

Prevention of Malnutrition through Food Security and Sustainable Agriculture in Nigeria: SDG2 in Focus

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Introduction: Malnutrition remains a critical global issue, affecting millions of people, especially in developing countries. Despite advancements in agriculture and food systems, achieving Zero Hunger, as outlined in Sustainable Development Goal 2 (SDG 2), is increasingly challenging due to various factors such as conflict, poverty, climate change, and economic instability. The 2024 State of Food Security and Nutrition report revealed that between 713 and 757 million people faced hunger in 2023, with Africa experiencing the highest rate of hunger at 20.4% of its population (Food and Agriculture Organization, 2024), compared to 8.1% in Asia, 6.2% in Latin America and the Caribbean, and 7.3% in Oceania (FAO, 2024; Otekunrin, 2024; Otekunrin, Mukaila & Otekunrin, 2023). Furthermore, by 2030, an estimated 582 million people are expected to be chronically undernourished, with over half residing in Africa (Frontiers in Public Health, 2023). Notwithstanding global commitments to reduce hunger and malnutrition, progress has been slow and uneven, particularly in regions like sub-Saharan Africa. The COVID-19 pandemic and geopolitical conflicts, such as the Russia-Ukraine war, have further exacerbated food insecurity by disrupting supply chains and increasing food prices (FSIN and Global Network against Food Crises, 2023) hence, the urgent need for coordinated and innovative solutions that can address both the immediate and underlying causes of malnutrition through sustainable agriculture and food security initiatives (United Nations, 2023). This paper therefore aims to assess

the impact of sustainable Agriculture on food security by evaluating the effectiveness of sustainable agricultural practices in enhancing food security and reducing malnutrition, particularly in vulnerable regions like Nigeria. The paper will identify the barriers precluding the achievement of SDG 2, and further explore potential strategies in food production, distribution, and consumption that could contribute to reducing hunger and malnutrition, with a focus on the role of local communities, governments, and international organizations.

Literature Review: Global and Regional Perspectives on Malnutrition: Malnutrition is one of the world's most serious but least-addressed development challenges. Its human and economic costs are enormous, with severe effect on the poor, women, and children. A report by the World Health Organization (2023) indicates that, in 2022, globally, 148.1 million (22.3 percent) children under the age of 5 were stunted, 45 million wasted, and 37 million overweight. Nearly all children affected lived in Asia (52 percent) and Africa (43 percent). Of the estimated 6.8 percent of children affected by wasting, 13.6 million (2.1 percent) were suffering from severe wasting. The report of Joint Child Malnutrition Estimates (2022) shows that more than three-quarters of all children with severe wasting live in Asia and another 22 percent live in Africa. Similarly, current levels of overweight have persisted for the last two decades in almost every region, and there are now 37 million children under 5 living with overweight globally, an increase of

nearly 4 million since 2000 (JME, 2022). These figures show not only a failure to achieve one's own genetic potential for growth but also a predictor of many other developmental constraints, including cognitive deficits and future economic opportunities, not to mention impeding a country's ability to accumulate human capital.

Additional data from the Global Report on Food Crises (GRFC, 2023) indicates that in 2022, 258 million people faced high levels of acute food insecurity in 58 countries. According to the report, between 2021 and 2022, there was a 34 percent increase in the number of people facing high levels of acute food insecurity, indicating a year-on-year rise in the level of acute food insecurity. In the same vein, the 2023 projections available reveals that 24 million people were estimated to suffer acute malnutrition or high levels of acute food insecurity across six countries comprising Burkina Faso, Haiti, Mali, Nigeria, Somalia and Kenya, with the case of Nigeria, being primarily as a result of conflict.

