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Food Security as a Driver of Sustainable Development: Empirical Evidence from South-West Nigeria

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Abstract: *The study examined the interconnection of sustainable development and food security in South-West Nigeria, a geopolitical zone characterized by urban-rural disparities and environmental vulnerabilities. Based on a descriptive survey research design, 600 respondents in urban and rural areas supplied the requisite data for the study. Regression and correlation tests guided the study of the socioeconomic and environmental variables that determine household food security and the broader sustainable development results. The study findings establish that 68.5% of the households are food-insecure, and that the key reasons are the rising cost of food, inability of the household to use or own farmland, and post-harvest losses. The study found that land access, household income, education, and market closeness significantly predicted food security ($R^2 = 0.41$, $p < 0.001$). There were strong positive correlations of food security with sustainable development indicators, including household income ($r = 0.65$) and education ($r = 0.58$). The study findings establish the critical role of food security in sustaining sustainable development, and that policy must therefore adopt an integrated approach that ensures social and distributive justice through eradicating structural vulnerabilities in the region.*

Keywords: food security, sustainable development, south-west Nigeria, capability approach, climate change, agricultural policy

INTRODUCTION

The intersection between food security and sustainable development has been a critical international challenge of the 21st century. Food security, as per the Food and Agriculture Organization (FAO), exists when all people, at all times, have physical, social, and economic access to adequate, safe, and nutritious food sufficient to meet their dietary needs and food aspirations to lead an active and healthy life (FAO, 1996). Achieving this goal marks a critical step toward global development agendas, especially among low- and middle-income countries

where food insecurity remains further compounded by environmental degradation, poverty, and poor governance (Barrett, 2010; De Schutter, 2011).

Global food markets have been strained to their limits by climate change, increasing populations, war, and economic insecurity during the past several decades. The FAO (2023) indicates that more than 735 million people endured chronic hunger during 2022, a dramatic increase stoked by long-existing inequality, supply disruptions, and increasing uncertainty in climatic patterns. The World Bank (2022) refers to climate shocks, especially in Sub-Saharan Africa, as being responsible for reduced crop yields, food price increases, and livelihood loss. The issues highlight a need to synchronize food security objectives with broader plans of sustainable development.

Nigeria is a leading example. With over 84 million hectares of farmable land and a labor force majorly involved with agriculture, Nigeria ranks among the world's largest food-insecure nations (EIU, 2022). Prevalent infrastructural shortage, fragmented markets, rising insecurity, and inadequate access to climate-resilient agricultural techniques continue to be among the factors undermining food supply chains (Eme et al., 2014; Ojo & Akintoye, 2019). The national challenges are reflected within subnational realms, particularly within South-West Nigeria, a place where urban-industrial development and agrarian cultivation are simultaneously present.

The South-West, comprised of Lagos, Ogun, Oyo, Osun, Ondo, and Ekiti, has economic diversification and environmental variability. The urban centers, including Lagos, are faced with high concentration of populations and unaffordability of food, while, Ekiti and Osun, being predominantly rural, are faced with a deficiency in investments within agriculture, weak market linkages, and loss of crops due to climate change (Ajibefun & Adeyeye, 2018, Shaibu, 2021). The food systems within are confronted with structural challenges such as land disputes over tenure, poor infrastructure within stores, and poor linkages, particularly from smallholding producers, into value chains (Adepoju & Salau, 2019).

Also, developmental impacts from food insecurity across the region are significant. Food insecurity has been blamed for malnutrition, restricted educational levels, ill health, youth joblessness, and exposure to increased social tension (UNICEF, 2022; Kerr et al., 2021). Sustainable development, as proposed in the Brundtland Report (WCED, 1987), means meeting present needs without sacrificing the ability future generations have to meet their own. Similarly, food security serves as a cause and effect of development, affecting indicators such as poverty reduction, economic development, equality between males and females, and environmental protection (Rojas et al., 2021; Sukhdev et al., 2022).

