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Ensuring Food and Nutrition Security in Rural Nigeria: An Assessment of the Challenges, Information Needs, and Analytical Capacity

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THE NIGERIA STRATEGY SUPPORT PROGRAM (NSSP)

BACKGROUND PAPERS

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The Nigeria Strategy Support Program (NSSP) of the International Food Policy Research Institute (IFPRI) aims to strengthen evidence-based policymaking in Nigeria in the areas of rural and agricultural development. In collaboration with the Federal Ministry of Agriculture and Water Resources, NSSP supports the implementation of Nigeria's national development plans by strengthening agricultural-sector policies and strategies through:

- Enhanced knowledge, information, data, and tools for the analysis, design, and implementation of pro-poor, gender-sensitive, and environmentally sustainable agricultural and rural development polices and strategies in Nigeria;
- Strengthened capacity for government agencies, research institutions, and other stakeholders to carry out and use applied research that directly informs agricultural and rural polices and strategies; and
- Improved communication linkages and consultations between policymakers, policy analysts, and policy beneficiaries on agricultural and rural development policy issues.

ABOUT THESE BACKGROUND PAPERS

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Table of Contents

List of Tables

List of Figures

Acronyms

ACC/SCN	Administrative Committee on Coordination/Sub-Committee on
ACSD	Accelerated Child Survival and Development
ADP	Agricultural Development Program
AEZ	Agro-Ecological Zone
ANC	Antenatal Care
ASTI	Agricultural Science and Technological Indicators
BASICS	Basic Support for Institutionalizing Child Survival
CAPA	Catchment Area Planning and Action
CBGMP	Community Based Growth Monitoring and Promotion
CBN	Central Bank of Nigeria
CDTI	Community Directed Treatment with Ivermectin
CHP	Community Health Promoter
CIDA	Canadian International Development Agency
COMPASS	Community Participation for action in the Social Sector
DFID	Department for International Development
DFRRI	Directorate of Food and Roads and Rural Infrastructure
DSG	Development strategy and Governance
EBF	Exclusive Breast feeding
ENA	Essential Nutrition Actions
ERGP	Economic Reforms & Governance Project
FANTA	Food and Nutrition Technical Assistance
FAO	Food and Agriculture Organization
FBFI	Food Basket Foundation International
FCT	Federal Capital Territory
FEWS NET	Famine Early Warning System Network
FFB	Fresh Fruit-Bunch
FIVIMS	Food Insecurity and Vulnerability Information and Mapping System
FMOH	Federal Ministry of Health
FMOI	Federal Ministry of Information
FRCN	Federal Radio Corporation of Nigeria
FRIN	Forestry Research Institute of Nigeria
FSCM	Food Security Core Module
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GINA	Gender Informed Nutrition and Agriculture
HGSFHP	Home Grown School Feeding and Health Program
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
IDA	Iron Deficiency Anemia
IDD	Iodine Deficiency Disorders
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IITA	International Institute of Tropical Agriculture
IMNCH	Integrated Maternal, Newborn and Child Health
IMR	Infant Mortality Rate
IRD/Macro	
IQ	Intelligence Quotient

LGA	Local Government Area
MBB	Minimum Bottleneck Budgeting
MDG	Millennium Development Goal
MI	Micronutrient Initiative
MICS	Multiple Indicator Cluster Survey
MMT	Million Metric Tons
MNDC	Micronutrient Deficiency Control
MSG	Monosodium Glutamate
MSME	Micro, Small and Medium Enterprise
NACB	Nigerian Agricultural Cooperative Bank
NAFDAC	National Agency for Food and Drug Administration and Control
NAFPP	National Accelerated Food Production
NALDA	National Agricultural Land Development Authority
NAPRI	National Animal Production Research Institute
NBS	National Bureau of Statistics
NCFN	National Committee on Food and Nutrition
NDHS	National Demographic Health Survey
NEEDS	National Economic Empowerment Development Strategy
NEMA	National Emergency Management Agency
NFCNS	Nigeria Food Consumption and Nutrition Status Survey
NFSP	National Food Security Program
NGO	Non Governmental Organization
NID	National Immunization Days
NIFOR	Nigerian Institute for Oil Palm Research
NISER	Nigerian Institute of Social and Economic Research
NLSS	Nigerian Living Standard Survey
NNC	National Nutrition Council
NPC	National Population Commission
NPHCDA	National Primary Health Care Development Agency
NRCRI	National Root Crops Research Institute
NSPFS	National Special Program for Food Security
PEM	Protein Energy Malnutrition
PD	Positive Deviance
PHC	Primary Health Care
PLWHA	People Living With HIV/AIDS
PRSP	Poverty Reduction Strategy Paper
RBDAs	River Basin Development Authorities
RTEP	Root and Tuber Extension Program
SAKSS	Strategic Analysis and Knowledge Support System
SEEDS	State Economic Empowerment Development
SNID	Subnational Immunisation Day
SON	Standard Organization of Nigeria
TANA	The Agriculture Nutrition Advantage
U5MR	Under-Five Mortality Rate
UN	United Nations
UNDP	United Nations Development Program
UNICEF	United Nations Children's' Fund
UNICEF PICS	United Nations Children's' Fund for Children Participatory Information Collection
USAID/ MARKETS	United States Agency for International Development/ Maximizing Agricultural Revenue and Key Enterprises in Targeted Sites

USGS/EDC	United States Geological Services/ The Earth Resources Observation Systems (EROS) Data Centre
USDA	United States Department of Agriculture
USI	Universal Salt Iodization
VAD	Vitamin A Deficiency
WFP	World Food Program
WHO	World Health Organization

Executive Summary

Nigeria is still characterized by high reliance on food imports. Malnutrition is widespread in the entire country and rural areas are especially vulnerable to chronic food shortages, malnutrition, unbalanced nutrition, erratic food supply, poor quality foods, high food costs, and even total lack of food. This phenomenon cuts across all age groups and categories of individuals in the rural areas. There is a high level of malnutrition among children in rural Nigeria; the figures differ with geopolitical zones, with 56 percent reported in a rural area of South West and 84.3 percent in three rural communities in the northern part of Nigeria. Nationally, the overall prevalence of stunting, wasting, and underweight are 42.0 percent, 9 percent and 25 percent, respectively.

The problem of food and nutrition security in Nigeria has not been adequately and critically analyzed, despite various approaches at addressing the challenge. The enormous amount of money spent in attempting to assure the food security of Nigerians without success calls for a fundamental review of the past approaches and achievements to see what lessons can be learned to re-strategize and develop an approach that will ensure that better progress is made toward achieving the first Millennium Development Goal. Since the majority of Nigerians (70 percent) live in rural areas, an analysis of the food and nutrition security status of rural dwellers will provide a clear picture of what needs to be done to assure food security in Nigeria with the attendant improvements in nutrition status when all the other necessary conditions, such as adequate health and care, are present.

The main objective of this knowledge review was to collect and summarize available secondary literature on food and nutrition security in rural Nigeria. The framework for the analysis of food and nutrition security details the factors responsible for low consumption of food and resulting malnutrition. The socioeconomic and political environment at the national and subnational level is the principal determinant of food security, since it influences food availability, stability of food supplies, and access to food, which in turn influence the amount of food consumed. When these factors interact with the health and sanitation environment as well as care practices they determine the nutritional status of the individual.

There is a dearth of national surveys providing datasets for the analysis of food and nutrition security in rural Nigeria. Though there have been a number of individual and institutional efforts and attempts at generating databases on food and nutrition security for Nigeria, these efforts are hampered by inadequate funds to implement large-scale surveys.

Fundamentally, we find that food insecurity and malnutrition in rural areas of Nigeria result from non implementation and/or faulty implementation of the National Food and Nutrition Policy and National Plan of Action for Food and Nutrition. Other reasons identified include unacceptably high levels of poverty in rural households, low priority for nutrition on the agenda of government and resulting poor funding, poor understanding by policymakers of the content of nutrition programs in relation to other sectors, poor infant and child feeding practices, inadequate access to healthy environment and health services as well as various care practices.

The review concludes that the existing knowledge of food and nutrition security in rural areas of Nigeria does not offer detailed information to the household level, at which greater understanding is required to help design interventions that will change the

unacceptable food and nutrition situation of rural dwellers in Nigeria. This gap needs to be filled to make progress in changing the food and nutrition security situation of rural dwellers in Nigeria.

Identified gaps in knowledge include the issue of mainstreaming nutrition considerations and activities into poverty reduction, agricultural development policies, and food security interventions. There is a need to understand and appreciate the distinctness of nutrition and prioritize its appropriate integration into all sectors and departments working on food security in Nigeria. Similarly, knowledge of the impact of seasonal variations, the environment, and livelihoods on food usage, consumption patterns, food coping strategies, and food and nutrition security status is important for action in Nigeria.

The knowledge gaps also include understanding the interconnectedness of gender factors and their roles in achieving household food and nutrition security, and understanding the impact of an integrated approach such as the integration of gender, environment, nutrition and agricultural activities, in achieving livelihoods for women, household food and nutrition security.

The review recommends a strategic partnership and collaboration of all stakeholders to produce datasets that will allow for new directions and a plan of action to seek a comprehensive integration of nutrition and coordination of food security interventions among all partners at all levels, particularly in government ministries and agencies. This multi-stakeholder and multidimensional approach is required for an effective mainstreaming, integration and coordination of food and nutrition activities.

Introduction to the Review

The Nigerian Context

Geographically, Nigeria occupies a landmass of approximately 923,768 square kilometers (km) in the west coast of Africa between the latitudes of 4o 1' and 13o 9' N and longitudes 2o2' and 14o 30' E. Nigeria shares its borders with four countries: Niger to the north, Chad and Cameroon to the east, and Benin to the west. The country is bounded on the south by a vast coastline of the Atlantic Ocean, the Gulf of Guinea, which measures about 800km. The population of Nigeria is estimated to be 140,003,542 (2006 preliminary census), with a projected average annual growth rate of about 3.0 percent (1995-2000), a total fertility rate of 5.8, and a crude death rate of about16 per 1,000. Nigeria has one quarter of the population of Africa and has a United Nations Development Program (UNDP)-Human Poverty Index-1 ranking of 75 out of 103 countries.

Nigeria is made up of over 300 ethnic/linguistic groups. Historically, most of the ethno-linguistic groups that constitute the present-day Nigeria previously existed as autonomous political entities prior to colonization. The country presently operates a federal system consisting of 36 states and a federal capital territory located in Abuja. The 36 states are also grouped into six geo-political zones, which to a great extent reflect ethnic affinity. The country is divided into 774 local government areas serving as administrative units at the third tier of government. Though the three tiers of government—the federal government, state government, and local government areas—are in place, the current constitution, which was drafted in 1999 under a military regime, does not explicitly recognize the autonomy of the local government areas (FMOI 1999).

Nigeria is agrarian, and agriculture remains the hub of the economy, providing employment for over 90 percent of the rural dwellers, who constitute about 70 percent of the total population. Nigeria's strengths include abundant land, labor, and natural resources. The country has an area covering 92.4 million hectares including 91.1 million hectares of land mass and 1.3 million hectares of water bodies. The agricultural land area of 83.6 million hectares is classified as 28.2 million hectares arable, 2 million hectares fadama (irrigable land), 2.5 million hectares permanent crops, 10.9 hectares forest/wood, and 40 million hectares pasture. The agricultural gross domestic product (GDP) is contributed by crops (85 percent), livestock (10 percent), fisheries (4 percent), and forestry (1 percent). More than 90 percent of the agricultural output is accounted for by small-scale farmers with less than 2 hectares under cropping. It is estimated that about 75 percent (68 million hectares) of the total land area has potential for agricultural activities with about 33 million hectares under cultivation. However, of the estimated 3.14 million hectares of irrigable land area, only about 220,000 hectares (7 percent) is utilized.

Nigeria is richly endowed with physical and natural resources. The large arable land stretches through five distinct vegetation zones—Sudan savannah, Guinea savannah, forest savanna, tropical rain forest, and mangrove swamp—and the ecology holds possibility for abundant food production. The abundance of water resources has great potential for fishery and related activities. Nigeria has a rich deposit of mineral resources including crude oil and gas, coal, granite, and other precious metals and gemstons. The

nation's oil reserve is the seventh largest in the world. The rich cultural heritage, weather conditions, geographical landscape, and other social and physical endowments also hold potential for tourism. Ecologically, Nigeria is endowed with a rich biodiversity of flora and fauna.

Definitions of Food and Nutrition Security

Food security refers to the condition in which all people, at all times, have physical, social, and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO/WHO 1992; FAO 1996). Food availability, stability of supplies and food access are related determinants of food security.

At the household level, food security implies an adequate access to food over time. This is possible when there is adequate food availability to the household, and an adequate income capacity for the purchase of the available food. Stability of food implies that the food availability is not affected by any shocks or risks affecting food production at all times. Food access has three components: 1) physical access to food, 2) economic access to food, and 3) sustainable access to food. Availability of food, stability of food supplies and access are therefore three essential determinants of food security. Physical access implies food availability or food supply to the household, as there might be food available at the national level which however may not trickle down to the household level.

A number of factors such as income, educational level, and household sizes are known to affect household food security, as they directly affect economic access and the sustenance of such access. Lack of food security, referred to as food insecurity, hunger, and poverty are closely linked. For farm households in rural areas, food availability means ensuring that sufficient food is available for them through their own production or purchase from markets. However, due to lack of adequate storage facilities and pressing needs, they mostly end up selling excess produce during the harvesting period, and sometimes rely on market purchases during the hungry season, thereby creating a situation of food insecurity for most rural farm producers and households. Not only does food insecurity in itself have deleterious effects on households and individuals, but efforts at achieving food security may also exact a heavy toll on households if they must spend most of their income on obtaining food.

Nutrition security is achieved for a household when secure access to food is coupled with a sanitary environment, adequate health services, and adequate care to ensure a healthy life for all household members.

Food and Nutrition Security in Rural Nigeria

Food security is currently both a fundamental objective and an expected outcome of development policies in Nigeria, as the country currently faces a challenge in meeting the basic food needs of its population. The majority of Nigerians depend largely on subsistence agriculture, which is hardly sufficient to meet the food needs of the population. However, notwithstanding the many policies, programs, and investments by various local and international agencies operating in the country, food security and the nutrition situation are worsening (FEWSNET 2007).

In Nigeria, women and female-headed households are frequently the most chronically poor within rural communities. Though women play significant roles in rural economic activities, women have lower social status than men and consequently less access to schooling and training, particularly in childcare and health practices. While the number of men migrating from rural areas in search of employment has increased over the last decades, the number of female-headed households has risen substantially. Women struggle to cope as the burden of work at home and in the fields, fall on their shoulders. Malnutrition is a frequent problem in these households. In order to better integrate women into the socioeconomic life of Nigeria, education and employment opportunities must be improved and women should be encouraged to participate more actively in development activities (IFAD 2006).

Women are the key to food and nutrition security (Quisumbing 1995; Ukeje 2003). They play an important role as producers of food, as managers of natural resources, in income generation and as providers of care for their families. Yet, women in Nigeria often continue to have limited access to land, education, credit, information, technology, and decision making bodies. The control of land confers on the owner access to credit, and access to inputs such as agricultural extension service, seeds, modern irrigation systems, fertilizers, pesticides, and membership of cooperative societies. Without land, the women have no security and have to depend on landowners for employment. In the eastern part of the country where the population density is high, the break-up of communal land holdings has led to the transfer of exclusive land rights to male-headed households (Ukeje 2003). This ignores both the existence of female-headed households and the rights of married women to a joint share. Women are either dependent on the goodwill of their husbands and the availability of land to grow food or have to lease farmland.

Inconsistent food security results in inadequate dietary intake, which leads to malnutrition. Malnutrition is the most serious consequence of food insecurity. Adult malnutrition results in a lower productivity on farms and in the labor market. In women, it also results in fetal malnutrition and low birth weights. Fetal and infant undernutrition leads to lower cognitive development and poor schooling performance. For school-age children, nutritional deficiencies are responsible in part for poor school enrollment, absenteeism, early dropout, and poor classroom performance with consequent losses in productivity during adulthood.

The poor health system with the lack of access of rural dwellers to good health care, potable water, good sanitation as well as adequate information on caring practices lead to high levels of infections which interact with inadequate food intake which affects the nutritional status of rural dwellers particularly women and children.

Hence, assessing food and nutrition security through guaranteeing household food security, adequate caring practices, and a healthy environment will save millions of lives or rural dwellers in Nigeria.

Justification for the Review

The problem of food and nutrition security in Nigeria has not been adequately and critically analyzed, despite various approaches addressing the challenge. The enormous amount of money spent in attempting to ensure the food security of Nigerians without success calls for a fundamental review of the past approaches and achievements to see what lessons can be learned to re-strategize and to develop an approach that will ensure

that better progress is made toward achieving the first Millennium Development Goal. Since the majority of Nigerians (70 percent) live in rural areas, an analysis of the food and nutrition security status of rural dwellers will provide a clear picture of what needs to be done to ensure food security in Nigeria with the attendant improvements in nutrition status when all the other necessary conditions, such as adequate health and care, are present.

Objectives

The main objective of this review is to collect and summarize available secondary literature on food and nutrition security in rural Nigeria. Specific objectives for the review include the following:

- Identify information sources throughout Nigeria on the current situation of food and nutrition security in rural Nigeria,
- Note gaps in the information, assess the complexity and types of studies being undertaken, and
- Document the capacity of firms, institutions, and individuals in Nigeria who can carry out future policy studies on food and nutrition security in Nigeria.

Organization of the Report

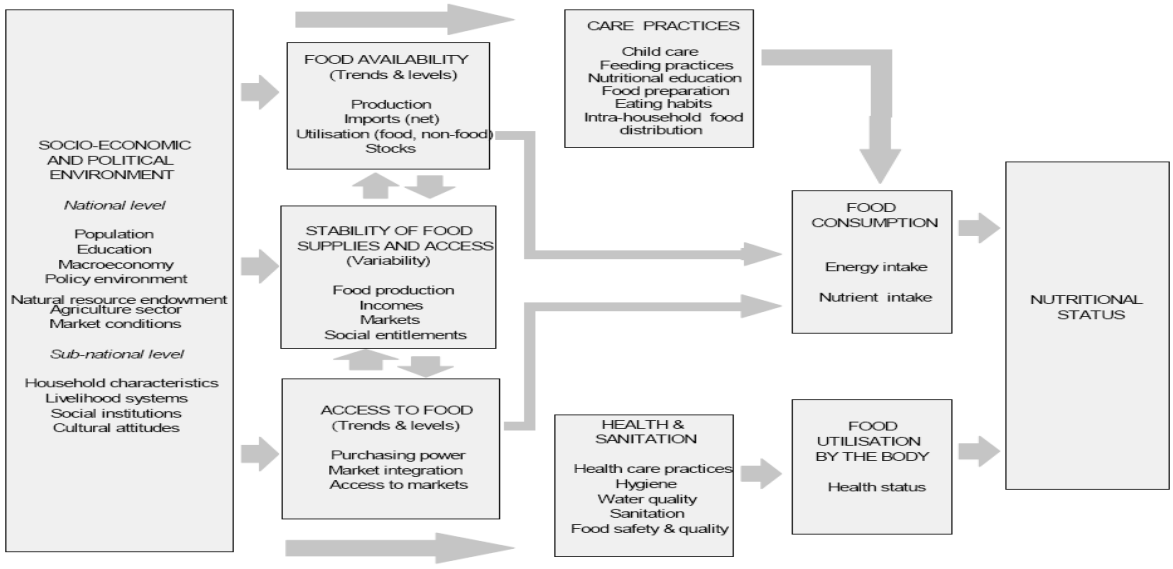
- Chapter 1 contains the background, Nigerian context, justification for the review, and the objectives of the assignment.
- Chapter 2 provides the conceptual framework for the review as well as the available datasets used in the review.
- Chapter 3 presents evidence on the level of food security and its various ramifications.
- Chapter 4 presents information on the nutrition situation.
- Chapter 5 describes the policies and programs to address malnutrition.
- Chapter 6 analyzes the government programs, actions, and policies of other international development partners for addressing food insecurity.
- Chapter 7 identifies the gaps in knowledge and capacity in achieving food and nutrition security.
- Chapter 8 provides a summary of the review as well as conclusions and recommendations.