Historical Context and Progress made towards SDG 2 in Nigeria: Following the end of the Millennium Development Goals (MDGs), the international community established in 2015 a new set of goals and targets known as the Sustainable Development Goals (SDGs), comprising social, economic, and environmental sustainability goals, with the deadline as 2030 (United Nations, 2015). Specifically, goal 2 of the SDG aims to “end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons by 2030” (United Nations, 2015). Although some level of progress has been achieved with regards to curbing hunger in Nigeria, millions of children still suffer from different forms of malnutrition ranging from stunting, wasting, under-weight as well as deficiency in key nutritional elements. The Global Nutrition Report (2022) indicates that there has been no progress made towards achieving the target of reducing anaemia among women of reproductive age, with 55.1% of women aged 15 to 49 years now affected. Meanwhile, there is insufficient data to assess the progress that Nigeria has made towards

achieving the low birth weight target, nor is there adequate prevalence data (Global Nutrition Report, 2022). However, some progress has been made towards achieving the exclusive breastfeeding target, with 28.7% of infants aged 0 to 5 months exclusively breastfed. Similarly, Nigeria has made some progress towards achieving the target for stunting, but 31.5% of children under 5 years of age are still affected, which is higher than the average for the Africa region (30.7%). Nigeria has also made some progress towards achieving the target for wasting but 6.5% of children under 5 years of age are still affected, which is higher than the average for the Africa region (6.0%). The prevalence of overweight children under 5 years of age is 1.6% and Nigeria is working towards preventing the figure from increasing (Global Nutrition Report, 2022). Furthermore, Nigeria has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets, while 15.7% of adult (aged 18 years and over) women and 5.9% of adult men are living with obesity. Nigeria's obesity prevalence is lower than the regional average of 20.8% for women and 9.2% for men. At the same time, diabetes is estimated to affect 6.8% of adult women and 7.5% of adult men.

Additionally, in the 2022 Global Hunger index (GHI), Nigeria ranked 103rd out of 121 countries, scoring 27.3/100. This indicates a serious level of hunger and suggests that Nigeria is not on track to achieve the Sustainable Development Goal 2 (SDG2) target by 2030 [5,6]. Further x-raying the food security environment in Nigeria, as reported in the Global Food Security Index of 2022, data under the four pillars for food security suggested that, Nigeria had the lowest score (25/100) globally on the affordability category. In the availability category, Nigeria ranked 108th globally and 26th in the region. The report showed that the very weak performance score (39.5) was a result of the “very weak” (0–39.9) scores obtained in certain indicators, such as agricultural research and development (30.7/100), supply-chain infrastructure (23.9/100), sufficiency of supply (25.5/100), political and social barriers to access (31.6/100), and food security and access policy commitments (0/100) [3].

These grim realities notwithstanding, the United Nations (UN) has remained committed to ending hunger (United Nations, 2017). Since the launch of the Sustainable Development Goal, many nations have implemented food and nutrition-sensitive policies aimed at achieving this goal. In 2023, the Nigerian government declared a state of emergency on food security to tackle critical issues such as availability, affordability, and accessibility. A key element of the policy framework is the National Food Security Council, which coordinates strategies involving federal, state, and local governments to boost food production. One of the initiatives under this framework is the expansion of land for cultivation and providing critical inputs like high-yield seeds and fertilizers. These efforts are especially targeted at smallholder farmers, who play a crucial role in food production (NESG 2024) (Punch 2024).

Similarly, Nigeria is focusing on reducing its reliance on food imports by boosting local production. A report by Punch (2024) indicates that the government has emphasized the need for self-sufficiency, particularly in strategic crops like maize and wheat, which are vital for domestic consumption. Importation is being strategically used only as a short-term measure to stabilize markets while local production increases. Likewise, International organizations like USAID are also playing a pivotal role in Nigeria's agricultural transformation, through public-private partnerships, initiatives such as the Feed the Future program to help finance local agricultural projects (USAID, 2024). NESG (2024) adds that, the Nigerian government has also initiated immediate hunger relief efforts, through the National Emergency Management Agency (NEMA) with the distribution of food directly to the over 100 million hungry Nigerians.

