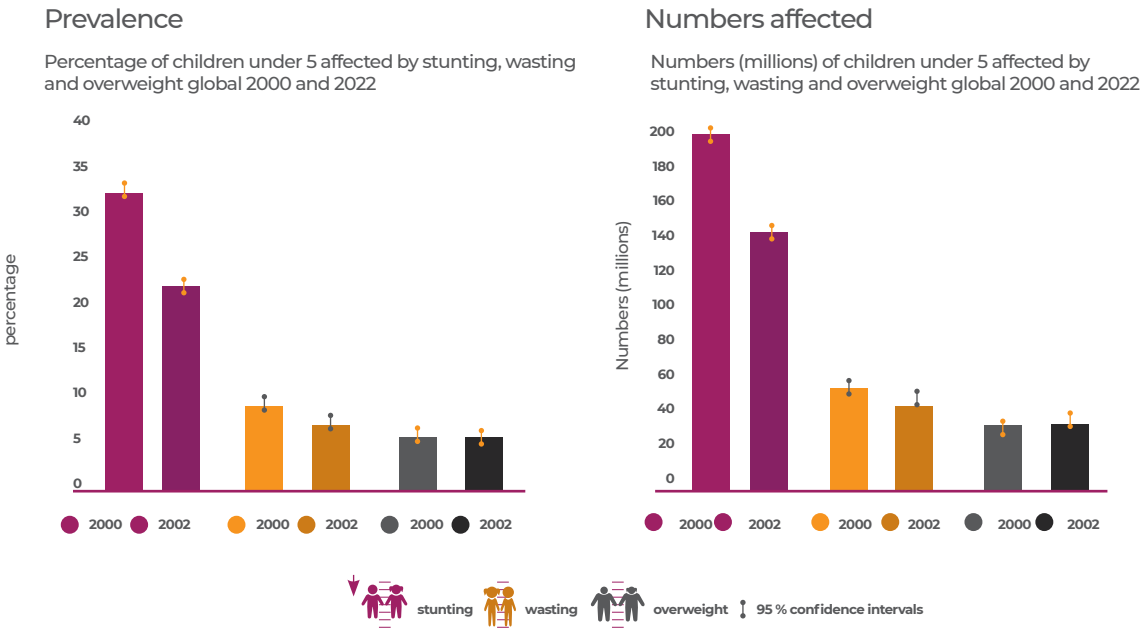
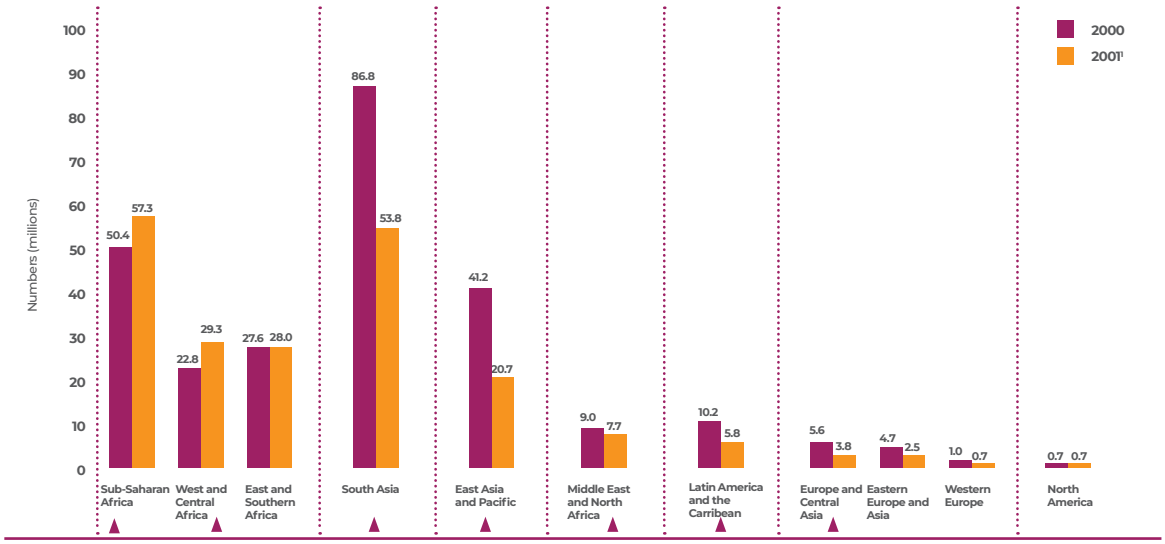


Figure 2: Global Prevalence of Malnutrition (i.e., stunting, wasting, and overweight) among children under five (UNICEF, 2023)

The number of children suffering from stunted growth (lower height in relation to age) is decreasing in all regions with the exception of Sub-Saharan Africa (Figure 3).



3. Food Insecurity:

Food insecurity is described as having limited or uncertain access to safe and nutritious foods. Food insecurity is generally linked to undernutrition and starvation in low-income nations (Castillo et al., 2013). In 2020, approximately 29% of the population in SSA experienced moderate to severe food insecurity (FAO, 2021).