Conceptual Framework and Available Data

Conceptual Framework for the Analysis of Food and Nutrition Security

In 2000, the Food and Agricultural Organization developed a framework for the analysis of food and nutrition security for the Food Insecurity and Vulnerability Information Mapping System. This framework details the factors responsible for a low consumption of food and resulting malnutrition. As shown in Figure 1, the socioeconomic and political environment at the national and subnational levels are the principal determinants of food security since they influence food availability, stability of food supplies, and access to food, which influence the amount of food consumed. When these factors interact with the health and sanitation environment and care practices they determine the nutritional status of the individual.

Figure 1. Conceptual framework for understanding the possible causes of low food consumption and poor nutritional status.



Source: Food insecurity and vulnerability information mapping system, FAO 2002.

The basic determinants of food and nutrition security are resources: human resources (for example, people and their knowledge, skills, and time); economic resources (for example, assets, land, and income); and organizational resources (for example, formal and non-formal institutions, extended families, and childcare organizations).

Resources are available at different levels of society and are controlled in many different ways. At the household level, men usually control more of the resources, which often constrains the achievement of adequate food, care, and health. The use of resources depends on the way a problem is understood as well as on the perception and priorities of those who control resources. Education plays a particularly important role in determining how resources are utilized to secure food, health, and care for children.

Food availability refers to sufficient quantities of appropriate, necessary types of food from domestic production, commercial imports, and other sources, that are consistently available to individuals or are in reasonable proximity to them. In this context, availability refers to the physical existence of food, from own production or in the markets. National level food availability is a combination of domestic food production, commercial food imports, food aid, and domestic food stocks, as well as the underlying determinants of all of these factors (Gross et al. 2000).

Stability of food supplies means that households should not risk losing access to food as a consequence of sudden shocks (climatic crisis) or cyclical events (e.g. seasonal food insecurity). Food stability at the household level is thus critical to food security.

Access to food is defined by an individual's capacity (i.e., incomes or other resources) to purchase or barter to obtain levels of appropriate foods needed to maintain consumption of an adequate diet and nutritional level. Food access also is a function of the physical, social, and policy environment which determine how effectively households are able to use their resources to meet their food security objectives. Access is therefore ensured when all households and all individuals within those households have sufficient resources to obtain appropriate foods for a nutritious diet (Riely et al.1999). The level of resources (capital, labor, and knowledge, and others) at the disposal of households and individuals to a large extent determines their economic access to required foods, in addition to the prevailing market prices of the food commodities. The ability of most households in rural and urban Nigeria to generate a sufficient income, which together with own production, can be used to meet food needs is however undermined as a result of high levels of poverty.

The component of food consumption refers to the proper use of food for consumption, proper food processing and storage, and possession and application of adequate knowledge of nutrition, childcare, and adequate health and sanitation services. The nutrition perspective here refers to the added components of caring practices and health services and healthy environments. This addition to the definition and concept of food security makes it whole, with the aim of achieving nutrition security, which is defined as adequate protein, energy, vitamins, and minerals for all household members at all times (Quisumbing 1995).

Food and nutrition security can only be achieved if adequate food (quantity, quality, safety, and socio-cultural acceptability) is available, accessible, and satisfactorily used by all individuals at all times to live a healthy and active life. Food and nutrition security are combined in this definition, and it highlights the essential aspects of availability,

accessibility and use of food. The inclusion of the use aspect underscores the fact that nutrition security is more than food security.

The underlying determinants of the framework indicate a set of outcome conditions necessary for adequate nutrition or, more precisely, for adequate dietary intake and absence of disease. Three such conditions can be identified: adequate access (household food security); adequate care of children and women; and adequate access to basic health services, combined with a safe and healthy environment. Each of these conditions is necessary but not sufficient for adequate nutrition. If all three are fulfilled, however, it is likely that dietary intake will be satisfactory, disease will be controlled, and adequate nutrition will be secured.

Adequate care of children and women has only recently been fully recognized as having an important bearing on the nutrition status of mothers and children. *Care practices* in the framework refer to care-giving behaviors such as breastfeeding and complementary feeding practices, food and personal hygiene, diagnosing illnesses, stimulating language and other cognitive capabilities, and providing emotional support. Care practices, like household food security, is the outcome of complex processes in society, but are ultimately dependant on the availability, accessibility, and use of resources.

Datasets on Food and Nutrition Security in Nigeria

There is a dearth of national surveys providing datasets which can be used for the analysis of food and nutrition security in rural Nigeria. Though there have been a number of individual and institutional efforts and attempts at generating databases on food and nutrition security for Nigeria, these efforts are however hampered by inadequate funds to implement large-scale surveys. Since 1990 there have been activities and efforts at generating national datasets for the analysis of food insecurity and nutrition. There is a strong need to institute a comprehensive national survey on food and nutrition security indicators across all the geopolitical zones and disaggregate this by gender, urban and rural and household, and lifecycle levels. This survey needs to be consistently carried out at least every four years.

Many surveys are carried out without including nutritional indicators or specific food security indicators such as per capital consumption, food distribution, and food availability at the household level. Many of the datasets for food and nutrition security are not disaggregated to the household level, which constrains the full analysis of the situation, thus creating a gap in any analysis of the household and individual levels. Datasets being used are classified according to the areas of focus of the indicators. Most are not focused on single areas of the conceptual framework but have been collected for the purpose of the review. Valid datasets and information sources that are being used for the current analysis and can be re-analyzed for future studies are classified as follows:

1. Food and Nutrition Security Datasets
    - National Bureau of Statistics (November 2007). Consumption Pattern in Nigeria. Produced under the auspices of the Economic Reforms & Governance Project (ERGP), Federal Government of Nigeria.
    - Report of the National Program for Food Security (May 2008). Federal Government of Nigeria
    - The Nigerian Experience: National Program for Food Security (December, 2006). Federal Ministry of Agriculture and Rural Development, Federal Government of Nigeria & Food and Agriculture Organization (FAO)
    - Nigeria Food Security Updates by the Famine Early Warning Systems Network, USAID, Nigeria
    - Nutrition Assessment in Northwest Millet and Sesame Livelihood Zone of Northern Nigeria August 26 to 31 2007. FEWS NET, Save the Children, UNICEF
    - Multiple Indicator Cluster Survey 1995, 1999 (MICS 1999); 2007;
    - Nigeria Food Consumption and Nutrition Status Survey 2001- 2003. Summary FGN/IITA/USAID/UNICEF/USDA 2004
    - The World Bank /Federal Ministry of Health Nigeria. Nigeria Health, Nutrition, and Population Country Status Report. Volume II: Main Report 34177-NG
    - The World Bank/The Federal Ministry of Health Nigeria: Nigeria Health, Nutrition, and Population Country Status Report. Volume 1: Executive Summary. Report No. 34177-NG
    - National Planning Commission: Annual MDG reports; 5 or 10 year Strategic Plans in health & education, SEEDS benchmarking report; NEEDS 1 & 2
    - USAID MARKETS fact sheets and other documents

2. Datasets addressing both Poverty and Agriculture
    - Preliminary Livelihoods zoning: Northern Nigeria: A special report by The Famine Early Warning Systems Network. February-March 2007. United States Agency for International Development Famine Early Warning Systems Network (FEWS NET)

3. Datasets addressing Poverty, Food and Nutrition Security
    - National Planning Commission, Nigeria and UNICEF, Children's and Women's Rights in Nigeria: A Wake-up Call. Situation Assessment and Analysis 2001
    - Nigeria Demographic and Health Survey (NDHS)1990 Federal Office of Statistics Lagos, Nigeria IRD/Macro International Inc. Columbia, Maryland USA April 1992
    - Nigeria Demographic and Health Survey (1999), National Population Commission (NPC) [Nigeria] and ORC Macro
    - Nigeria Demographic and Health Survey (2003), National Population Commission (NPC) [Nigeria] and ORC Macro

4. Datasets addressing Agriculture and Food Security

- National Bureau of Statistics (November, 2007). Prices of Selected Items 1997-2006. Produced under the auspices of the Economic Reforms & Governance Project (ERGP), Federal Government of Nigeria
- Reports of the National Strategic Grain Reserve office showing periodic purchase and release of food commodities from 1999-2008
- Crop, Livestock and Fish Production Estimate for 1999-2007 by the Department of Planning and Research Analysis of the Federal Ministry of Agriculture and Water Resources, Nigeria
- Various publications of the International Institute of Tropical Agriculture

5. Datasets addressing Poverty, Agriculture and Food Security together
   - Retail Market Prices of Agricultural inputs and Produce at Urban Markets by the Nigeria Agri-Market Information Service, National Food Reserve Agency, Federal Ministry of Agriculture and Water Resources, Nigeria
   - Gender Informed Nutrition Agriculture (GINA II) Project 2006
   - Millennium Development Goals. Report 2004 Nigeria
   - Individual studies at localized areas of Nigeria, Technical reports etc included in the reference section of this report

6. Poverty specific related datasets
   - National Policy on Integrated Rural Development (December, 2006). Federal Ministry of Agriculture and Rural Development, Federal Government of Nigeria
   - National Bureau of Statistics (2005) – Core Welfare Indicators. FGN/World Bank

7. Agriculture related datasets
   - National Bureau of Statistics (November 2007). Agricultural Survey Report covering 1994/95-2005/2006. Produced under the auspices of the Economic Reforms & Governance Project (ERGP), Federal Government of Nigeria
   - Survey on Cassava production and productivity in Nigeria (August 2007).Presidential Initiative on Cassava Production and Export. Federal Department of Agriculture, Federal Ministry of Agriculture and Water Resources, Nigeria
   - Nigeria Institute of Social and Economic Research (1998). National Agricultural Research Program in Nigeria: The Efficacy of Policy Studies. A publication of the Socioeconomic Policy Research Component of the National Agriculture Research Project.
   - Nigeria Institute of Social and Economic Research (2004). NISER Annual Survey of Crop Production Conditions in Nigeria, 2002. A publication of NISER Annual Monitoring Research Project.
   - Nigeria Institute of Social and Economic Research (1998). Crop Production Trends and Variability in Nigeria. 1990-1995. A publication of NISER Annual Monitoring Research Project
   - Nigeria Institute of Social and Economic Research (1999). A Characterization of Industrial Demand for Major Agricultural Commodities in Nigeria

Food Security/Insecurity Situation in Rural Nigeria

Food insecurity is a situation that exists when all people, at all times, do not have physical, social and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life. As seen in the conceptual framework in Figure 1, food security is defined by food availability, food access, and stability of supplies while utilization coupled with health and care practices define nutrition security.

The following section presents an analysis of the food security situation in Nigeria using the three components in the conceptual framework.

Food Availability

Agricultural Production

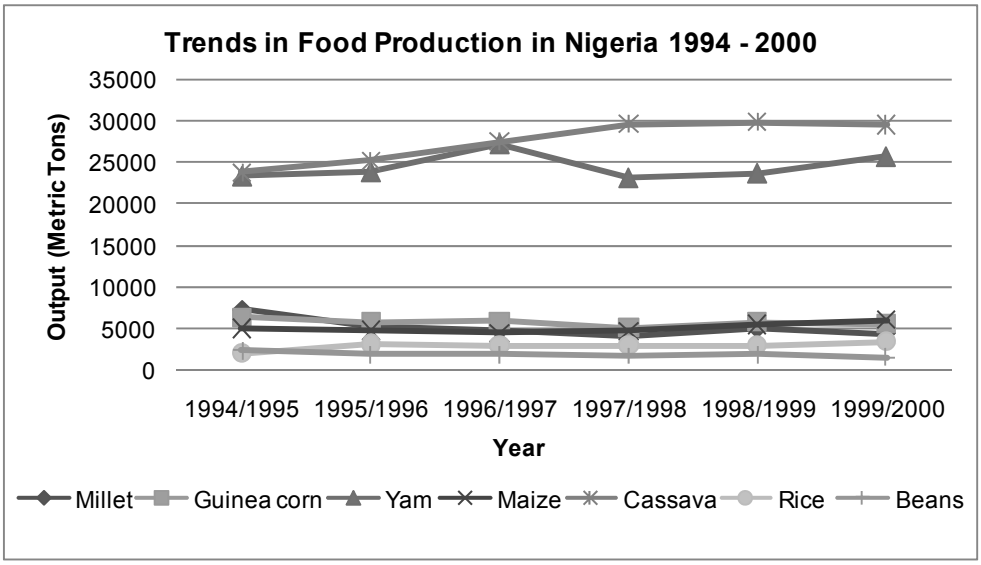
At 212.8 (1990=100), the provisional aggregate index of agricultural production increased in 2007 by 6.4 percent, compared with 7.1 percent recorded in 2006. The growth exceeded the target of 6.0 percent set for the agricultural sector in the National Economic Empowerment Development Strategy (NEEDS) program. The increase in agricultural production was propelled largely by the implementation of the various agricultural policies and programs, including the prompt response to the outbreak of pest infestations, implementation of zero tariffs on imported agrochemicals and the continued enforcement of the temporary ban on the importation of some agricultural products notably poultry products and rice (Nigeria 2006).

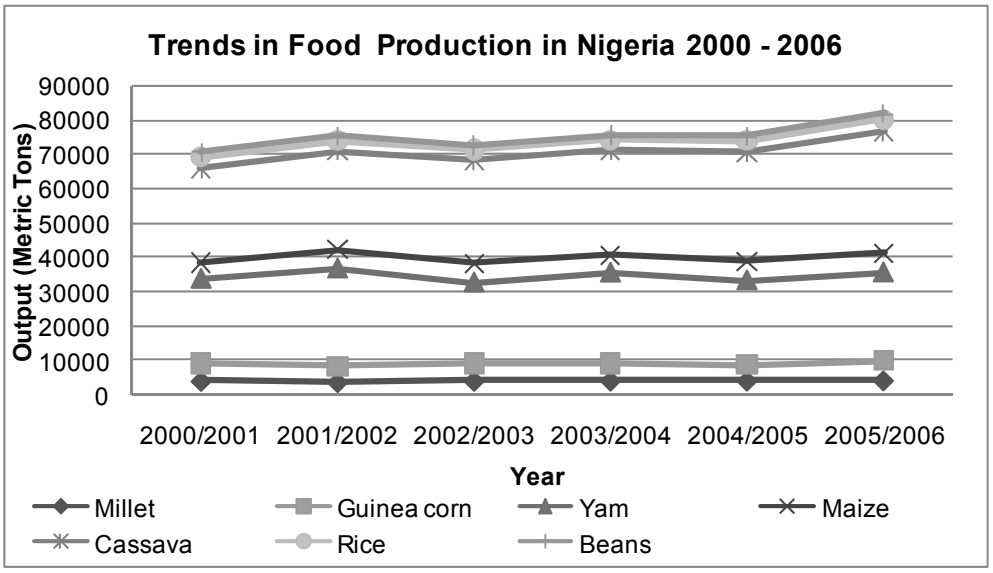
Land Area and Production

Nigeria has a land area of 98.3 million hectares, of which 74 million is good for farming. Agricultural production plays a principal role in the Nigerian economy. The agriculture sector contributes about 40 percent of the Gross Domestic Product (GDP) (NFSP 2008).

The focus of agricultural production in Nigeria is largely on the crop subsector because of its contributions to food supply, raw materials supply, and national income. Livestock, fisheries, and forestry contribute only about 15 percent of the agricultural GDP. Despite the increase in food production, about 60 percent of the population is living below the poverty line (Nigeria 2006). Figure 2 summarizes the trend of food production of the various staples between 1994/1995 and 2005/2006.The trend shows fluctuations in production during 2005/2006.

Figure 2. Trends in food production in Nigeria (1994-2006)





Source: National Bureau of Statistics Agricultural Survey Report, 2007

Cereals

The major cereals in Nigeria are maize, millet, sorghum, and rice (Nigeria 2006). The total area under crop for millet in Nigeria shows a decline from 7.53 million hectares in 1994/1995 to 3.91 million hectares in 2005/2006. The national production output also shows a decline from 7.27 million tons in 1994/1995 to 3.80 million tons 2004/2005.

A decline in total area used to plant guinea corn was seen from 6.00 million hectares in 1994/1995 to 3.95 million hectares in 2004/2005. 1994/1995 recorded the highest

production of guinea corn. A decline has been recorded since then with fluctuation over the years ranging from 4.54 -5.8 million tons.

Area under crop for maize ranged between 2.85 and 3.44 million hectares within the period under review while there was an increase in total production output ranging from 4.55 million tons (1996/1997) to 6.07 million tons (1999/2000). The total output in 2005/2006 was 5.76 million tons.

Rice, which is the most consumed staple, has a total area under crop that ranged between 1.34 (2003/2004) and 1.62(2005/2006) million hectares. The national production output was 1.99 million hectares as of 1994/1995 and increased to 3.28 million tons by the end of 2006. According to the National Food Security Program (NFSP) 2008 report, the current local production of rice in Nigeria amounts to about 2.8 million tons.

Root and Tubers

Yam and cassava are the two major root and tuber crops in Nigeria. The total area used for planting yams ranged between 1.99 and 2.38 million kilometers from 1994 to 2006 while total production outputs increased from 23.30 million tons in 1994/1995 to 28.37 million tons in 2001/2002. However, a decline was recorded since then.

Nigeria is currently the leading producer of cassava in the world, producing about 40.0 million tons annually. A number of products such as starch, cassava chips, pharmaceuticals, and adhesives are derived from the crop. Area under crop for cassava ranged from 2.14 and 2.79 million hectares from 1994 to2006. The national production output of cassava increased from 23.83 million tons in 1994/1995 to 35.61 million tons in 2005/2006.

Pulses

Pulses are an important food crop in Nigeria because they provide a vast number of the population with a cheap alternate source of protein. Cowpea, groundnut and soya bean are the major pulses consumed in Nigeria. Bean production increased from 2.14 million hectares in 1994/1995 to 3.47 million hectares in 2005/2006. Total production output in 1994/1995 was 2.33 million tons, but reduced to 1.45 million tons in 2002/2003. The trend in production output of cowpea indicates a decline, although the areas under crop increased in the years.

Livestock products

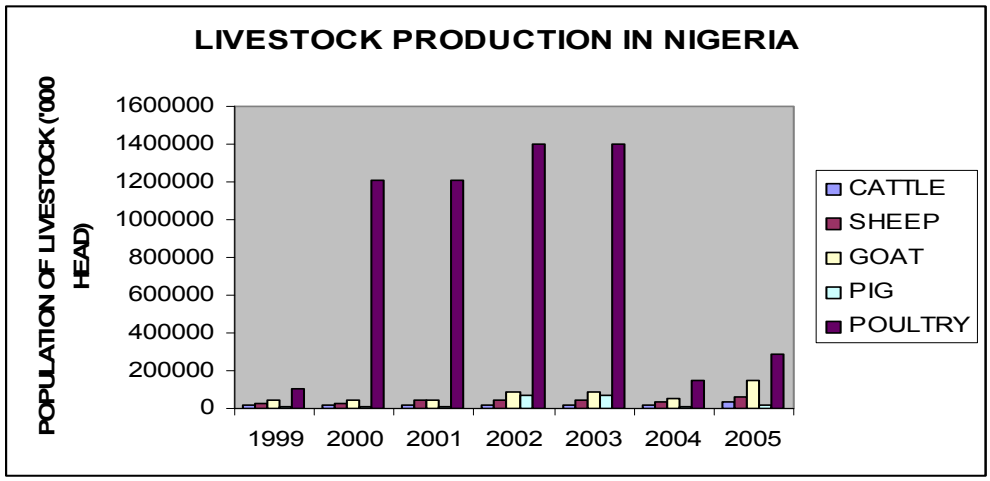
Livestock accounts for a third of Nigeria's agricultural GDP, providing income, employment, food, farm energy, manure, fuel, and transport. It is also a major source of government revenue. Traditional livestock production in Nigeria is varied and complex. Livestock, especially ruminants, is the most efficient user of uncultivated land and can contribute substantially to crop production. For most of the major livestock in Nigeria, an increase in output was witnessed over the last 10 years. Despite a series of outbreaks of the avian flu pandemic in some states, the poultry subsector witnessed increased growth. This was attributed to the strict compliance with safety practices such as

slaughtering of infected flocks, safe disposal of the carcasses, decontamination of the farms, improvement of bio-security, controlled movement of birds, and strengthening of surveillance and disease reporting. Prompt and adequate payment of compensation to affected farmers facilitated the implementation of these measures.

Egg production increased by 4.6 percent to 632,000 tons in 2007, driven by the use of the resistant shika brown chicken, developed by the National Animal Production Research Institute (CBN Annual Report 2008). Currently, importation of poultry products such as chicken and turkey are currently banned in Nigeria. Figure 3 and Table 1 detail the production trends of the different livestock raised in Nigeria.