Challenges impeding Food Security in Nigeria:

Climate Change and Environmental Factors:

Climate change is a significant barrier to food security in Nigeria, particularly due to irregular rainfall, desertification in the northern regions, and increased flooding in the southern areas. These extreme weather conditions have significantly reduced agricultural productivity, impacting both crop and livestock farming. For example, floods in

2022 submerged over 569,000 hectares of farmland, which severely affected the cultivation of rice, maize, and cassava (NESG, 2024; USAID, 2024). Desertification in the northern regions has pushed farmers to relocate, leading to competition for arable land and contributing to conflicts between farmers and herders (NESG, 2024).

Insecurity and Conflict: Insecurity, particularly in the northern regions, has emerged as a critical issue affecting food security. Terrorist groups like Boko Haram, bandits, and herder-farmer clashes have displaced millions of people, disrupting agricultural activities. The insurgency in the northeast, where much of Nigeria's agricultural production occurs, has led to the abandonment of farms and food storage facilities (NESG, 2024). The frequent attacks have disrupted supply chains, driving food prices higher due to shortages in local production. Additionally, attacks on transportation networks have further impeded the delivery of food to urban centers, contributing to food inflation (USAID, 2024).

Policy Inconsistencies and Poor Implementation:

While Nigeria has numerous policies aimed at achieving food security, such as the Agricultural Promotion Policy (APP) and the Green Alternative Plan, the implementation of these strategies has been inconsistent. Furthermore, many agricultural programs, like the Anchor Borrowers' Program (ABP), which was designed to provide farmers with credit and inputs, have been plagued by mismanagement and corruption (NESG, 2024). Additionally, over-reliance on imports to meet domestic food needs has further complicated the situation. Although the government has recently prioritized reducing food imports to encourage self-sufficiency, inadequate support for local farmers in terms of infrastructure, mechanization, and market access remains a persistent issue (Punch, 2024).

Economic Constraints and Inflation:

Nigeria's economic instability, characterized by inflation and high input costs, poses a significant challenge to food security. Farmers struggle with the rising costs of seeds, fertilizers, and pesticides, compounded by currency devaluation and high interest rates on loans. The removal of fuel subsidies in 2023 has further worsened the situation, as it increased transportation costs, affecting both the price of agricultural inputs

and the distribution of food products (USAID, 2024). Rising inflation has also decreased the purchasing power of consumers, making basic food items unaffordable for many Nigerians. This is particularly evident in urban areas where food prices have skyrocketed due to limited access to local produce and dependence on imports (Punch, 2024).

Infrastructure Deficits: Nigeria's inadequate rural infrastructure, particularly in terms of roads, storage facilities, and irrigation systems, is a major impediment to food security. Poor road networks hinder farmers from accessing markets to sell their produce, leading to significant post-harvest losses, which are estimated to be as high as 40%. Inadequate storage facilities also lead to the spoilage of perishable crops, further aggravating food shortages (Punch; 2024; NESG, 2024).

The lack of irrigation infrastructure has limited Nigeria's ability to engage in year-round farming, especially during the dry season. This situation has left the country heavily reliant on rain-fed agriculture, making it vulnerable to climate shocks (NES Group).

Population Growth and Urbanization: Nigeria's rapidly growing population, which is projected to reach 400 million by 2050, presents a looming challenge for food security. As the population expands, demand for food continues to rise, putting additional pressure on an already overstretched agricultural sector. Urbanization is also straining food distribution systems, as more people move to cities where access to fresh, affordable produce is limited (Punch, 2024).

Relationship between Food Security in Nigeria and SDG2: According to Idahosa (2020), food security is achieved when the populace at all times has physical, economic, and social access to enough food that is of quality in order to maintain food health and well-being. Food security cuts across four (4) fundamental pillars, viz: Availability, Access, Utilization and Stability.

Availability: Food availability is the supply of food through production, distribution and exchange. In the case of production, there are factors such as crop selection, livestock breeding and management, harvesting, etc, that can hinder effective production and reduce the availability of food across the globe.

