CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Economics and Management

Department of Economics

Bachelor Thesis

Food Insecurity: Influence of Environmental Degradation on Food Supply in Nigeria

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DECLARATION

I hereby acknowledge that I have worked on this Bachelor thesis titled:

“Food Insecurity: Influence of Environmental Degradation on Food Supply in Nigeria” by myself and all used resources are included in the bibliography, articles and supplements section.

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NWAIWU, CELINE CHIKODI PRAGUE, 21.03.2011

ACKNOWLEDGEMENT

I am very grateful to my supervisor, Ing. Petr Pochaska Ph.D. et Ph.D. for his diverse help not only during my thesis writing but much more. He has been helpful to me throughout my whole study program and his efforts need to be commended.

My special thanks goes to my sister and her Husband Mr & Mrs Minz-Nwawu, Blessing and brother Mr. John Keitha for their financial support towards my education. My siblings Chukwuma Nwaiwu, Okwuchi Okeagu and Chinedu Nwaiwu for their moral and spiritual support, I owe them much gratitude.

In writing this piece I have made extensive use of scholarly writings from eminent authors, my sincere thanks to all these scholars.

Lastly, my heartfelt appreciation goes to the head of the International relations office, PhDr. Vlastimil Cerny CSc. M.A and the entire economics department and all my lecturers for their contributions towards my studies.

DEDICATION

This thesis is wholeheartedly dedicated to the Almighty God for His preservation, provision, sustenance, guidance, protection and knowledge.

Bachelor Thesis

Food Insecurity: Influence of Environmental Degradation on Food Supply in Nigeria

Potravinové nejistoty: Vliv degradace životního prostředí na zásobování potravin v Nigérii

SOUHRN:

Tato práce je zaměřena na odhalení problému nedostatku potravin (Zemědělská produkce: poptávka, distribuce a spotřeba) a jak změny prostředí / degradace, hustota obyvatel, míra nezaměstnanosti, atd.) ovlivňují zásobování potravin v Nigérii, zvýrazněním ovlivňujících faktorů a korelaci jeho následky pro životní prostředí jako celek.

Bezpečnost potravin znamená, že jednotlivci jsou schopni získat adekvátní potřebné jídlo za všech okolností. Nejistota potravin nebo nedostatek, je obvykle ovlivněn rozdělením příjmů domácností, průmyslovou poptávkou, velikostí domácnosti, městskými a venkovskými obydlími, hustotou obyvatelstva, zhoršování životního prostředí a stále se zvyšujících dopadů změn klimatu na zemědělství.

Tři pilíře, jmenovitě dostupnost jídla, přístupnost a nutriční faktory byly identifikovány jako ovlivňující bezpečnost potravin v Nigérii (Světová banka 2001). Úroveň chudoby v Nigérie je v současnosti 85%, což znamená, že většina Nigerijců žije pod 1 dolar na den. Dále se bude řešit jak potravinovou bezpečnost ovlivňuje ohrožení nigerijského životního prostředí pomocí změny klimatu, jakožto i další faktory jako statika dostupnosti potravy (%), spotřeba domácností (%) a charakteristika obyvatel Nigérie.

Neúspěch průmyslového zemědělství znamená, že soběstačná zemědělská výroba stále zůstává hlavním zdrojem potravy, zatímco nedostatek techniky řízení přírodních zdrojů,, stejně jako malé nebo žádné posklizňové technologie vede k další ztrátě zemědělské produkce. Více migrace lidí z venkova do měst (urbanizace a přelidnění) dále zhoršuje problémy.

Hlavní problémy životního prostředí, které se zhoršily pomocí dopadů změn klimatu zahrnují: desertifikace, obrovské záplavy jako výsledek přetékání řek a oceánů, eroze (půda, strouhy, pobřežní), odlesňování a znečištění (voda, vzduch, půda) a jak zhoršování stavu životního prostředí ovlivňuje zásobování potravin v Nigérii.

V souhrnu, Nigérie má potenciál pro velikost, ale nedostatek jídla, přelidněnost, zhoršování životního prostředí, korupci, špatné hospodářství a nevypočitatelné elity. Životní a majetková nejistota byla kritickými problémem v národním životě a veřejné diskusi. Řešení problémů nedostatku potravin a poškozování životního prostředí urazí ještě dlouhou cestu ve snížení utrpení obyčejných Nigerijců.

klíčová Slova: Životní Prostředí, Degradace, Dodávka, Klima, Potraviny, Obyvatelstvo, Nedostatek, Demografie, Nigérie.

SUMMARY:

This paper is aimed at bringing to light the problem of food insecurity (Agricultural produce: demand, distribution and consumption), and how environmental changes/degradation, population density, unemployment rate, etc) is affecting food supply in Nigeria; by highlighting the influencing factors and correlating the consequences by and for the environment at large.

Food security implies that individuals are able to obtain adequate food needed at all times. Food insecurity or shortage; is usually influenced by household income distribution, industrial demand, household size, urban or rural dwelling, population density, environmental degradation and the increasingly compounding impacts of climate change on Agriculture.

Three pillars, namely; food availability, accessibility and nutritional factors have been identified as affecting food security in Nigeria (World Bank 2001). The poverty level of Nigeria is currently 85%; this means that most Nigerians live below $1 per day. The threats to the Nigerian environment through climate change as well as other factors like; static of food availability (%), household consumption (%) and how the population characteristic of Nigeria also affects food security will be looked at.

The failure of industrialized agriculture means that subsistence agricultural production still remains the main source of food; while the lack of natural resources management techniques as well as little or no post harvest technology leads to additional loss of agricultural produce. More so, rural to urban migration (urbanization and overpopulation) further compounds the problems.

Major environmental problems, which have been worsened by the impacts of climate change includes: desertification, oceans and river overflow resulting in enormous flooding, erosion (soil, gully, coastal), deforestation and pollution (water, air, land) and how environmental degradation is affecting food supply in Nigeria.

In summary, Nigeria has the potential for greatness; but, food scarcity, overpopulation, environmental degradation, corruption, mismanagement of the economy, unaccountable elites, and insecurity of lives and property have been the critical issues in the nation's life and public debate. Tackling the problems of food insecurity and environmental degradation will go a long way, in reducing the suffering of ordinary Nigerians.

Keywords: Environment, Degradation, Supply, Climate, Food, Population, Scarcity, Demography, Nigeria.

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1.0 INTRODUCTION

1. 1 Historical and Background of Food Insecurity in Nigeria

Food scarcity or shortage in Nigeria arose during the civil war (1967/70 whereby importation of agricultural machineries was curtailed so as to conserve foreign exchange. Crops and farm lands were destroyed and the production of Nigeria was disrupted and threatened as well. The windfall from crude oil in 1974 resulted in further neglect of the nation's agricultural sector. The period of 1974/1980s observed massive movement of labour and drastic shift of resources from agricultural sector to other sectors, like crude oil whose financial returns was higher.

Despite the huge resources from oil, Nigeria is characterized by threat of hunger, about 70 per cent of the population lives on less than N100 ($ 0.7) per day, youth unemployment and high food imports. Hunger and malnutrition continue to plague the Nigerian economy [1].

Oil revenue led to huge investments in capital and infrastructure in the 1970s and 1980s but productivity declined and per capita GDP remained at about the same level as 1965. During the period of 1970-1979, the average annual deficit in per capita daily calories intake was 24.4 per cent. It declined to 23.58 per cent within 1980-1989 and by 2006 it reached 11.34 per cent (CBN, 1993, African Development Bank, 2007).

This problem has been a recurring issue in the World Bank, and recent reports show that about 70 million Nigerians or about 40 per cent of the population suffer from food insecurity. Nigeria's per capita GDP was US$1,113 in 1970 and is estimated to have remained at US$1,084 in 2006. Between 1970 and 2006, the poverty rate, measured as the share of the population subsisting on less than US$1 per day increased from close to 36 percent to about 70 percent. This translates into an increase in the number of poor from about US$19 million in 1970 to a staggering US$ 100 million in 2006 (WDR 2007) [3].

2.0 OBJECTIVE AND METHODOLOGY

2.1 Objective

This paper brings to light the problem of food insecurity and how environmental and social phenomena such as insufficient Agricultural produce, soil degradation, increase in demand, distribution and consumption of food influences food supply. Also by analyzing the effect of population growth, increase in income, and the influencing factor of demand and supply of food.

2.2 Methodology

- Qualitative data analyzing,
- Synthesis of literature and
- Data collection

3.0 LITERATURE REVIEW/ OVERVIEW

3.1. Introduction and Meaning of Food Insecurity

Food is one of the basic necessities of life. It is a very important means of sustenance and adequate food consumption in terms of quantity and quality, is essential for healthy and productive life. To measure the quality of any food consumed, there should be numbers of essential nutrients that should be combined in appropriate proportion. These are carbohydrates, protein, fats and oil, vitamins and minerals [1].

Food security is defined as access by all people at all times to enough food for an active and healthy life (World Bank). The committee on world food security defined it as physical and economic access to adequate food by all household members without undue risk of losing the access [4]. Or, the accessibility of all people, at all times, to enough food for an active and healthy life (Reutlinger, 1987).

Consequently, food security implies access by everyone at all times to sufficient food for a healthy and productive life. It means there are major elements that constitute food security; these are availability, adequacy, accessibility and sustainability of access.

Availability**:** Signifies the physical presence of food in large quantity.

Accessibility**:** Signifies sufficient purchasing power or ability to acquire quality food at all times.

Utilization**:** The demands of sufficient quantity and quality of food intake. The elements of availability, accessibility, utilization and sustainability in a larger context embrace the supply, demand and adequacy of food at all times [1].