Total milk production increased by 5.7 percent to 1.4 million tons in 2007. The government initiated several programs to increase domestic milk production and intensified marketing of fresh milk consumption. The pilot Diary Development Program continued in Kaduna with the formation of the Milk Producers' Association. Another contributing factor was the encouragement of milk consumption through the primary school feeding and health programs introduced in many schools across the country (CBN Annual Report 2008).

Figure 3. Livestock production in Nigeria (1999-2005)



Source: Federal Ministry of Agriculture 2006

Table 1. Production and growth rates of livestock products (1996-2005)

Year	Poultry Actual Growth		Goat Actual Growth		Mutton Actual Growth		Beef Actual Growth		Pork Actual Growth	
	(000 tons)	(percent)	(000 tons)	(percent)	(000 tons)	(per cent)	(000 tons)	(per cent)	(000 tons)	(percent)
1996	74		92		96		197		39	
1997	76	2.70	95	3.26	101	5.21	200	1.52	43	10.26
1998	77	1.32	96	1.05	102	0.99	202	1.00	45	4.65
1999	82	6.49	101	5.21	107	4.90	208	2.97	47	4.44
2000	88	7.32	107	5.94	113	5.61	215	3.37	50	6.38
2001	95	7.95	114	6.94	117	3.54	228	6.05	55	10.00
2002	107	12.63	129	13.16	126	7.69	239	4.82	62	12.73
2003	107	0	129	0.08	129	2.40	248	3.95	62	0.32
2004	108	1.11	129.9	0.08	132	2.79	257	3.23	62	0
1998-2003 Average	90	7.36	109.66	6.61	112.35	5.22	217.61	3.59	51.40	8.81

Source: Central Bank of Nigeria Annual Report and Statement of Accounts, 2001 and 2003 editions.

Fisheries

According to the USAID-funded Maximizing Agricultural Revenue and Key Enterprises in Targeted Sites (MARKETS) project, aquaculture is becoming an increasingly important source of fish in Nigeria (Nigeria 2006). Fish output increased by 5.8 percent to 635,200 tons in 2007. The production of fish through aquaculture also increased from 68,300 tons to 76,300 tons, representing a growth rate of 11.7 percent. However, the annual production level was much lower than the national demand of 1.5 million tons. According to USAID MARKETS, Nigeria needs to increase domestic fish supply by at least 700,000 tons per year to eliminate dependence on fish importation and meet domestic demand. The low level of investment by the private sector in the fisheries sub-sector has accounted for the slow growth of fish production in the country

Forestry

Forestry production in Nigeria increased modestly by 2.7 percent (145.6 million cubic meters) in 2006. The rise was attributed to increased demand for wood products. In order to sustain wood production, the Forestry Research Institute of Nigeria intensified the supply of improved breeder seedlings to replace the harvested tree stocks.

In spite of the remarkable performance of the agricultural sector in 2007, some problems constrained higher production. These included inadequate and late supply of fertilizers and other farming inputs, high cost of production, as well as the invasion of farms by quela birds in most northern states, coupled with mild drought and flooding experienced in some parts of the country.

Fertilizer

Nigeria produced its largest quantity of fertilizer between 1994 and 1995. A reduction in quantity was witnessed in the following years. The level of quantity produced has been

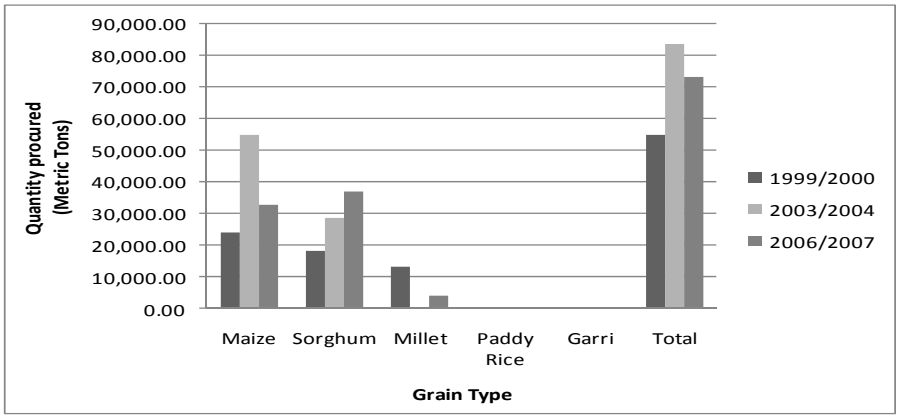
fluctuating between 71.66 and 76.90 million tons. To boost agricultural productivity in 2007, the federal government doubled the amount of subsidized fertilizer it provided to farmers to 500,000 tons. However, providing farmers with adequate supplies of fertilizers in time for the planting season remains a challenge for the government and its partners (FEWS NET 2007).

Affordability is a constraint in the use of fertilizer in Nigeria (Nigeria 2006). In 2007, the price of fertilizer was relatively stable but remained high. (In major northern states, fertilizer prices were slightly lower in 2007 than in 2006.) The expansion of the subsidy program did not have much impact on fertilizer market prices because demand was very high and some subsidized fertilizer were being sold in the markets. The price of subsidized fertilizer was 25 percent lower than the current market price in 2007: a 50-kg bag was estimated at Nigerian naira (N) 3000 (FEWS NET 2007).

Grains

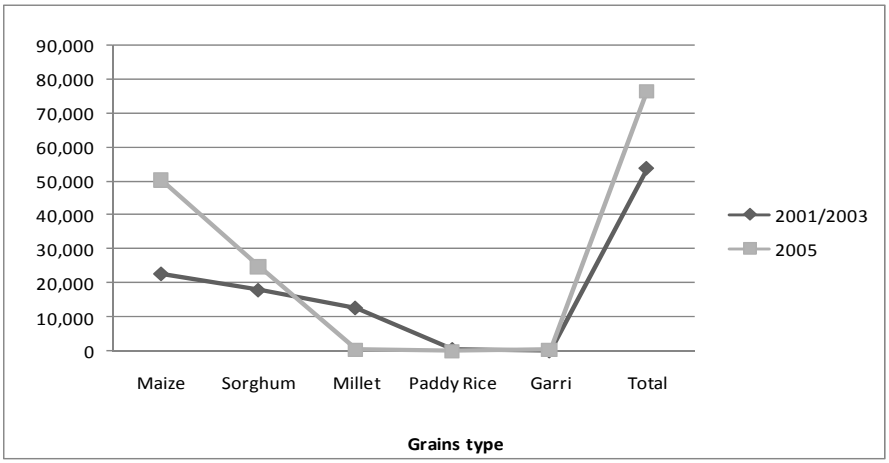
Nigeria has 11 functional grain silos. Grains are procured when there is a glut in the markets and then released when they are in short supply. In 1999/2000 and 2003/2004 there were gluts of grains in the market, and a procurements of 54,789.67 tons and 83,595.03 tons were made. The sum of N2.5 billion was released for the procurement of grains in the country by the federal government. As a result, the federal government met its 2005/2006 strategic food reserve target of 51,000 tons of grains and about 1,220 tons of processed cassava (CBN 2007 report). In 2006/2007, a total of 73,466.81 tons were procured. Between 2001/2003, 53,358.51 tons of grains were released while in 2005, 76,631.15 tons were released to the beneficiaries, which included state governments, individual household consumers, livestock farmers, feed millers, cooperative groups (all farmers associations of Nigeria, the Poultry Association of Nigeria), schools, women in agriculture, security agencies (police, civil defense), traditional rulers, NGOs, individuals, the World Food Program, and the National Emergency Management Agency. Figures for 2008 are unavailable, but 72,000 tons were the expected quantity to be released.

Figure 4. Grains procurement from the National Grain Reserve (1999-2007)



Source: Strategic grain reserve, Federal Ministry of Agriculture Abuja, 2008

Figure 5. Grains released from the National Grain Reserve (2001-2005)



Source: Strategic grain reserve, Federal Ministry of Agriculture Abuja, 2008

Food Export and Import

The contribution of agriculture to the GDP has been on the increase since 2003. Despite these increases, shortfalls in food requirements continue to increase. These shortfalls are filled through food imports, ranging in value from N3.47 billion in 1990 to N113.64 billion in 2000 (CBN 2001). According to the CBN report, the value of all import categories increased in 2006. The increase was particularly prominent in crude oil (39.7 percent), manufactured goods (39.5 percent), chemicals (37.9 percent), and food and live animals (23.4 percent). Import of food and live animals was N144.29 billion in 2004 but increased to N201.65 billion in 2005. During 2006 it declined to N174.23 billion (CBN 2006). The recent food crisis in 2008 in Nigeria caused the government to import about 500,000 tons of rice into the country (FEWS NET 2008).

Table 2 shows the sectoral growth rates of GDP at 1990 prices for the various subsectors of agriculture.

Table 2. Sectoral growth rates of GDP at 1990 constant basic prices (percent) (2008)

	2003	2004	2005	2006	2007
Agriculture	6.64	6.50	7.06	7.40	7.42
Crop Production	7.00	6.50	7.13	7.49	7.51
Livestock	4.19	6.50	6.76	6.90	6.91
Forestry	1.50	6.50	5.92	6.02	6.02
Fishing	4.06	6.50	6.02	6.55	6.58

Source: CBN 2008 report.

Food Access

Food Prices in Nigeria

The trend of food prices in Nigeria shows fluctuations over the past six years. Nationally, there has been an increase in prices of rice, yam, beef, chicken, egg, palm oil, and fruits and vegetables. However, a decline was seen in 2006 in prices of beans, garri, guinea corn, millet, and maize.

In the South East zone of Nigeria, food prices increased during the last six years. The prices of most commodities such as beans, rice, chicken, beef, fruit, and vegetable, palm oil, were higher in this zone than most of the other zones. In the Southwest zone, fluctuations and a decline in prices of beans, garri, guinea corn, millet and maize could be seen during this period, while prices for rice, yam, chicken, beef, egg, palm oil, fruits, and vegetables increased.

The trend of food prices in the North Central zone shows an increase in most food commodities, especially rice, yam, chicken, beef, egg, palm oil, fruits, and vegetables. The increase was, however, not as high as in the South East zone. There were fluctuations during this period in prices of beans, garri, guinea corn, millet, and maize with a decline in 2006.

The trend of food prices in the North East zone was similar to that of the North Central zone. In the North West zone, food prices showed a similar pattern of increase in rice, yam, chicken, beef, egg, palm oil, fruits, and vegetables while fluctuations were seen in food prices of beans, garri, guinea corn, millet, and maize which ended with a decline in 2006.

The trend of increased food prices is less severe in rural areas, where most vegetables are still gathered and need not be purchased. Likewise, farmgate prices of items commonly consumed in rural areas have not risen as sharply in rural as in urban areas. However, the increasing preference of rural dwellers for long grain rice and animal products has equalized food price increases for those foods in both rural and urban areas.

According to the core welfare indicator survey (NBS 2005), about 35.0 percent of households nationally reported that they “never had difficulty” satisfying food needs, while 34.6 percent said they “sometimes had difficulty.” About the same percentage in rural (35.3 percent) and urban (35.4 percent) areas said that they “never had difficulty.” Zonal disaggregation showed that two zones among the northern zones reported high figures for “never:” Northwest (46.6 percent) and North Central (48.0 percent), while two states in the southern zones had high figures for “sometimes:” Southeast (42.9 percent) and South-South (45.9 percent). The states under each zone also reported the same pattern. Moreover, 4 out of 10 (40.5 percent) households with one to two members never had difficulty, while 37.0 percent of households with 6 members sometimes had difficulty. Also, about 44 percent of households owning six or more hectares of land reported never having difficulty, while 36.4 percent owning less than one hectare sometimes had difficulty. Forty-seven percent of households that owned both small and large livestock never had difficulty, while 36.5 percent that did not own any livestock sometimes had difficulty. The households that reported ”never” predominantly belonged

to the public group (42.1 percent) that included more male heads (36.6 percent) who were polygamous (38.5 percent) and had no education (37.5 percent).

In coping mechanisms, households were asked to rank their means of getting through difficult times from one (most frequently used) to four (least frequently used). About 18 percent reported reducing meals as the most important way to cope, and 18.6 percent coped by asking from friends. The third means of coping during times of need was through informal borrowing, which accounted for 22.3 percent. There were no significant differences in percentages between male- and female-headed households in times of need. Both acceded to reducing most of their meals during hard times as the most important, and the least important means of coping during times of need in both types by household-head was asking from friends. This scenario did not differ by sectoral (rural and urban areas) distribution.

The socioeconomic grouping showed that the highest percentage of poor households was headed by those engaged in agriculture (68.4 percent), unemployed (67.4), or private informal (63.2 percent). The greater percentage of households who reported that they were not poor was those who were engaged in the public sector (49.4 percent), private formal (45.0 percent) and self-others. More female headed households (70.5 percent) than male headed households (62.8 percent) reported that they were poor. The survey also showed that the higher the level of education of the household heads, the lower the level of poverty.

Most households that considered themselves poor attributed their poverty to their inability to afford basic needs (31.1 percent). However, the second (12.4 percent) and third (13.3 percent) reasons were lack of capital to start and expand their farms, and the fourth (17.9 percent) reason was that prices of commodities were high. There were, however, no significant differences in reasons between male and female headed households.

The reasons for poverty in rural households differed significantly from the urban households. While rural households mentioned inability to afford basic needs as the most important reason, the second and third reasons were lack of capital to start and expand their farms and the fourth reason was that prices of commodities were high. Urban households, in addition to the inability to afford basic needs, mentioned unemployment opportunities, high cost of housing, lack of opportunities to obtain credit to generate income, and high food prices.

Stability of Food Supplies

Stability of food supplies means that households should not risk losing access to food as a consequence of sudden shocks (climatic crisis) or cyclical events (e.g., seasonal food insecurity). Food stability at the household level is thus critical to food security

Recent literature has revealed new factors influencing the stability of the food supply, including: climate change and inter-annual variability adversely affecting yield stability and vulnerability of the food insecure; alarming erosion of environmental services affecting agro-ecosystem and global ecosystem resilience; and trade reform affecting development and seasonality of prices and quantities, with an adverse impact on rural food security if it unduly reduces real prices received by domestic farmers (Scialabba 2007).

When the food supply is irregular because of drought, flooding, fluctuation of prices, or seasonal unemployment, poor people are the most vulnerable. The stability of provision is dependent on the capacity of storage and savings at the household level. The stability of the market depends on the balance between supply and demand, the role of the state as the regulating instrument of intervention, and the government's capacity to react in an emergency.

Food Consumption

Cereals are important staple foods in Nigeria and the consumption pattern shows that they are widely consumed across the regions of the country. The northern part of Nigeria shows the highest consumption of cereals as compared to the southern part of Nigeria. These cereals include guinea corn, millet, maize, rice, and sorghum. However, a higher consumption of starchy foods is seen among the southern parts of Nigeria as compared with the north. The northwest shows the least consumption of starchy foods.

The distribution of processed foods shows the highest consumption patterns in the South East (24 percent), South South (23 percent) and South West (18 percent) while a lower consumption pattern is seen in the North West (15 percent) North East (11 percent) and North Central (9 percent). The consumption of protein was higher in the South South (26percent), South East (22 percent) and South West (15 percent) while it was lower in the North East (14 percent), North West (12 percent) and North Central (11 percent).The North West and South East regions had the highest consumption of vegetables while the South West, South South and North Central had the same consumption pattern of vegetables. The North East (27 percent) and the southern regions (25 percent), with the exception of the South West zone, had the highest consumption of fruits in the country. However, consumption was lower among the North West (9 percent) and North Central (8 percent). The South West zone had the lowest consumption pattern. These patterns were not disaggregated by urban and rural.

The consumption pattern of Nigerians differs across the nation. In the savannah eco-zones of Nigeria, Etkin and Ross (1994) documented about 119 food plants which were predominantly found in the forest. According to Okafor et al. (1994), these forest foods form the major intake of protein, vitamins, minerals, fats, and carbohydrates among the majority of rural communities in the country. A recent study (National Bureau of Statistics 2007) showed that beef, rice, yam tuber, cassava, and bread constituted the main food items consumed in the southeastern part of Nigeria, while the South West household members consumed more of Eko/Agidi, bread, yam flour, yam tuber, and garri. Food items consumed in the South South zone included beef, garri, fresh fish, rice, yam tuber, and beans. In a similar manner, yam tuber, beef, fufu, rice, beans, and garri were the major food items consumed by household members in the North Central zone. The North East zone consumption pattern was dominated by rice, dried fish, beef, palm oil, groundnut, beans, maize grain, yam tuber, millet, and guinea corn. Rice, maize, beans, beef, guinea corn, millet, tomatoes, and yam tuber were the food items consumed by household members in the North West zone.

Information on consumption patterns and food preparation methods of the Igbo people in rural Nigerian communities from 242 households in two different ecological zones showed starchy staples were the main foods consumed by 100 percent of respondents,

followed by cereals, legumes, fruits, and vegetables (60-80 percent), fish or meat (40-50 percent), with the meals usually consumed two times a day (Okeke 1996).

As reported by Olarinde and Kuponiyi (2005), carbohydrates constituted the majority of prepared food items bought and consumed outside the households studied in Oyo state. The average amount spent on prepared and purchased carbohydrate food was N4, 337.33 per household while protein food outside the home stood at N540 per month. This amounted to an average of N1469 worth of food per household member per month. It also amounted to a monthly diet of 79 percent carbohydrate, 17 percent protein, and 4 percent vitamin per month. Comparing this with a related study of farming households in Oyo State Adio (2000) found that energy intake was about 97 percent carbohydrate (from plant and animal products) and about 28 percent protein (from plant and animal products), this implies a shortfall of 18 percent and 11 percent in carbohydrate and protein intake respectively in three years.

Oluwatayo (2008), in a recent survey of inequality and welfare status of some households in rural Nigeria, revealed households had a diet made up largely of starchy foods with very little proteins and vitamins. Also, a greater share of the respondents (51.7 percent) ate twice a day, a little over one-third (34.2 percent) of the households ate three times a day, while 10 percent of the respondents only ate once a day.

Kushwaha et al. (2007) observed in Kano that the quantity of vegetables consumed (grams per household per week) in urban areas was higher (1,781.78 grams) than that of the rural areas (451.08 grams). A similar situation was reported by Gomna and Rana (2007) in a comparative study conducted between two different eco-zones (Niger and Lagos) in the country. The result showed consumption of fish was higher than that of meat in fishing communities in both states; fish consumption in Niger was almost twice that in Lagos, while meat consumption was also higher in Niger than Lagos state. Fish was the preferred protein, with an average daily household consumption 3 to 4 times that of meat, confirming its importance in the diet of rural people. The average daily weight of meat consumed per household in Niger and Lagos states was 61 grams and 38 grams, respectively. On a unit body weight basis, male heads of households consumed 59 percent more fish than their wives or children. The average weight of fish consumed by the male head of household was 0.27kg of fish per kilogram of body weight per year, compared with 0·17 kg fish/kg body weight per year for the wife and child.

Sources of Food

Gomna and Rana (2007) showed in their study that rivers were the major source of fish consumed (61 percent) by all the households, followed by lagoons (18 percent), creeks (5 percent) and the sea (2 percent), whereas local markets were the major source of meat (93 percent). About 5 percent of the meats eaten were bush meats. Some households had animals (2 percent) that were occasionally slaughtered and eaten, especially during festivals. Most of the fish and meats consumed during the study were cooked in fresh form. Smoked, frozen, dried, and roasted fish and meat were only consumed occasionally. Unlike fish, the market was the most important source for the meat consumed by fishing villages. Although a large number of aquatic species were consumed, a few species dominated consumption, Tilapia being the most important. In

another study, fermented foods were widely used and consumed by most age groups (under two years to adults) because of poor socioeconomic status (Onofiok 1994).

In a multiagency study on food consumption patterns in rural northern Nigeria, it was shown that millet, sorghum, and maize were the most important staples (FGN/ FEWS NET 2007) more often from purchases than from own production. This demonstrates the importance of food prices as a determinant of food security. Shifts in food prices occurred which favored increased consumption of millet during the study period as opposed to sorghum in the previous four weeks.

Table 3. Main staple foods at the time of study and the main staple four weeks before the study (2008)

Main Staple Foods at this time of the year			**Main Staple Foods in the past four weeks**		
Food	percent of Households consuming the food as		Food	percent of Households consuming the food as	
	Most Important	2nd Most important		Most Important	2nd Most important
Millet	91.7	6.0	Millet	88.0	8.3
Sorghum	5.3	6.0	Sorghum	9.0	65.0
Maize	1.3	1.0	Maize	1.0	2.7
Rice	1.3	0.7	Rice	1.0	-
Others	-	20.7	Others	-	23.7

Source: FMOH, FEWS NET, UNICEF, Save the Children 2008.

