



Climate Change and Food Security Challenges: Empirical Investigations in Nigeria

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Abstract

The baseline for the data analysis is a decadal dataset of World Bank, and Food Agricultural Organizations (FAO) spanning 2008-2017. The dataset captures all dimensions of food security index as: crop production, and livestock, cereal productivity, food availability, population density while index for annual normal rainfall round the years in total, and annual normal temperature degrees were extracted from database of Nigerian Meteorological Agency (NMA), with one state each representing the sample size drawn from six (6) geopolitical zones in Nigeria. North West (Kano), North East (Gombe), North Central (Benue), South West (Ondo), South East (Enugu), and SouthSouth (CrossRiver); these states were chosen due to their installed capacity for food production in the country as enhanced by avalanche of arable lands with relative share of climate impacts. Bivariate Pearson Correlation (BPC) and Multiple Regressions Techniques (MRT) were employed to underpin the degree of interannual to intraannual responsiveness of normal climate change distribution at a time. However, relative share of climate impacts (independent variables) on food security parameters (dependent variables) as applicable to each states were determined using backward selection methods for the regression estimation. The result shows that climate changes pose high impacts to food productivity and sustainability in Nigeria.

Keywords: Climate change; Food security; Nigeria.

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1. Introduction

As two deserving phenomenon at the fore of research in sustainable development; food security and climate volatility mutually bonds to underpin the economics of livelihood around man, environments, and livestock. Therefore, we contrive the flow of thought on this subject matter with emphasis on food security from global stance; hence the divulgence of United Nation foremost agenda aimed at reducing extreme poverty in developing countries. Albeit, there have been a global consensus among governments, policy makers, international donors, and NGO's to develop a more integrated approach to food sustainability which serve to augment the current capacity of the United Nation in terms of funding, cross border investment, and inclusive human capital development. Down the lane of history, Nigeria government has deployed many legislative reforms towards food security; the impact which is yet to translate into anything nationally significant has long left the nation in food pandemic ever more than dealing with the scores of disease outbreak.

In Nigeria, economic diversification to oil since its commercially viable discovery in 1956 precipitated the modern dearth of installed capacity for agricultural productivity and value chain, so agricultural practices in Nigeria is no longer a profession worthy of emulation or legacy willfully passed on by ancestors to their legatees. This paradigm shift strongly coexists with the country's current food supply truncation in the wake of threatening hunger and increasing population growth nexus. In retrospect, Nigeria was a global hub for agricultural investments, the proceeds theretofore; tripartite as the country's primary source of revenue contributing about 45% annually to Gross Domestic Product (GDP) and 70% export earnings, also, similar evidence was found to have spiked employment index aggressively and ultimately pose high multiplier effect on industrial revolution as a result of potential opportunity for supply of raw material.

Nigeria economy has historic prowess as global forerunner in yam, cassava, groundnut, cowpea, and palm oil production; courtesy of the country's avalanche of fecund arable land. Besides, by geographically mapping Nigeria in Africa, economic location of the country availed its maritime splendor the forte to esteem best fishing practices; thus providing sea foods at national scale, and also created external market opportunity in Africa for cross border trade openness, this remarkable feat ranked the country among top 20 world largest producer of fish. For further appraisals, Nigeria government provided enabled platforms by creating various credit schemes, incentives, including rural\urban agricultural extension programs; country-wide initiatives to boost farmer's morale for increasing capacity utilization in food supply [1]. Posited statistical evidence that Nigeria's agricultural sector gainfully employed proportionately about two-thirds of the country's labor size; availing the labor market speculations at 90% rural agro economy. On the stance of food security, Reference [2] underpinned it in manifold dimensions of thought encompassing (i) adequate supply of farm produce by farmers (ii) consistent supply through local and import substitution, and long term preservation of available food quantities (iii) household income variations and their food purchasing power (iv) direct requisitioning, nutritional quality, food ingestion capacity, level of classified education, and healthy balance. According to [3] food security connotes increased level of food production capacity with aggregate demand.