Food insecurity on the other hand, refers to deficits or shortfalls in actual per capita daily calorie intake below the minimum per calorie intake recommended by FAO and WHO for maintaining the human body-2450kcal/day (Riscopoulos *et al.* 1988; Rosen and Shapouri, 1994). Food insecurity often results in human suffering, substantial productivity losses and a misallocation of scarce resources due to diminished work

performance, lower cognitive ability and school performance, and ineffective income earning decisions (Braun *et al*. 1992) [3.]

From the foregoing, Nigeria is considered a food insecure country. One of the common characteristics of food insecurity in Nigeria is poverty. Table 1 shows Available evidence which indicates that on almost every indicator, Nigeria exhibits high levels of food insecurity.

TABLE 1: INDICATORS SHOWING HIGH LEVEL OF FOOD INSECURITY

Year	Deficit in per calories intake	Export earnings (Nbillion)	Per capital Income (N)	Food Import (Nm)
1976	-1	6.6224	1151.71	441.7
1980	27.2	14.1987	1138.98	1437.5
1985	23	11.7208	714.23	940.6
1990	9.1	109.8861	826.25	3474.5
1992	9.1	205.6131	847.67	12597.2
1995	6.86	206.2851	835.67	11594
2000	5.21	308.2654	846.76	12678.2
2002	5.32	412.2345	952.34	13672.5
2004	4.12	513.3412	974.23	15237.4
2006	3.21	621.3217	988.76	16245.5

Source: Column 1 FAO Statistics 2007, Columns 2, 4 Central Bank of Nigeria Statistical Bulletin Various IssueColumn 3, World development Indicators 2007 [3].

A school of thought for instance believes that there is enough domestic production of food in Nigeria and that the problem with food security lies in poor storage, marketing and distribution arrangement, which greatly reduce available, market supplies of food. Policy according to this view should focus on improving the market and distribution

chain, as there is enough domestic production. A variant of this school believes that there is enough aggregate production but that the observed food security problems are the result of unequal economic access to available food supplies, rooted in unequal distribution of income and wealth [3].

Furthermore, another school of thought believes that public policy on food and Agriculture is itself at the root of Nigerian food security problems. According to this school, food policy has been characterized by inappropriate role of government in food and Agriculture, which manifest in badly formulated and poor executed food policies and the perennial emergence of the unintended consequences and beneficiaries of the food and Agricultural policies [4].

3.2 FACTORS THAT INFLUENCES FOOD INSECURITY IN NIGERIA

There are various factors or determinants of food insecurity in Nigeria. They are the main causes of food insecurity and if not managed properly, it can lead to huge damage to the nation. Individual Influences of these factors, how it came into existence and what can be done to ensure food security in Nigeria will be analyzed,

3.3 INFLUENCE OF AGRICULTURAL PRODUCE ON FOOD INSECURITY IN NIGERIA

Agriculture remains the mainstay of the Nigerian economy despite its decline in the 1970s. Greater proportions of the population depend on the subsistence agricultural sector for their livelihood, it contributes more than 30% of the total annual GDP, employs about 70% of the labour force, accounts for over 70% of the non oil export and it provide 80% of the food needs of the country (Adegboye, 2004) [17].

Nigeria's growth experience shows a gradual and steady performance in the immediate post-independence period, with a healthy balance of payments position through exports of cash crops. Marketing boards were used to extract surpluses from the agricultural sector, which were used to provide basic infrastructure.

The development of the economy since 1960 has witnessed a declining share of agriculture in the gross domestic product (GDP). At constant factor cost, agriculture, which accounted for about 66% of GDP in 1958/59, was estimated at 50% in 1970/71.

Part of this decline is traceable to the relatively higher growth rate of manufacturing and mining, which is consistent with the development pattern characteristics of developing countries. Agricultural export was the engine of growth prior to 1973, providing much of the revenue that the government used in developing a basic infrastructural system.

Agricultural export also financed the import substitution industrialization program. Increases in imports due to increasing income and the import requirements of the emerging industrial sector induced balance of payments problems in the late 1960s. The oil boom of the early 1970s relaxed the financial constraints to development.

The GDP at 1977/78 factor cost grew at an average rate of only 5.0% per annum between 1975 and 1980. One major characteristic of this growth was its very unstable nature. The growth rates ranged from -1.3% in 1975/76 to 9.5% in 1979/80. Generally, government services recorded the highest growth of 17.7% in constant terms during this period. Manufacturing grew at 13.3%, while agriculture recorded a growth rate of -2.3% [6]. As a result of the decline in agricultural output, domestic food supply had to be augmented with large imports.

Soil degradation is a serious problem in Nigeria (World Bank, 1990). In Nigeria 90% of the agricultural primary produce is in the hands of small holders cultivating between 0.8-4 hectares otherwise known as subsistence agriculture. Farm size expansion is limited by population pressure, land fragmentation, poor market opportunities and lack of finance [5].

3.4 MAJOR PROBLEMS CONFRONTING AGRICULTURE IN NIGERIA

Agriculture in Nigeria has been faced with so many problems impeding its productivity and also contributing to low national aggregate output. These problems are grouped as follows:

(A) Infrastructural Facilities

- Lack of farm and off-farm storage facilities; network between the rural areas where agricultural production mainly takes place and the urban areas.
- Poor feeder roads and inadequate road.
- Irrigation facilities are still very poor despite the existence of River Basin and Rural Development Authorities (RBRDA). For instance, in Ogun State, only 15 hectares of land were irrigated between 1997 and 1999 by Ogun-Osun RBRDA;
- Schools (primary and secondary) are few in the rural areas and hence the migration of youth to the urban areas, among other reasons.
- Insufficient rural energy.
- Inadequate healths care facilities in the rural areas and hence, so many work days are lost to ill-health which could have been easily treated.

(B) Manpower/Skill Development

- The frequency of extension message discovery is limited by poor research situations in Universities and Research Institutes;
- The extension service delivery system still suffers from inadequate number of extension men/women. The few ones that are in place, lack mobility to improve on extension-farmer contact while women extensionists are few to handle gender issues;
- Able- bodied people are leaving farming/rural areas. This has negative effects on labour availability, productivity and production. Hence the wage rates have increased (Table 2), thereby increasing the cost of food production and in turn food prices.

- Shortage of experienced professional and technical manpower, for tractors and machines, generally;

(C) Socio-Cultural Factors

The land tenure systems in the Southern part of Nigeria, limit land availability to would be farmers, women and the landless, hence, small and uneconomic holdings. Arising from religion, women's roles are limited to few activities and therefore low returns and low family income.

(D) Economic Factors

The main issues are as follows:

- Prices of inputs: As shown in Table 7, the prices of fertilizer, herbicides, and pesticides have risen astronomically. These have limited their adoption and subsequent impact on yield and production levels;
- Unavailability of inputs
- Wage rates have increased in the rural areas over the years
- Low participation by the organized private sector in agriculture
- Lack of good linkages between the farm sector and the industrial sector to generate a demand pull situation, which will propel high prices for industrial raw materials.
- Lack of credit to farmers and as a result, limited farm size commensurate to what they can afford. When credit is available, the interest is high, thus increasing farmers' cost of production.

(E) Government/Regulatory Policies

- There are numerous policies that are not supportive enough to agricultural transformation e.g. Land Use Act, Importation tariff, unprotected policies, etc.
- Frequent changes/abortion of policies which are not agricultural.
- Low investment on agriculture in terms of research, incentives to industries and banks to finance agriculture, capacity building etc.

- Unsustainable extension service system.
- Weak planning framework.
- Insufficient encouragement to foreign investors.

(F) Environmental Factors

- High incidence of pests and diseases.
- Drought in some areas.
- Harsh weather which limits the number of hours people work on farms.
- Erosion and marginal lands which affect tractors and the land availability.
- Desert encroachment.
- Pollution by industrial activities especially oil companies and some manufacturers.

Arising from all these problems, agricultural contributions to the GDP and exports have been low since 1980s (Table 1). This dismal performance is seen in Table 2 as the food imports continue to rise in value from N3.47 billion in 1990 to N113.63 billion in 2000. In terms of relative importance, food import as a percentage of total imports rose from 3.5 percent in 1991 to 11.8 percent in year 2000.

Incidentally, food imports were low during the period of Structural Adjustment Program, SAP – 1987 – 1993! However, as shown in Table 2, the gains of the SAP in terms of reduction of food imports was lost as from 1995, for since then food importation took an upward turn.

In essence, agricultural contribution to the national economy has not been sustained. This is so given that Nigeria has varied and complex constraints militating against the realization of increased agricultural output. Availability of food to sustain developmental efforts of the population should be viewed not only from the production aspect but also from the market price perspective. Nigeria is an inflationary economy. In the past three decades, the inflation rate has skyrocketed at a pace, which has confounded policy

makers. Both agricultural and industries have been affected, though its effect on agricultural and food prices have been excruciating considering the fact that basic food need is topmost in the hierarchy of wants. It is important to note however that the development of agriculture is highly necessary to ensure that more food is produced and made available to non-producers at reasonable prices, CBN ECONOMIC & FINANCIAL REVIEW, VOL. 39 N0 [8].

TABLE 2: INDICATE THE CONTRIBUTION OF AGRICULTURE TO THE NATIONAL ECONOMY.

Period Indicators

Year	Agric. GDP as % of Total GDP	Index of agric. Production	Agric. Exports as % of total exports	Share of Agric. In total employment
1970	n.a	126.0	75	75
1975	n.a	104.3	6.4	64
1980	34.7	92.5	3.7	60
1985	40.3	104.6	2.3	58
1990	39.0	167.5	2.2	56
1995	38.6	216.8	1.6	55
1996	39.0	224.8	1.3	54
1997	39.4	234.1	1.6	54
1998	40.4	242.4	n.a	53
1999	40.4	252.0	n.a	52

Table 2; Shows that agricultural contributions to the GDP and exports have been low since 1980s.