The conceptual fundament to our work here is Amartya Sen's Capability Approach, where development is defined neither as increasing incomes alone but as increasing freedoms and capabilities that are crucial to having meaningful lives (Sen, 1999; Nussbaum, 2011). Food security, consequently, is a means to achieve broader development ends such as health, education, and political participation. Inability to access sufficient food decreases individuals' capabilities, solidifying poverty patterns and weakening building blocks toward sustainable development.

Given its urbanization, agricultural promise, and environmental vulnerability, South-West Nigeria provides a case study from which a broader perspective can be gleaned with respect to

food security's intersection with sustainable development. Regional-centric research here can generate region-specific understanding, but feed into country policy shift, and international discussion about resilient, just food systems.

Statement of the Problem

Food insecurity remains one of the highest priority stumbling blocks to sustainable development throughout Sub-Saharan Africa despite the vast potential of agriculture within. Particularly, Nigeria struggles with a paradox: with an agrarian sector providing a job to more than 35% of those who work and contributing approximately 23% to GDP within the nation (World Bank, 2022), it still grapples with enduring food insecurity. FAO (2023) documents that close to 25 million Nigerians are exposed to acute food insecurity, which is fueled by inflation, conflict, inadequate infrastructure, and shock from environmental sources. Specifically, such thoughts are emphasized within the region of South-West Nigeria—a region previously defined by its agrarian economy but significantly shaped by urbanization changes, food prices, unstable weather, and systemic disregard of agrarian region development (Ajibefun & Adeyeye, 2018; Shaibu, 2021).

Although several national policies aim to eradicate food insecurity, including the Agricultural Promotion Policy (APP) and the National Food Security Programme, their application has created very little local impact, especially from regions like the South-West (Fasoranti & Yusuf, 2015). Empirical evidence linking food security with the outcomes of sustainable development, including education, access to health care, reduction of poverty, and environmental sustainability, still remains limited within subnational levels. The overwhelming majority of research focuses either on national-level assessment or sectoral dimensions of food security, but with little understanding of its overall implications for regional development (Adepoju & Salau, 2019; Onoja et al., 2024).

Also, there is growing separation between food production and affordability across the region. Despite wide monoculture, food prices across South-West Nigeria tend to be similar to areas where food production remains extremely small, and hence, concerns emerge across inefficient supply chains, loss during the post-harvest period, and market access (Eme et al., 2014). The vulnerable populations, such as youth, females, and those from rural regions, are significantly affected, leading to growing inequalities and fewer development opportunities (UNICEF, 2022; Kerr et al., 2021).

This knowledge and practice divide is a major research question. It deserves research into how food security, as defined by its availability, accessibility, affordability, and adequacy in providing nutrients, intersects with sustainable development indicators within South-West Nigeria. In finding socio-economic and environmental determinants of food security in a given area, and how they impact development outcomes, the study seeks to add to more focused and evidence-based interventions.

Objectives of the Study

The primary objective of this study is to examine the interrelationship between food security and sustainable development in Southwest Nigeria. To achieve this, the study is guided by the following specific objectives:

i. To assess the current level of food security among households in South-West Nigeria.

ii. To examine the influence of key socio-economic factors on household food security in South-West Nigeria.

iii. To evaluate critical indicators of sustainable development in South-West Nigeria.

iv. To empirically determine the relationship between food security and sustainable development indicators.

Significance of the Study

This research has both theoretical and practical applications. Theoretically, it adds to existing literature regarding the nexus between food security and sustainable development in Nigeria by providing empirical evidence from the South-West. The study broadens the discussion by quantitatively illustrating socio-economic and environmental determinants of food security and linking them with sustainable development indicators. It buttresses theories such as the capabilities approach by Sen (1999) and the multi-dimensional perspective of development defined by the SDGs (United Nations, 2015).

Practically, the findings offer policymakers, development practitioners, and stakeholders in the agricultural sector critical insights for designing targeted interventions. By identifying key predictors of food security—such as access to farmland, income level, and education—the study provides an evidence base for prioritizing investments and resource allocation. Furthermore, the demonstrated link between food security and sustainable development indicators highlights the need for integrated policies that address food access, income generation, education, and health services concurrently, particularly in rural areas where disparities are most pronounced.