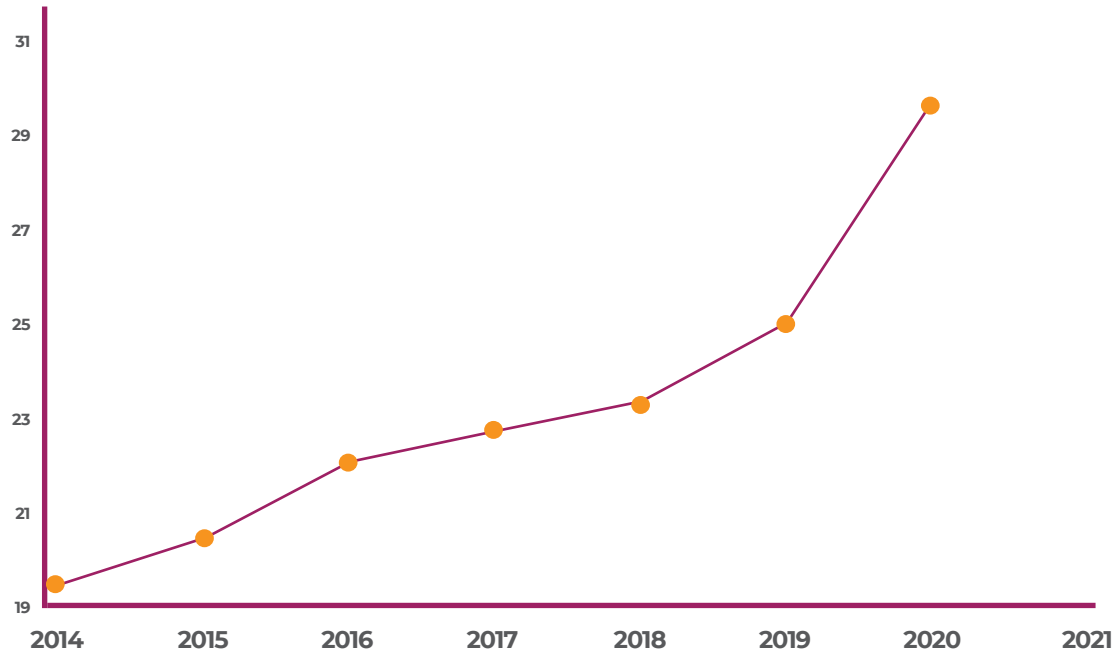


Figure 1: Prevalence of severe food insecurity (in percent) in Sub-Saharan Africa from 2014 to 2022. Data retrieved from The State of Food Security and Nutrition in the World 2021-Table 3 (FAO, 2021)

4. Agricultural Production and Post-harvest Challenges:

There is limited access to modern farming technologies and agricultural inputs and inadequate infrastructure (e.g., buildings, roadways, electricity supply, water distribution networks, warehouses, and storage sites) in SSA. This contributes to low crop yields and hampers the efforts to achieve food security in the region (Memon & Bilali, 2019; Ogunyiola et al., 2022).

5. Climate Change Impacts:

The impacts of climate change are another significant challenge faced in SSA as the region is highly vulnerable to irregularities in rainfall patterns, droughts, and extreme weather events. These factors affect agricultural productivity which further exacerbates the issue of food insecurity in the region (Ayanlade et al., 2022).

6. Gender Disparities or inequalities:

When it comes to agricultural production in SSA, women play a vital role, yet they often face gender disparities in terms of access to land, financial resources, and decision-making power (Phiri et al., 2022).

Policy Recommendations

To address this issue, this policy paper aims to provide a detailed and thorough policy blueprint for eradicating hunger in SSA, drawing on evidence-based strategies and best practices.
The recommendations are divided into four categories: 1) agricultural production and yields, 2) land and water management, 3) empowering farmers and stakeholders in the agricultural value chain, 4) enhancing market access, and 5) enhancing food and nutrition security.