The period 1994-1998 saw a shift in policy from structural adjustment to one of guided deregulation. The growth in agricultural products during this period was 2.3% per annum in line with GDP growth of 2.8 per cent. All the sub-sectors recorded lower growth rates except fishery which grew by 12.6 per cent**.**

The volume of food imports grew at a lower rate of 6.2 per cent, but the value rose astronomically during the period by 111.2 per cent and represented 11.8 per cent of total import and 3.7 per cent of GDP, reflecting the further depreciation in the naira exchange rate. The per capita income of Nigerians during this period grew on the average by 33.7 per cent. This implies that the increase in the cost of food imported into the country more than outweighed the growth in per capita income, thus bringing to the fore the issue of affordability, as a consequence resulting in increased food insecurity.

The period 1999-2003 coincided with the coming to power of the present civilian administration in Nigeria. This period witnessed massive government investment in agricultural infrastructure, especially water resources. For instance, capital expenditure rose consistently from 6,912.6 million in 1999 to 57,879.0 million in 2001 before declining to 32,364.4 million and 8,510.9 million in 2002 and 2003, respectively. This period witnessed the highest budgetary allocation in the last three decades.

The allocation represented shares of 13.2 and 10.1 per cent of total budget for 2001 and 2002, respectively and averaged 6.4 per cent for the period 1999 – 2003. However, the output of the agricultural sector did not reflect the inflow of investment as the sector only grew at an average rate of 3.53 per cent during this period. All the major staple crops recorded increases in output. Livestock, fishery and forestry sub-sector all recorded significant growth. This brings to the fore the question of the quality of investment as the capital investment though low compared with the contribution of the sector to the GDP had not resulted in commensurate increase in agricultural output.

3.5 STRUCTURE OF AGRICULTURAL PRODUCTION

The principal constraint to the growth of the agricultural sector is the fact that the structure and methods of production have remained the same since independence more than four decades ago. The farming population comprises predominantly small scale, subsistence peasants, farming on average, about two hectares of land and usually on scattered holdings. Farming activities are also carried out mainly with traditional, rudimentary technology consisting mainly of hoe and cutlass.

Crops: Nigerian farming systems depends largely on the broad ecological zones resulting from the intensity of rainfall. Different farming systems have been identified in Nigeria based on vegetation types and land uses practices and different cropping patterns have also been identified within these farming systems. However, due to the limited availability of irrigation, farming systems and cropping patterns have remained basically unchanged except for those farms that are located near irrigation facilities. Crop production accounts for 98% of agricultural output, and the output of staples has increased from 69.4 % in 1970-85 to 85.4% in 1999-2003.

Livestock: Animal husbandry in Nigeria is largely characterised by extensive grazing practice, using mainly free range land and crop residue. Intensive ranching is still largely undeveloped, however, there have been some modernisation lately following the establishment of cattle ranches and farms for intensive stock breeding, fattening and milking. The products from these sub-sector accounts for 3.4%, 1.9% and 1.7%, respectively during the three periods. However, poultry rearing has changed tremendously from the traditional free range system to the modern intensive commercial poultry practice. The recent bans on the importation of poultry products have added great impetus to this sub-sector.

Fishery: The major mode of fish production has been the peasant artisanal fish-mongering in creeks and coastal waters. Modern fish trawling and fish farming which

has remained relatively undeveloped is gradually gaining prominence. However, the capital intensive nature of this mode of fishing has reduced the number of participants in this venture. The contribution of this sub-sector has remained the least over time. It accounts for 1.5%, 0.4% and 0.4%, respectively during the period 1982-1985, 1986-1998 and 1999-2003.

4.0 ECONOMICS AND DEMOGRAPHIC INFLUENCES ON FOOD INSECURITY

4.1 Influence of Internal Migration

Migration: is the movement of people from one geographical region to another, which may be on temporary or permanent basis. People migrate based on the common conditions and the reasons for it vary from one person to another depending on the situation that brought about the decision. Migration is a selective process affecting families or individuals with certain social, economic, demographic and educational characteristics.

Migration occurs as a response to economic development as well as cultural, environmental, social and political factors, the effects on areas of origin as well as destination. People tend to move away from a place due to political instability, drought, and congestion in various dimensions and in search of better life (food security). Also, adverse physical conditions such as soil degradation, landslide (erosion and earthquake), insects and pests, flood and infertility contributes immensely to the reasons why people leave one environment for another [18].

The continued population increase in Nigeria, resulting to rural vs. urban migration has led to amplified urbanization. This is an acute problem in Nigeria. Environmental conditions in the cities have gradually deteriorated due to the rapid growth of urbanization. Inadequate storm drains, too little waste management systems leading to dumping of refuse in drainage lines and construction of houses to and even on the natural water channel is the cause of increasing cases of flood in the urban centers.

Nigeria is one of the countries in the world with very high rural-urban dichotomy. The number of rural inhabitants that migrate to cities with high hopes of overcoming powerlessness consistent with rural life is unprecedented. Nigeria is practicing a non-regulatory system which allows for uncontrolled migration from one place to another. The impoverishment of rural areas in Nigeria is partly explainable by out-migration of

able youths in search of employment in cities. Consequently, agriculture which prior to discovery of oil was the mainstay of Nigeria's economy was far relegated to the background leading to the country's mono-economy status; Migration of young adults from the rural areas also placed a greater burden on the farmers.

For farmers to cover the same area of land as when he had extra assistance, he must work much longer hours thus depriving him of some time for leisure or participation in various social activities and resulting to less agricultural produce, this has lead to scarcity of manpower and avoidable importation of agricultural products, which together have over the years had negative net effect on local industries and productions as well as international trade balances [11].

Migration rates reduce poverty mostly when the majority of individuals who migrate are skilled workers. On the other hand, individuals who emigrate vacate jobs in skilled labour markets. Thus, migration drains on skills. It reduces the pace of economic growth and thus slows the process of overall job creation and affects the long-run development potential in a country [10].

The burden of rural to urban migration in Nigeria is complicated and inter-twining. The immediate effect of rural to urban migration, that means increase in population or its explosion, various other subsequent effects are expected to be considered. Population explosion activates the housing challenge both at micro family and macro society levels. Congestion in households and communities has implications for both the health and psychology of victims.

Nigerian cities such as Lagos, Port-Harcourt, Kano, and Onitsha among others are potrayed by human traffic, environmental pollution, vehicular congestions, consistent internal-migration and expansion of territories to accommodate human additions.

For some individuals, especially young boys and men, emigration into cities is a necessary approach to overcoming poverty and attendant powerlessness in rural areas

notwithstanding the implications of such migration for individuals, families and groups in destination locations. In some instances, the recipients are hardly aware of the impending human additions; yet most strive to accommodate the in-migrants in line with the African extended family tradition and hospitality, at times at severe costs. The volume of internal migration in African countries was aptly highlighted by Findley (1997:110): This is especially the case in Nigeria [11]. Food insecurity situation in Nigeria has worsened, if cities are unable to cope with the increase in population. This could make the urban poor more vulnerable to increase in food price.

4.2 INFLUENCE OF ENVIRONMENTAL/SOIL DEGRADATION

The unwise use of the natural resources due to ignorance, poverty, overpopulation and greed among others has led to degradation of the environment. Degradation comes as Nigerians tries to adjust their seemingly endless want and desires for food, shelter, recreation, infrastructural facilities etc. The land use activities contributes to the overall development of the country and produces negative impacts and abuse of the environment which causes urbanization, soil degradation, overpopulation, desertification and deforestation.

Soil degradation is the temporary or permanent lowering of the productive capacity of soil caused by overgrazing, deforestation, inappropriate agricultural practices, over exploitation of fuel wood leading to desertification and other man-induced activities.

Soil degradation is a serious problem in Nigeria. Deforestation, soil erosion, desertification, soil salinization, alkalinization and water-logging, form different but often interrelated aspects of soil degradation (Karshenas, 1994). In Nigeria, soil degradation affects about 50 million people and leads to the greatest loss of GNP (US $3000 million per year) relative to other environmental problems. By 1964, 47% of the soils of Eastern Nigeria were affected by measurable sheet erosion; 20% from severe sheet erosion (Ofomata, 1976). By 1990, gullies occupied 4% of the land area of Anambra, Imo, Abia and Enugu states (World Bank, 1990).

It could be hypothesized that more than 70% of soil erosion-related losses suffered by Nigerian small farmers is attributable to sheet erosion/soil wash (Okoye, 1995). The persistent researchers' focus on aggregate 'soil degradation' with less attention to the more specific aspects means that soil wash will remain inadequately analyzed Hence, the avoidance of soil loss by improved management and conservation of the natural resource is important to combat low agricultural production, food insecurity, and the rapid increase in levels of poverty (Ehui and Pender 2005) [13].

Food security is vulnerable to extreme weather events such as drought and floods. When the Sahelian zone suffered drought in the 1970's and 1980's, harvest failure was remarkable throughout the region. Close to one million livestock were lost, affecting meat and dairy supply throughout the country. Flood hazards in both the north and south of the country consistently posed a danger to farmlands and hence, to food security.

Food security is dependent on rainfall and rainfall amount, and is affected by the age-long ability of farmers to predict when to plant their crops. Unpredictable changes in the onset of rains in the last 20 to 30 years have led to situations where crops planted with the arrival of early rains get smothered in the soil by an unexpected dry spell that can follow early planting. The late arrival of rains due to climate variability, results in harvest failures in ecosystems that rely on rain-fed agriculture [14].

It is no more a news to say that the Niger Delta region of Nigeria that bears the bulk of the nation's oil wealth has long been faced with environmental degradation. This being the direct results of oil spillage, gas flaring and other environmentally negative practices that have for long characterized the activities of oil multinationals operating in the region and which has consistently endangered the lives of the inhabitants of the area [12] .

Table 4: Illustrate the oil spill incidents in the country between 1976 and 1998. The highest number of oil spill incidents happened in 1979, while the lowest quantity of oil was spilled in 1989.