Table 4. Source of main staple foods in the past four weeks before the survey and in the next two months after the survey (2008)

Source of main staple foods in the past four weeks			**Source of main staple foods in the next two months**		
Source	percent of Households using the source as		Source	percent of Households using source as	
	Most Important	2nd Most important		Most Important	2nd Most important
Purchase	65.7	20.7	Purchase	20.7	71.0
Own Product	32.3	61.3	Own Product	61.3	26.3
Food Gift	-	1.3	Food Gift	1.3	0.3
Wild Food	-	-	Wild Food		
Others	-	3.7	Others	3.7	0.7

Source: FMOH, FEWS NET, UNICEF, Save the Children 2008.

Food Demand and Consumption by Livelihood

Studies in rural communities of the Ideato area of Imo State showed that 25 percent of the respondents received income from a combination of trading and farming (Eze and Ibekwe 2004). This is similar to a recent study by Oluwatayo (2008), where respondents in the study area were predominantly farmers representing about 51.7 percent of the total respondents, and the majority was low-income earners. The study showed the welfare status of the respondents to be directly related to the household size, size of farmland, and income, while marital status and primary occupation were known to be negatively related to the welfare status of the households.

In a study of the general livelihood pattern of households in Oyo State, farmers who produced more of the food consumed in their area of residence had the least disposable income to cater for their basic needs (Olarinde and Kuponiyi 2005). Findings in Kano revealed that, unlike in the rural areas, income was the most important factor affecting vegetable consumption pattern in urban areas, and that the higher income earners (urban consumers) spent a greater proportion of their earnings on food than lower income groups (Kushwaha et al. 2007). The mean expenditure on food in the urban areas was (N3, 120.47), when disaggregated by food items, urban areas spent more money (N540.53) on vegetables (N/household/week) than in the rural areas (N153.96).The National Bureau of Statistics (2007) indicated that about three quarters (64.3 percent) of Nigerian households spent their incomes on food and 35.7 percent on nonfood items. The study also showed that 14.9 percent of the households spent more of their income on protein rich foods, cereals (14.1 percent), starchy food (9.3 percent), processed food (9.5 percent), vegetables (6.5 percent), clothing and footwear (7.7 percent), household goods (7.6 percent), fuel/light (6.5 percent) and transport (4.1 percent). There were disparities in urban and rural household expenditure distribution. In urban areas, 57.6 percent was recorded for food items, while nonfood recorded 42.4 percent. In rural areas, food recorded the highest percentage with 67.0 percent and 33.0 percent in nonfood commodities. More income was spent on nonfood in urban areas than in rural areas. It was noted that the households in the lower socioeconomic strata spent more of their income on fish than on meat (Gomna and Rana 2007).

Current Level of Food Security in Rural Areas

Location of the Food Insecure in Nigeria

There is an overwhelmingly large proportion of Nigerians who are food insecure. They are spread across both rural and urban settings in Nigeria, though most are in rural areas. This fact is corroborated by FEWS NET (2007) which stated that food security was constrained for many households in Nigeria. They postulated a worst-case scenario where food insecurity increased to high and extreme levels through September 2008 and that food insecurity became worse, especially in northern Nigeria, if prevailing circumstances remained; poor rainy season, stockpiling, soaring food prices, etc. The decision of government to release cereal grains to states in Northern Nigeria confirmed the scenario.

Findings from a recent study in Ibadan and Lagos showed that in Ibadan, 45.7 percent, 25.9 percent, and 4.7 percent and in Lagos, 37.2 percent, 22.8 percent and 12.0 percent

were food insecure with no hunger, moderate hunger, and severe hunger, respectively (Sanusi et al. 2006).

There is however no national dataset to use in mapping the specific locations of the food insecure except to use the proxy of poverty profile as an indicator of the food insecure.

Retrospectively, in 2007, FEWS NET highlighted persisting child malnutrition, mortality, and morbidity conditions in the northwest millet and sesame livelihood zone, especially in the states of Katsina and Jigawa and part of Yobe (FMOH/FEWS NET/UNICEF/Save the Children 2007). Data from a joint food and nutrition survey conducted in August 2007 in this zone reported that 336,000 (56 percent) of the 600,000 children under five years of age living in this zone were stunted, while 252,000 (40 percent) were underweight, 62,400 were wasted (10.4 percent), and 5,400 (0.9 percent) were severely wasted (FGN/FEWSNET 2007).

Household Food Production in Relation to Food Security

According to a report of the nutrition assessment of a livelihood zone in northern Nigeria, cereals (millet and sorghum) were the main staples produced by the majority (85.5 percent) of households at the time of the survey in the Sahel savannah ecological belt while 11.7 percent of households produced maize. In the previous weeks preceding the survey, the main staples produced by the majority (85.0 percent) of households were still millet and sorghum while 12.7 percent of households produced maize. In those preceding weeks, 54.8 percent of households purchased their main source of staple food, 43.5 percent produced their main source of staple while 1.7 percent had other means of procuring their main staple foods. This was indicative of stability in food dynamism and recent harvest. However, two months following the survey, 63.3 percent of households anticipated that their food source would be from their own production, 34.7 percent from purchase, and 2.0 percent from other sources (FMOH/FEWS NET/UNICEF/Save the Children 2008).

Factors Causing Low Food Consumption by the Poor

Available data from the National Bureau of Statistics (2003) and the National Demographic Health Survey (NDHS) (2003) showed that more than half of the Nigerian population, especially women and children, lived in severe social deprivation, with many households being food insecure, with poor access to resources to meet basic needs, resulting in nutritional deficiencies. Poverty in Nigeria is a multifaceted phenomenon involving the violation or even denial of most human rights, including the right to food. People are reduced to poverty and maintained in poverty by human rights violations, especially the right of the child to adequate nutrition.

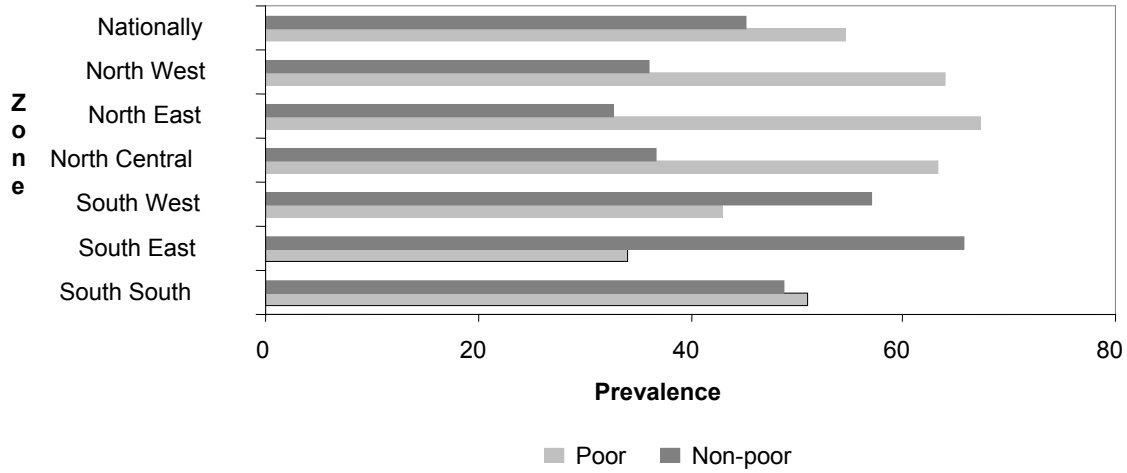
The figure below shows the incidence of poverty in Nigeria, using food-energy intake. Nationally, the food-energy poverty incidence is higher among the poor (54.7 percent) than the non-poor (45.3 percent). When disaggregated by different sectors, food energy poverty incidence was higher among the rural poor (63.8 percent) than rural non-poor (36.2 percent) while that of the urban non-poor was higher (56.9 percent) than the urban poor (36.2 percent).

When disaggregated by geopolitical zone in Figure 7, the poor in North West, North East, and North Central zones had a higher incidence of food energy poverty than the non-poor. This was however different in South West, South East, and South South where the incidence of food energy poverty was higher among the non-poor than the poor.(NBS 2005) These findings have implications for the growth of children and women as well as adult productivity due to insufficient intake of energy nutrients.

Figure 6. Poverty incidence by sector based on energy intake

Source: National Bureau of Statistics 2005.

Figure 7. Poverty Incidence by Geopolitical zone based on Energy Intake (National Bureau Statistics)



Source: National Bureau of Statistics 2005.

It is seen from this chapter that the datasets show potential adequate food availability, and access to and stability of supplies if appropriate interventions to harness and manage food resources are put in place. Poverty and the lack of adequate post harvest technology and equitable food distribution hamper food security in rural Nigeria, especially with seasonal variations.

Nutrition Situation in Rural Nigeria

Chapter 3 has outlined the aspect of food security defined in the Food Insecurity and Vulnerability Information and Mapping System (FIVIMS) framework (Figure 1) as food availability, food access, and stability of supplies. It also examined food demand and consumption based on the livelihood systems. The nutritional status in the framework is defined by caring practices, health, and a healthy environment coupled with the level of consumption. Chapter 4 thus describes the nutrition situation in rural Nigeria, including access to health services, water and sanitation, and childcare, in relation to the conceptual framework, to easily understand its consequences on nutritional status.

Access to Health Services

Health care in Nigeria is in a rather deplorable state. Access to health services is poor. Although the number of primary health centers across the country suggests reasonable availability, higher level primary health centers (PHC) are concentrated in the South while the North experiences lower level services. NDHS (1999) indicated that 71 percent of households were within 5 kilometers of a PHC. In 2004, the NLSS showed that the use of PHC services increased as households became poorer.

In 2005, 80 percent of households in urban areas were within 5 kilometers of a PHC, compared to 66 percent in rural areas (The World Bank /FMOH 2005). The challenges of inadequate staffing and low capacity, equipment, and essential drugs, were consistent among the PHCs. In a study by Akinyele (2001) to determine how well the six essential nutrition actions were being implemented in the PHCs, it was found that these services were haphazardly implemented and the challenges inherent in the PHC system made it impossible for these services to have any impact on nutrition.

Reports of the NDHS 2003 revealed that 47 percent of mothers visited antenatal care (ANC) services more than 4 times, 11 percent visited 2 to 3 times, while only 3 percent made just one visit, and about 37 percent of mothers did not make any visits. Across residences, women in the urban areas and in the South were much more likely to receive ANC than their rural and northern counterparts–47 percent and 59 percent of mothers in the North East and North West, respectively, did not receive ANC. More than half (71 percent) of urban women made four or more visits to ANC provider, compared with only 38 percent of rural women.

Access to Water and Sanitation

Only a relatively small percentage of Nigerian households have access to improved sources of drinking water and sanitation. In a 2005 report, 42 percent of Nigerian households had access to safe sources of drinking water (piped water, public taps, and protected wells); 74 percent had access to an improved sanitation facility, while among households that did not share their facility, 37 percent of them had access to an improved sanitation facility (World Bank 2005).

According to the NDHS 2003 report, the sources of drinking water among households included piped (67.6 percent), protected (68.2 percent), open well (60.4 percent), surface (58.6 percent), and others (68.0 percent). The study showed that the presence of tap water was higher in urban areas (64.3 percent) than in rural areas (63.4 percent).

Slight differences were observed among regions. The prevalence by region ranged from 76.8 percent in the South South zone to 52.4 percent in South West. Households in the South had better access to safe drinking water than those in the North, while more than 20 percent of the former had access to a flush toilet, less than 10 percent of the latter had access to a flush toilet. The source of improved water and sanitation across wealth quintiles showed the poorest 20 percent of households had almost no access to safe sources of drinking water and only 33 percent had access to an improved sanitation facility. Only about 6 percent of the poorest households had access to an improved source of water compared to more than 80 percent of the richest households. Likewise, almost all rich households had access to flush toilet or to a latrine, relative to only 25 percent of the poorest households. These confirm what was reported in the study, that households in urban areas are more than twice as likely to have access to a safe drinking water source and an improved source of sanitation, compared to those in rural areas.

Access to Childcare

In view of the lack of access to childcare services for most households, the primary context for the care of many young children is the home. However in recent decades, rapid urbanization has increasingly eroded this traditional pattern of childcare. More women have joined the labor force and are often working long hours in order to supplement family income. Data from the NDHS (1999) indicated that 33 percent of women worked five or more days a week, though there were wide regional variations, ranging from a high of 55 percent in the South West to 13 and 10 percent respectively in the North East and North West. It is worthy of note that 41 percent of working mothers looked after their children while they were at work.

Urbanization and the involvement of mothers in the workforce have increased the demand for organized forms of early childcare in communities. At the same time there is growing recognition among parents of the value of pre-primary education, to help prepare their children for school. This has resulted in an upsurge of two types of pre-primary facilities, namely daycare centers for children aged 0 to 3 years and pre-primary (nursery) schools for children aged 3 to 5. However, only a small minority of Nigerian children receive any pre-primary education. The 1999 MICS data showed that 18 percent of children aged 36 to 59 months were attending some form of organized early childhood education program.

Key factors contributing to positive nutrition and early childcare include: care for pregnant and lactating women, breastfeeding and complementary feeding, food preparation, hygiene, and health-seeking behaviors. Moreover encouraging community social support for the mother and the ability to refer for medical support when needed are important for success. Family and societal support for an optimal infant and young child feeding norm holds a huge promise (Black 2008).

Also important is the need to create an environment where women are successfully able to meet infants' right to nutrition which means that women may need to be supported financially through maternity entitlements to meet their own right to work and at the same time realize right to food for their babies. It also means that women working in the organized sector, whether in public or private sectors, be given maternity leave of at

least six months. The enabling environment also includes nutritional support for women. A breastfeeding woman needs almost 500 Kcal of extra food a day, as she expends this amount through breast milk. While there is enough evidence to show that even the most undernourished woman can successfully lactate and breastfeed her child adequately, she does this by putting an immense strain on her own nutritional resources, which are inadequate to begin with. Thus, undernourished mothers need to be provided additional food for the period while they are breastfeeding.

Thus the pathway to adequate access to health and care requires opportunities to assist poor families (especially women n such homes) generate income and gain access to health services and a health environment which engenders adequate care for themselves and their children. Furthermore, the adequacy of safe household food supplies, care for mother and child, and access to health services and a healthy environment reinforce the importance of access to services to meet the rights of women and children. The determinants of quality care in the home and/or in the health facility include the level of knowledge, motivation, and skills of the caregiver, and the availability of essential commodities and drugs.

Malnutrition often begins at conception, and child malnutrition is linked to poverty, low levels of education, and poor access to health services, including reproductive health and family planning. Every individual deserves good care, nutrition, and health that encourage their social, emotional, physical, and intellectual growth, thus raising an urgent need for an enabling environment through well-articulated policies, projects, and programs and interventions to ensure the wholesome development of Nigerians and to enhance their quality of life.

The general relationship between infection and undernutrition is well established. Undernutrition affects both the body's immunological and non-immunological defenses. As a result, it increases the incidence, severity, and duration of common diseases.

This chapter outlines the prevalence and effects of undernutrition, macronutrient and micronutrient deficiencies on the nutrition status of children under five and women of reproductive age. It concentrates on outcome indicators of poor dietary intake and disease on the target population.

Macronutrient Deficiencies

The assessment of growth is the single most important measurement that defines the nutritional status of infants and children. Data from the Nigeria Food Consumption and Nutrition Status Survey (Maziya-Dixon et al. 2004) showed that nationally, 42 percent of children were stunted, 25 percent underweight and 9 percent wasted (Figure 8).

The NFCNS is the first nationally representative survey conducted in Nigeria specifically to capture macronutrient deficiencies reported as stunting, wasting and underweight. Only national data is available for presentation, the data sets can however be re-analyzed. NDHS data provides information for the same year as the NFCNS for comparison of results as a test of reliability. Since 2003 there has been no other national survey except the 2008 NDHS currently being conducted. A trend analysis is provided with the NDHS data from 1990. The lack of current datasets for proper understanding of

trends defines the challenges of data collection in Nigeria. The different datasets quoted here are official figures accepted by the Government of Nigeria, they are thus considered valid. Where disaggregation by rural/urban residence occurs, it is always indicated.

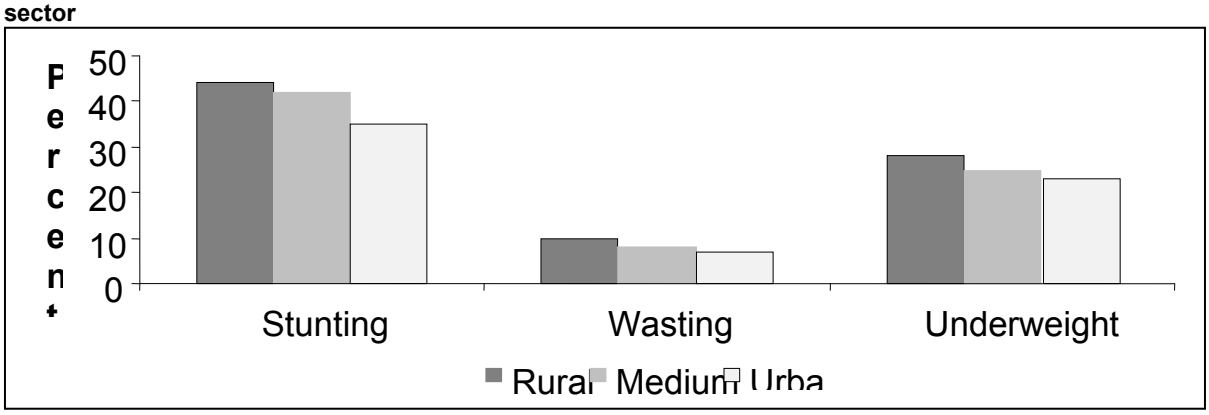
Although a trend analysis is not possible with the NFCNS data, it is the only dataset that has information on micronutrient deficiencies, and thus is included in this review. A follow up survey is overdue, to capture the dietary patterns of rural Nigerians, explain the high level of stunting, wasting and underweight, and see how well current interventions are working.

Figure 8. Undernutrition in children under five (NCFNS 2003)

Source: Maziya-Dixon et al. 2003.

The NDHS 2003 reported 38 percent of under-five children as stunted, 29 percent underweight and 9 percent wasted. The UNICEF PIC study of 1993 on the nutritional status of women and children showed that nationally, under-five stunting was 52 percent, underweight was 28 percent and wasting was 11 percent. MICS 1999 also showed that nationally, 34 percent of the under fives were stunted, 31 percent were underweight and 16 percent suffered from wasting.

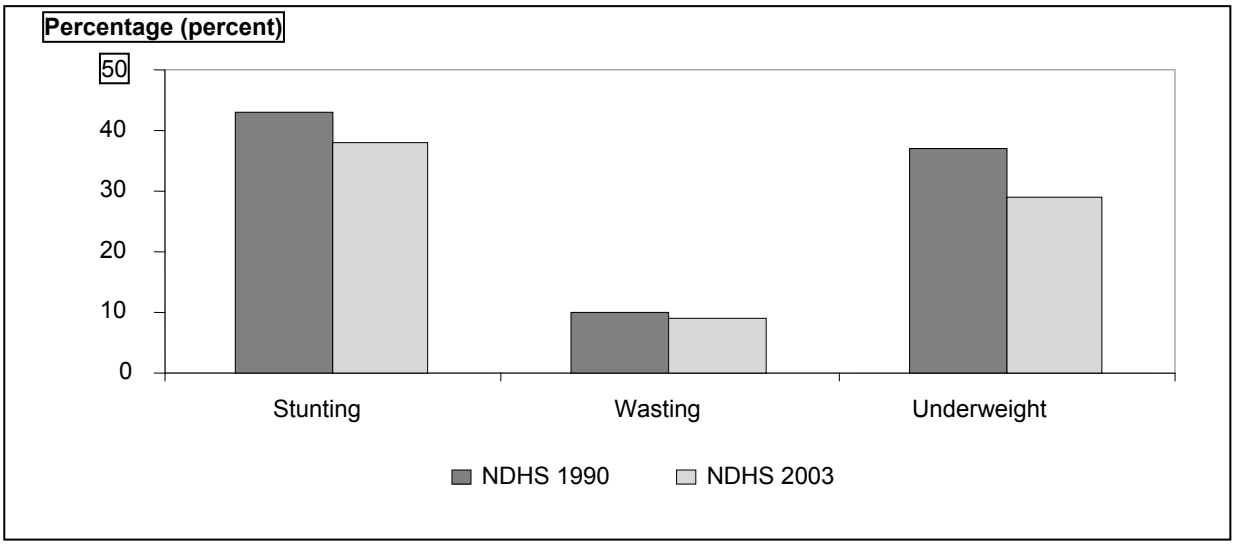
Figure 9. Protein-energy malnutrition among children 0-59 months disaggregated by sector



Source: Maziya-Dixon et al. 2004.