According to [4] the author articulated food security as sustainable development threshold for human capacity building; a phenomenon if properly maintained; culminates economically into appreciable level of exponential

growth that erodes intellectual degradation. Reference [5] Proposed a framework bothering food security beyond core nutritional composite for dietary value but rather a substance that provokes mental agility as underlying physiological considerations for predetermined course of human activity based management. The author further diagnosed food security in Nigeria as norm for national peaceful coexistence, and also reiterated that food security is literally gaining unrestricted access to supply at a centrally controlled price that influence the ease of consumer's purchasing power beyond quantity resolutions. Food security is one of the primary dividend of good governance, this corroborates a profound African adage "when there's food, poverty abates". In a study conducted by [6] the author perspective on food security was culled from the United Nation's output on global food security competitiveness, they epically disposed food security as global index assessment for poverty and physiological state of human fitness which they statistically measured with specific considerations to dual proxy such as: recommended daily allowance (RDA) of calories and protein per meal intake, and hunger rate per malnourished underage child. Reference [7] appraised food security as conservative measure towards ensuring evenly distributed quantity and quality of consumable food items to all legitimate and non- citizens without discriminating ethnical affiliations or probable racism. The author further emancipated that food security requires gaining holistic insights of the environments, climate variations, markets condition, and interference of the forces of demand and supply determining price benchmark, transportation system, storage capacity, and trends in fashion so as to mitigate economic uncertainties that may curtail food availability.

While [8] addressed food security as sustainability proxy to right proportion of nutritional composition, affordability, environmental safety, and unrestricted access to procurement, Reference [9] contrived the economics behind food security as restricted wastage, Reference [10] philosophized food security as measures that curbs export of staple foods in the country, emphatically stressing prospects for food security in Nigeria as potential leverage of good soil structure for crop production, and good habitation for livestock reproduction, all these models to create two tier markets opportunities for supply chain of farm produce, and forestry resources while other constraints are held in derision. Reference [11] encapsulated food security as a dual economic phenomenon in which one is at progression of imports against local production backlog to feed growing population while other trickles down to household sustainability via family size, and income propensity. Reference [12] annual reports on global food security itemized three profound strands of food security indicators, inter alia; food utilization, availability, and accessibility, these trio indices serves to benchmark global economy food security assessment.

In logical overview, climate change and food security have symbiotic bonding, the former has been identified to have high impact assessment on agricultural yields in Nigeria due to dynamic variations in weather precipitations. The impact of climate change is such that both crops and livestock directly respond to course of nature or man-made factors. It is to this extent that economic growth, agricultural demand, and income distribution are pegged [13]. The inverse nexus between rising food prices and declining food production in Nigeria is caused by weather disruption. Fast forward to 2080, it is globally probable that climate severity across developing countries may curtail food supply by 20%, aggravates hunger, increase global mobility in search for food, and mortality rate of vulnerable people, while statistical propositions conjures to model a fair look of 6% evidence from highly industrialized nations.

According to (FAO, 2008) climate variability in developing countries may stunt food production averagely by 15% if no measures are deployed to mitigate the looming menace by 2080 [5]. Posited climate change as inherent impacts of natural emissions from the atmosphere affecting plants, man, and animals, interacting in an unpredictable manner inimical to crop diseases, pests, and food production over a time lag [14]. Attributed impairment of ecosystem to global warming, further stressed it to orchestrate backlog in revenue generation and income distribution linkable to household sustainability [15]. Viewed climate change as extreme departure of ozone layers from normal anticipated temperatures caused by natural phenomenon or outright activity of man directly connected with environmental degradation [16]. Perceived climate change as atmospheric variations inconsistent with speculations in statistical distribution of rainfall, wind, solar radiations, and degree of humidity over specific range of activity under investigation.

Appraising further, a study conducted by [17] directly linked most vulnerable states in Nigeria to stormy gale of flood or erosion; the causal effect of heavy rainfall controlled climate, while some territories witnessed increasing return to poverty, inaccessible land utilization, infrastructural decadence, and poor human capital development. As credited to [18] exploring the menace of climate change is beyond myopic underpinnings, it also rather inhibits quality of health and vitality, and influence offshore and onshore business environment, nevertheless, agricultural practices in Nigeria has suffered major setbacks due to poor culture of irrigated farming [19]. Thoughtfully made it clear that flood, storms, and drought are major impacts of climate change extremities, the extent to which sensitivity of agricultural productivity is fundamentally is aggregated. While the subsistence agricultural economy is facing increasing risk of marginal depression, the quota of food supply in Nigeria is further aggravated by climatic resistance, poor credit facility, high unemployment, labor shortage, poor land tenure ecosystem, and decadence of technological infrastructures.