AGRICULTURAL PRODUCTION AND YIELDS

1. **Invest in agricultural research and development to develop high-yielding and climate-resilient crop varieties and promote cultivation of indigenous crop varieties that are suitable for local agroecological conditions.**
   Despite the rise in agricultural output in SSA, this growth has been driven primarily by the expansion of farmed areas rather than productivity enhancement. One key cause has been the government's low investment in agricultural research and development (R&D) (Jayne et al., 2021). Increasing access to improved, high-yielding cultivars will not only lead to sustained improvements in agricultural yields but will also prevent overexploitation of land and decrease the rate of deforestation (Bernard et al., 2023). Developing crops that are suited to current local conditions and resilient to future climatic fluctuations can prevent a drop in productivity and/or lead to higher productivity and farmers' incomes (Cacho et al., 2020). The use of drought- and heat-tolerant varieties, in particular, could greatly benefit farmers in SSA. This is because SSA, especially the semiarid and arid areas, is prone to drought and extreme heat (Ayal, 2021).
   However, the developed varieties might fail to achieve the expected level of yield in agricultural fields in case little to no attention is paid to the agroecological specificity of farmed areas. Therefore, the development and recommendation of crop varieties should be performed taking into account the characteristics of different agroecological zones, or ideally micro-agroecological zones. Micro-agroecological zones are established by studying the agroecological specificity of farmed areas which includes biophysical factors (i.e., soil properties, moisture content, and slope/landform of the faming site) and socio-economic factors (i.e., farmers' knowledge, preferences, local knowledge, labour requirements, and profitability) (Mekuriaw, 2023). This could help to increase the success rate of the developed varieties.
   Another measure is harnessing Indigenous Crops and Fruit Trees for hunger and poverty alleviation. Indigenous fruit trees have the potential to contribute significantly to poverty alleviation and hunger eradication in Africa (Degrande et al., 2006). Promoting the cultivation and utilization of indigenous fruit trees that are adapted to the local climate can provide a sustainable source of nutritious food, particularly in the humid forest zones of West and Central Africa (Degrande et al., 2006).

2. **Develop climate-smart agriculture practices that are adapted to the local context, incorporating resilient crop varieties, agroforestry, and sustainable water management techniques.**
   Climate-smart agriculture can aid in improving the adaptive capacity of farmers, service providers to farmers, and important institutions to manage the risks brought on by increased climatic variability and respond to the long-term consequences of climate change in an effective manner. Climate-smart agricultural practices should also aim to minimize agricultural greenhouse gas emissions (Zougmoré

et al., 2016). Policymakers in Sub-Saharan Africa should therefore prioritize developing or reinforcing adaptation measures to manage the adverse effects of climate change, but this would necessitate alterations in regional governance, policies, legislation, and funding system. The existing agricultural development budget is set to act as the primary source of funding for public investment in climate-smart agriculture. Scientific investigation and capacity building need to be financed, to guarantee that every decision is supported by research-based evidence and the practices are adapted to local conditions (Williams et al., 2015). Besides implementing climate-smart agricultural practices, monitoring and evaluating the effectiveness of such practices is required (Zougmoré et al., 2016).

For the crop production industry, efforts should be made to develop cultivars resistant or tolerant to drought, pests, weeds, high salinity, and floods. Agroforestry improves soil fertility and mitigates the effect of climate change. Agroforestry necessitates a rise in the number of trees in farm settings using methods such as hedges, fodder-producing trees in farmlands, multilayer farming, contour hedgerow system, and planting trees in gardens (Zougmoré et al., 2018). To prevent dependence on blue water abstraction, soil and water conservation measures that promote efficient utilization of green water (rainfall and soil moisture) should be encouraged. Irrigation techniques should be developed to enhance water efficiency. Soil and water management should be combined to improve soil fertility, prevent degradation, and boost the capacity to supply water to roots during important growing seasons (Williams et al., 2015). Tailor-made strategies should be adopted to manage and limit exposure to flood hazards, decrease vulnerability and enhance adaptive capacity in the event of floods, reduce the impact of floods on people who are vulnerable, and manage the risk of flooding through better governance (FAO, 2023).

3. **Establish early warning systems for climate-related risks and support farmers with climate information services, weather-indexed insurance, and other risk management tools.**

Early warning is important for the fast and accurate delivery of climatic fluctuation and hazard data through recognized organizations, enabling farmers to take action, minimize the consequences, and get prepared to carry out efficient responses against climatic variations and weather extremes. Monitoring and forecasting of weather events are essential components of an early warning system. This could be achieved by analysing changes in parameters such as temperature, wind, humidity, precipitation, and evaporation over long periods of time, providing enough tools to develop a disaster response framework for each climate hazard in SSA and prevent additional losses for farmers (Nhamo et al., 2019).

Supporting efforts to increase access to and use of seasonal forecasting information can be very beneficial to African farmers in terms of anticipating weather patterns, supporting farmers in their decision-making processes, and minimizing climate-related risks. Climate information services, for example, assist farmers in making predictions regarding rain distribution and temperature fluctuations and planning their planting activities (Zougmoré et al., 2018).

The adoption of weather index-based crop insurance (WII) by farmers as a risk management tool to lessen the impact of environmental shocks and natural catastrophes is becoming essential. However, developing a policy that improves farmers' (especially economically disadvantaged farmers) comprehension of these insurances through extension services and information channels like radio and television is necessary. Farmer subscriptions to this insurance could be increased by subsidizing the insurance costs or offering weather-indexed insurance plans with additional benefits that make them quasi-obligatory (Seebo et al., 2022).

4. **Promote the adoption of climate-resilient practices through targeted capacity building, awareness campaigns, and financial incentives.**

Public and private agricultural extension services raise awareness about the most suitable climate-adaptive solutions available and give farmers the technical know-how for putting the solutions into practice (Ziro et al., 2023). For example, farmers could gain knowledge on crop varieties to be used in drought-affected areas or poultry farming during hot weather.