The disparity in under-five nutritional status according to the NFCNS 2003 further confirms that under-five malnutrition is more prevalent in rural areas. Stunting was highest in all the sectors, especially in rural areas (over 40 percent), indicating long-standing deprivation of the child's right to adequate care and nutrition (Figure 9).

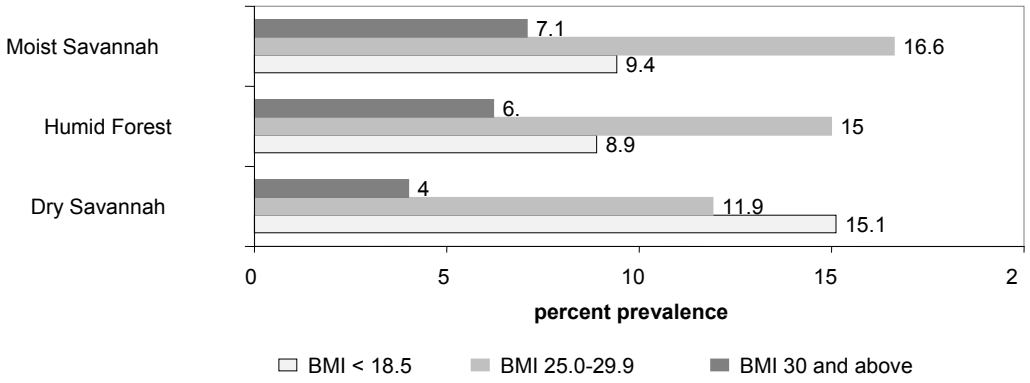
Figure 10. Trends in undernutrition in children under five (1990-2003)



Source: Nigeria Demographic and Health Survey 1990, 2003.

The nutritional status of women of reproductive age (Figure 11) shows that the problem of overweight and obesity is beginning to become evident, based on BMI above 30. These data have implications for women especially during pregnancy and lactation. The risk of overweight or obese women developing non-communicable diseases increases the burden of high disease level among rural dwellers in Nigeria.

Figure 11. Nutritional status of women of reproductive age disaggregated by agro-ecological zone



Source: Maziya-Dixon et al. 2003.

Micronutrient Deficiencies

Deficiencies in vitamin A, iodine, folate, and iron still constitute major determinants of maternal mortality in Nigeria. Each of the major micronutrient deficiencies is discussed below.

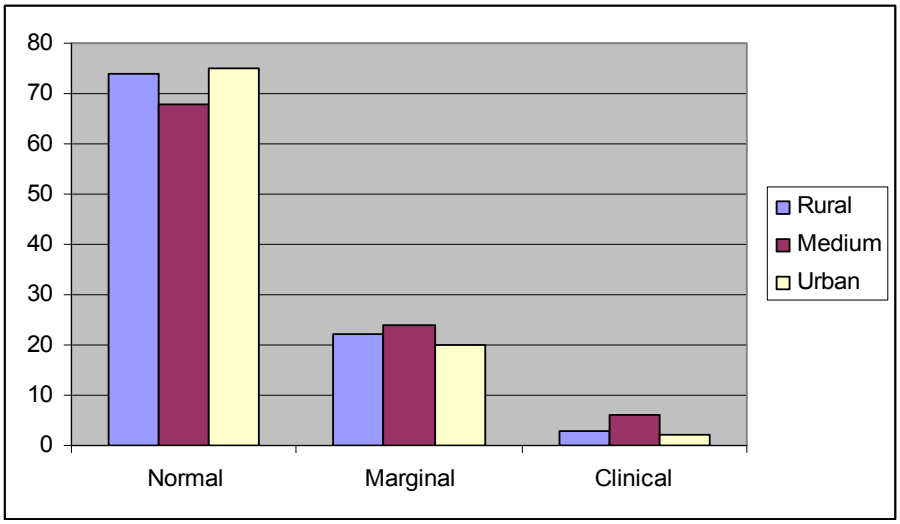
Vitamin A Deficiency

Vitamin A deficiency contributes to 25 percent of infant, child, and maternal mortality in Nigeria because of reduced resistance to protein-energy malnutrition, acute respiratory infection, measles, malaria, and diarrhea. If no effective action is taken to prevent and control vitamin A deficiency, about 860,000 Nigeria children will die between now and 2015. Individuals suffering from vitamin A deficiency (VAD) are susceptible to night blindness and xerophthalmia.

The results of the vitamin A supplementation coverage post NID survey in March 2006 showed that there has been an improvement in coverage to 70 percent in children 6 to 59 months (Akinyele 2006). The coverage level was based on information gathered from interviewed mother and caregivers. However, this coverage level did not reach the expected 90 percent coverage.

Figures 12 and 13 show the vitamin A status among children under 5 years of age by sector and by geopolitical zone, demonstrating that VAD is more dominant in the rural sector. The disparities are due mainly to dietary patterns, which influence sources of vitamin A.

Figure 12. Vitamin A status of children under five

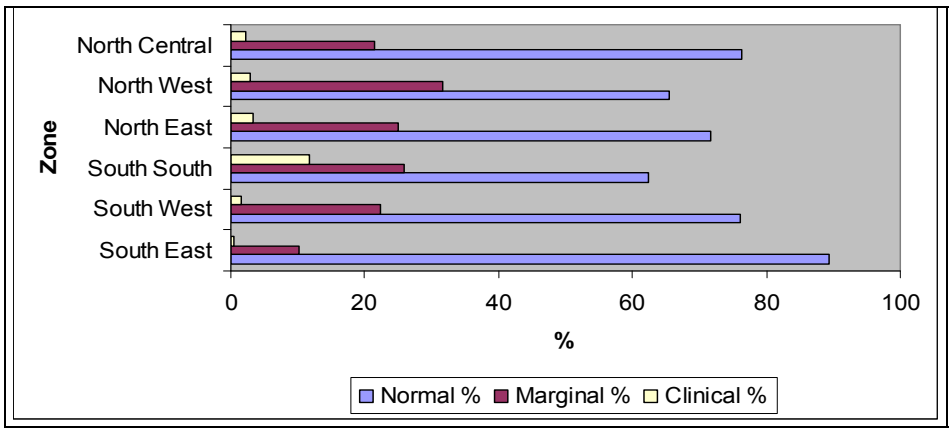


Source: Maziya-Dixon et al. 2003.

The vitamin A status of all children surveyed is presented in Figure 12. At the national level, 24.8 percent of children under 5 suffered from marginal deficiency (serum retinol concentration < 20µg/dl) and therefore were vitamin A deficient; 4.7 percent had serum retinol concentration < 10 µg/dl and were suffering from severe vitamin A deficiency (clinical deficiency); and 71.5 percent of children were normal. If those who were marginally deficient are combined with those who were clinically deficient, 29.5 percent of children under 5 were suffering from vitamin A deficiency.

The study defined sector as urban, medium, and rural, to separate communities that could not be classified as urban or rural based on population size definition. The distribution of the marginally deficient was 23.4 percent for the rural, 25.1 percent for the medium, and 22.5 percent for the urban sector. The clinical deficiencies were 7.5 percent in the medium sector while the urban (3.4 percent) and rural (2.2 percent) sectors were much lower. These are disaggregated by geopolitical zones (Figure 13).

Figure 13. Vitamin A status of children under five by geopolitical zone



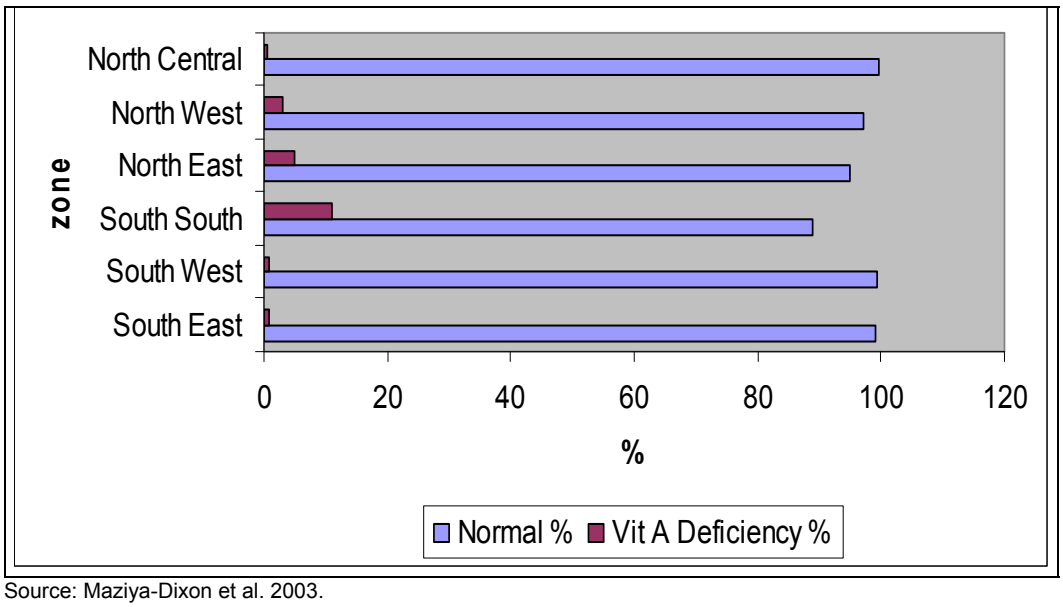
Source: Maziya-Dixon 2003.

In pregnant women, vitamin A deficiency, especially in combination with zinc deficiency, contributes to intra-uterine malnutrition, leading to low birth weight or stillbirths. Furthermore, scientific evidence showed that adding vitamin A or beta carotene to the diets of expecting women lowers their risk of death from pregnancy by as much as 40 percent. Figure 14 shows mothers vitamin A status by geopolitical zones.

Mothers with serum retinol concentration (< 30 µg/dl) were considered at risk of vitamin A deficiency, and constituted 13.1 percent of the national population. At the agro-ecological zone (AEZ) level, there was a decrease in the percentage of mothers at risk of vitamin A deficiency from 19.6 percent in the dry savanna to 14.5 percent in the moist savanna, and 8.8 percent in the humid forest. More mothers were at risk of vitamin A deficiency in the medium sector (30.7 percent) sector than in the rural (11.2 percent) and urban (10 percent) sectors. Mothers with serum retinol concentration < 20 µg/dl were considered as being vitamin A deficient. From those mothers who were at risk of vitamin A deficiency, only 4.1 percent were vitamin A deficient. These findings were disaggregated by geopolitical zone (Figure 14).

There is evidence to show that dietary sources of provitamin A are available in rural areas including different vegetables, oranges, pawpaw, orange flesh sweet potatoes (recently being introduced), carrots, and tomatoes among others, which could be promoted for consumption among rural dwellers. While rural dwellers do not generally have access to animal sources of vitamin A, those who do consume bush meat and assorted animal livers which are rich in preformed vitamin A.

Figure 14. Mother's vitamin A status by geopolitical zone



Source: Maziya-Dixon et al. 2003.

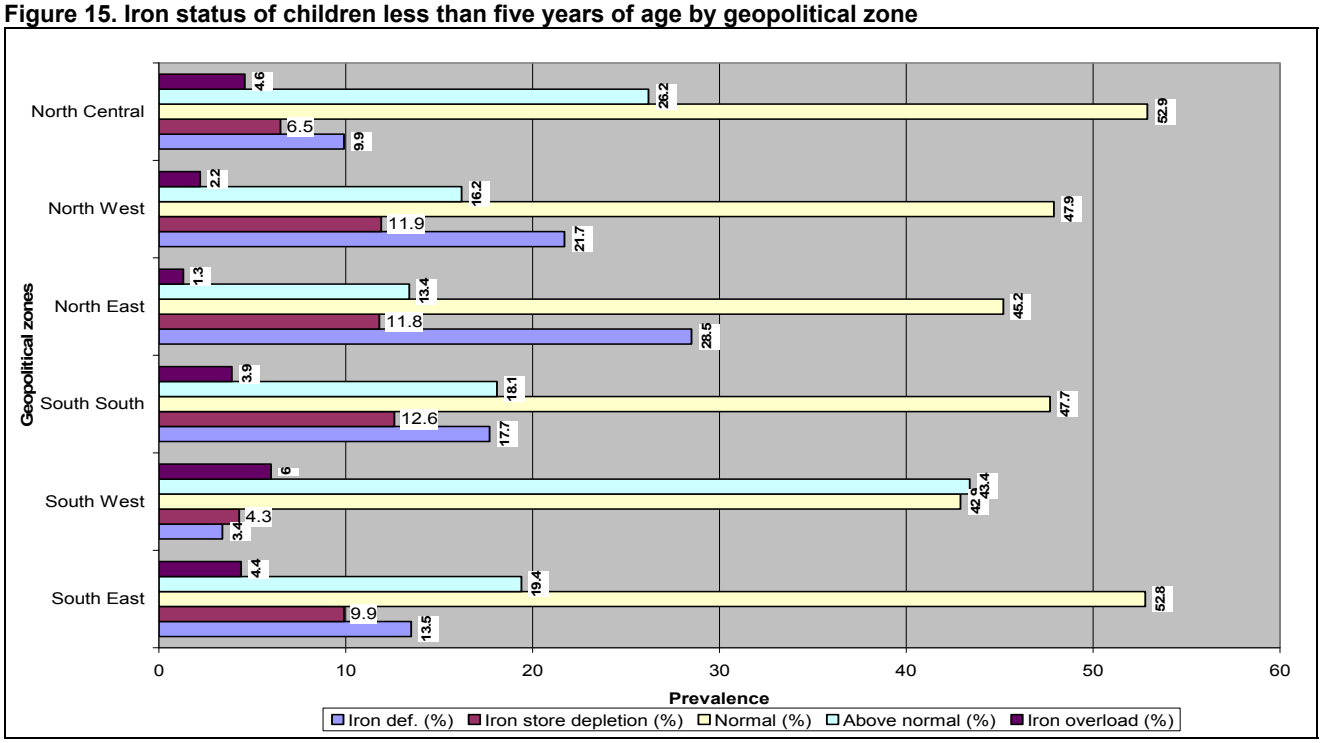
Iron Deficiency

Nutritional anemia is a widespread dilemma in Nigeria, with an estimated prevalence of 20 to 40 percent in adult females, 20 to 25 percent in children, and 10 percent in adult males. In 1988, 39 percent of school children examined suffered mild anemia. Anemia contributes to one in five maternal deaths and to increased morbidity, fetal growth retardation, compromised mental development, poor physical activity, and reduced labor productivity.

The iron profile from the Maziya-Dixon et al. 2003 survey showed that almost 20 percent of children were iron deficient and another 8 percent had depleted iron stores. A level of over 25 percent of iron deficiency in children under five years of age invites attention to the issue of adequate dietary intake of iron.

This profile is not the same in the three agro-ecological zones. Figure 15 shows the distribution of iron deficiency anemia in under-five children by geopolitical zone. Anemia affects 25 percent of women of reproductive age in Nigeria, and as many as 61 percent in some regions. If no action is taken, 64,000 Nigerian mothers will die between 2005 and 2015: about18 maternal deaths per day every day for the next 10 years (Akinyele et al. 2002).

Figure 15. Iron status of children less than five years of age by geopolitical zone



Source: Maziya-Dixon et al. 2003.

When data were disaggregated by sector, the results showed that the proportion of children with varying degrees of iron deficiency was 24.4 percent for the rural sector, 27.9 percent for the medium, and 33.1 percent for the urban. Iron deficiency (serum ferritin concentration < 10 µg/ml) was high in urban areas (22.6 percent), followed by the medium (17.8 percent) and rural areas (13.5 percent).

Children under 5 with deleted iron store (serum ferritin concentration <20 µg/ml) were similar in the different sectors: 10.9 percent in rural areas, 10.5 percent in urban areas, and 10.2 percent in the medium sector. The percentages of children with normal iron status (serum ferritin concentration 20 – 100 µg/ml) did not vary much in the sectors: 47.8 percent in the rural, 49.4 percent in the medium, and 48.7 percent in the urban.

The distribution by sector of children under 5 who had a serum ferritin concentration above the normal range showed that 27.8 percent were in the rural areas, 22.7 percent in the medium, while 18.2 percent were in the urban areas.

The level of iron deficiency may have been due to poor dietary sources of iron, or sources in which the iron is in a form that is not available for absorption. Vegetables are a major source of iron subject to chelation by oxalates, phytates and other antinutrients, making it unavailable for absorption by the body. Other nutrients enhance iron absorption, particularly vitamin C. Animal sources of iron are most desirable.

Iodine Deficiency

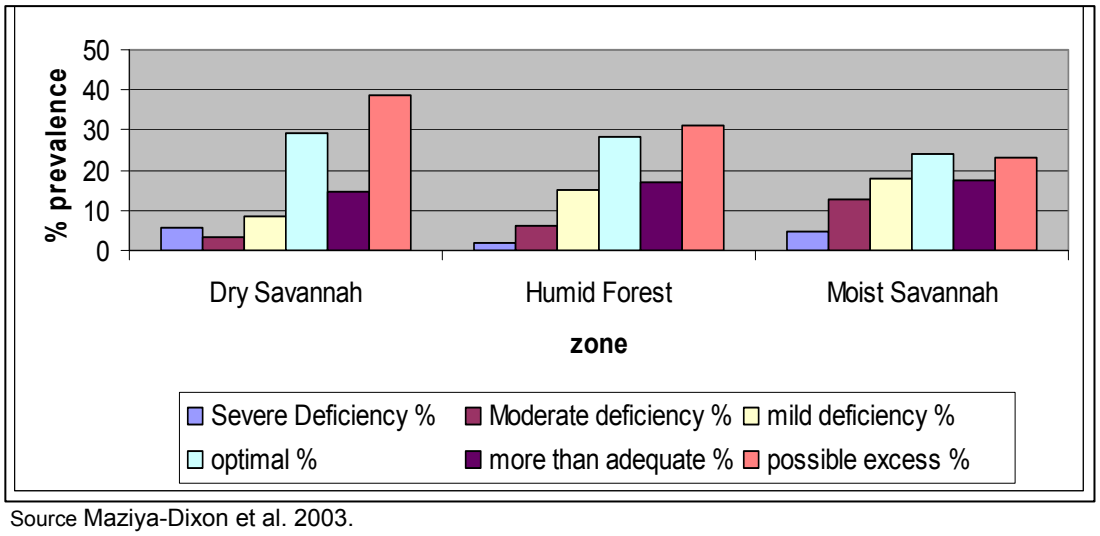
In 2003, 14.6 percent of children had mild iodine deficiency, 8 percent had moderate deficiency, and only 4 percent had severe deficiency. Almost one-third of children had optimal iodine levels.

Over 20 percent of the total population suffers from goiter, which is the most severe form of iodine deficiency. If current levels of iodine deficiency remain unchanged, over 9 million children born between now and 2015 will suffer from varying degrees of mental impairments because their mothers were deficient in iodine during pregnancy. Endemic iodine deficiency reduces the IQ by 3.5 percent, permanently affecting intellectual development.

A total of 27.5 percent of children suffered various degree of iodine deficiency while 46.5 percent had more than adequate levels. The deficiency was severe in 4.2 percent, moderate in 8.7 percent, and mild in 14.6 percent. Only 26.0 percent of children had optimal levels of iodine. However, it is noteworthy that 16.6 percent of children had more than adequate levels while 29.8 percent had a possible excess intake of iodine and ran the risk of adverse health consequences.

Deficiency of iodine was reported in 10.6 percent of children under 5 in the medium sector, 15.5 percent in the rural sector, and 10.6 percent in the urban sector. More than adequate and possible excessive intakes of iodine were seen in 51 percent of children under 5 in the medium sector, 42 percent in the rural sector, and 49 percent in the urban sector.

Figure 16. Iodine status of children under five by agro-ecological zone



Source Maziya-Dixon et al. 2003.

Iodine deficiency in mothers by AEZ was 11.6 percent in the dry savanna, 19.0 percent in the moist savanna, and 15.2 percent in the humid forest. The percentage of those with mild deficiency ranged from 16.8 to 21.6 percent across zones.