Table 3: Oil Spill Data

S/NO	Year	Number of Spill Incidents	Quantity spilled (barrels)
1	1976	128	26,157.00
2	1977	104	32,879.25
3	1978	154	489,294.75
4	1979	157	694,117.13
5	1980	241	600,511.02
6	1981	238	42,722.50
7	1982	257	42,841.00
8	1983	173	48,351.30
9	1984	151	40,209.00
10	1985	187	11,876.60
11	1986	155	12,905.00
12	1987	129	31,866.00
13	1988	208	9,172.00
14	1989	195	7,628.161
15	1990	160	14,940.816
16	1991	201	106,827.98
17	1992	367	51,131.91
18	1993	428	9,752.22
19	1994	515	30,282.67
20	1995	417	63,677.17
21	1996	430	46,353.12
22	1997	339	59,272.30
23	1998	390	98345.00
	Total	**5724**	**2,571,113.90**

Source: The Department of Petroleum Resources

The most publicized of all oil spills in Nigeria occurred on January 17 1980 when a total of 37.0 million liters of crude oil got spilled into the environment. This spill occurred as a result of a blow out at Funiwa 5 offshore station. The heaviest recorded yearly spill so far occurred in 1979 and 1980 with a net volume of 694,117.13 barrels and 600,511.02 barrels respectively.

The harmful effects of oil spill on the environment are many. Oil destroys plants and animals in the estuarine zone. It settles on beaches and kills organisms and marine animals like fishes, crabs and other organisms. Oil disrupts major food chains and decreases the yield of edible organisms. On the Nigerian Coastal environment, large areas of the mangrove ecosystem have been destroyed. Oil spill has also destroyed farmlands, polluted ground and drinkable water and caused drawbacks in fishing off the coastal waters.

4.3 INFLUENCE OF CLIMATE CHANGE IN NIGERIA

Nigeria is also experiencing problems associated with climate change, established between global warming and ravaging environmental problems such as coastal and gully erosion in the South, menacing erosion in the South-East and desertification in the North as well as deforestation, urbanization, overpopulation and pollution. In some remote areas, these phenomena are even primitively adduced to the anger of the gods.

Erosion: Many communities in the South-East have been obliterated by erosion and in many places the erosion gullies seem to chase migrating communities. There are over 1,000 severe erosion sites in the South- East in need of urgent attention, 540 of them in Anambra State alone. One of the most impacted communities is the Nanka community in the Orumba North local government area of Anambra State, which is believed to have been under the scourge since the 1920s. In the North, the march of the Sahara Desert through the states is almost visible. The desert is moving southwards at the rate of 600 meters annually, while deforestation has been at the rate of 350,000 annually. Along the long Atlantic coast line of Nigeria, communities are on permanent retreat to escape coastal erosion.

Deforestation: Forest is very important to the environment, it plays the role of a sanctuary for rare and endangered animals, and it acts as storm breaks, thereby protecting towns and villages from destruction. In 1975, the total area of forest in the country was estimated at 360,000sq kilometers and it was also estimated that the annual harvest of sawn timber from high forest was 1.5million cubic meters which could take 30 years to denude the forest of matured timber. With rapid rise in domestic consumption of timber for building constructions resulting from the rise in population, it will take less than 15years to exhaust the forest of timber resources (NEST: 1992). The food and Agricultural organization (FAO) estimates that Nigerians destroy about 600,000 hectares of her forest every year through careless exploitation and husbandry.

Nigeria is currently having the highest rate of forest loss (3.3 percent) in the world, since 1990, the country has lost some 6.1 million hectares or 35.7 percent of its forests cover. Between 1990 and 2005, the country has lost 79% of its forest. This is a big problem in the southern part of Nigeria where food insecurity is high, the indigenes use wood (fuel wood) as their only source for energy. Over exploitation occasion by greed and illegal exploitation, to the extent that it outstrips regeneration, is also another threat to the sustainability of forest resources in the country.

Petroleum exploration, exploitation, and oil spillage are, together, destroying large areas of swamp forest in Nigeria. Communal clashes have also been identified as another threat to the sustainability of forest in Nigeria. The above human induced problems are occasioned by one or more of the following- poverty, overpopulation, political insensitivity, poor enlightenment, urbanization and industrialization without proper planning, and research Akachukwu (2005).

Desertification: Desert is more pronounced in the northern part of Nigeria, where the Sahara desert has eaten deep into the once fertile land. The Lake Chad basin which is situated in the area is not left out of desertification, it diminished from a water surface area of about 24,000sq kilometers in 1963 to about 3,00sq kilometers in 1984. This is

due to natural hazards and man's unwise use of the lake environment. This problem is dangerous to man; it leads to famine, diseases, destruction of crops, livestock and man.

Urbanization: Is caused by high population growth rate and rural vs. urban migration, this is an acute problem in Nigeria. Environmental conditions in the cities have gradually deteriorated due to the rapid growth of urbanization. Inadequate storm drains, dumping of refuse in drainage lines and construction of houses to and even on the natural water channel is the cause of increasing cases of flood in the urban centers.

Overpopulation: Nigerian over population is responsible for abandonment of old age, a production system and resources management technique that allows them to produce enough food for themselves at minimal impact on the environment. This causes stress on the environment, under such stressful situation, it will be easy for people to become so exigent, worrying only ablaut what to get out of the environment for their own immediate needs and uses, without caring very much for the consequence.

Pollution: Environmental pollution can be classified into three groups, which are; air, water pollution and land pollution. In Nigeria several rural towns that had enjoyed fresh and dry air are currently experiencing air pollution problems due to industrialization process and expansion in human activities. Nigerians are experiencing water pollution due to widespread water contamination in most Nigeria cities, caused by discharge of unwanted biological, chemical and physical materials into water bodies from man's environment; Acidic Rain is a big problem in Nigeria especially the southern part which is dangerous to human health. The growth of urbanization and industrial development and improper waste management control has added a great dimension to land area pollution.

4.4 PROBLEM OF FOOD SUPPLY IN NIGERIA.

The issue of food for the country's population has attracted the attention of all those directly connected with agricultural production. Agricultural supply is one of the greatest problems facing agricultural production in Nigeria and concerns everyone from the research scientists to the extension workers in the field to the farmers on the farm and to the government policy formulators. The World Food Summit in November 1996 vowed to reduce the number of undernourished people to half their present level of 800 million by 2015.

This means that food production would have to grow by 4% each year for the next two decades, efforts made to increase food production include the establishment of river basin authorities, agricultural development programs, green revolution, Operation Feed the Nation, research institutes, agricultural input supplies and bulk purchase companies. However, increased food production was not the final solution. It had to be complemented by good harvests and post-harvest practices which reduced the amount of loss and increase the amount of supply. A 50% reduction in postharvest food loss should reduce the need for food importation. This chapter outlines the different factors responsible for quantifiable agricultural and food supply with some recommendations for solving the problem [17].

4.1.0 Effect of Transportation System on Food Supply

Transporting is known as the marketing function for moving goods. The efficient flow of agricultural produce requires a good quality system for shipping and moving goods. A country's infrastructures and transport system are often seen as key aspects of its development. In Nigeria, road and rail systems are the means for transporting agricultural produce down south and up north. A major obstacle to agricultural development in Nigeria is the perilous state of the transport infrastructure.

Despite their obvious importance, transport systems do not function as they should. The roads and rail are in a dilapidated condition and a significant proportion of investments made in road networks in 1960s and 1970s have disappeared because of lack of

maintenance. The worsening condition of the roads is such that the amount of necessary repairs or reconstruction now requires levels of expenditure between three and five times as much as preventive maintenance would have cost. The World Bank estimates that the saving of one dollar on road maintenance increases the cost of operating vehicles on that route by two or three dollars. On top of the dilapidated state of roads and the deterioration of rural tracks, there is another layer of concern: the ramshackle vehicles hurtling at excess speed from pothole to pothole, overloaded with human and other cargo, a frequent and sometimes fatal recipe for disaster.

The impact of transport on agricultural supply is that poor state of roads slows down the development of supply systems and food distribution. It is common to see trucks conveying perishable produce breaking down and remaining in that state for three days to a week without removing the produce. In cities like Jos, Kano and Lagos, piles of spoiled fruits tell the tale of the ineffectiveness of the transport system [(17)].

4.1.1 Food Storage and Handling Facilities

Food availability could be thought to be synonymous with food production. For food supply to increase and losses to be reduced, harvesting, handling and storage methods must be matched by sudden increases in crop production. The great harvest recorded in 1985 and 1986 with their accompanying food prices confirms the view that Nigeria's efforts to improve farm production must be matched by adequate storage, marketing and distribution.

In an effort to reduce post-harvest losses and increase supply of food, the government constructed strategies like the FAO who queried the decision to use metal instead of concrete bins because of their greater susceptibility to moisture migration and thus their suitability for long-term storage of grain in the humid climate of Nigeria. Moisture migration and condensation in grain stock result in spoilage and is a shortcoming of metallic silo cells.

When metallic silos were used, an estimated 25 to 30% post-harvest loss was recorded for maize, 37% for sorghum and 30 to 50% for cowpeas. Insects and fire outbreaks are other major causes of grain loss in the traditional methods of storage with the Rhombus method recording the highest loss. Agridem Consultant, a private organization, estimated the marketing distribution losses in 1994 for maize, rice, sorghum, millet, cowpea, groundnut, yam, cassava, plantain and fruits as 1.6%, 1.8%, and 1.76%, 1.65%, 2.81%, 1.63%, 3.7%, 2.38%, 2.22% and 3.83% respectively. At the present time, Nigeria is still battling with primitive ways of handling farm produce [17].

4.1.2 Marketing and Price System

There is a need for production incentives in terms of favourable pricing linked with efficient marketing facilities, if supply is to be increased in Nigeria; however, incentives are generally minimal or non-existent. There is no provision for cushioning farmers against periods of sharp price fluctuations. Another cause for concern is that consumers in the main importing countries such as the EU, Japan and the USA are becoming more demanding of quality and more aware of pesticide residues and bacterial contamination in crops, fish and livestock products [17].