LITERATURE REVIEW

Conceptual Perspectives on Food Security

Food security has seen a remarkable evolution over the past half-century in policy and research scholarship. The notion, once illustrated with national-level food supply, has developed to accommodate household-level and individual experiences with access, affordability, and sufficiency of nutrition (FAO, 1996; Maxwell & Smith, 1992). Availability, access, utilization, and stability are broadly accepted dimensions (Barrett, 2010). The dimensions include depth, acknowledging that hunger might still be a reality even where food is present physically, due to economic or social isolation.

Food insecurity in developing countries, particularly Sub-Saharan Africa, comes from poor-performing agriculture, but structural factors such as land insecurity, inequality, conflict, and unstable policy environments are responsible (Altman et al., 2018). In Nigeria, they are

exacerbated by rising inflation, inadequate infrastructure, and exogenous shock from climate change, affecting plant and harvest cycles (Eme et al., 2014; Ojo & Akintoye, 2019). Urban locations, even with market proximity, are, however, more susceptible to food insecurity with market proximity owing to skyrocketing food prices and dependency on importers or long-distance rural producers (Ajibefun & Adeyeye, 2018).

More and more, it becomes recognized that food security must incorporate cultural and psychological considerations, such as food decisions, food dignity, and emotional wellbeing - areas generally shunned by technocratic conversation (Power, 2008; De Schutter, 2011). Food system design and evaluation need to be multifaceted to accommodate these new ideas.

Theoretical Frameworks: Understanding the Nexus

In understanding the complex interrelationship between food security and sustainable development, a multi-theory framework is required. This work utilizes three interrelated theoretical frameworks—Amartya Sen's Capability Approach, Political Ecology Theory, and Social Capital Theory—to build a robust conceptual foundation to explore how social, economic, and environmental configurations shape food systems and development processes.

The Capability Approach, firstly promoted by Amartya Sen (1999), emphasizes development being assessed by income or GDP or not, but by the capabilities individuals have to live a life they have a reason to value. Food, here, is as much a central human requirement as a crucial capability by which people are enabled to live well, remain healthy, and be members of a society. Sen contends further that hunger and food insecurity are more a result of food scarcity, as such, but rather a result of people being excluded from obtaining food by structural obstacles to their food access, including poverty, social exclusion, and weak institutions. Hence, rising food security becomes a means to expand human freedoms, a central issue of sustainable development.

To this, the Political Ecology Theory brings an explanation of how political and economic relationships of power influence environmental consequences. It recognizes that food insecurity is a socio-political, as well as an ecological or technical, problem. Power relationships, land conflicts, resource control, and inability to govern tend to determine who ends up with access to food and who lacks access to food (Robbins, 2012). In South-Western Nigeria, commercial land sales and urbanization, say, have dislodged smallholding farmers and damaged traditional food landscapes, with poor households and women being especially hard hit (Adepoju & Salau, 2019). Political ecology, then, explains food insecurity as a consequence of biased access to resources and political power.

Social Capital Theory provides further insight into this conversation by highlighting the necessity of community networks, trust, and collective action to build resilient food systems. According to Pretty (2003), households and communities with strong social capital—such as cooperative societies, local farmer groups, and village savings schemes—are better positioned to adapt to food system disruptions, share resources, and advocate for their needs. In regions like South-West Nigeria, where formal state support is often limited, social networks serve as informal safety nets that mitigate the worst effects of food insecurity and help communities invest in sustainable practices.

These methods, considered together, allow a multi-faceted analysis of food security–sustainable development nexus. The Capability Approach centers the central human experience and agency; Political Ecology shows how structural conditions constrain access; and Social Capital centers grassroots solidarity and institutional trust. Meanwhile, together, these approaches provide a holistic lens through which to analyze systemic, contextual, and human processes that are foundational to food security in South-West Nigeria and its long-term developmental impacts.

Dimensions of Sustainable Development

Sustainable development is a broad but contested concept with social, economic, and environmental aspects. Ever since the 1987 Brundtland Report (WCED, 1987), the prevailing discourse has been one of balancing current needs and future environmental sustainability. The United Nations Sustainable Development Goals (SDGs) provides operational clarity to this vision, with a particular emphasis on objectives such as poverty reduction, decent work, education, energy from renewables, and climate action (UN, 2015).