Increased interaction between farmers and extension agents who raise awareness, share knowledge, and provide training in climate change adaptation strategies leads to greater adoption of climate-resilient practices. The creation of agricultural field schools where producers are taught through demonstration and practice could improve the adoption and effectiveness of climate-resilient strategies (Ziro et al., 2023). Financial incentives (e.g., pre-financing) stimulate the adoption of sustainable farming practices. Access to credit, for example, enables farmers to choose resilient strategies that are more expensive (e.g., modern irrigation, purchase of improved seeds with quicker germination). Credit financing necessitates climate-resilient practices to be profitable in order for farmers to pay back the loans and cover credit risk (Van Asseldonk et al., 2023). Therefore, both technical and financial assistance is required for the effective implementation of these practices.

5. **Strengthen extension services to provide farmers with access to knowledge, information, and innovative technologies for improved agricultural practices.**

Extension services can contribute by ensuring that initiatives to boost agricultural productivity are sustainable. Without relevant and trustworthy agricultural information, increasing agricultural production and ensuring sustainable food security might not be possible (Raidimi & Kabiti, 2019). The following could be done to improve the capacity of extension services to efficiently educate and assist farmers in their decision-making process:

- Obtain relevant information from knowledge-rich and reliable sources such as research institutions on improved technologies and agricultural practices (Raidimi & Kabiti, 2019).
- Timely delivery of climate and agricultural information to assist farmers in decision-making such as the ideal time for planting and applying fertilizer and pest control (Antwi-Agyei & Stringer, 2021).
- Increase access to extension services in remote areas to enable farmers in these regions to receive agricultural information that will help them increase the quality and quantity of their yields (Dugbazah et al., 2022).
- Using communication and digital technologies (e.g., radio, television, text messages, smartphone applications, websites) to enable access to agricultural extension services without the physical presence of extension agents (Dugbazah et al., 2022).
- Increasing the geographical coverage of extension services by allocating officers to various agricultural production areas (Ziro et al., 2023).
- Improve working conditions of agricultural extension officers, for example, by increasing their travel allowance and providing them with better transportation and working supplies (Dugbazah et al., 2022).
- Extension agents should be trained on a regular basis to remain informed about the current technological advancements designed to benefit farmers (Raidimi & Kabiti, 2019).
- Frequent assessments of the capacity-building needs of extension professionals to properly assist farmers (Antwi-Agyei & Stringer, 2021).

LAND AND WATER MANAGEMENT

1. **Promote sustainable land management (SLM) practices, including agroforestry, terracing, and watershedmanagement, to prevent soil erosion, and improve land productivity.**
   Identifying solutions to counteract the effects of land degradation and enhance land productivity and sustainability is an essential step in preventing declining per capita food availability. SLM practices can be used separately or simultaneously depending on the issue faced and the desired goal. Decisions on the SLM to be used should be based on the farmers' knowledge, the tools/equipment/resources available, and how the practices will affect the environment, productivity as well as farmers' income (Mutoko et al., 2015).

Some methods of SLM include:

- Use of biopesticides and organic products to control pests, herbs, and diseases.
- Improve soil fertility by enhancing soil cover through intercropping, crop rotation, fallowing, spreading animal/green manure, and composting (preferably in a combined crop-tree-livestock farming system).
- Vegetation and structural barriers can be used to capture sediments and nutrients, thus preventing soil erosion (Dallimer et al., 2018).
- The presence of trees in agroforestry systems could enable microclimatic regulation by reducing temperature, evapotranspiration, and moisture loss, and preventing exposure to direct sunlight (Kumar, 2016).

2. **Implement land tenure reforms and strengthen land governance to ensure equitable access to land resources, especially for smallholder farmers and women.**
   Equitable land access is essential for farming activities and ensuring food security. One common difficulty with land access and security in developing nations is the existence of two land management regimes, namely: customary land rights and modern land-management regulations (Coulibaly et al., 2021).
   In SSA, approximately 90% of the land is under customary land regimes. Land ownership under this system grants the right to occupy and utilize land rather than full ownership as seen in the Western society. Hence, customary land legislation is a weak system that does not provide protection for Africans' land rights. Policies should be implemented to officially protect the land rights of Africans by law. African governments could formalize customary land tenure by implementing simple land registration processes (including lands under the customary law system) to increase tenure security (Bae, 2023). This will ensure that land titles are granted to owners to strengthen tenure security in SSA.
   Women's unequal access to land has been shown to lower productivity across a number of sectors, particularly in agriculture. In Kenya, women cannot register land they purchased in their own names because the name of an elderly male family member should be used for land registration. In Africa, women are mostly land users rather than owners (Issaka, 2023). This prevents women from carrying out large-scale agricultural activities.
   States should consider the establishment of effective and gender-sensitive land laws with the goal of improving household income and overall economic development instead of viewing land ownership from a cultural and social standpoint. Policymakers should implement gender-sensitive land policies that seek to make land ownership and registration more accessible and affordable to women, regardless of marital status, income, or literacy level (Wamboye, 2023). Also, there is a need to raise awareness about the equality of men and women in the ownership of resources like land (Issaka, 2023).