2. Literature Review

2.1. Challenges of Food Security in Nigeria

In Nigeria, it is no longer new that average populace lives less than the world most quoted currency of \$1 daily, a standard of living not farfetched from extreme poverty threshold influenced by hunger [20]. It is crystal clear in Nigeria that poor or non-immunity against food insecurity is a national norm for those not born with silver spoon. This is further endangered by dreadful activities of insurgency especially in the northern states where most staple foods available at large scale farming such as sweet potatoes, beans, sorghum, millet, cowpea, pepper, groundnuts, and fruity foods are transported to south-west and south-east. Many commercially viable cities in Bornu State has witnessed incessant lockdown of activity in recent past due to sudden invasion of Islamic extremist believed to be masterminded by the prestigious Boko Haram. In the wake of this socio-economic unrest, rural/urban drifts to other extensions of the country has been geometrically increasing due to effort aimed at giving comforts such as shelter and food to the most vulnerable internally displaced persons, this contributes immensely to food sustainability inhibition in the regions affected by high population density. However, without innovative economic reforms and strategic plans towards increasing the baseline for standard of living of people, growing population will continue to reduce per capital income; and at such, purchasing propensity for food may be greatly hindered.

Also in retrospect, Nigeria was a major hub for investments including agriculture, and as one of the world's largest producers of aquatic resources, especially fish; courtesy of the country's maritime splendor. In addition, Nigeria economic position and geographical landscape in Africa contributed immensely to the country's fortune in no small quantum through trade liberalization/openness, and inflow of foreign direct investments (FDI). This availed the country opportunity for massively engaged potential individuals in agricultural business notably export of agricultural produce to neighboring countries without undermining domestic supply. The proceeds from exports of farm produce were judiciously used to expand production facilities without inequalities in income redistribution. A good example of the use of agricultural proceeds was infrastructural developments; a typical evidence of Cocoa House Tower located in Ibadan metropolis, Oyo State, Nigeria. The first and tallest edifice in tropical Africa having magnificent 26 storeys with about 105 meters height occupying 1.7 hectares of land. This iconic skyscraper was completed in 1964 and commissioned for use on July 30, 1965. However, it derived its name officially from Yoruba Language; hence the expression "Ile Awon Egbe" translated to depict "House of Farmers, while the conception of the name was in a bid to commemorate tangible use to which proceeds from cocoa was put. The monument which serves as national symbol of historic legacy attributable to agricultural developments in Nigeria was credited to the politically led administration of late Chief Obafemi Awolowo serving at the frontier of the political party under the nomenclature; Action Group (A.G).

While the subsistence agricultural economy is facing increasing risk of marginal depression, the quota of food supply in Nigeria is further aggravated by climatic resistance, poor credit facility, high unemployment, labor shortage, poor land tenure ecosystem, and decadence of technological infrastructures [21]. According to [6] and [2] the duo articulated that food security challenges in Nigeria are compounded by farmers' failure to imitate global best practices in agriculture, such as lack of modern use of technological infrastructures to increase productivity. They further stressed that climate severity, insurgency, political diffusion, poor agricultural yield, poor rural/urban integration in terms of networking and transportation, and poor marketing skills also identifies with problems been faced with food insecurity in Nigeria. Reference [22] Attributed poverty as underlying factor in connection with food insecurity in Nigeria. Many Nigerians are still living far below the poverty line, mortality rate of malnourished children are increasing,

Reference [23] Posited lack of food price subsidy mechanism and outrageous population growth are responsible for food insecurity in Nigeria. Underutilization of manpower capacity in farming has also been identified to esteem food insecurity in Nigeria. This substantiates the study conducted by [24] within his purview; about 22% of rural inhabitants are potentially indifference to farming. Also, [11] investigated that there is still wide range of inaccessible land resources for agro based activities such that Nigeria only commit about 41% of her available arable lands to farming leaving about 59% under idle capacity. As though enough, the author asserted further that subsistence farmers contributes about 80% of all farm produce while about 90% of farm outputs dependence on rain undermines potential production of livestock and crops, and culture of production. Concurrent to this, the dearth of agricultural yields are worsened by low quality seedling, poor fertilizer application, Sometimes, annual rain distribution based on country's forecast may be disappointing or positively unrealistic. From the stance of [5] food security in developing countries is challenged by unemployment and abject poverty, to this end, a country like Nigeria with large expanse of arable lands should appropriate significant revenue toward revamping the country's deficits in agricultural productivity. This will go long way to curb social vices across the country

because food gains top priority among the tripartite basic need of man, and failure to access food indicates exploring every possible opportunity including attempt to steal and etc.