In food-insecure contexts, sustainable development indicators often reveal sectoral gaps. Access to education, for instance, influences household nutrition choices and agricultural knowledge. Food access also influences health, and so does dietary quality, especially among children and pregnant mothers (UNICEF, 2022). Gender equality, too, is a major area, with females being primary food producers and caregivers but being refused land rights and also being shut out from household agricultural decisions unduly (Rojas et al., 2021).

Environmental sustainability also intersects with food systems. Unsustainable agronomic methods, deforestation, and excessive use of agrochemicals destroy the natural resource base food security relies on. Climate change exacerbates these risks, bringing rainfall uncertainty, pest epidemics, and erosion, especially within humid tropics in South-West Nigeria (Giller et al., 2021; Ojo & Akintoye, 2019).

Although national frameworks like Nigeria's Economic Recovery and Growth Plan (ERGP) and National Agricultural Resilience Framework (NARF) incorporate sustainability goals, they often lack region-specific implementation mechanisms, particularly at the local government level.

Linking Food Security and Sustainable Development

The food security–sustainable development nexus has also come to be the focus of increasing empirical research across disciplines. In developed and developing nations alike, research has shown that food security is a development goal and a development facilitator. Effective nutrition powers labor productivity, enhances schooling, and decreases vulnerability to health epidemics, all with a reinforcing impact on socioeconomic development (Ericksen, 2008; Ruel et al., 2013).

Unsustainable food systems, by way of comparison—those with monoculture, imported fertilizers, or long-distance transportation chains—can entrench poverty and environmental degradation. In reference, there has been a shift toward agroecology, regenerative agriculture, and local food networks, with research and policy backing (Kerr et al., 2021; Sukhdev et al.,

2022). These initiatives aim to integrate food production with environmental principles, decrease fossil fuel dependency, and achieve community resilience.

Though, in southern-western Nigeria, previous research bridging food security and development have alluded to the vicious cycle between food access, social exclusion, and poverty (Onoja et al., 2024) within previous literature, there remains a critical data-based deficiency, with very few employing quantitative data to explore said interrelationship. Moreover, policy studies rarely get involved with both sides of said interrelationship—how food insecurity leads to and results from a region's or nation's underdevelopment.

It seeks to fill that niche through the application of empirical evidence to examine the relationship between food security and development indicators across South-West Nigeria. It contributes region-specific data to be used in regional development planning, implementation of SDGs, and national strategies in agriculture and nutrition.

METHODOLOGY

This study employed a descriptive survey research design to examine the interrelationship between food security and sustainable development in South-West Nigeria. The region, comprising Ekiti, Lagos, Ogun, Ondo, Osun, and Oyo States, was selected for its diverse agro-ecological and socio-economic characteristics, representing a mix of urban and rural settings. A multi-stage sampling technique was adopted, beginning with the purposive selection of two local government areas (one urban, one rural) from each state, followed by systematic random sampling of respondents within those areas. Six hundred respondents were drawn from 600 people, 100 from each collapsing, including traders, civil servants, farmers, and food vendors. Data were generated from a structured questionnaire, titled “Food Security and Sustainable Development Assessment Scale (FSSDA Scale),” vetted by subject matter experts and tested for reliability with a pilot study, obtaining a Cronbach’s alpha reliability coefficient of 0.87. The questionnaire consisted of indicators including food accessibility by household, market, and land accessibility, income, health, education, and environmental sustainability. Data were interpreted by descriptive statistics (frequencies, means, standard deviations) and with inferential statistics. Pearson correlation analysis was used to study food security and sustainable development indicators, while multiple regression analysis was used to identify significant predictors. All statistical tests were done with SPSS Version 26.0, with a significance threshold being $p < 0.05$.