3. **Develop and implement integrated water resource management (IWRM) strategies to ensure efficient and equitable water use for agriculture, while protecting ecosystems and water sources.**

The major water consumer in Africa continues to be the agricultural sector. Water shortage persists in most Sub-Saharan African nations, leading to water conflicts. For instance, growing tensions and competitiveness over the use of water in agriculture have been observed in Tanzania (Dungumaro & Madulu, 2003). IWRM is a type of sustainable water management that entails conserving water resources, decreasing water pollution (increasing water quality), and increasing the efficiency of irrigation/water productivity. This can be accomplished through water collection and storage systems, rainwater harvesting, enhanced irrigation (e.g., drip irrigation), contour farming, integrated crop-livestock systems (e.g., rice-fish farming), and surplus water management to prevent water loss (from runoff and evaporation) (DGB group, 2023). Proper management of water resources can assist farmers in lowering expenses, reducing the risk of contamination, and preserving or increasing land productivity to achieve good yields (FAO, 2017).

The use of IWRM techniques to attain water sustainability has been implemented at low to medium levels by several sub-Saharan African countries, yet most countries will not meet the Sustainable Development Goal 6 (SDG 6) focused on ensuring a stable and clean supply of water. The IWRM strategy struggles to achieve its aims because local governments are unable to launch large-scale advocacy initiatives designed to promote a sense of belonging among the general population, which would increase the community's readiness to adopt IWRM practices. Weak capacity building of an enabling environment, institutional frameworks, and managerial tools are also key obstacles to the successful implementation of future IWRM (Mbaigoto et al., 2023).

EMPOWERING FARMERS AND STAKEHOLDERS IN THE AGRICULTURAL VALUE CHAIN

1. **Provide smallholder farmers with access to credit, financial services, and insurance schemes to enhance their resilience and ability to invest in sustainable agricultural practices.**
   Agricultural insurance coverage among smallholder farmers in Africa remains low. Agricultural insurance is a good risk-mitigation tool for dealing with losses caused by climate-related hazards (Ankrah et al., 2021). Therefore, improving insurance coverage will protect smallholder farmers against losses and increase their capacity to recover more quickly from climatic disasters and other unexpected problems. Smallholder farmers have limited access to finance, resulting in lower usage of modern technologies such as improved crop varieties, and fertilizers, and reduced access to other inputs (e.g., land). Smallholder farmers require improved access to credit and financial services in order to invest and increase the volume and quality of their produce. Higher quality produce makes it possible for farmers to sell at better prices and cover their production costs, increasing their profits. Most financial institutions refrain from giving out loans or credit for farming activities because of the substantial risks involved in agriculture. Credit guarantee schemes, interlocked credit market arrangements for finance, and warehouse receipts systems are potential solutions to remedy the low funding by commercial banks in the agricultural sector (Langyintuo, 2020). Also, agricultural insurance can assist in lowering the risk associated with lending to farmers by protecting them against losses due to natural catastrophes, pest outbreaks, fires, disease outbreaks, etc. (Bannor et al., 2021). The insurance provider agrees to reimburse the farmer for the losses suffered if any of the unfortunate events happen.

2. **Addressing Gender Disparities in Agriculture: Promote gender equality and women's empowerment in agriculture by ensuring equal access to resources, training, and decision-making opportunities.**
   Gender disparities in resource access and utilization in agriculture hinder food security and inclusive growth in Africa (Coker et al., 2017). Closing the gender gap in socioeconomic status (e.g., net income), resource access, productivity, and competitiveness are crucial for achieving food security (Coker et al., 2017). Policies and interventions should aim to address these disparities and promote gender equality in agriculture. The active involvement of women in agricultural decision-making and production processes is crucial for increasing agricultural output in Africa. According to the World Bank, if women had equal access to agricultural resources (seeds, extension services, etc.), approximately 100 to 150 million fewer people would face hunger (Williams et al., 2015).
   Involving women in agricultural production could be accomplished by empowering women and closing the gap between male and female empowerment. The relatively low efficiency of female workers can be improved by organizing agricultural training sessions for women, to train them on modern agricultural technologies and other farm-related operations that were predominantly taught to male farmers. The production efficiency of women can also be improved by providing secondary or higher education to women (Anik et al., 2020). Hence, better access to education will increase the productivity of female food producers.
   Initiatives to reduce hunger while promoting food security have to ensure equal access for men and women to resources such as land, finance, and other assistance programs. African governments are required to practice gender-responsive budgeting to enable proper resource allocation for the development of gender equality programs in the food production sector (Moyo & Dhliwayo, 2019).