In a research explored by [8] it was articulated that food production exposure to trends in price volatility influenced global potential supply of staple food to which activities of many middlemen markets in African are closely vulnerable thereby systematically and indirectly importing inflation into their country. In addition, the author reiterated that cost of raw materials is a strong determinant of food prices; therefore, high input cost reduces agricultural productivity and optimal consumption of fertilizers. According to [6] natural disaster such as flood caused by negative reactions in climate distribution is a factor contributing immensely to food security in Nigeria, the evidence which has been identified in the hike price of food. This also conforms to what [5] posited as major challenges facing food security in Nigeria such that climate volatility impairs the tropical levels of agricultural productivity and threatens activity of crop diseases, livestock, and human inclusive development.

Reference [25] Stressed the laxity in crop cultivation to be a challenge facing food security in Nigeria, such that the right constituent of dietary proportion is absent in human and livestock thereby causing major deformities and shorter life span of existence. This is also substantiated from the purview of [26] that a challenge to food security is the complete absence of nutritional values in available food which inhibits physiological healthiness of man such that a failed state of health retards ability to perform any productive task. Similarly, economic development of a country is in futility if potential manpower development culminates further into generational state of complete erosion [27]. The challenges of food insecurity were perceived by [28] to mean instability in country-wide food production and supply capacity such that households and livestock nutritional level of consumption are not satisfied to maintaining dietary balance. From similar perspective, challenge of food security in Nigeria loomed largely from chronic or transitory degree of vulnerability to hunger, famine, and malnutrition; since the trio phenomenon jointly coexist. The best possible way to mitigate these is by enhancing agricultural practices especially in developing countries, and also granting scholarship opportunities to improve the level of tertiary education in agriculture [27].

2.2. Climate Change and Food Security in Nigeria

In a survey explored by the United Nations Environmental Program (UNEP) in 2013, it was reported that about 50.1 giga-tonnes of global greenhouse gas (GHG) i.e. Carbon dioxide (GtCO₂e) were released into the atmosphere in 2010 above the normal annual range between 45.6-54.6 GtCO₂e of GHG. From year 1990 to 1999, there was wide variance in global greenhouse gas emission contributed by developed and developing countries, from 2000 to 2010, in developed countries, GHG dropped from 51.8% to 40.9% while in developing countries; there was GHG increased from 48.2% to 59.1%. These estimates were still very much higher compared to probable forecast of greenhouse gas emissions proxy for 2020. However, economic effect of this statistical posits is such that heat waves, heavy storms, and extreme dryness of the earth crust will reduce agricultural productivity; enhance hunger and poverty of most vulnerable developing countries where there is complete absence of technological developments to salvage relative humidity caused by greenhouse gas emission.

In 2014, data from World Meteorological Association (WMA) regarded preceding year 2013 as one of the top ten year in world history having highest statistical distribution of warmest temperature with ocean and global land

surface temperature of 0.5o Celsius due to greenhouse gas emissions (GHG) ever since 1850 when world meteorologist first began to take global records of climate variations across countries. However, both year 2013 and 2007 doubles as the sixth warmest years higher than historic temperature underpinnings between 1961 and 1990 having 0.03o Celsius, a temperature degree in excess of average range for 2001-2010. According to the United Nations Framework Convention on Climate Change (UNFCCC) both developed and developing countries are liable for sharing global greenhouse gas emission evenly for the period from 1850 to 2010. As reported by UNEP in 2013, tropical agricultural practices in developing countries contributed about 11% to global greenhouse gas emission, excluding other extremities such as: gas flaring, fossil fuel, and bush burning. The impact of climate change mostly affect agriculture which also contributes to global greenhouse gas emission (IPCC, 2007) Synthetic application of fertilizer releases substantial amount of GHG from the soil into the atmosphere, a proportion of about 38% GHG, -11% rice production, -7% manure management, 32% methane arising from enteric fermentation found in livestock having ruminant character, and -12% biomass burning [29]. According to [30] the cumulative sum of global greenhouse gas emissions (GHG) relative to agriculture contributes rough estimates of 19 to 29% to food system. Alone, direct impact of agriculture emissions is about 60% of global greenhouse gas emission, and about 50% of methane emissions [31]. In the same venn, about 80% of global forest degradation and deforestation is precipitated by agriculture [32]. On the other hand, [33] estimated that agriculture greenhouse gas emission (GHG) reduction was within the range of 1.1 GtCO₂e to 4.3 GtCO₂e in 2020.