Crop production is affected by adverse weather conditions due to climate change, and in the case of Nigeria, insecurity is also a huge factor. Distribution of agricultural finished products through the appropriate distribution chain is also key; that is, Manufacturer → Wholesaler → Retailer → Contractor = Final consumer. These channels of distribution facilitate the availability of agricultural products for consumption.

Access: Food security explains the need to have access to sufficient, safe and nutritious food that meets the preference and dietary needs for an active and healthy life. The ability of a particular household to purchase food in the right quality and diversity in the market is considered as a major factor when it comes to improving food security. The major aim of food security is that each household will have access to quality, nutritious food at all levels.

Utilization: Food safety plays an important role when it comes to utilization as it involves handling, preparation, and storage of food which can affect food utilization if not properly considered. It is important that food consumed is safe, and meets the physiological requirement of individuals. The health of individuals controls how food is metabolized, showing that health care is part of utilization. Therefore, it is important for a general education about nutrition, food safety and how it can affect food utilization.

Stability: Stability simply means the ability to obtain food consistently over a long period of time. If there is food availability, accessibility, utilization and no stability, there is already an alteration which explains that all four pillars must go together for food security to be achieved. And for food security to be achieved, there should be a form of stability.

Consequently, the eradication of hunger requires the alignment of SDG-2 targets, and indicators, with the four pillars of food security, by ensuring the availability of sufficient quantities of food, enabling the economic and physical means to obtain a nutritious diet; having adequate dietary intake and the ability to absorb and use nutrients in the body, as well as facilitating the consistency of these factors (FAO 2008).

Sustainable Agriculture as a Path to Food Security: The Center for Integrated Agricultural

Systems (CIAS) defines sustainable agriculture as farming systems and government policies that develop long term positive impacts on the following; agricultural profitability, environmental quality, food sufficiency, quality and affordability and rural family and community vitality, which is not far from the three main goals of sustainable agriculture such as environmental health, economic stability, social and economic equity (Age, 2017). Sustainable agriculture practices, such as crop diversification, dry season farming, organic farming, agroforestry, provision of improved physical, social, institutional, and rural infrastructural facilities, including the use of climate-resilient crop varieties, play a pivotal role in enhancing food production (Jason, 2015).

Sustainable agriculture focuses on using natural resources in a way that meets current food needs without compromising the ability of future generations to do the same. In Nigeria, this involves improving productivity, ensuring efficient use of resources, and mitigating the environmental impacts of farming, all of which are essential to achieving food security. Nigeria faces several challenges, including rapid population growth, climate change, and food shortages that have left over 100 million people food insecure (Punch Newspapers). Sustainable agriculture practices—such as crop rotation, organic farming, and the use of climate-resilient crops—help address these challenges by boosting yields and maintaining soil health over time. These practices enable farmers to produce more food on the same land, ensuring consistent supply and availability of food, which is critical for achieving food security (USAID, 2024; Punch, 2024). Moreover, sustainable agriculture helps to reduce post-harvest losses. In Nigeria, post-harvest losses account for up to 40% of food production due to inadequate storage and transportation infrastructure. Sustainable practices such as improved storage facilities and value-added processing can preserve food quality, increasing food availability for longer periods and stabilizing food prices (NES Group).

Secondly, one of the key drivers of malnutrition in Nigeria is the lack of access to a diverse and nutritious diet. Malnutrition affects over 37% of children under five, contributing to high rates of

stunting and wasting (NESG, 2024). Sustainable agriculture promotes the cultivation of nutrient-dense crops, such as legumes, millet, sorghum, and vegetables, which are rich in essential vitamins and minerals. By encouraging crop diversification, sustainable farming reduces the reliance on a few staple crops like maize and cassava, which are energy-rich but nutrient-poor. Diversifying crops helps provide a balanced diet that can combat micronutrient deficiencies, particularly in rural areas where access to fortified foods and supplements is limited (Punch Newspapers). In addition, sustainable methods, such as organic farming, avoid harmful pesticides and chemical fertilizers, ensuring that crops retain their nutritional value, which is vital for reducing malnutrition (USAID, 2024).