Iodine deficiencies among mothers were 10.0 percent in the urban sector, 13.7 percent in the medium sector, and 21.0 percent in the rural sector. A more than adequate intake was seen in 16.6 percent of the mothers in the rural sector, 20.6 percent in the medium sector, and 20.3 in the urban sector. Those with possible excess iodine intake were observed in the rural sector (14.6 percent), medium sector (25.9 percent), and urban (24.4 percent) sector.

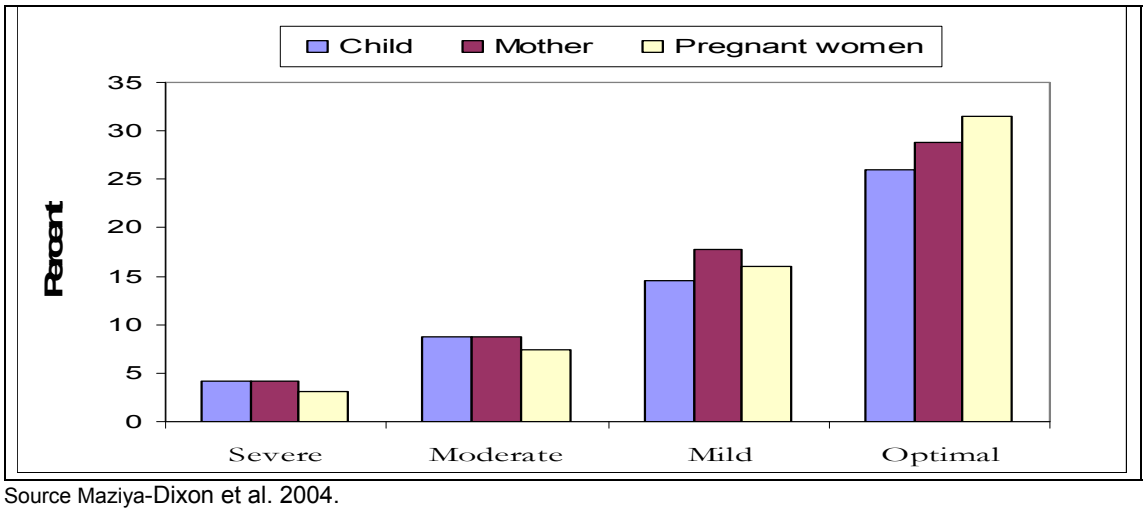
In pregnant women, the deficiency rates were 8.0 percent for the dry savanna, 15 percent for the moist savanna, and 11.3 percent for the humid forest. Although the deficiency level was low, over one-fifth of pregnant women in all zones had a possible excess iodine intake, being 22.3 percent in the dry savanna, 22.4 percent in the moist savanna, and 25.8 percent in the humid forest.

There were more pregnant women with adequate iodine status in the dry savanna (34.7 percent), followed by those in the moist savanna and humid forest (28.4 percent). Across the zones, the percentages of pregnant women with adequate iodine nutrition range from 27.4 to 34.9 percent.

Among pregnant women, iodine deficiency was reported as 10 percent in the medium, 9 percent in the urban, and 14 percent in the rural sectors. Excess intake was reported in 37 percent in the rural sector, 41 percent in the urban sector, and 45 percent in the medium sector.

Nigeria has provided universal salt iodization since 1993, and household consumption of iodized salt is said to be 97 percent (UNICEF 2005). Nigeria was designated as USI compliant in 2008. However, salt and iodine deficiency disorder is still a problem. This was attributed to the fact that iodized salt is sold in open receptacles and in the last two years regulation have been made to require packing of 50 mg.

Figure 17. Iodine status of children, mothers, and pregnant women



Source Maziya-Dixon et al. 2004.

Zinc deficiency

Maziya-Dixon et al. (2004) reported that zinc deficiency was 20 percent for children under five, 28.1 percent for mothers, and 43.8 percent for pregnant women studied. Among children, deficiency was higher (36.5 percent) in the moist savanna and lowest (6.3 percent) in the humid forest. No other datasets are available for this micronutrient except individual studies which are not regionally or nationally representative.

Nutritional Status of Pregnant and Lactating Women

Adequate diets for pregnant and lactating mothers deserve special attention. The extra nutritional requirements of pregnant and lactating women need to be met not only for their own interests, but also for the wellbeing of their children. Various studies (Butterworth, 2001; McGready et al. 2001; Osho 2004) reported low plasma micronutrients level in pregnant rural women. Reports of high incidences of thiamine deficiency during pregnancy and lactation have previously been reported in India, Malaysia, Ghana, and Thailand, where a staple diet of milled or polished grains instead of brown rice is consumed; the consumption of food rich in thiaminases was also implicated (Butterworth 2001).

The prevalence of anemia was recorded in 76.5 percent of women in Abeokuta, with a high percentage of anemia among women in the traditional birth homes (81.4 percent) than those in the hospitals (72.5 percent) (Idowu et al. 2005). This is similar to what was reported in Enugu where among pregnant women, 32.4 percent had anemia while it was most prevalent in the third trimester (62.86 percent) (Ekejindu et al. 2006). In another study, 24.3 percent of women and 35.3 percent pregnant women were at different stages of iron deficiencies (Maziya-Dixon et al. 2003). The finding of another study showed that the energy, protein, riboflavin, and ascorbic acid intakes were inadequate (Abakada 1980). In Nigeria, most (73.5 percent) of the lactating mothers had normal mean body mass index (i.e., not under weight nor obese) (Charles-Davies 2006), while another study by Okwu et al. (2007) showed the prevalence of PEM to be 3 to 4 times higher in the rural area compared with the urban area among pregnant women in a community in Nigeria. The NDHS 2003 reported 2 percent thinness, 15 percent overweight, and 6 percent obesity among Nigerian women.

Reasons for the Level of Malnutrition

The non implementation of the National Food and Nutrition Policy and the National Plan of Action for Food and Nutrition constitute the major reasons for the level of malnutrition reported in Nigeria. Other reasons include:

- Unacceptably high levels of poverty and household food insecurity in a country that is richly and vastly endowed
- A lack of attention to nutrition as a critical determinant of development
- Low priority of nutrition on the government agenda and hence poor funding
- Poor understanding by policymakers of the content of nutrition programs in relation to other sectors
- Poor and inadequate capacity among relevant government ministries and agencies to formulate and implement interventions to reduce malnutrition
- Poor infant and young child feeding practices

- Inadequate access to a healthy environment and health services, poor environmental conditions (water, sanitation and hygiene) resulting in the increasing trend of diarrhea, which offsets malnutrition in children
- Little focus on the nutritional determinants of maternal morbidity and mortality
- Lack of adequate attention to maternal nutrition before and during pregnancy resulting in compromised growth and development of the fetus and low birth weight
- A poor understanding of the link between HIV/AIDS and malnutrition. Malnutrition is a common complication of HIV infection and contributes to increased morbidity and mortality of infected individuals. While Nigeria has policies and guidelines for HIV/AIDS prevention and treatment, they do not provide guidance on the nutritional care and support of people living with HIV/AIDS (PLWHA).
- Poor integration of nutrition and coordination of food and nutritional interventions among all partners
- Poor analysis of the consequences of development policies and programs on nutrition in the Nigerian population, leading to a lack of mainstreaming of nutrition activities in resource allocations
- Poor understanding and inadequate political commitment based partly on inadequate awareness, leading to a lack of confidence and prioritization of nutrition for the population's health and development

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Policies and Programs to Address Food Insecurity and Malnutrition

There have been several initiatives aimed at providing the necessary policy environment for addressing malnutrition in Nigeria. The various policies instituted by the government and other stakeholders are analyzed in this chapter.

Food and Nutrition Policy for Nigeria

The Food and Nutrition Policy for Nigeria articulates the fact that food and nutrition are an integral part of the overall national objective of improving the socioeconomic well-being of the people.

The overall goal of the Food and Nutrition Policy is to improve the nutritional status of all Nigerians, particularly of the most vulnerable groups. The Food and Nutrition Policy aims at promoting the following specific goals:

1. Establishing a viable system for guiding and coordinating food and nutrition activities undertaken in the various sectors and at various levels of the society, from the community to the national levels,
2. Incorporating food and nutrition considerations in development plans and allocating adequate resources toward solving the problems pertaining to food and nutrition at all levels,
3. Promoting habits and activities that will reduce the level of malnutrition and improve the nutritional status of the population,
4. Identifying sectoral roles and assigning responsibilities for the alleviation of malnutrition,
5. Ensuring that nutrition is recognized and used as an important indicator to monitor and evaluate development policies and programs, and
6. Promoting the good indigenous food cultures and dietary habits of Nigerian peoples for healthy living and development.

To achieve the overall goal to improve the nutrition status of the vulnerable groups, a number of specific objectives were formulated as follows:

1. Improve food security at the household and the aggregate level to guarantee that families have access to adequate and safe food in both quantity and quality to meet nutritional requirements for a healthy and active life,
2. Enhance care-giving capacity within households regarding child feeding and childcare practices, as well as addressing the care and well-being of mothers,
3. Improve the provision of human services such as health care, environmental sanitation, education, and community development,
4. Improve the capacity within the country to address food and nutrition problems, and
5. Raise the understanding of the problems of malnutrition in Nigeria at all levels of the society, especially with respect to its causes and possible solutions.

The following targets were set to address the food and nutrition problems in the country:

1. Reduction in the level of poverty to 10 percent by 2010
2. Reduction in starvation and chronic hunger to the barest minimum through increased food intake
3. Reduction in undernutrition especially among children, women and the aged, and in particular severe and moderate malnutrition among under-fives by 30 percent by 2010
4. Reduction in micronutrient deficiencies particularly iodine deficiency disorders, vitamin A Deficiency, and iron deficiency anemia by 50 percent of the current levels by 2010
5. Reduction in the rate of low birth weight (2.5kg or less) to less than 10 percent of the current levels by 2010
6. Reduction in diet-related noncommunicable diseases by 25 percent of current levels by 2010
7. Improvement in general sanitation and hygiene including availability of safe drinking water
8. Reduction in the prevalence of infectious and parasitic diseases that aggravate the poor nutritional status of infants and children by 25 percent current levels

National Plan of Action for Food and Nutrition

The National Plan of Action for Food and Nutrition is the flagship infrastructure for realizing the rights of the Nigerian population to adequate nutrition and achieving the Millennium Development Goals. The plan details various activities aimed at addressing the basic, underlying, and immediate causes of malnutrition while promoting partnerships among all stakeholders working together to achieve results. Though the National Plan of Action for Food and Nutrition in Nigeria was launched in 2004, the plan of action is yet to be fully implemented. Its nonimplementation in a systematic and coherent manner constitutes a big barrier to achieving the rights of Nigerians to adequate nutrition. There is therefore an urgent call for a fully coordinated implementation of the food and nutrition plan of action. As the food security vehicle of the nation gathers steam and momentum, it is imperative that critical attention be given to the realization of the right of the individual Nigerian to adequate nutrition, a critical survival need.

The World Bank (2006) articulated a case for repositioning nutrition for socioeconomic development by showing the scientific evidence linking poverty reduction, child survival, and development to adequate nutrition. Little attention has been paid to translating this treatise to facilitate the repositioning of nutrition for development in Nigeria (World Bank 2006).

There is however a ray of hope since the draft National Economic Empowerment Development (NEEDS 2), which included nutrition in Chapter 23 as a cross-cutting issue. NEEDS, as the poverty reduction strategy of the government, should therefore inform development partners' acceptance of nutrition as a cross-cutting issue for child survival and development women's wellbeing, leading to the reduction of infant, child,

and maternal mortality, and to the achievement of the eight Millennium Development Goals in Nigeria.

Institutional Framework for Implementing Food and Nutrition Policy and Plan of Action

The Food and Nutrition Policy document mandated by the National Committee on Food and Nutrition (NCFN) provides the institutional framework to coordinate and implement policy guidelines by the committee. The committee provided for a secretariat to lead its activities, located at the National Planning Commission in the Presidency because of the multisectoral and multidisciplinary nature of solving the multifactorial causes of malnutrition. Provisions were also made to have the committee replicated at the state and local government area levels.

The committees at the federal, state, and local government areas are not functional at an equal level, due to the continued lack of understanding and poor resource allocation by the government and its agencies. The committee's location at the federal level within the Agriculture and Industries Department of the National Planning Commission instead of the Department for International Cooperation has made it difficult to get development partners buy in to the nutrition agenda to foster an integration of the various approaches for resolving child survival and development problems. This institutional framework needs to be recognized and supported by government and the development partners in the bid to deliver adequate nutrition services for the Nigerian population to meet its right to adequate nutrition for survival.

Moreover, there is critical need to deploy nutritionists at various levels of the committee to implement food and nutrition programs. Improved sector-wide coordination of food and nutrition programs, technical capacity, and budgetary allocations is also required. Gaps in the availability of technical staff capable of skillful and effective service delivery in food and nutrition, and poor use of staff capacity and skills also need be addressed.

Program Implementation

Primary Health Care Approach

The Primary Health Care (PHC) approach is now being promoted and supported by the federal and state ministries of health and implemented by the local government area. It offers the basis for successful integration of nutrition activities into the health care system.

Nigeria was among 134 countries who endorsed the concept of PHC in1978 as a tool to achieving health care for all by the year 2000 (WHO 1978). The Declaration of Alma Ata listed eight original components of PHC:

- Education concerning prevalent health problems and methods of preventing and controlling them
- Promotion of food supply and proper nutrition
- Maintenance of adequate supply of safe water and basic sanitation
- Provision of maternal and child health, including family planning
- Immunization against the major infectious diseases
- Prevention and control of endemic diseases

- Appropriate treatment of common diseases and injuries
- Provision of essential drugs

The second component of the PHC had explicit goals aimed at “Health for All” by the year 2000. The goals were:

- A halving of severe and moderate protein-energy malnutrition in children under five
- A reduction in the rate of low birth weight to less than 10 percent in all countries
- A reduction at least one third in 1990 levels of iron-deficiency anemia in women
- The virtual elimination of iodine and vitamin A deficiencies

Since the PHC was basically a health concept and a development strategy, it was a vehicle for effective implementation of the health sector’s nutrition policy, which fed into the development of the National Food and Nutrition Policy.

Commitment to the review and repositioning of nutrition in the health sector through health sector reform will help to achieve the following objectives:

- Improve the nutritional and health status of all Nigerians with particular emphasis on the most vulnerable groups (children, women, and elderly),
- Reduce undernutrition, especially among children and the aged and in particular, severe and moderate malnutrition among children under five by 30 percent by the year 2010,
- Reduce micronutrient-deficiencies, particularly iodine deficiency disorders (IDD), vitamin A deficiency (VAD) and iron deficiency anemia (IDD) by 50 percent of the current levels by the year 2010,
- Reduce the rate of low birth weight (2.5kg or less) to less than 10 percent of the current level by 2010,
- Reduce the prevalence of infection and parasitic disease that aggravate the poor nutritional status of infants and children by 25 percent of the level,
- Reduce starvation and chronic hunger to the barest minimum through increased food intake.
- Promote healthy lifestyles through the reduction of risk factors and effective routine immunization, and
- Implement Essential Nutrition Actions (ENA), a proven global strategy that is being adopted globally to promote nutrition.

Accelerated Child Survival and Development

Considering the disproportionate number of the 11 million annual child deaths worldwide occurring in West and Central Africa, UNICEF responded to the challenge in 2002 with funding from Canadian International Development Agency (CIDA), and selected a set of high-impact , cost-effective interventions and innovative activities aimed at substantially reducing child mortality, focusing specifically on the most vulnerable. They began implementing this package as the Accelerated Child Survival and Development (ACSD) approach in 16 high mortality districts in four countries in West and Central Africa, targeting an initial population of 3 million people with a goal of reducing child mortality by 35 percent by 2010. The objective of the program is to, within a very short period of time, see how integrated implementation of low-cost key effective interventions can have a dramatic impact on child survival; reduce infant, under-five, and maternal mortality.

The ACSD therefore is an innovative convergence of interventions, and an integrated approach, which includes Immunization Plus, infant and young child feeding, Integrated Management of Childhood Illness Plus, and Antenatal Care Plus. Subsidized bed nets are being distributed in conjunction with Immunization Plus activities. The ACSD initiative seeks to build capacity for planning, organizing, and managing interventions and services that will improve child survival. At the same time it seeks to provide relevant technical skills as well as technical support and supervision, and ensure adequate funding, supplies and equipment for implementation.

ACSD activities are meant to complement ongoing health sector reform initiatives. These include initiatives aimed at improving the financing of health interventions, promoting the family and community-oriented approaches, strengthening the supplies procurement process, and advancing the monitoring and evaluation process.

The impact of the increased interventions on the under-five mortality rate will be estimated using various tools, such as the Minimum Bottleneck Budgeting (MBB) tool. The study of the efficacy of evidence-based interventions on child and neonatal survival by *The Lancet* will also provide insight.

The ACSD program has just begun in some Nigerian states where the health teams are being strengthened. There is therefore a pertinent need to assess the program in those states so as to gauge the programs achievements and shortcomings..

Catchments Area Planning and Action

BASICS II developed the concept of Catchments Area Planning and Action (CAPA) as a new development paradigm which sought to put rural and urban communities and local governments in charge of addressing child survival as well as to give them a new set of powers, rights, and obligations. This is based on the assumption that considerable institutional capacity already exists in local governments or communities. The process promotes the increased use of proven child health interventions at the household, community, and health facility levels to reduce morbidity and mortality in Nigeria.

The approach is led by the community, the community health promoters (CHPs), the CAPA Committee (i.e., the CHP-facilitating agent) and other service providers. The "community" refers to the direct and indirect beneficiaries or clients of the system and is characterized by the following:

- Geographical and social boundaries
- Leadership and decision-making processes
- Different groups (based on criteria of interest, social, socioeconomic, etc.)

The community participates interactively (co-learning) toward to achieve self-mobilization (collective action) catalyzed by the CHPs, who have some accountability to both the CAPA committee and their clients (more so than professional extension agents). This happens in such a manner as to ensure maximum quality of service. The CAPA committee is supported by the CHP facilitating agent, which supports CHPs by providing resources, training, and management. Service providers include many organizations from the micro- and macro-levels: Formal and informal, government, private sector, and NGO.

Results of the initiative to date include:

- well-informed and well-mobilized communities,
- technically-empowered health workers and CAPAC members,
- complementary feeding and vitamin A supplementation, and
- marked improvement in mothers' exclusive breastfeeding in the three BASICS focal states--there has been an increase of between 40 and 60 percent in the number of mothers encouraged to breastfeed exclusively and an increase in the proportion of children breastfed within 1 hour of delivery.

State and local governments and communities have learned that:

- decentralizing allows for greater flexibility and innovation,
- ensuring adequate supplies is key,
- emphasizing preventive actions while not rejecting curative elements is essential,
- addressing and monitoring inequity is important,
- using any one of the ENA interventions as the entry point is acceptable,
- involving community is essential and requires health system support to produce results, and that
- fostering a spirit of volunteerism and the presence of grassroots-level organizations is very worthwhile.

Gender Informed Nutrition and Agriculture

Arising from the prevalence of a high rate of malnutrition across Nigeria and concern about the alarming increase of micronutrient deficiencies, the "The Initiative to End Hunger in Africa" lead to the formation of the USAID-supported The Agriculture Nutrition Advantage (TANA). The International Institute of Tropical Agriculture (IITA) implemented TANA in partnership with other agencies. TANA was operational at the national level and used conceptual approaches to get policymakers to recognize that food and nutrition issues need to be prioritized in Nigeria's development efforts.

Gender Informed Nutrition and Agriculture II (GINA II), a multisectoral USAID approach to combating hunger in Sub-Saharan Africa built on TANA. GINA II's overall goal was to improve the nutritional status of women and children. It aimed to reduce the number of underweight children in GINA communities by 10 percent It sought to do this in several ways, including by improving agricultural practices, enhancing the care-giving capacity of mothers with children, building the nutrition-related capacity of local service providers, and sensitizing key local government officials about the importance of nutrition..

The Food Basket Foundation International Program (FBFI) implemented the program with support from USAID in three communities. The communities were Gunki, Ungwa Mallam/Powa, Wache of Nasarawa State; Afaha Ediene, Itak Ikot, Akpandem of Akwa Ibom State; and Hagagawa/Zango, Hagawa, Tinki of Kano State. The strategies involved: advocacy and mobilization; development review of relevant operational documents; re-ranking of community needs; training in project planning and implementation; finance and accounting; proposal appraisals; and project interventions.