Food security and climate change are two interrelated concepts worthy of underpinning scholarly literatures bothering on agriculture. Climate change connotes the impact of unanticipated diversity of atmospheric properties on ecosystem such that humans, crops, and livestock sustainability are endangered. The intensity of climate variability is a global threat, the economic implication affecting all elements that constitute sustainable production such as soil, health, water resources, agriculture and ecosystem [34].

Climate change is any level of atmospheric departures from anticipate ranges or alterations in standard measure of weather conditions such as consistent wind, precipitations, and pressure of temperatures [35] meanwhile, climate changes are also most likely caused by earth warming, tsunamis, wind, solar radiations, and relative humidity. Other natural precipitating factors are: land use, fossil fuels burning; industrial activities, transportation system, urbanization, and agriculture are contributing factors to greenhouse gas emission into the atmosphere. Climate change is an atmospheric deviation from normal range of weather distribution of a place arising from human or interaction of the forces of nature such as environmental degradation [15]. On the other hand, climate change is a sudden variation in the statistical distribution of anticipated forecasts in weather conditions over long range of time usually three decades [16]. Poverty eradication has become more difficult in most countries vulnerable poor countries due to high impacts of climate change, likewise, most rain-fed agricultural practices thereby limiting the potential utilization of land and human capital development, and infrastructures [17].

In developing countries like Nigeria where culture of irrigation is extremely poor, the impact of climate change on offshore and onshore agro-allied operations are usually severe [18]. Climate variability such as flood, stormy gale, and agriculture have extreme inverse sensitivity returns to scale where most dynamic dimensions of climate change invariably are: erosion due to soil fragility, extreme rainfalls, high surface temperature and rising sea level

[19]. In a study conducted by [36] the rationale behind climate change was established to contribute in no small proportion towards threshold for food prices while its impacts also pose more challenges to future of developing countries.

3. Methods and Materials

The baseline for the data analysis is a decadal dataset of World Bank, and Food Agricultural Organizations (FAO) spanning 2008-2017 capturing dimensions of food security index as: crop production, and livestock, cereal productivity, food availability, population density while index for annual normal rainfall round the years in total, and annual normal temperature degrees were extracted from database of Nigerian Meteorological Agency (NMA), with one state each representing the sample size drawn from six (6) geopolitical zones in Nigeria.

North West (Kano), North East (Gombe), North Cental (Benue), South West (Ondo), South East (Enugu), and South- South (Cross-River); these states were chosen due to their installed capacity for food production in the country as enhanced by avalanche of arable lands with relative share of climate impacts. Meanwhile, unavailable data in each case were treated as mean values while Bivariate Pearson Correlation (BPC) and Multiple Regressions Techniques (MRT) were employed to underpin the degree of inter-annual to intra-annual responsiveness of normal climate change distribution at a time. However, relative share of climate impacts (independent variables) on food security parameters (dependent variables) as applicable to each states were determined using backward selection methods for the regression estimation.

The rationale behind variables selections was that they cover all dimensions of food security and climate parameters such as: food availability, accessibility, utility and stability. They have also been validated through a consensus reached by experts on global food challenges and climate nexus with sufficient annual data available at database of World Bank, Food Agricultural Organizations (FAO) and annual data publication from national Meteorological Associations. On the other hand, Food and Agriculture Organizations recommended a standards measure of food security index to cover all aspect of edible food crops containing recommended daily allowance of nutrients for growth and vitality.

For livestock production index, the following were used: dairy products such as milk, eggs, meat, honey, wool, hides and animal skins etc. the standard measure for cereal produce includes: yield in kilogram per hectare of land occupied with the exclusion of cereals used for animal grazing, silage, hay or those directly connected with green harvest for food as a result of non-existent of data.