TABLE 4: FOOD SHORTFALL AND IMPORT IN NIGERIA (1995- 2001)

Food Shortfall and Import, Million Mt (1994 – 2001) 1994	1995	1996	1997	1998	1999	2000	2001
Shortfall (Deficit)	0.53	0.30	2.91	3.34	3.13	4.22	5.34	6.51
Food Import	0.67	0.58	2.95	3.47	3.24	4.48	5.59	6.91

Source: FOS, Review of the Nigeria Economy, Various Issues

4.2.0 ANALYZING THE MILLENNIUM DEVELOPMENT GOALS IN NIGERIA: MDG TARGET 1.C: HALVE, BETWEEN 1990 AND 2015, THE PROPORTION OF PEOPLE WHO SUFFER FROM HUNGER.

As adopted by world leaders in the year 2000 and set to be achieved by 2015, the Millennium Development Goals (MDGs) provide concrete, numerical benchmarks for tackling extreme poverty in its many dimensions. It provides a framework for the entire international community to work together towards a common end – making sure that human development reaches everyone, everywhere. If these goals are achieved, world poverty will be cut by half, tens of millions of lives will be saved, and billions more people will have the opportunity to benefit from the global economy.

Nigeria which was one of the richest 50 countries in the early 1970s has retrogressed to become one of the 25 poorest countries at the threshold of the twenty first century. It is ironic that Nigeria is the sixth largest exporter of oil and at the same time host the third largest number of poor people after China and India. Statistics show that the incidence of poverty using the rate of US $1 per day increased from 28.1 percent in 1980 to 46.3 percent in 1985 and declined to 42.7 percent in 1992 but increased again to 65.6 percent in 1996. This incidence increased to 69.2 percent in 1997. The 2004 report by the National Planning Commission indicates that poverty has decreased to 54.4 percent. Nigeria fares very poorly in all development indices, it's among the 20 countries in the world with the widest gap between the rich and the poor [15].

4.2.1 Influence of the MDGs on Food Security in Nigeria

Agriculture has been identified as a critical component in successful attainment of the Millennium Development Goals (MDGs) by all nations. This is because all the goals have link with agriculture. But the current global food crisis and the upward trend in global food prices (Benson et al., 2008) in the last quarter of this decade makes it a dream in Africa and Nigeria in particular. Nigeria has one of the best agro-ecology to grow variety of crops. The country is endowed with an environment characterized by fair to good soils. Nigeria's cultivable land has been estimated to about 71.2 million

hectares but less than 50% is put to use due to water constraint (Aremu and Ogunwale, 1994).

TABLE 5: ESTIMATED PLANTED AGRICULTURAL LAND (2004 - 2007).

Year	Area Planted in ('000) Ha	Estimated output ('000)	Output Per Ha
2004	43,561.6	11359.8	2.61
2005	90,075.0	121146.3	1.34
2006	99,307.7	130574.1	1.31
2007	104,233.1	139395.1	1.34

Source: - Computed from CBN Report (2005, 2006, and 2007).

Table 5; shows the estimated Area planted and Output between 2004 and 2007. The Output per hectare has been reducing due to erratic rainfall distribution and lack of access to farm inputs among other factors.

TABLE 6: CONTRIBUTION OF AGRICULTURE TO THE TOTAL GROSS DOMESTIC PRODUCT (2000 - 2007).

Period	Total GDP (#billion)	Agric. Share of GDP	Share of Agric in Total GDP
2001	431.78	182.66	42.30
2002	451.71	190.37	42.14
2003	495.01	203.01	41.01
2004	527.58	216.21	40.98
2005	561.83	231.46	41.19
2006	595.82	248.60	41.72
2007	632.86	267.06	42.20

Source: - CBN (2005, 2007) Note GDP at 1990 constant basic prices. *Provisional figures.

Table 6; shows a sharp increase in contribution from 24.6% between 1996 and 2000 as against 42.20% in 2007 [16].

4.2.2 Problems Experienced by the MDGs: Can Nigeria meets the Target?

The question of whether Nigeria can or cannot meet the MDGs is a crucial one that should agitate the minds of politicians, government bureaucrats, civil society activists and development workers. In our view, there is no straightforward answer. It can be answered either in the negative or the affirmative. The (needs) document clearly states that "if present trend continues, the country is not likely to meet the Millennium Development Goals."[i] On the other hand, the 2005 report gives the conditions for meeting the goals: strong political will and sustained efforts. Perhaps, a better way to frame the question is what Nigeria can do to meet the MDGs in 2015? In our view, Nigeria has sufficient resources to meet the MDGs in 2015. But for this to happen, as argued above, the country will have to change course in the conceptualization and implementation of policies and program to achieve the MDGs [16].

One good initiative in Nigeria designed to meet the MDGs is the Oversight of Public Expenditure in Nigeria (OPEN) set up to monitor the Debt Relief Gain (DRG). Two issues make this initiative unique. The first is the leadership of the process which has been participatory, open, transparent and all inclusive with participation of private sector and civil society. The second and perhaps most important is that systems have been put in place to track resources. This is perhaps the model that should become the norm in every ministry, department and agency at all levels of government. It must however be recognized that development is a complex issue and goes beyond allocation of Debt Relief Gains to some MDG Ministries [15] .

4.3.0 FACTORS THAT INFLUENCES THE NIGERIA ECONOMY

4.3.1 How Prices of Food Affects it's Demand in Nigeria

Price is the market value that will purchase a measure of goods and services. It is, what a buyer is willing to pay, what a seller is willing to accept and the competition in the market. Pricing is the business variable by which a company/firm can possess some degree of control.

The price of food has increased in Nigeria, different factors have influenced the increase in food prices and some food type can be price elastic or Inelastic. Factors like high trader's speculation, household's demands, industrial demands and increase in fuel prices. The rise in food prices is linked to high inflation rates, high international commodity prices and shortage in domestic food produce. Inflation rate in Nigeria rose from 5.5% in 2007 to 8.6% in 2008 (CBN 2008) thereby affecting production of food.

When traders speculate that the demand for a particular food product is high in other cities or neighboring countries, they starts keeping substantial amount of food produce (supplies) off the market to be sold later at a higher price. The locals in the northern part of Nigeria are very poor so increase in the price of a particular food produce will always affect its demand, the locals look for substitute or go for inferior food produce. For example, the extreme north where farmers has resulted to exporting their food produce to Niger, has amounted to increase in cereal price because demand is higher than supply.

At household level food is expected to be available either by own farm operations or by buying the food from the market, most times own farm produce is never enough and it needs a good marketing system which is very essential to ensure food availability (FAO 1997). However, due to marketing inefficiencies and other issues, food is not evenly distributed to the people; there are shortage of food in some part of Nigeria and excess in other part.

Therefore, the questions of how much quantities of food will households get? This is very fundamental in securing food security for households, a function of food production level, marketing efficiency and income level of household (ladele and Ayoola, 1997). In the south, households are faced with high food insecurity, due to seasonal decline in suppliers of food. The prices of staple food remain significantly above normal, above the nominal four-year averages. Income in the south has slightly increased, making the demand for food higher than normal.

Industrial demand for food produce is very high, as breweries and pharmaceutical companies are demanding for sorghum. The locals in the northern part of Nigeria uses sorghum which when processed can be used to produce unleavened bread, porridge etc as their daily food cereal. Before now sorghum was very affordable for poor and average Nigeria but because of the increase in demands by industries which is estimated at 2000,000 metrics ton per year which they use for a variety of things like, alcohol beverages, syrup, bio-fuels etc, has made the demand for sorghum as well as price go up there.

Processing companies and poultry industries are demanding for cowpea, maize, and millet as well. In so doing, the price of these food produce goes up because of increase in demand for them by the companies. Industries have more money than individuals and they can afford to pay more for any food produce that they need for production to be complete. The price for maize, millet, sorghum and cowpea has risen significantly during 2010 and early 2011 and this is an indication of unreasonably higher food prices, higher demands and tighter supplies; and this trend in rising food prices is likely to continue.

Sorghum, millet, garri (fermented cassava starch), and rice are daily food items for households which are found in Nigerian markets and various industry uses them as well. Maize is mostly used by poultry industries as raw materials to feed their livestock, while sorghum is used by breweries to produce alcoholic beverages. Farmers are exporting the above food produce to nearby countries for higher prices and thereby increasing their income. The high demands from industries and neighboring countries is

a good thing for farmers because they make more money (higher profit). Farmers prefer to enrich themselves instead of providing affordable food to the people of Nigeria.

Nigeria is one of the top fuel producers in the world and yet it still has a way of making its citizen suffer for fuel. The price of fuel is always going up and when it does, it usually affects the market; given that the price of almost every other thing also goes up. Fuel price increase raises the price of normal staple food produce as well. Consequently, the average citizen can no longer afford to eat whatever he/she likes at all time; then opportunity cost arises and trade off follows. Inflation rate is high in Nigeria and has resulted in the increased price of all commodities; despite the huge increase of refined petroleum imports which Nigeria is highly relying on, the fuel price continue to go up.

The price level of food in Nigeria is changing every year and the there has also been increase in income of the people due to rise in inflation (a rise in price level). This will leave us to what is called Consumer Price index, which measures the combined price of a particular combination of goods, called a “market basket” in a specific period relative to the combined price of similar group of goods in a reference period which is the base year. More formally,

$$\text{Consumer Price index (CPI9} = \frac{\text{Price of the market basket in a specific year}}{\text{Price of the same market basket in the base year}} * 100$$

According to the 2010 report from the national Bureau of Statistic (NBS), the consumer price index rose from 10.1% to 12.3% in December, which is higher than normal. The average monthly food consumer inflation index rose by 0.7% in March when compared to January. The rise was caused by consistent increase in the price of food item such as rice, cereals, beverages, yam, meat etc

TABLE 7; AVERAGE FOOD PRICES AND FOOD IMPORTS IN NIGERIA

	1970-74	1975-80	1981-85	1986-92	1993-95	1983-02
Consumer price index(1985=100)	11.74	30.97	73.66	22.03	1125.68	3857
Total Import (N million)	1176.6	6621.3	7858.2	33594.4	29768.8	123644
Food Import (N million)	104.6	823.1	1308.7	2256.2	29798.8	12364.4
Food Import as %of Total Import	8.8	11.3	17.2	9.0	9.7	11.75

Source: Central Bank of Nigeria 2002.