3. **Strengthen farmer organizations and cooperatives to enhance collective bargaining power, improve access to markets, and facilitate value chain integration.**

Increasing the involvement of small-scale farmers in farm organizations such as agricultural cooperatives and producer associations helps them in bringing together their resources so that they can collectively carry out profitable agri-value chain operations that would have been impossible to perform individually due to elevated risks, high transaction costs, low negotiating power, and limited economies of scale. Farmer organizations enable farmers to collaborate during post-harvest processing and increase market access. Market access enables increased production and revenue potential for excess harvest, thereby contributing to household food and nutrition security and improved livelihoods (e.g., source of employment and income) (Ochieng et al., 2018). Collective action is more likely to work when there is a favourable number of participants, the existence of group norms, and voluntary collaboration among members. Self-organized farmer organizations are more sustainable than externally initiated ones because they define and respect clearer norms and rely on greater mutual confidence and closer interaction between farmers (Gyau et al., 2014). The following could be done to strengthen the creation and management of farmer organisations:

- Farmers could group themselves according to a common interest such as their agricultural product (e.g., dairy cooperative, cassava cooperative) or resources required in the process of creating farm organizations. This will allow farmers who face similar difficulties to work together to improve their working conditions, enhance the volume and quality of their yields, purchase inputs at better prices, and sell their products at competitive prices.
- Extension officers should be trained on the principles and procedures of a community-based agricultural organization to be able to assist farmers in organizing themselves into strong and sustainable cooperatives/associations (Valleur, 2017).
- Training should be organized to develop the management skills of farm organization leaders, their members, and agricultural extension workers (Valleur, 2017). Training farmers is important to develop their capacity to plan and implement activities as well as find solutions to their problems.
- Training of farmers to gain and improve negotiation skills so that they can sell their products at more stable prices (Valleur, 2017).

4. **Promote agribusiness development, including processing, storage, and value addition, to create employment opportunities, increase income for farmers, and stimulate rural economies.**

Strategies to reduce hunger through yield improvements will be useless if a significant part of the harvested agricultural products is lost after harvest due to inefficient post-harvest and preservation processes. Stakeholders (e.g., food scientists & engineers, food processors, academics, professionals from NGOs, etc.) should educate/train small-scale farmers about correct post-harvest handling procedures and agro-processing techniques. Moreover, a commitment of more financial resources by local governments and donors to subsidize access to better processing equipment is required (Ogundele, 2022). Improved preservation and packaging technologies and better electricity & water supply are all urgently needed to support food processing activities for producing food products with added value and longer shelf life. For example, packinghouses could be constructed to prepare fresh goods while ensuring quality and food safety before they are sold to consumers (Aworh et al., 2021). Dedicated agro-industrial processing zones should be established to encourage agribusiness entrepreneurs to establish processing facilities in regions with high agricultural production for transforming raw materials into food and beverage products (Ogundele, 2022).

MARKET ACCESS

1. **Improve rural transportation, storage, and food market infrastructure, to better market linkages, reduce post-harvest losses, and enhance market access for smallholder farmers.**
   Improvements in production and processing techniques without enough infrastructure investments in food storage, transportation, and markets might result in surplus food, which can result in reduced food prices and more food losses. Refrigerated transportation and storage structures, including cold storage/warehouse facilities, metal silos, plastic silos, airtight bags, hermetic storage technologies, and solar-powered cold storage, are required to ensure that a larger amount of food items can be stored for longer periods and can reach the market in the best possible conditions (Aworh et al., 2021; Ogundele, 2022).
   Access to better roads cuts transportation costs from farm to market and increases market access, potentially accelerating the trade of food items and reducing the need for on-farm storage. In addition to generating losses due to product degradation and spillage, poor infrastructure can also hinder the adoption or scaling-up of technology that could minimize post-harvest losses. In Bihar (India) for example, the use of cold storage practices expanded when the local government invested in infrastructure, notably roadways, hence improving market access for farmers in rural areas (Bendinelli et al., 2020).

2. **Use of digital tools for facilitating access to market information and food/agricultural markets.**
   In Sub-Saharan Africa's agri-food industry, mobile phone (particularly smartphones) adoption is not very high among farming communities. It is nonetheless appreciated among traders. The majority of farmers use mobile phones for regular communication, i.e., to stay in contact with friends and relatives, as opposed to agri-food merchants who use them to seek pricing information in various marketplaces. According to research, Sub-Saharan African farmers rarely use their phones to keep track of the pricing of various produce and commodities in various markets (Kabbiri et al., 2018). In case the relationships between producers and consumers are weak, farmers will have lower market access and there will be more food losses (Bendinelli et al., 2020). With the growing adoption of smartphones in Sub-Saharan Africa, farmers can be connected to both agricultural input (such as providers of licensed seeds and fertilizers) and output (final food product) markets. For instance, online ordering platforms can assist in connecting farmers with input vendors and customers, increasing farmers' market size and possibilities to sell their farmed products (Chandra & Collis, 2021). Platforms for communicating pricing information and selling products are examples of popular technologies that facilitate access to output markets (Birch, 2018).
   In the present situation, however, farmers need to have better access to digital technologies and smartphones to increase the link with other value chain actors, including buyers and suppliers. Farmers are vulnerable to exploitation by other agri-food value chain actors, particularly intermediaries (middlemen) because they have no idea what happens in markets, and they accept whatever price the intermediaries offer them for their products. Farmers will be protected from exploitation if they can stay connected with several markets using digital technologies just like intermediaries (Kabbiri et al., 2018).