Those ones predominantly used in this study are: millets, sorghum, and rice, wheat of all breed, barley, soya beans, grains, oats and barley. For population index used, the population sample covers people of national legitimacy by birth or honorarium with exemption of people under statutory asylum most especially refugees. Also, land area used was estimated with cognizant to country's total land area covered without offshore zones and continental shelf. FAO approaches to determining production indexes is based on rationale of values pegged in dollars.

Table 1: Bivariate Correlation (Dependent and Independent Variable)

	Normal Rainfall Per Annum	Normal Temperature Per Annum	Food Supply Index	Livestock Index	Cereal Index	Crop Index	Population Index
Annual Normal Rainfall	1	-0.144	0.108	0.998**	0.967**	0.993**	0.780**
Annual Normal Temperature	-0.144	1	0.366**	0.254	0.262	0.375**	0.366*
Food Supply Index	0.108	0.366**	1	0.162	0.150	0.051	-0.163
Livestock Index	0.998**	0.254	0.162	1	0.981**	0.931**	0.717**
Cereal Index	0.967**	0.262	0.150	0.981**	1	0.961**	0.669**
Crop Index	0.993**	0.375**	0.051	0.931	0.961**	1	0.808**
Population Density	0.780**	0.366*	-0.613	0.717**	0.669**	0.808**	1

** Correlation value is significant at 0.01 level (2-tailed)

* Correlation value is significant at 0.05 level (2-tailed)

Table 2: Stepwise Regressions for Dependent and Independent Variables

Model	R	R ²	Adjusted R ²	Std. Error of Estimates	Change Statistics			Durbin Watson		
					Sig. F	R Square	F	df1	df2	Sig F
	Change	Change	Change	Change	Change	Change	Change	Change	Change	Change
Crop Production Index	.993	.887	.858	388.125080	.887	412.061	1	45	.000	.208
Livestock Production Index	.998	.987	.979	204.11819	.839	199.267	1	48	.000	.580
Cereal Production Index	.967	.584	.488	10763.100852	.447	69.599	1	48	.000	.640

a Explanatory Variable: Crop Production Index per annum

b Explanatory Variable: Livestock Index per annum

c Explanatory Variable: Cereal Index per annum

d Predictors Variable: (Constant), Population per square kilometer, Normal Temperature, Normal rainfall per annum

e Weighted Least Square Regressions per annum

4. Discussions of Findings

From table 2 above, it appears that cereal production index has highest value under Durbin- Watson statistical distribution of significant F-change with strong equivalent value of 0.640. The implication of this is that climate change poses high impacts to food security. This is validated by high values obtained from R² which is estimated at 0.993 level of reliability in the model. Highest value of F- change and lowest value of 0.208 calculated for Durbin-Watson indicated that the significant effects of climate change on crop production is not strongly significant. Whereas, livestock production sensitivity to climate change is averagely high at 0.580 values calculated for Durbin-Watson with corresponding lowest F-change of 0.967.

5. Conclusion

As standard of living in Nigeria continues to fall below the global poverty line, hunger is also a norm ravaging the economy. In the wake of this historical dilemma, Nigeria at the reception of climate has greatly inhibited food production capacity. In what has been best interest of the nation importing staple foods into the country, farming installed capacity in the country has been underutilized. Poor policy intervention, poor credit facilities, infrastructural decadence, miracle of crude oil, and other led to the dearth of agricultural productivity in the country. Also, farmer failure to imitate global best practices in agriculture validated their poor use of technological infrastructures to increase productivity. It can also be stressed that insurgency, political diffusion, poor agricultural yield, poor rural/urban integration in terms of networking and transportation, and poor marketing skills also identifies with problems been faced with food insecurity in Nigeria. Similarly, agricultural education in our tertiary institutions is not encouraging, therefore, students are no longer motivated to take agricultural courses anymore because the future of the profession, thus, it supports the reason for food insecurity in Nigeria. Lack of food price subsidy mechanism and outrageous population growth are also responsible for food insecurity in Nigeria. Underutilization of manpower capacity in farming has also been identified to esteem food insecurity in Nigeria where about 22% of rural inhabitants are potentially indifference to farming while there is still wide range of inaccessible land resources for agro based activities such that Nigeria can improve her domestic revenue without having to depend on foreign aids or bailouts.

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