Table 7; is analyzing food imports as regards to consumer price index. The demand for food increases as the local supplies cannot meet up with the demand; which has resulted to continual increase in consumer price index of food from 1970 to 2002, and increase in importation of food.

4.3.2 THE INFLUENCE OF IMPORTATION AND GLOBAL ECONOMY

Nigeria is a net importer of food. It does not produce enough food to meet the demands of its citizens which has caused a lot of problems and issues with regard to agricultural development. Generally, there is less motivation for farmers to grow local foods when cheaper and more palatable foods are being imported to the market and people tend to prefer the imported food. This forces local farmer to decrease the prices for their food, which decreases the income generated by the farm and consequently decreases farm production. To complement stable food supply, Nigeria is highly depending on imports of wheat, rice, sugar, milk, millet and so much more food items.

Farmers in Nigeria are producing lots of food but they face so many challenges, like Irrigation problems, erosion and most importantly food processing issues. It is estimated that farmers lose 20-40% of their yearly harvest during processing, which decreases the amount of food being produced and supplied and results in insufficient food for the people. The primary cause of food supply shortage is inadequate skilled labor and lack of efficient harvesting techniques, the lack of processing and harvesting technology causes most farmers to harvest crops by hand, instead of using a proper machine.

Globalization can be defined as a way by which developments in one region can quickly come to have significant consequences to the security and well-being of people in quite distant regions of the world. In Nigeria, the structural adjustment program (SAP) of 1986 from members of the world trade organization (WHO) placed the country under globalization.

So, a number of questions have arisen on how globalization has made impact on food consumption, health and nutrition in Nigeria, and how the country can take advantage of globalization to improve the nutrition statue of its people. The per capital calories of Nigerians has not been stable over the years, the index for food crop production has increased from 90.74 in 1983 to 296.44 in 1998-2002. However, this increase in food produce does not result into increase in supply of food due to two major problems. First, farm losses, increase in market price of food and low purchasing power of the people is

still constantly high, thereby decreasing the supply of food to the market, which results to increase in demand of food by the people and importation.

While Nigeria is depending on food import to meet it demands, some farmers are exporting their food to neighboring countries like Niger, Benin, Burkina Faso, Mali and Ghana. They supply them with cereals and cash crops so as to acquire higher income.

Table 8; Comparison of Food Production, and Demand with Shortfalls and Import (Million)

Description	1994	1995	1996	1997	1998	1999	2000	2001
Production (Food Supply)	86.70	89.25	93.35	95.64	98.74	100.41	102.12	103.86
Food Demand	87.23	89.55	96.26	99.03	101.87	104.63	107.46	110.37
Shortfall surplus	0.53	0.30	2.91	3.13	3.13	4.22	5.34	6.51
Food Import	0.67	0.58	2.95	3.47	3.24	4.48	5.59	6.91

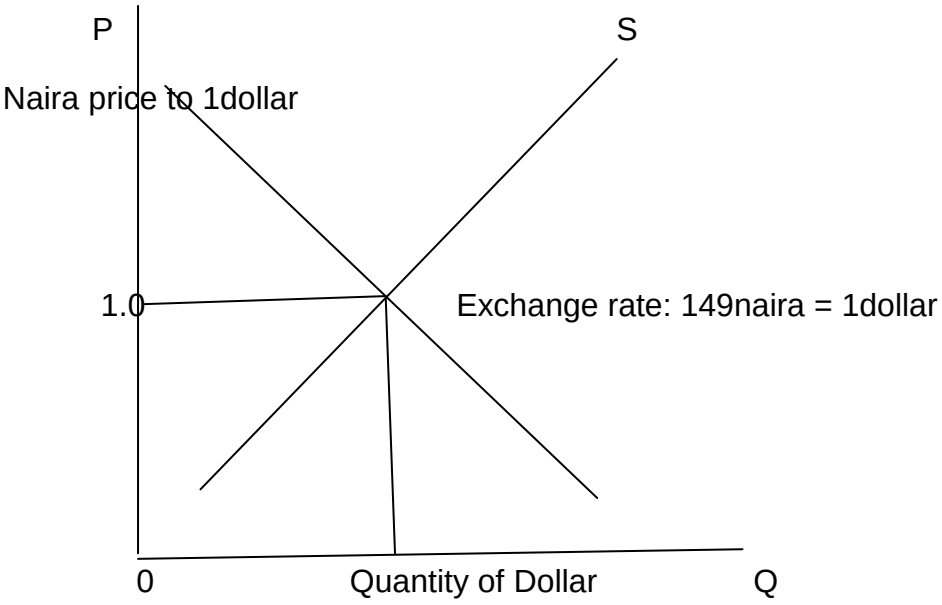
Source: Histogram of Domestic Food Production, Demand

Table 8: Shows that Nigeria is relying on food importation to meet its demands. That is, that food security of its people is affected by the global market. It also illustrates that demand for food in Nigeria is increasing every year and production is also increasing but it has not been able to meet the demand yet, thanks to importation that has been at the mercy of the people.

Nigeria is depending on global market for its food security, which means facing the foreign exchange market. Foreign exchange market is when individuals, firm or nations specializing in the production of specific goods or services and exchange them for money. Within an economy, for example, prices are given in Naira and people buy domestic product in Naira, thereby paying exactly what the seller demands. But in the international market however, it is a different case because of different currency. For example, how many dollars does it take to buy truckloads of millets, selling for 10,000naira?

Ultimately this will mean depending on foreign countries for price, which might affect local farmers if they cannot meet up with foreign price. However, it is also determined by how a currency is appreciated or depreciated over the US dollars. Income might increase in Nigeria, enabling Nigerians to buy not only domestic food but Sony television, Samsung cameras and automobiles from USA. So, Nigerians need more dollars and the demand for dollars increases, or a change in Nigerians taste for more foreign food may arise, Nigerians will now prefer food from USA more than local food. Example is local and foreign rice; locals now prefer foreign rice to local rice even when the price is slightly higher.

Graph 1; Naira and Dollar Market

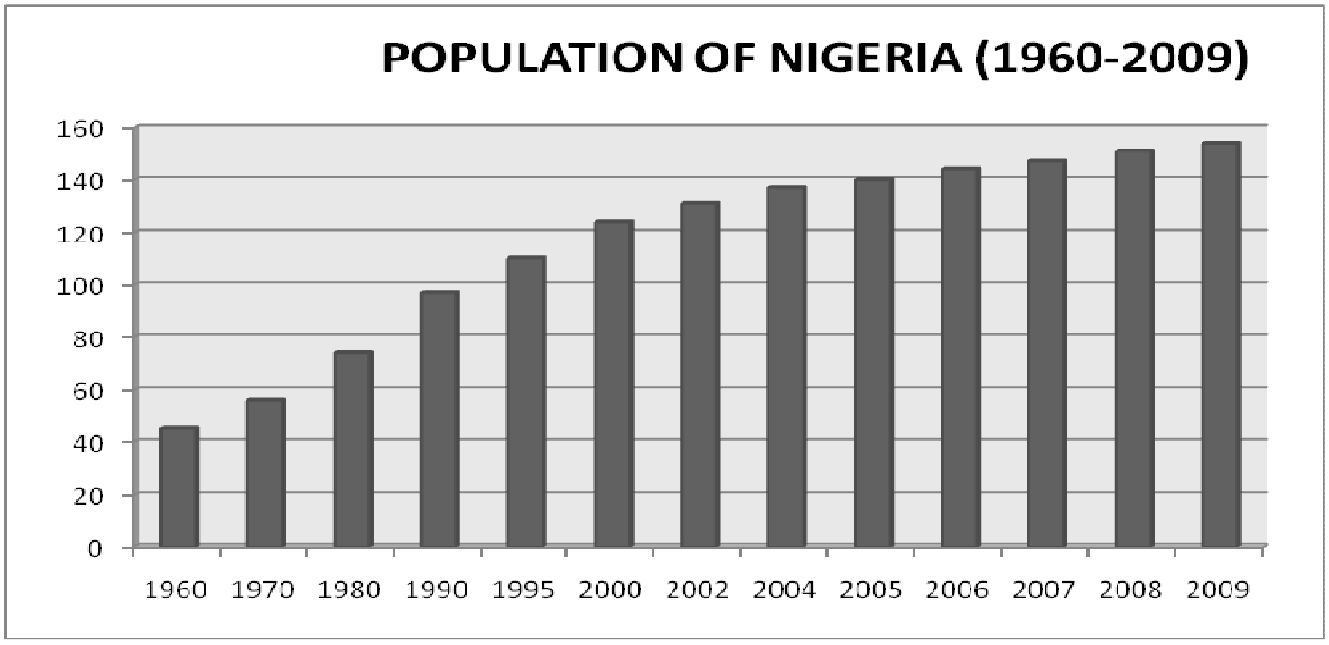


Graph 1; illustrate the Naira to Dollar exchange rate in the market currently. Nigerian imports from America create a demand for dollar, while Nigerian exports to America create a supply for dollar. The naira price of one dollar- the exchange rate- is determined at the intersection of the supply and demand curves. In this case the equilibrium price is 1.0dollar. At the point of 149naira=1.0dollar in the American market clears, there is neither a shortage nor surplus of dollar. It established the equilibrium price of naira to dollars.