3. **Facilitate access to fair and transparent markets for smallholder farmers by promoting inclusive business models, fair trade practices, and market information systems.**

The high market power of big companies in the food production industry forces farmers to sign unfair contracts that limit market transparency and value transparency, drive down prices of agricultural products, threaten their livelihoods, and limit their ability to utilize sustainable farming methods. Similarly, powerful agricultural input suppliers can impose higher prices for fertilizers, feed, and other items farmers need to operate their farm businesses. As a result, policy reforms are required to ban unfair trading practices and simultaneously promote transparency of value distribution (clear information on product's price and quality) and fairness for smallholder farmers (Kaminski et al. 2020). This will increase the stability of relationships along the food chain, ensure reasonable prices of agricultural inputs, have better prices paid to farmers for their products to generate higher profits, and improve the quality of food supplies (van Berkum, 2021). It is critical for governments and companies to develop inclusive business models by introducing more ethical policy guidelines and mechanisms, such as improved labour conditions, higher purchase/sale prices (that cover the production cost) to offer opportunities for economic growth to all actors in the food value chain (Kaminski et al. 2020).

Disseminating agricultural market information using communication and technology tools like the internet, radio, and television can be excellent sources of information for farmers to improve their decision-making capacity. For instance, farmers might use information on current market pricing, price fluctuations, and worldwide statistics to bargain with purchasers for higher prices (Ajani, 2014). Educating farmers on the advantages of market information, different sources of this data, and the correct interpretation of this information is necessary to promote profitability in agriculture (Ameru et al., 2018).

FOOD AND NUTRITION SECURITY

1. **Implement nutrition-sensitive agriculture interventions to enhance the availability, accessibility, and affordability of diverse and nutritious foods.**
   Nutrition-sensitive agriculture could be achieved by encouraging diversification in the agricultural sector and increased production of nutritionally rich foods such as leafy vegetables, poultry, fish, dairy, and eggs. Governments should advertise biofortified crops (e.g., iron-reach beans and orange sweet potatoes) to stimulate greater cultivation of these crops. A diversified diet and nutrient-dense foods could become cheaper if growers receive agricultural subsidies (Hodge et al., 2015).
   Increases in national budget allocation for nutrition will be required to implement nutrition-sensitive agriculture activities. Governments should develop plans to boost the value chains of wholesome foods. Research indicates that agribusiness value chains can play a crucial role in fostering the production and consumption of nutrient-dense foods. For instance, there is evidence from research that expanding pulse value chains in SSA may improve nutritional and economic sustainability, although value chain development of nutritious foods has received less attention from policymakers compared to staple cereal-based crops (Asirvatham et al., 2022). Another recommendation is to avoid wasteful food processing and storage that depletes the foods' nutritious value, for example, through the use of appropriate packaging, and hygienic preservation and storage of foods (Hodge et al., 2015).

2. **Ensuring Food Safety: The absence of safe food leads to increasing levels of food insecurity.**
   Foods produced in Africa have difficulty complying with requirements of national or international food safety (such as chemical and microbial) standards. Additionally, a lot of instances of food safety problems go unnoticed as a result of inadequate monitoring, surveillance, or outbreak reporting mechanisms (Kussaga et al., 2014). To ensure an efficient food safety control system, it is recommended to explore and employ relatively new procedures such as HARPC (hazard analysis and risk-based preventative controls), TACCP (threat assessment critical control points), and VACCP (vulnerability assessment critical control points) (Adebiyi et al., 2019).
   Mycotoxins pose a significant threat to food safety in Africa (Chilaka et al., 2022). High rates of post-harvest losses due to mycotoxin contamination contribute to economic losses and health risks (Chilaka et al., 2022). Strengthening institutional efforts to improve pre-harvest (e.g., using clean/uncontaminated seeds), post-harvest (e.g., effective cleaning of harvested products prior to storage), and decontamination (e.g., controlled processing/preservation techniques) practices is essential to regulate mycotoxin contamination and for ensuring food safety (Chilaka et al., 2022; Owolabi et al., 2022). Controlled fermentation with microorganisms is an inexpensive technique for enhancing nutrition, controlling mycotoxins, and guaranteeing food safety in the absence of advanced monitoring and preventive systems. (Adebiyi et al., 2019).
   Training programs should be organized to enhance farmers' understanding of important biological changes (e.g., microbial growth and contamination) that occur and environmental factors (e.g., temperature and humidity level) that are important during harvesting, post-harvest procedures, and storage (Ogundele, 2022). This will aid in increasing safety and maintaining the quality of the harvested product for longer periods.