RESULTS AND ANALYSIS

Objective 1: Assessing the Current Level of Food Security Among Households in South-West Nigeria

Table 1: Major Reported Causes of Food Insecurity

S/N	Cause of Food Insecurity	% of Respondents Reporting
1	Rising food prices	79%
2	Poor access to farmland	52%
3	Post-harvest losses	47%
4	Declining soil fertility	41%

The research identified several key factors contributing to household food insecurity in South-West Nigeria. The most significant was the rise in food prices, cited by 79% of respondents as their biggest obstacle to food access. This was followed by limited access to land, mentioned by 52%, highlighting structural issues facing many rural households involved in agriculture. Losses during or after harvest were noted by 47%, pointing to problems with market, transportation, and storage systems. Additionally, 41% of respondents identified soil degradation as a major constraint, reflecting environmental deterioration that threatens sustainable food production. These findings, summarized in Table 1, emphasize the complex and interconnected nature of the region's food security challenges.

Objective 2: Examining the Influence of Key Socio-Economic Factors on Household Food Security

Table 2: Standardized Regression Coefficients Predicting Household Food Security

Predictor Variable	Standardized Coefficient (β)	Significance (p-value)
Access to Farmland	0.37	< 0.01
Income Level	0.29	< 0.01
Educational Attainment	0.25	< 0.05
Market Proximity	0.21	< 0.05
Model Summary	**$R^2 = 0.41$, $F(4,595) = 19.87$**	**$p < 0.001$**

Multiple regression analysis was used to evaluate the impact of income level, access to farmland, educational attainment, and market proximity on household food security. The regression model was statistically significant ($F(4,595) = 19.87$, $p < 0.001$, $R^2 = 0.41$), showing

that these four variables accounted for 41% of the variation in food security status across the study population. Among the predictors, access to farmland had the strongest influence ($\beta = 0.37$, $p < 0.01$), followed by income level ($\beta = 0.29$, $p < 0.01$), educational attainment ($\beta = 0.25$, $p < 0.05$), and market proximity ($\beta = 0.21$, $p < 0.05$). Households with higher incomes, better education, and access to markets and productive land were significantly more food secure. This pattern was consistent across rural and urban local government areas, although the strength of the impact varied slightly.

Objective 3: Evaluating Critical Indicators of Sustainable Development in South-West Nigeria

Figure 3: Access to Key Sustainable Development Indicators by Area

Indicator	Urban Access (%)	Rural Access (%)
Basic Education	63	39
Health Services	66	36
Income below Minimum Wage	47	68
Access to Credit/Extension	49	27
Climate Risks (Reported Cases)	41	65

The assessment of sustainable development indicators across South-West Nigeria revealed marked disparities between urban and rural areas. Urban respondents reported significantly higher access to basic education (63%) and health services (66%) compared to rural respondents (39% and 36%, respectively). In contrast, a greater proportion of rural households (68%) lived below the national minimum wage threshold, highlighting persistent economic inequalities. Furthermore, access to agricultural credit and extension services was much lower in rural areas (27%) than in urban centers (49%), suggesting limited institutional support for rural livelihoods. Climate risks, including irregular rainfall and pest infestations, were also reported more frequently in rural regions (65%) than in urban areas (41%), exacerbating environmental vulnerability and threatening long-term sustainability outcomes.

Objective 4: Determining the Relationship Between Food Security and Sustainable Development Indicators

Table 4: Correlation Between Food Security and Sustainable Development Indicators

Sustainable Development Indicator	Correlation with Food Security (r)	Significance (p-value)
Income Level	0.65	< 0.01
Educational Attainment	0.58	< 0.01
Access to Healthcare	0.53	< 0.01

Pearson's correlation analysis revealed a significant and strong relationship between food security and major sustainable development indicators. The income status was significantly

correlated with food security to a higher degree ($r = 0.65$, $p < 0.01$) then education ($r = 0.58$, $p < 0.01$) and accessibility to healthcare ($r = 0.53$, $p < 0.01$). The above results suggest that food-secure households have improved accessibility to education, improved health, and income-earning activities. Moreover, those areas with improved infrastructure development (road, water, market link) were those with improved food security levels. The results validate our hypothesis that food security and sustainable development are complementary. Food-secure households are less captured by poverty traps, poor health, and poor accessibility to socio-development services, but they are better placed to contribute to sustainable development.