4.3.3 THE INFLUENCE OF POPULATION/POPULATION GROWTH

The population in Nigeria is over 160million; The Economic and statistical review reveals that population growth rate is 2.83% annually. Land shortage and increasing population is the greatest problem facing agriculture in Nigeria, which contributes to Nigerian food shortage and its food producing potentials. Land shortage in the southern part of Nigeria was aggravated by rapid population growth of the people after 1960.

GRAPH 2: POPULATION GROWTH OF NIGERIA (UNIT= MILLION)



SOURCE: The WORLD BANK and own input.

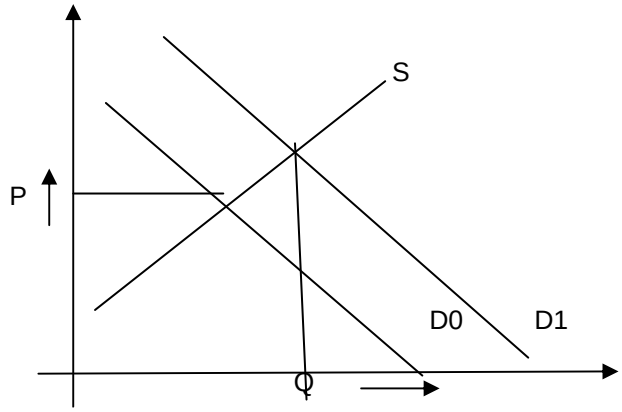
Domestic Demand is increasing day by day due to population growth, urbanization, increase in demand for staple food by industries, improvement in the living conditions of people, rise in income, and livestock farming. However, human consumption dominates, it accounts for 80% of federal availabilities and is joined by the demand from agro-food industries (12%) and bio-fuels (5%), with the remaining (3%) for unspecified uses, which could be exported to neighboring countries. Also, urbanization is associated with some

changes in food intake patterns, together with population and income growth which contributes to increase in demand of food and is certainly one of the big challenges in the near future.

Nigeria is experiencing structural deficit at the moment. For example, the domestic demands for rice has been 5.0 million tons per year since 2008, compared to its domestic supply of 2.3 million tons, the shortage/gap makes price for rice very high because demand is higher than supply. Nigeria tries to cover the gap of 2.7 million tons of rice demand by imports, making Nigeria the second largest importer of rice in the world. At the current pace of production growth, Nigeria will probably be incapable of attaining rice self-sufficient at the short run. Food security is one of the major concerns of the federal Government of Nigeria and setting ways to attain food availability because the demand for food rises at the same pace as the population grows.

Population is very important and plays a significant role in the Nigeria market. Market can be defined as an institution which brings together buyers (demanders) and sellers (suppliers) of particular goods and services. Nigerian food market is a purely competitive market where the equilibrium price is discovered by the interaction of buyers and sellers. The farmers which are the suppliers (sellers) in this case determine their price by the demand in the market, if the demand is higher than supply, then the price of food goes up. Demand and quantity demanded for a particular product is always determined by price of that product. The demand for staple food like rice, millet, sorghum etc is increasing daily, due to increase in population growth and income of the citizen.

GRAPH 3: EFFECT OF POPULATION GROWTH ON QUANTITY DEMANDED



Where:

P= Population

Q- Quantity

D0- Initial Demand

D1- Change in demand

S- Supply

Graph 2; illustrates the increase in population and how it affects the quantity of food demanded. In Nigeria, as population increases, there is a shift in the demand curve to the right from dd0 to dd1.

Population as a Determinant of Poverty

Macroeconomic Shocks And Policy Failure: - As economies around the world faces macroeconomic disequilibrium, mostly in the balance of payments due to terms-of-trade shocks, expansive aggregate demand policies, and natural disasters, it become necessary to undergo major policy reforms, In the process such economies became vulnerable to poverty. Macro-economic shocks and policy failure account for poverty largely because they constrain the poor from using their greatest asset which is labour. Also, unfavorable monetary policies affects access to credit by the poor and cost fiscal policy results in retrenchment, lay-off and factor Substitution; exchange rate policy which raises the cost. CBN ECONOMIC & FINANCIAL REVIEW, VOL. 39 N0.

In an import dependent production system, domestic cost of production will affect the poor negatively. However, an exchange rate policy which boosts exports particularly

those in which the poor are predominantly engaged (for example agriculture) will help reduce poverty. policy failure ,which have resulted to the urban poor, are vulnerable to job losses resulting from job-cut-backs in the public sectors or from the decline of industries adversely affected by shifts in relative prices. The urban poor also lose from the removal of food subsidies and other welfare packages. Further, devaluation result to both negative and positive effects on equity and poverty cases. On the negative side higher production costs of import, especially in import dependent economy usually result in declining capacity utilization rate in manufacturing and lay–off; and retrenchment in the private sector are all worsening poverty.

Labour Markets Deficiencies: Labour is the poor's most abundant resource, a virile labour market is important to reducing poverty and income inequality. Majority of poor households participate in the labour market in one way or another in most countries of the world, and thus poverty is a problem of low wages (in the informal sector), low labour returns to rural self-employment activities, underemployment.

These problems are affected in different ways by deficiencies in labour market. The majority of the labour force work as paid employees in the private informal sector, followed by employees in the public sector. When there are deficiencies in labour market, the poor people are affected mostly because they experience limited job growth and absorption capacity in the formal sector. Also, relatively high labour costs in the formal sector that lead to over expansion of a low-productivity informal sector, thus putting downward pressure on wages in the informal sector, and limited opportunities for unskilled youth to acquire job training and skills. This phenomenon can prolong the existence of a cycle of poverty [10].

4.3.4 PROBLEM OF FOOD SUPPLY IN NIGERIA

Agriculture is the key component of the Nigeria economy; it is currently contributing 41% of Nigeria GDP and employing 60% of the labor force. Nigeria has 79million hectares of fertile land but only 32 million is in use. More than 90% of agriculture output for households with less than 2 hectares under cropping. The role of agriculture in Nigeria cannot be overemphasized given that 60% of the entire population derives their livelihood from it.

Domestic supply of food produce in Nigeria has been generally insufficient. Fertilizer usage in Nigeria is about 7kg per hectare which is the lowest in sub-Saharan Africa, farmers have limited access to credit and extension services are inadequate. The mechanized assistance for farming is inadequate and when damaged cannot be repaired. There are only about 30,000 tractors farming group in Nigeria.

Ultimately, Nigeria loses significant value of about 15%-40% of food produce because of its inability to process most of its food. Importation of certain food commodities have been used to protect and improve domestic agricultural production. The government commenced on some export ban on some food commodities, such as, maize, sorghum, millet, root and tubers, groundnut oil, palm oil, and poultry products, to ensure adequate food supply, so as to meet expanding domestic demands for households and industrial uses.

The lack of storage and processing facilities is a major problem affecting food supply in Nigeria, for some crops such as cassava, which can be stored in-ground, huge deterioration, takes place within few days after harvest, the losses start as soon as the crop is harvested. Simple, efficient, and cost effective storage technologies for perishables food like, fruits, vegetables, tubers, roots, are not available in Nigeria. Consequently, post harvest food storage losses are on the high side, the humid tropical environment in the south east and south west also contribute to the complication to store any crop successfully.

Also, poor transportation and distribution techniques are also affecting the quantity of food supply across Nigeria. The only means of distributing food from one place to another is via the road system, the railway system is not functioning, and no significant cargo is transported via rivers. The feeder roads off the main high ways are in bad condition and in need of repairs, most farms to market roads are unpaved and pot-holes are making distribution of food time consuming, expensive and most of all losing its values and quality, especially in the case of perishable food.

Nigeria has a wide range of agro ecological zones, so the distribution of farm produce is a major concern to the nation, large volume of food produce is transported across the globe to meet its demand. However, the flow of food from one zone to the other has always resulted to decrease in the quantity supplied, due to damages and quality reduction of product being supplied to the markets.

4.3.5 THE INFLUENCES OF INCOME ON NORMAL AND INFERIOR FOOD

Food produce (Rice, Millet, Guinea Corn, Yam, Garri , Beans, and Maize) in Nigeria has been classified to be price elastic, inelastic and normal, income elasticity of household in Nigeria is not even, some household are high income earners while the others are average. For middle income earners, Rice and yam is considered luxury food while guinea corn, millet and beans are price elastic food item, while the rest food items are price inelastic (garri and maize). Beans can be complimented by other food item except yam, millet can be substituted for rice, guinea corn, yam and maize, while maize can be substituted for millet, guinea corn, garri and beans.