Again, Nigeria is highly vulnerable to the impacts of climate change, including erratic rainfall, desertification, and flooding, which all negatively affect agricultural productivity. Sustainable agriculture practices help farmers build resilience to these climate shocks by promoting climate-smart techniques like conservation agriculture, agroforestry, and the use of drought-resistant crop varieties. These practices not only protect the environment but also ensure that food production continues even in the face of extreme weather events. For example, agroforestry, which involves integrating trees with crops and livestock, can improve soil fertility, reduce erosion, and provide shade and moisture retention, thus improving agricultural productivity in a changing climate (USAID, 2024). This resilience is crucial to ensuring a stable food supply, which is essential for both food security and reducing malnutrition, particularly in vulnerable communities.

Additionally, sustainable agriculture not only focuses on environmental health but also enhances the economic viability of farming. By reducing the need for expensive chemical inputs and promoting more cost-effective farming methods, sustainable practices can increase the income of smallholder farmers, who make up the majority of Nigeria's agricultural workforce. Higher incomes enable households to invest in better nutrition, healthcare, and education, which are all essential for tackling malnutrition. Sustainable agricultural systems, when

combined with improved access to markets, ensure that farmers can sell their produce at fair prices, further supporting their livelihoods and food security (USAID, 2024).

Lastly, effective policy frameworks are essential for scaling sustainable agriculture in Nigeria. The Nigerian government has acknowledged the need for sustainable practices through programs such as the Green Alternative Agriculture Promotion Policy and partnerships with international organizations like USAID's Feed the Future initiative. These policies focus on promoting climate-smart agriculture, improving infrastructure, and providing technical support to farmers (USAID, 2024). However, there are still gaps in policy implementation and continuity. Strengthening local food systems through government support and international collaborations can help ensure that sustainable agriculture becomes the norm, thereby addressing both food security and malnutrition at scale.

The Role of Stakeholders: As outlined by USAID (2024), there is need among many others, to expand the Food Security Council to include Governors whose states are the key contributors to the country's food production output. This essence is to rally all the available primary production centres in Nigeria and extract immediate and medium-term commitments from States on: the number of hectares of cultivated land to be contributed to the national food system response; the strategic crops to be cultivated; the strategic coordination mechanisms that need strengthening between federal and state governments for the seamless, timely delivery of high-yield seeds, fertilisers, chemicals, credit, etc, to farmers at all levels; the security architecture to protect farmlands and production centres; as well as the cooperation frameworks with development partners and the private sector, thriving in one state, that can be scaled to others within months, etc.

Similarly, there is an urgent need for the Ministry of Budget and Economic Planning, the Ministry of Agriculture and Food Security, and the Coordinating Ministry of Health and Social Welfare, along with key agencies like National Emergency Management Agency (NEMA), National Social Safety Net Coordinating Office (NASSCO) and the National Social Investment Agency to define the proper scale,

scope and strategy of a National Hunger Response. The expanded National Food Security Council should have task forces actively overseeing strategic responses for land security, soil security, seed security, water security, harvest security, storage and logistics security, and human security (the hunger response). A revision of the roles and responsibilities of critical institutional actors is crucial for success. In the last eight years, the Central Bank of Nigeria has had an extensive and overshadowing role, reach and influence on food security coordination in Nigeria. There should be an effective and proper transition of CBN from direct food security interventions to the Ministry of Agriculture and Food Security and other intervening Agric-focused MDAs.

Conclusion: Sustainable agriculture is a vital solution to both food security and malnutrition in Nigeria. By adopting practices that promote environmental sustainability, economic viability, and climate resilience, Nigeria can build a food system capable of feeding its population in the long term. Addressing food security and malnutrition through sustainable agriculture requires coordinated efforts from governments, international organizations, and local communities, but it presents the most holistic and effective path forward for tackling these intertwined challenges.

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