3. **Strengthen social protection programs, including cash transfers, school feeding, and nutrition support, to address immediate food needs and improve the nutritional status of vulnerable populations.**

Delivering social protection in the form of social transfers can combat insufficient nutrient consumption that leads to undernourishment. Beneficiaries could enjoy improved food intake in terms of quantity (calorie intake) and quality (dietary diversity and nutritional intake), either directly through food transfers (i.e., subsidised provision of food to vulnerable populations) or indirectly through cash transfers which provide income to vulnerable/poor households leading to greater buying power (Olney et al., 2021). Home-grown school feeding (HGSF), which procures food for school meals from local farmers rather than using imported food, can promote the local production of nutritious and make nutrient-dense foods more available for children in schools (Laar et al., 2017). Improving the coverage of nutrition-sensitive social protection and ensuring that it reaches the most nutritionally vulnerable will enable more recipients to benefit from enhanced food access and improved nutrition status. Social protection programs should pay equal attention to rising hunger and malnutrition problems faced in urban areas since societies are becoming increasingly urbanized, without neglecting efforts to address these issues in rural regions (Brzeska et al., 2015).

Governments ought to direct their limited funds on social assistance schemes that meet essential health and nutritional needs, with a special focus on vulnerable populations such as those who live in extreme poverty, children, pregnant women, and lactating mothers (Pasadilla & Édes, 2015). Sustainable financing is required to support the implementation of social protection. The duration of programs must be sufficient to achieve long-lasting, beneficial effects on food and nutrition security. The greatest benefits are seen in programs that last for decades. It was suggested that governments should expand their sources of revenue, for example, by gradually increasing taxes to aid in funding nutrition-sensitive social protection interventions (Sheahan, 2017).

4. **Integrate nutrition education and behaviour change communication into agricultural extension services and community programs to promote healthy diets and optimal nutrition practices.**

Agriculture and health professionals could collaborate to deliver behaviour change messages on better nutrition that extension workers can utilize to educate the farming community on the utilization of diverse crops and livestock for nutrition outcomes. Nutrition education could be provided to extension officers and offered in farmer field schools (Hodje et al., 2015).

Training tools like nutrition instruction manuals that offer guidance on safe food handling, food preservation, meal planning, preparing and cooking safely (food hygiene), and energy-saving cooking techniques to better retain nutrients in foods could be used by community health personnel and extension officers to facilitate the dissemination of behaviour change messages and adoption of good nutrition practices by the farming community and general public (Hodje et al., 2015).

It is necessary to intensify research for the creation and validation of indicators of diet quality in the context of SSA (Sheahan, 2017). This will guide individuals and households in SSA in choosing the right foods to eat to maintain a healthy diet.

5. **Enhancing Policy Coherence for Food Security and Nutrition:**
   One important aspect of addressing hunger in Africa is improving policy coherence for food security and nutrition (Thow et al., 2018). Current policy priorities often focus on increasing food production and access but neglect the importance of nutritional quality. It is essential to shift the focus towards food systems that deliver not only sufficient calories but also nutritional quality (Thow et al., 2018). This can be achieved by integrating a nutritional quality and food security lens into existing policy priorities, content, and interests regarding the food supply (Thow et al., 2018).

6. **Addressing Seasonal and Spatial Dynamics of Food Insecurity:**
   Food insecurity in Africa is influenced by seasonal and spatial dynamics, which must be considered when designing interventions (Sassi & Trital, 2021). Traditional longitudinal analysis may not capture the complexities of inter- and intra-household heterogeneities within the seasonal and spatial context of food security. Therefore, using a statistical approach like the multi-group piecewise latent growth curve model can provide valuable insights into how food security changes over time and varies across different populations and locations. This method helps identify patterns, trends, and disparities in food security, making it a useful tool for targeting, monitoring, and evaluating population-level programs and interventions aimed at addressing food insecurity (Sassi & Trital, 2021). This approach can help target, monitor, and evaluate population-level programs and interventions addressing food insecurity.

7. **Strengthening Community-Level Strategies:**
   Efforts to combat hunger in Africa should extend beyond the healthcare setting and include cost-effective health promotional strategies at the community level (Ubesie & Ibeziakor, 2012). Strategies that focus on prevention, early detection, and prompt treatment of protein-energy malnutrition can significantly reduce morbidity and mortality associated with this condition (Ubesie & Ibeziakor, 2012). These strategies should be informed by evidence-based research and implemented through diverse and nested institutional mechanisms (Akamani, 2020).

Conclusion

Achieving zero hunger in Sub-Saharan Africa requires a comprehensive and multi-faceted approach that addresses the underlying causes of food insecurity, empowers smallholder farmers, promotes sustainable agricultural practices, and strengthens market systems, by implementing the strategies outlined in this blueprint. This policy blueprint highlights the importance of policy coherence, addressing seasonal and spatial dynamics, promoting sustainable agriculture, harnessing indigenous resources, strengthening community-level strategies, ensuring food safety, and addressing gender disparities. By implementing evidence-based policies and interventions, SSA can make considerable progress towards achieving food security and nutrition for all.

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