The program's strengths and weaknesses included the following:

Strengths

- Involvement of multiple partners—such as FBFI, COMPASS, BASICS III, and USAID—working together
- Existence of preexisting structures and trained personnel
- Provision of logistics and good working environment because of supportive relationship with state and local government area officials
- Willingness of people to participate and donate properties
- Presence of facilities for dry season farming and suitable crops
- Readiness of people to adopt new farming techniques (irrigation farming)
- Positive returns on child malnutrition reduction through Positive Deviance (PD) Hearth sessions and community-based growth monitoring

Weaknesses

- Inadequate facility for dry season farming (Bichi in Kano)
- Inadequate understanding of aims, roles, and responsibilities of stakeholders
- Illiteracy and lack of basic numeric skills
- Inadequate linkage and communication between implementing partners
- Inadequate linkage and communication between stakeholders, for example, beneficiaries not knowing that loans should be refunded
- Socio-cultural barriers among the poor

Home-Grown School Feeding and Health Program

The Home-Grown School Feeding and Health Program was adopted worldwide and initiated in September 2005 by Nigeria's federal government to reduce child malnutrition and poverty; empower school-aged children; and to mitigate risk factors for underdevelopment.

The program ensures a free meal for a child each school day that is adequate in quality and quantity. It also aims to provide preventive health services for all Nigerian school children to reduce hunger and improve nutrition, increase school enrollment, enhance learning, and improve health. The program also strives to enroll enough girls to correct a gender imbalance. A total of 15 states, including two non-pilot states, covering the six geopolitical zones, are implementing the program now with a target of 2.5 million children.

The strategies the program employs to deliver its services include using a home-grown, school-based, community-driven, multi-sectoral and multi-stakeholder approach. The program inputs are meant to be procured locally with the active participation of the private sector. The strategies also include regular monitoring and evaluation of the program. The program has three components: program management, school feeding, and health. It also offers support services aimed at helping children, society, and the nation.

Advantages of school meals include: increased school enrollment, improved nutritional status of the average school child (6-18 years), and improved school performance by the children. If properly designed and effectively implemented school feeding programs can achieve a number of goals. They can: (1) alleviate short-term hunger, thus increasing

attention spans; (2) contribute to better nutrition and address specific micronutrient deficiencies in school-age children (especially iron and iodine deficiencies, which directly affect cognitive development); (3) encourage enrollment and improve retention; and (4) increase community involvement in schools.

Data is not available, however, to measure the progress and impact of the program, especially on the nutrition and health status of the school children in Nigeria. The program calls for a comprehensive evaluation in the near future to determine its progressive impact on the nutritional status of school children.

Vitamin A Supplementation in Nigeria

Efforts to control vitamin A deficiency started in 1996 in response to high infant and under-five mortality rates. The Nutrition Division of the Federal Ministry of Health (FMOH), the National Primary Health Care Development Agency (NPHCDA), and UNICEF jointly developed a work plan in 1996 to eliminate vitamin A deficiency.. In 1999, UNICEF, WHO, DFID, USAID, the National Program on Immunization and the FMOH developed a broader framework to link vitamin A distribution to polio eradication. The National Program on Immunization, created by the federal government in July 1996, is responsible for formulating policy and coordinating all immunization activities in the country. Hence it was easy to integrate vitamin A supplementation into immunization activities despite the fact that such integration was not part of the National Program on Immunization's mandate.

The National Planning Commission through the National Committee on Food and Nutrition (NCFN) coordinates all nutrition activities in the country. The NCFN addresses micronutrient deficiency through the multi-stakeholder MNDC subcommittee, which was set up by NCFN in the Nutrition Division of the FMOH. At inception, the NPHCDA was the government agency designated to coordinate and implement vitamin A and mineral supplementation in the country.

The National Immunization Days (NIDs) and its state variants, Subnational Immunization Days (SNIDs), which are used to eradicate poliomyelitis have been major vehicles for the distribution of vitamin A capsules to eligible children. The country first integrated large-scale vitamin A supplementation into NIDs in 2000. This integration has since been elevated to two rounds a year because it is seen as the best way to provide vitamin A to the target groups in Nigeria. UNICEF delivers the vitamin A supplements to the National Program on Immunization for distribution during NIDs/SNIDs. These supplements come to the states along with vaccines and other supplies. The local governments then collect their supplies from the state NPI stores. The local governments bring the vitamin A capsules, which are intended for distribution through the health facilities in the UNICEF/NPHCDA-supported areas, to the Zonal NPHCDA stores. The capsules are then delivered to the target local government areas and facilities. Helen Keller International collects vitamin A stocks from the UNICEF national stores and distributes them to all the CDTI partners in vitamin A supplementation who in turn deliver them to their states of operation, local government areas, and community health workers. The Canadian International Development Agency (CIDA)/Micronutrient Initiative (MI) donates the supplements through UNICEF. Government and other

international agencies are only involved in the distribution/delivery of the supplements through various mechanisms.

Other agencies also assist the government in the distribution of vitamin A through Child Health Weeks in some states. Vitamin A Supplementation is usually given twice a year through this mechanism. During Child Health Week, mothers are reminded and encouraged prior to a scheduled distribution to take their children to designated centers or outreach posts to receive the supplements. , Health workers (public and private) routinely run or manage this distribution, frequently with the support of officials from other sectors, and sometimes with volunteers. The Child Health Weeks are often integrated with other interventions, such as growth promotion, deworming, ITNs, immunizations, and other micronutrient programs. This mechanism is currently in use by the Food Basket Foundation International and UNICEF with support from Canada's Micronutrient Initiative.

To date, the following strengths of vitamin A supplementation have been noted:

- The National Food and Nutrition Policy is in place and provides a reference point for vitamin A supplementation.
- NIDs are a low cost means of delivering vitamin A supplements at least once a year and are implemented in all 774 local government areas of the country through home delivery.
- Trained vaccinators also visit the markets, places of worship, and day care centers for young children and each round lasts from three to seven days.
- The health system is decentralized along the three tiers of government. Policymakers have developed an intermediate PHC structure at the ward level to serve as a bridge between the local government areas and village levels. This intermediate structure replaces the district level in 200 out of the 774 local government areas nationwide.
- Human resources for vitamin A supplementation are available at all levels: (1) NPHCDA at the national level and six zonal offices; (2) the state directorate of Primary Health Centre (PHC) at the state level; (3) the PHC department at the local government area level; and (4) health workers in the health facilities at the ward and community levels.
- The private sector (both profit and nonprofit) has been an important delivery channel.
- The main vitamin A supplementation partners provide a local model of partnership for improved coverage and impact.
- Frequent meetings of the nutrition partners have been beneficial.
- The use of other vehicles and avenues such as CDTI and Child Health Weeks has increased coverage.
- Guidelines are important to implementation. These include guidelines on training in vitamin A supplementation in PHC facilities (NPHCDA), training during National Immunization Days (BASICS II), and management of diseases (CDTI) (NPHCDA 2007)

Cited weaknesses of the vitamin A supplementation program have also been noted:

- The National Food and Nutrition policy talks about MNDC emphasizing food fortification and dietary diversification but makes no mention of the role of vitamin A supplementation to address vitamin A deficiency and improve child survival.

- Vitamin A supplementation has no permanent home nor effective coordination and implementing mechanisms
- There is inconsistency in the denominator population used in the estimation of vitamin A supplementation coverage.
- There is no provision for vitamin A supplementation in emergency situations.
- There is a lack of consensus in Nigeria on the best strategies for sustaining vitamin A supplementation.
- The policy leadership for vitamin A supplementation needs to be strengthened.
- There are no clear roles and accountabilities among governmental partners.
- The private sector (profit/ nonprofit), though recognized as an important delivery channel, has not being integrated into the vitamin A supplementation system.
- The system's capacity to deliver is low because financial resources (including salaries) do not reach the local levels.
- There has been inadequate attention paid to pre-service training on micronutrient deficiency control in general and vitamin A deficiency control in particular.
- There is no clear understanding of the roles and accountabilities of stakeholders, especially at the national level among NCFN, the Nutrition Division of FMOH and the NPHCDA. Hence the government provides poor technical coordination of the program.
- Poor logistics and weak supervision due to insufficient resources have lead to delays in distributing capsules.
- There has been inadequate monitoring, supervision, and coordination of activities to ensure that nationally, vitamin A supplementation is administered uniformly at the same time to the target population.

Food Fortification and Biofortification

Based on the extent of hidden hunger in Nigeria, the government took steps to undertake fortification programs to ameliorate the situation. These steps include iodizing salt; adding vitamin A and iron to wheat and maize flour and vitamin A alone to vegetable oil and sugar. These efforts are described below.

Salt Iodization

Nigeria adopted universal salt iodization (USI) in 1993 to combat iodine deficiency disorders (IDD). Legislation stipulated iodine levels of 50 milligrams per kilogram and 30 milligrams per kilogram at factory and retail levels respectively. The program took off in 1994. This was prompted by the fact that a 1993 survey indicated a 20 percent prevalence of IDD (as grade1 and 2 goiters), with an estimated 25 to 35 million Nigerians at risk. By the year 1999, the country had achieved 98 percent USI. An impact evaluation of some previous IDD endemic locations and sentinel sites indicated a drastic reduction in the total goiter rate and more significantly, in the urinary iodine excretion rate. The prevalence of goiters at those sites had dropped to 11 percent in 1999 from 20 percent in 1993, with median and mean urinary excretion rates of 146.5 and 133.9 micrograms per liter (ug/l) respectively.

However, USI faltered in 2002 because regulatory agencies were haphazardly monitoring and enforcing iodization standards, and because of logistics problems.

In 2002 an IDD task force supported and funded largely by UNICEF began to monitor salt iodization levels at production plants and distributor and households levels. Collated reports indicated 100 percent iodization at factory and distributor levels and 98.3 percent iodization at the household level. The shortfall was traced to the production and sale of local non-iodized salt from brine lakes and salt mines in some localities as well as iodine loss due to long and unsuitable storage conditions.

UNICEF has funded a number of projects organized by the National Agency for Food and Drug Administration and Control (NAFDAC) in the following areas:

- Urging salt manufacturers to sustain USI and package iodized salt in smaller affordable sizes (250g-500g) instead of the present 25 kg which is usually dispensed in open markets under very harsh weather leading to loss of iodine content
- Targeting the social marketing of iodized salt at high-risk areas
- Visiting large-scale salt manufacturers and cottage manufacturers of noniodized salt to recommend ways to help them with iodization and manufacturing practices.

Vitamin A Food Fortification

The government legislated mandatory vitamin A fortification in February, 2000 for flour, edible vegetable oil products, and sugar. Enforcement started in September 2002. Compliance has been extremely slow. A survey conducted in October, 2003 by NAFDAC that sampled flour and vegetable oil from the distribution chain for laboratory assessment of vitamin A levels indicated only 5 percent compliance. The government imposed sanctions on erring manufacturers after completing another survey in the last two weeks of June, 2004.

There is also voluntary fortification of some foods with vitamin A.

Flour has been mandatorily fortified with iron, riboflavin (or vitamin B2), niacin, and thiamine (or vitamin B1) since 1980. The regulatory agencies SON and NAFDAC address any problems with the program at meetings with industry representatives. UNICEF and Canada's Micronutrient Initiative have always played a major role in facilitating such meetings.

The 1996 consultative group on fortifying food with vitamin A identified potential food vehicles that are industrially processed. Using criteria like technical feasibility, acceptability, sustainability and population coverage, the potential foods were ranked in order as bouillon cubes, MSG, salt, sugar, wheat, and maize flour. This ranking was confirmed from a benchmark food consumption survey of about 3000 households (UNICEF 1996).

The majority of people consumed these foods four to seven days a week. The consumption levels are for bouillon cubes (1-3g), MSG (0.4-1.5g), sugar (3-15g), and wheat and maize products (40-220g) per person per day. Information on food consumption by infants, young children, and women is not available. Nor is information available that compares consumption by rural people versus the urban poor or that measures intra-household distribution. In the end the consultative group picked only

wheat and maize flours, vegetable oils and sugar for fortification with vitamin A. The group also recommended putting iron in the two types of flour.

The IITA National Food Consumption and Nutrition Status survey showed that bakery products were available 8-10 months of the year to 99.5 percent of households and that 87.6 percent of households could afford them. Maize was available during the same period to 56.5 percent of households while 46.8 percent of households could afford it (International Institute for Tropical Agriculture (IITA), 2003). Thus fortification of wheat and maize flour would make vitamin A and iron available fairly widely. Based on cultural diversity in the country, the use of a multivehicle approach for vitamin A was adopted using wheat and maize flour, branded vegetable oil, and white sugar. Iron was a normal constituent of the premixes used to fortify wheat and maize flour.

Manufacturers have reviewed, tested and accepted revised standards for vitamin A in wheat and maize flour, sugar, and edible vegetable oil. They have started effectively fortifying 80 percent of wheat and maize flour and 55 percent of edible vegetable oil. The formal food sector in Nigeria is well established and growing, with 80 percent of the market share of Nigerian-made processed foods controlled by a few large-scale food industries including multinationals such as Flour Mills of Nigeria, Nestle Nigeria Plc, Cadbury Nigeria Plc, and Unilever Nigeria Plc.

There are no price controls, rationing or consumer subsidies but tariffs on fortificants are reduced 10 percent for these and other producers. Prices have been relatively stable and fluctuations are due primarily to increases in transportation costs influenced by deregulated fuel prices. Similarly, exchange rate fluctuations have affected the prices of imported fortificants.

Encapsulated water and miscible vitamin A are used to fortify sugar. The addition of a peroxide-free oil, such as sunflower oil, helps vitamin A to adhere to sugar crystals while Iron premix is included as ferrous fumarate. These specific fortificants were selected based on research results and consensus amongst all stakeholders in the public-private partnership. Vitamin A and pro- vitamin A compounds are more stable in fats and oils. They may be added directly to vegetable oil since they are fat soluble and distribute easily and uniformly through the fat. Vitamin A is quite stable in fortified cereal products. In studies, wheat flour fortified with 7500 IU/oz of vitamin A was shown to remain stable for six months at 23 degree Celsius (Cort et al. 1976). Breakfast cereals fortified with 5450 IU/oz of vitamin A also remained stable for six months at 23 degrees Celsius (Anderson et al. 1976). Most of the losses of vitamin A in wheat and maize flour (30-40 percent) occurred during baking.

National Special Program on Food Security

The National Special Program for Food Security (NSPFS) is an initiative of the Federal Government of Nigeria and the Food and Agricultural Organization for poverty reduction in line with the thrust of the National Economic Empowerment Strategy. It focuses on the transfer and application of low-cost technologies to improve agricultural productivity and sustain agricultural systems. Policymakers executed the first phase over a five-year period with the federal government bearing the entire cost. The program includes: (1) a food security project; (2) an aquaculture and inland fisheries project; (3) an animal

disease and trans-boundary pests control project; (4) a marketing of agricultural commodities project; (5) a soil fertility initiative; (6) a food stock management project; and (7) South-South cooperation.

The program's broad objective is to contribute to sustainable improvements in national food security through a rapid increase in productivity; to foster food production on an economically and environmentally sustainable basis; to reduce yearly variability in agricultural production; and to improve the people's access to food. Its specific objectives are to:

- assist farmers to achieve their potential for increasing output, productivity, and incomes,
- strengthen the effectiveness of research and extension services by bringing technology and new farming practices developed by research institutes to farmers,
- concentrate initial efforts in pilot areas for maximum effect and ease of replicability, and
- educate farmers in the effective use of available land, water, and other resources and facilities to produce food and create employment.

The NSPFS no doubt has bolstered the productivity and sustainability of the small-scale agricultural systems with obvious improvements in beneficiaries' livelihoods, food security, and socioeconomic status. State governments have funded the establishment of additional NSPFS sites while the federal government increased the number of sites from 109 to 327 beginning in 2007.

Other Programs

Other initiatives include :

- the Integrated Maternal, Newborn, and Child Health strategy to reduce maternal, neonatal, and child morbidity and mortality in line with Millennium Development Goals 4 and 5. (The targets are to reduce the maternal mortality rate by 75 percent, from 1000 maternal deaths per 100,000 live births in 1990 to 250 maternal deaths per 100,000 live births in 2015; and to reduce the under-five mortality rate from 230 deaths per 1000 live births in 1990 to 77 per 1000 in 2015.),
- the community-based growth monitoring and promotion program and the implementation of PD Hearth sessions to combat malnutrition,
- the fostering of key household practices aimed at improving the nutritional situation of household members using the Integrated Management of the Childhood Illnesses approach, and
- the support of healthy lifestyles, facilitation of healthier environments, provision of public information and health services, and involvement in improving the health of individuals and communities.

Strengths and Weaknesses of Policies and Programs to address Food Insecurity and Malnutrition

In the spirit of fairness, it must be said that most of the programs initiated by the government addressing food and nutrition security have made some achievements. But they did not realize self-sufficiency or reduce malnutrition.

Overall, some of the salient reasons for the ineffectiveness of the various efforts aimed at achieving food security in Nigeria include, but are not limited to:

- policy inconsistency and administrative dislocations of the federal departments in charge of the various programs,
- inability to sustain funding of the programs,
- instability of the research institutes due to their constant movement among ministries and poor funding,
- unnecessary political interference and managerial problems, resulting from socioeconomic cleavages, which permeated the nation's sociopolitical, economic, and cultural institutions,
- lack of qualified manpower to provide effective leadership for the various programs,
- lack of continuity and shifts in approach by successive governments,
- poor funding and lack of institutional arrangements for implementation,
- lack of funds and commitment limiting the extent of infrastructural provision in the rural areas, and
- government infrastructural programs embarked upon without effective planning or institutional arrangements for their execution and continuity.

Table 5 provides a summary of the weaknesses of each of the programs and policies related to agricultural production and food security.

Table 5. Program Implementation

S/No	Program	Strengths	Weaknesses
1	Primary Health Care Approach	• Seeks to promote the integration of nutrition activities into the health care system	• Weak health system and poor implementation of PHC as vertical program
2	Accelerated Child Survival and Development	• Seeks to integrate the components of child survival and development.	• Too early to evaluate effectiveness • Implementation process slow now that it is merged with IMNCH
3	Catchments Area Planning and Action	• Approach is community driven and interactive, offering greater flexibility and innovation	• Health system support is weak, no strong sustainability since donor support ended.
4	Gender Informed Nutrition and Agriculture	• Existence of multiple partners working together including FBFI, COMPASS, BASICS III and USAID • Presence of facilities for dry season farming and suitable crops to guarantee household food security.	• Inadequate stakeholders' understanding of aims, roles, and responsibilities • Sociocultural barriers among the poor. • Illiteracy and lack of basic numeric skills.
5	Home Grown School Feeding and Health Program	• Increase enrollment in schools and improved performance of children.	• Design not adequate, state government buy-in is slow and no impact assessment indicators exist.
6	Vitamin A Supplementation	• The National Food and Nutrition Policy is in place and provides a reference point for vitamin A supplementation. • Trained vaccinators also visit the markets, places or worship, and day care centers for young children; each round is over a period of 3 – 7 days	• The National Food and Nutrition policy talks about MNDC emphasizing food fortification and dietary diversification but makes no mention of the role of vitamin A supplementation to control vitamin A deficiency and improve child survival. • There is no provision for vitamin A supplementation in emergency situations.
7	Food Fortification and Biofortification	• Increasing population coverage for vitamin and mineral consumption.	• Acceptability of products in rural areas not ascertained.
8	Salt Iodization	• Coverage of all households (97percent)	• Inability to determine the amount of iodine consumed at the household level.
9.	Vitamin A Food Fortification	• Makes vitamin A available to all members of the population.	• No guaranteed protection for consumers from over-consumption of vitamin A from the many products fortified.
10.	National Special Program on Food Security	• Activities in many communities to assure food security.	• Difficult to document the level of production and impact.

Government and International Development Partners, Policies, and Programs for Food and Nutrition Security

There have been initiatives aimed at providing the necessary policy environment for addressing food insecurity in Nigeria. Recent government pronouncements and plans reveal an awakened drive toward food security accompanied by inconsistency, poor targeting, a lack of commitment, and improper coordination. Therefore, the various policies have failed. The various export trade policies (for example, encouragement of processed cassava export) and import trade policies (for example, the recent reduction in tariffs and the lifting of import bans and the temporary abolition of duties on some agricultural products) are even leading to food insecurity.

The various policies and programs instituted by the government and other stakeholders to increase food security are analyzed in this chapter.