DISCUSSION OF FINDINGS

These results offer a detailed insight into food security trends within South-West Nigeria. The high incidence of food insecurity, as indicated by more than two-thirds of interviewed individuals, validates long-existing worries expressed by researchers like Eme et al. (2014) and Shaibu (2021), who captured structural and policy hindrances to food accessibility and availability. The highest-ranking reason—increasing food prices—validates FAO's (2023) global report findings regarding food crises fueled by inflation, especially in poor areas. Poor access to farmland and post-harvest losses, also among the top drivers, reinforce earlier insights by Adepoju and Salau (2019) and Ajibefun and Adeyeye (2018), who emphasized land tenure insecurity and infrastructural deficits as core limitations to local food production.

Consistent with Barrett (2010) and De Schutter (2011), the multivariate analysis showed that food security is not a function of agricultural productivity alone but is significantly influenced by socio-economic capabilities. Access to land became the strongest predictor, with income level, education, and market proximity next in sequence—the right to food needing to be complemented by structural facilitators like landholding, jobs, and education. The results are congruent with capability-centered views of Sen (1999) and Nussbaum (2011), who attribute primacy to human development as a basis to solve food insecurity.

The disparities revealed in development indicators further highlight the unequal distribution of resources between urban and rural areas. As shown in Table 3, urban respondents had greater access to education, healthcare, and extension services, while rural communities were more vulnerable to environmental risks. This aligns with earlier research by Ojo and Akintoye (2019), who found that climate change exacerbates rural poverty and food insecurity in Nigeria. These outcomes also reflect global concerns about uneven development expressed in the UN's 2030 Agenda (United Nations, 2015) and the Brundtland Report (WCED, 1987), which advocate for inclusive access to basic needs as a pathway to sustainable development.

Lastly, the very strong positive correlations between food security and sustainable development indicators, particularly income, education, and healthcare, confirm the interconnected nature of development objectives. This conclusion reflects evidence from the World Bank (2022), UNICEF (2022), and Rojas et al. (2021), who emphasized that food security should not be addressed singly but through multifaceted policy approaches that generate resilience, equity, and opportunity across sectors. In conclusion, this research provides evidence to support the hypothesis that food security achievement serves as a developmental outcome and a catalyst to wider social advancement.

CONCLUSION

This research explored food security and sustainable development linkages in South-West Nigeria, finding a multifaceted interrelationship between socio-economy, environmental conditions, and institutional access. The findings verify that food insecurity is a persistent issue, fueled by rising food prices, restricted access to arable land, post-harvest loss, and degraded soil fertility. Household food security is influenced by socio-economic factors, including income, education, and market accessibility, while inequality of access to core services impedes sustainable development within urban-rural divides.

It is worth highlighting that the strong linkage between food security and development indicators emphasizes taking up inclusive and integrated policies that are sensitive to structural vulnerability factors. Food security upgrade needs to be a concerted effort to increase agricultural productivity, access to health, education services, and income-generation activities, especially among vulnerable populations. It should be within a wider Nigerian endeavor to achieve the Sustainable Development Goals by 2030.

Addressing food insecurity in South-West Nigeria is not merely a matter of agricultural reform but a development imperative that calls for multisectoral strategies targeting the root causes of poverty and inequality. The study calls for holistic and sustainable approaches that empower communities, build resilience, and foster human development at scale.

Recommendation

Based on the major findings from the study, the recommendations below endeavor to promote food security and sustainable development within South-West Nigeria:

i. Enhance access to high-quality inputs, land tenure security, and extension services to smallholders.
ii. Invest in markets, storage, and roads to decrease food losses and improve distribution.
iii. Increase public services, particularly those in rural locations, to address food security's underlying social determinants.
iv. Support inclusive financial services targeting low-income and female-headed households.
v. Promote regenerative and environmentally sustainable farming practices.
vi. Include food security initiatives within national and regional development plans.

These concise policy orientations outline a path to multi-stakeholder efforts to end hunger, reduce inequality, and attain inclusive, sustainable development.

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