TABLE 9: INCOME AND PRICE ELASTICITIES OF DOMESTIC FOOD ITEM IN NIGERIAN

Food Item	Income Elasticity	Price-Elasticity						
		Rice	Millet	G. Corn	Yam	Garri	Beans	Maize
Rice	1.21	0.25	-0.23	-0.05	-0.48	0.27	0.34	0.17
Millet	1.21	1.21	-0.85	-0.27	0.60	0.77	0.70	0.01
G. Corn	0.86	-0.13	1.09	-2.41	1.00	0.21	1.36	1.04
Yam	1.01	0.53	0.07	0.16	-0.34	-0.17	0.25	-0.09
Garri	-0.12	-0.69	0.08	-0.03	0.05	-0.35	-0.32	0.53
Beans	-0.31	-0.05	0.62	-0.12	-0.73	-1.46	-0.13	-1.10
Maize	0.49	0.64	-0.54	-0.41	0.30	0.28	0.41	-0.57

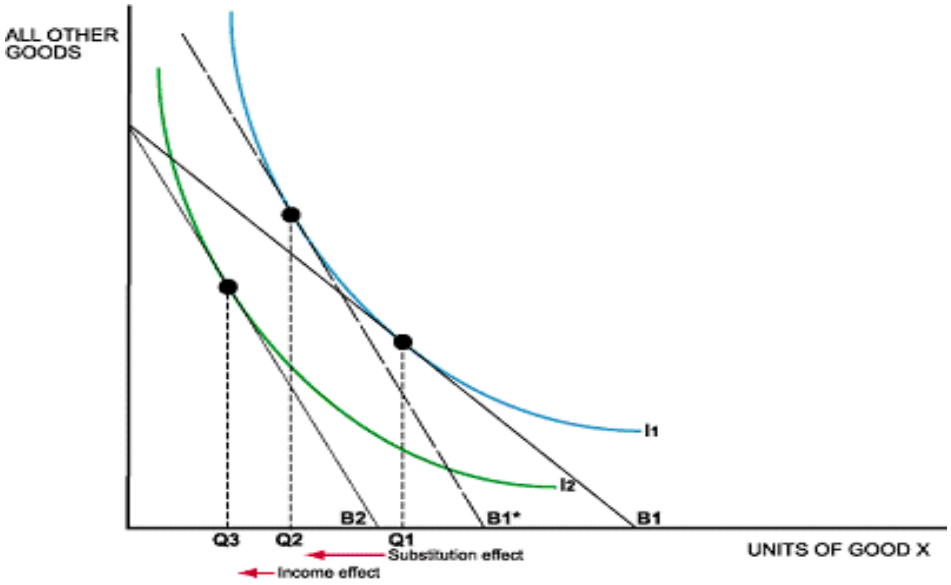
Source: Oguntona & Akinyele, 1995; Central Bank of Nigeria, 1998. Result of Analysis, 2004.

Income elasticity for households with high income considers garri, beans and maize to be inferior foods, while the other food items are essential foods. In this case, guinea corn is price elastic while others are price inelastic. Rice has the smallest energy content of the food items, while yam is very high in moisture. Beans on the other hand have the highest protein value, least carbohydrate content, highest phosphorous content and the least iron content, while garri is least in protein and high in carbohydrate.

A unit increase in percentage increase in income would lead to percentage increase in the quantity of nutrients from the food consumed by the low income earners. Lets say the increase in unit has a mean value of 40%; a similar change in price of guinea corn would have an opposite effect. The greatest increase in this case would come from garri (90%), which is known as food for the poor, relative rise in the price of millet will result to increase in diet. For the average income household, millet and guinea corn are the danger food items and a percentage increase in them would lead to a reduction in the nutrient available to the household because consumer will buy more of substitute food, while increase in income would ultimately lead to increase in available nutrient to the household.

Millets, guinea corn, rice, yam, sorghum etc, are all considered as normal goods, which are consumed more when income increases and are consumed less when income decreases. The demand for normal goods increases as income rice, people tend to buy more quantity of rice, millet, guinea corn, sorghum etc as their income increases. See graph 4.

GRAPH 4: NORMAL FOOD CURVE



Graph 4; illustrates the behavior of households when income increases or decreases in Nigeria. When income goes down, the demand for normal goods decreases and the demand for inferior food increases.

The decrease in quantity demanded of a normal food item can be divided into two effects; which are the substitution effect and the Income effect.

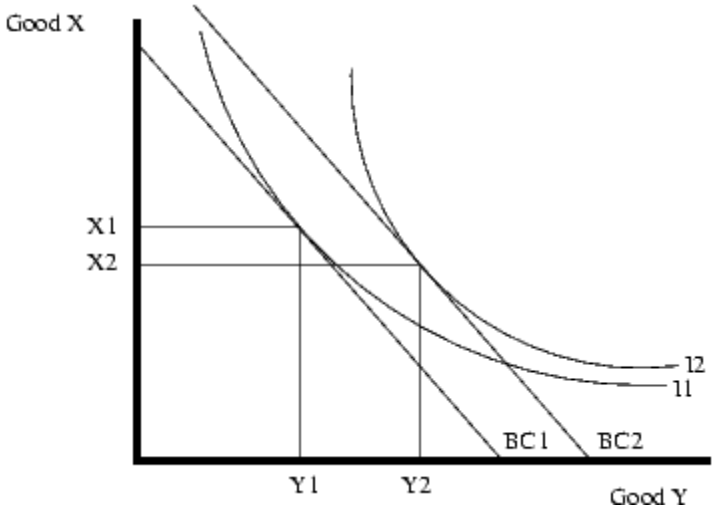
Substitution Effect: The substitution effect is when the consumer changes consumption patterns due to the price change alone but remains on the same indifference curve. In this case, cross price relationships will make beans substitute for guinea corn, yam and maize, millet would substitute guinea corn, maize and yam will substitute every other food item. For one to be able to identify the substitution effect a new budget line needs to be created. The budget line B1* is added, this budget line needs to be parallel with the budget line B2 and tangential to I1.Therefore, the movement from Q1 to Q2 is purely due to the substitution effect.

The Income Effect: The income effect shows how consumption changes due to the consumer having a change in buying power as a result of the price change. The higher

price means the budget line is B2; hence the optimum consumption point is Q2. This point is on a lower indifference curve.

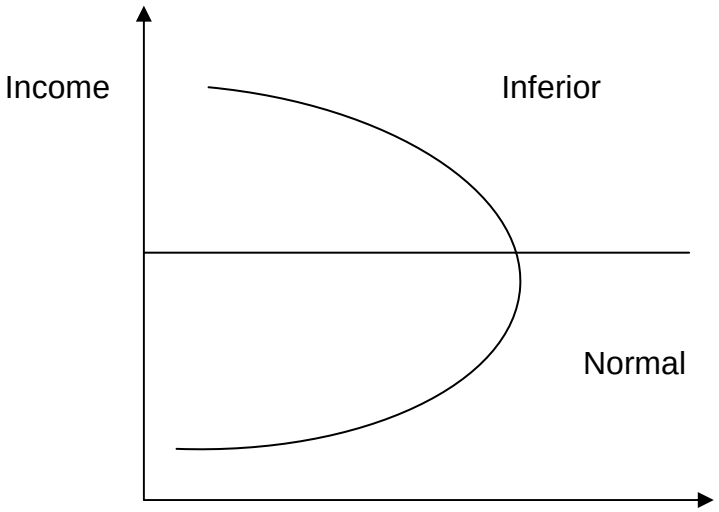
Inferior Food Item: The demand for inferior food like garri, maize and cassava on the other hands, increases when income falls. Households will buy more of garri and maize when they have less money, and buy less when they have more money. Garri, cassava can substitute for most of the normal food, and when consumed it gives almost the same proportion of nutrients like the normal food. See the below graph.

GRAPH 5: INFERIOR FOOD CURVE



Graph 5; illustrates that, Good Y is a normal good since the amount bought increased from Y1 to Y2, and as the budget constraint move from BC1 to the increased income BC2. Good X is an inferior good because the amount purchased decreases from X1 to X2 as income increases.

GRAPH 6: ENGEL'S CURVE



Graph 6; is the combination of graph 4 and 5. It illustrates how a consumer's purchases of a food item vary as that consumer's total income increases or decreases. Income elasticity for households with high income considers garri, beans and maize to be inferior foods. While, the other food items are essential (normal) foods.

5.0 RECOMMENDATIONS

1. Government should provide education for farmers, improve their access to information. By doing so, it will change the way food is being produced.

2. Governments should mobilize and encourage the citizens to take up farming, introduce them to modern farming techniques, technology & equipment, storage facilities. Thereby creating better market locally.

3. Youth should be encouraged into agriculture, land turner system should be addressed, and Incentives should be given to them for getting into agriculture.

4. There should be adequate support to food production, storage and distribution by every stakeholder on food production. The World Bank, other development organizations, various governments, concerned business organizations and individuals should begin to think more of the solutions, than on the problems.

5. Peasant farming should completely give way to new methods of technological knowhow. As land becomes increasingly encroached on, we have to preserve the fallow land and use more enhancers like fertilizers, new agricultural implements as well as provide access to water in case of arid lands.

6. Citizens must be encouraged by the government to buy local food produce first and import only surplus requirements.

5.1 CONCLUSION

Nigeria has a high risk of losing their ecological sub-structure, upon which the future of sustainable agriculture will be built. Nigerians should be aware of the impact of desertification, soil erosion, deforestation, oil pollution and general abuse of our environmental assets due to short term development pursuits. Nigerian need to take account of what has occurred to the environment in the last three decades in order to realize the dangers they would face in the near future if conservative and protective measures are not put into effect.

Based on the indices for measuring food security around the world, it is best to conclude that Nigeria is still food insecure. The question still remains, how far are we from being food secure? It is hard to answer this question with confidence, without considering some of the issues which made Nigerian economic development extremely slow and low in the first place.

For the Nigerian economy to grow in a more higher pace, there are commanding height it should embrace and manage, such that each one of them makes its maximum contribution to the national revenue pool. Unfortunately, Nigeria has her attention solely concentrated on the oil sector for decades now, which has resulted to the leaving behind of other important sectors expecially agriculture and manufacturing.

Agriculture and environment plays important roles in the Nigeria economy, her social – economic progress has stagnated and has resulted to high level of unemployment, pervasive poverty, hunger and disease, inadequate infrastructure and basic social services, Decline in life expectancy, High level of illiteracy, Overdependence on foreign economies and foreign institutions. The neglects of the real sectors of her economy has brought Nigeria to its present statue of being among the 20 poorest countries in the world.

More so, it is imperative for government, churches, mosques and all leading think tanks to inform and educate Nigerians about the impacts of skyrocketing population increase in order to awaken them to its immediate impact and inevitable consequeces on the future generetions if not checked.

The millennium Development Goals(MDGs) is targeted on making Nigeria to move forward, from its present level and statue of being food insecure to a food secure level within the shortest possible time. Hopefully, the economy will grow fast enough for Nigeria to become one of the 50 largest economies in the world by year 2020. The aim and meaning of this objective is that the citizens of Nigeria would be lifted out of their present poverty into a new era of comfort and affluence.

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