Policies and Programs of Government for Food and Nutrition Security

Nigeria's federal government has put several policies and programs in place to address agricultural production and food security. These programs and projects as well as various presidential Initiatives are summarized in Tables 6 and 7 below:

Table 6. Government agricultural development initiatives

S/N	Program /project	Description	Weakness
1	Cooperatives (1935 to date)	The Nigerian Cooperatives Ordinance was promulgated in 1935 to regulate cooperative activities in the country. In 1974 a law was enacted establishing the Department of Cooperatives.	Policy inconsistency and administrative dislocations of the federal departments in charge of cooperatives.
2	Commodity Boards 1947-1986	Commodity Marketing Boards started during the colonial era with the establishment of the first marketing board in 1947, Palm Produce, Groundnut and Cotton Marketing Boards were formed in 1949. The second generation, established in 1954, were the regional marketing boards which served as buyers of last resort at fixed prices and held buffer stock.	Inability to pay farmers the subsisting market price then. Scrapped in 1986 under the Structural Adjustment Program.
3	Agricultural Research Institutes (1964 to date)	Four research institutes, namely: Cocoa, Oil, Palm, Rubber and Trypanosomiasis were established by the Nigerian Research Institute Act in 1964. In 1975 the Agricultural Research Institute Decree came into effect, establishing additional research institutes.	Instability of the research institutes as a result of their constant movement from one ministry to another. There was also a major funding problem
4	National Accelerated Food Production (NAFPP) (1970s)	Objectives were to increase the yield of seed varieties, enhance fertilizers use, and promote extension and credit services as well as adaptive research and staff training. A number of national crop centers were established at different locations:, Ibadan for rice and maize; Zaria for sorghum, millet and wheat, and Umudike for cassava.	Started very well but the wheat program was affected by a basic withdrawal of political support and the lifting of the ban on wheat imports.
5	Nigerian Agricultural Cooperative Bank (NACB) 1973 to date	The main specialized institution for agricultural credit delivery in the country.	Directed to provide subsidized credit at single digit interest rate without the corresponding government subsidy .. Needs to be reformed for greater efficiency and effectiveness in resource mobilization and credit delivery.
6	Agricultural Development Projects (ADPs) (1975-Present)	World Bank funded at inception. ADP revolution started in 1974 with the establishment of Gombe, Funtua, and Gusau ADPs. They were set up to provide extension services, technical input support, and rural infrastructure services. Though they were set up to perform a temporary role in providing advisory services, the ADPs have assumed a permanent status. They are now recognized as the major agricultural development institutions in the country.	The decline in oil prices that started in 1982 had a substantial fiscal effect in Nigeria and led to shortages of counterpart funds for these projects. The emphasis on modern technology in the ADPs led their agricultural research and extension services to focus on relatively high input technology for sole cropping systems. These systems were not used by the majority of smallholders who used

S/N	Program /project	Description	Weakness
			mixed/relay cropping systems as a rational strategy to reduce risks. With extension methods: the change from training and demonstration to the TV system was slow, resulting in top- down, rather than responsive, recommendations to farmers.
7	River Basin Development Authorities (RBDAs) (1977-Present)	The major instrument of the Water Resources and Irrigation Policy was the establishment of 11 RBDAs in 1977 to develop and take advantage of available water bodies in the country for agriculture, fishing and other purposes.	The failure of the RBDAs was due to unnecessary political interference and managerial problems resulting from socioeconomic cleavages which permeated the nation's socio-political, economic and cultural institutions. A lack of qualified manpower to provide effective leadership at the departmental levels also played a role.
8	Operation Feed the Nation (1976-1979)	This was a mass mobilization and mass awareness program created in 1976 through 1979 in reaction to the first real food crisis in the country.	The lack of continuity and shifts in approach by successive governments were the reasons for the failure of the program.
9	Green Revolution (1979-1983)	The program focused on food production, input supply and subsidy, special commodity development, review of agricultural credit guarantee schemes, and increased resource allocation to RBDAs.	The lack of continuity and shifts in approach by successive governments were the reasons for the failure of the program.
10	Directorate of Food and Roads and Rural Infrastructure (DFRRI) (1986-1993)	DFRRI was established in late 1986 to accelerate the rate of infrastructure development in the rural areas. It was originally designed as a supra-ministerial body for channeling the proceeds of the liberalized foreign exchange market for rural development.	The lack of funds and commitment limited the extent of infrastructural provision in the rural areas. The government infrastructural programs were embarked upon without effective planning and without institutional arrangements for their execution.
11	National Agricultural Land Development Authority (NALDA) (1991-1999)	The authority's objectives include providing strategic public support for land development, promoting and supporting optimum use of Nigeria's rural land resources, providing gainful employment for rural people and raising incomes, and improving general living standards in rural areas.	The NALDA approach increased rather than reduced the direct public provision of goods and services which could be provided by the private sector instead. Many of the NALDAs' services were duplications, albeit on a more intensive basis than services provided by the ADPs.
12	Presidential Initiatives on Cocoa, Cassava, Rice, Livestock, Fisheries, Vegetables (1999-2007)	These were initiated by the last administration in an effort to improve Nigeria's food production in line with Vision 2020. The strategy is to attract the attention of the highest level of political authority for special intervention in the commodity sector	Weaknesses were poor funding and lack of institutional arrangements for implementation.

Source: Report of the National Program for Food Security, Federal Ministry of Agriculture and Water Resources, May 2008.

Table 7. Presidential agricultural development initiatives (2008)

Presidential Initiative	Target	Achievement to Date
Increased rice production	Increased rice production and export so as to produce 6 million metric tons of rice by 2005 and surplus for export by 2007.	• Through R-Box technology, increased yield of 3.5-7.5 tons has been recorded • Training of 370 extension agents • Training of 1,250 farmers in 25 states and FCT on R-Box technology • Training of engineers and technicians in handling of rice-processing equipment • Attainment of a national output of 0.8 million metric tons (MMT) in 2004, t causing a reduction in importation from 3 MMT to 1.3 MMT in 2004
Cassava production and processing	Increased cassava production and export with target earning of US$ 5.0 billion from cassava export in 3 years. The specific target is to produce 150 million metric tons of cassava per year by the end of 2006.	• Expansion of export trade on cassava • Development of equipment for the processing of cassava • Local processing centers established in each Local Government Area • Production of 18,000 bundles of breeder stock at National Root and Cash Crop Research Institute-Umudike • Production of 12,000 bundles of foundation stock by Root and Tuber Expansion Program • Development of new varieties with a yield of 30-80 tons per hectare as against 12-15 tons per hectare of local varieties.
Vegetable oil development	Bridge the supply and demand shortfall of about 300,000 tons/liters and attain self-sufficiency within 5 years. Fabricate processing machines. fabrication	• Production of 102,000 sprouted nuts • Production of 29.27 metric tons of foundation seeds • Production of 40.04 metric tons of groundnut seed • Procurement of and distribution of 175.11 metric tons of seed cotton • Training of 100 oil palm nursery operators and equipment fabricators at National Institute for Oil Palm and Research • Training of 100 extension staff • Promotion of radio jingles on Federal Radio Corporation of Nigeria • Procurement of 70,000 jute bags • Fabrication of two soya bean layers • Privatization of Federal Oil Palm Estate at Ore-Irele (Ondo State).
Livestock Production	Improve animal protein intake by 50 percent within three years. Produce for export within the next five years and expand dairy. production, Develop small holder poultry scheme and rehabilitate existing infrastructure.	• Procurement of 300 million doses of contagious bovine pleuropneumonia from National Veterinary Research Institute • Procurement of 200,000 disposable syringes • Procurement of 200,000 day old chicks from National Animal Production Research Institute • Development of 3 numbers earth dams at Adamawa, Borno and Kwara States • Rehabilitation of infrastructure at cattle multiplication centers • Procurement of 25 tons of cattle premix, 70 tons of cotton seeds, cake and 5,000 blocks of mineral salt licks.

Source: Mohammed A.M., Follow-up of the implementation of the World Food Summit Plan of Action, 2006.

Maximizing Agricultural Revenue and Key Enterprises in Targeted Sites

Maximizing Agricultural Revenue and Key Enterprises in Targeted Sites (MARKETS) is a US$25 million, USAID-funded, private-sector-led project that builds upon USAID investment in Nigerian agricultural development . It aims to expand economic opportunities by increasing productivity, enhancing value-added processing and increasing commercialization through private-sector led growth and development. MARKETS' mandate is to help transform Nigerian agriculture in selected areas from low-input/low-output, subsistence farming to commercially competitive agriculture. The project supports off-farm agricultural enterprises that enhance processing, and offer employment and investment opportunities.

MARKETS determined that Nigeria's agricultural sector's problems included poor performance stemming from low-input/low-output technologies, high postharvest losses, unavailability of appropriate processing and value-adding technologies, and poor linkage of production to demand and use of market information. MARKETS began identifying targeted commodity value chains that could benefit from technological packages, increased value addition through storage, processing, and significant commercialization. Its targeted commodities are aquaculture, cowpea, dairy, rice, sorghum, and sesame.

To date, MARKETS, in collaboration with its partners in the five mandated commodities, has networked a total of 50,000 small-scale farmers in 15 of the 36 states resulting in the generation of more than US$20 million of on-farm revenue. MARKETS has also facilitated more than US$4.9 million in investment and short-term credits for farmers, agribusinesses, and others. Its products and services, such as the Package of Practice, have been used by the commodity producers to tremendously increase the volume of the target commodities.

International Fund for Agricultural Development

The International Fund for Agricultural Development (IFAD) was formed in response to the realization at the 1974 World Food Conference that the causes of food insecurity and famine were not so much failures in food production, but structural problems relating to poverty and the fact that the majority of the developing world's poor populations were concentrated in rural areas.

In Nigeria, IFAD's support for the government's poverty reduction program focuses on facilitating economic and social development in rural areas. Its goal is to empower poor rural adults in developing countries to achieve higher incomes and improved food security. Its particular objectives are to empower the rural poor, especially women, by increasing their access to resources, infrastructure, and services, and to promote the management of land, water, and common property by local communities.

IFAD directs assistance toward the following areas:

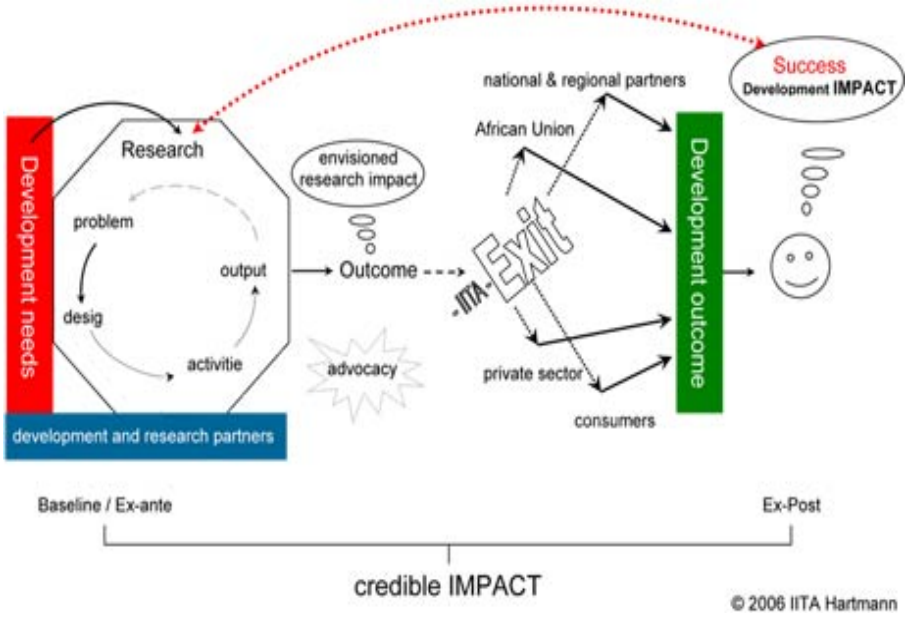
- Empowering small-scale farmers, landless people, and rural women to generate sustainable incomes from farming and other activities
- Supporting pro-poor reforms and local governance to expand access to information, effective transport systems, village infrastructures, and technologies and
- Improving poor rural communities' access to financial services and social services

At the government level, IFAD helps build capacity and strengthen institutions that provide services to rural poor people. It assists with necessary policy changes, develops local organizations to enhance their effective participation, and promotes initiatives to foster rapid private sector-led poverty reduction and economic growth. It has spent a total of US$639.9 million with 2,298,560 households directly benefiting (IFAD 2008).

International Institute of Tropical Agriculture

The mission of the International Institute of Tropical Agriculture (IITA) is to enhance food security and improve livelihoods in Africa through research-for-development. Its research-for-development model (figure 18) proves effective in setting a research course that addresses major development problems in Africa rather than simply contributing to scientific knowledge. The model seeks to establish mechanisms for scaling up to enhance food security and development at the community level.

Figure 18. IITA's Research-for-Development Model (2006)



IITA's Integrated Cassava Program in Nigeria, which is implemented within the framework of the Presidential Initiative on Cassava, spurred the commercialization of the crop in the country, benefiting millions of farmers and bringing in much needed foreign exchange. In 2007, IITA's research and advocacy work with partners led to the formation of the National Nutrition Council (NNC), a collaboration that works to identify nutrition problems, propose solutions and coordinate activities that address these issues. The NNC is chaired by the president. Additionally, its work toward helped to establish a School Feeding Program in Nasarawa State.

IITA, in Borno State, promoted the adoption of IITA-produced maize, soybean, and cowpea varieties for several years through the "Promoting Sustainable Agriculture in Borno State" program. The varieties offer resistance or tolerance to *Striga,* considered to be the major agro-economic constraint to profitable farming in that area of Nigeria. It also developed and promoted the use of technologies and cropping systems to control *Striga* through a farmer-participatory research and extension approach. This resulted in the combination of technologies with farmers' practices, thereby adding more value and relevance to research products.

World Bank

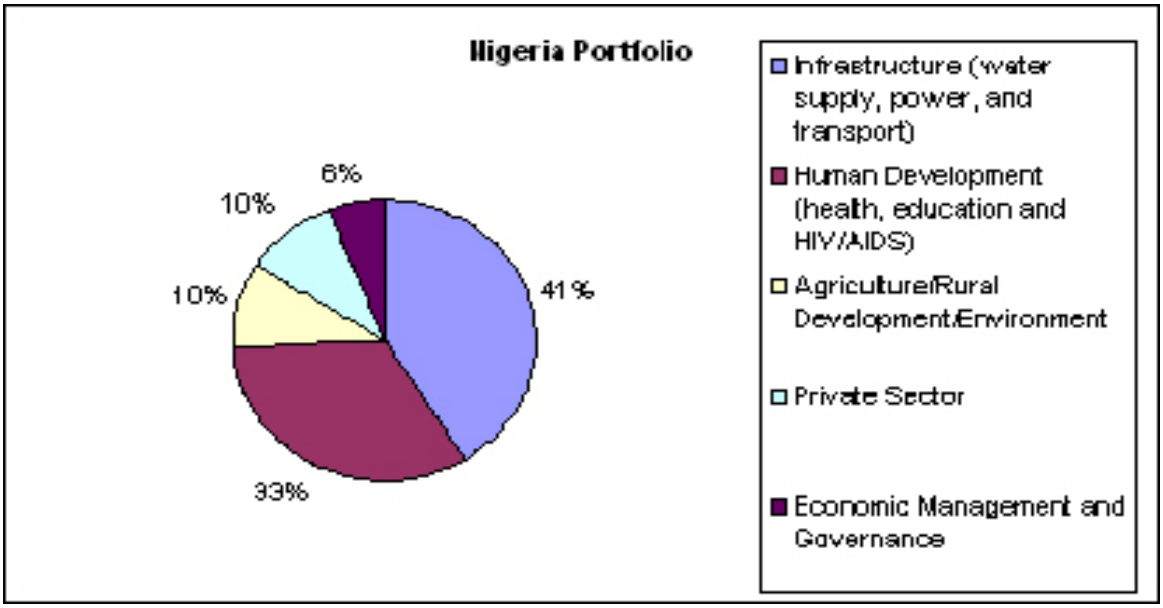
Nigeria joined the World Bank in 1961. Since then, World Bank assistance on 123 projects has helped the country achieve economic growth and reduce poverty. By mid-2007, 23 International Development Assistance (IDA) and 2 Global Environmental Facility (GEF) projects were underway with a commitment value of approximately US$2.67 billion. These projects include:

- a Micro, Small and Medium Enterprise (MSME) project: A US$32 million project aims to increase the performance and employment levels of MSMEs in selected non-oil industry sub-sectors and in three targeted states of the country.
- the Second National Fadama Development Project (Fadama II): a US$100 million project with the objective of sustainably increasing the incomes of *fadama* users—those

who depend directly or indirectly on *fadama* resources (farmers, pastoralists, fishers, hunters, gatherers, and service providers).

- a Local Empowerment and Environmental Management Project: a US$70 million operation that seeks to strengthen the institutional framework at all three levels of government (federal, state and, particularly, local government) to support environmentally sustainable, and socially inclusive, development, and, to promote state beneficiaries' participation in the planning, co-financing, and implementation of multisectoral microprojects.

Figure 19. World Bank's Nigeria portfolio (2008)



Source: World Bank 2008.

The World Bank strategy focuses on helping the government to achieve results in three main areas: (1) human development; (2) non-oil growth; and (3) better governance. The Bank is already supporting state programs in governance, education, health and agriculture. Projects supporting basic service provision and community driven development are underway in all of the states. Some of the projects under preparation that relate to food security are Commercial Agriculture, Fadama III, Community Social Development, Second State Education, and others.

Three community-driven development projects have already demonstrated an impact on poverty and improved livelihoods (for example, the Fadama II project increased, on average, the net income of *fadama* users by 60 percent). The Lagos Urban Transport Project has improved the quality of roads and access, and decreased transportation costs by 30 percent.

International Finance Corporation

At US$553 million or 37 percent of Sub-Saharan Africa's portfolio, lending in Nigeria makes up the International Finance Corporation's largest portfolio. The portfolio addresses (1) financial markets, infrastructure, manufacturing and services, indigenous oil-gas-petrochemicals, agribusiness and healthcare; (2) diversification within financial markets to include trade financing, housing financing including mortgages and securitizations, insurance, and enterprise financing (micro, small and medium); and (3) improving the investment climate and developing the local fixed-income capital market.

Food and Agriculture Organization

Within the context of the Millennium Development Goal to eradicate extreme poverty and hunger, the Food and Agriculture Organization (FAO) signed an agreement for a Unilateral Trust Fund project in support of the National Program for Food Security in Nigeria in May 2000. The Nigerian government decided to implement the Special Program for Food Security with its own human and financial resources (US$45 million), whereas FAO provides technical support on demand to the government.

The goal of the program is to improve national and household food security and reduce rural poverty in an economically and environmentally sustainable way. It has the following objectives:

- Improve household food security and incomes though increases in productivity, diversification, and sustainable use of natural resources
- Enhance consumers' food security through improved access to and availability of food and also increase producers' income through more efficient marketing
- Enhance farmers' and consumers' access to support services such as extension, credit, nutrition, and health education
- Foster participation of the poor rural population in the development of the community.

The program's many projects include activities aimed at improving household food security through: (1) water control, (such as on-farm irrigation) and capacity building in gender and water management); (2) crop intensification and diversification, (3) soil fertility improvement, (4) aquaculture and inland fisheries, (5) control of animal diseases and transboundary pests, and (6) marketing of agricultural commodities.

The Project Coordination Unit in the Federal Ministry of Agriculture and Rural Development was given the important task of launching field activities in all 36 Nigerian states and the Federal Capital Territory, directly involving a total of 109 sites and 30,000 families. In March, 2003, China, Nigeria, and the FAO signed a four-year South South Cooperation agreement, with funding provided entirely by the Nigerian government (US$22.7 million). The Chinese government provided some 20 experts and more than 500 field technicians with expertise in various fields of agriculture to assist in the building and rehabilitation of small-scale water control infrastructures, including the construction of dams and other agriculture-related technology transfer activities.

The National Program for Food Security played a central role in achieving the government's goals of boosting agricultural production for certain priority crops and commodities such as rice, cassava, yam, maize, sorghum, millet, cowpea, fruits, and vegetables.

The program's success substantially improved food security and productivity, especially in marginal areas, and prompted the government to triple the number of project sites to 327 over five years, starting in 2007. In total, the expansion is expected to reach 6 million beneficiaries.

The estimated budget for the expansion of the National Program for Food Security during a five-year period (2007–2011) amounts to a staggering US$364 million, one of the largest programs of this sort. Nigeria will provide 60 percent of the funds required for the next phase with the rest from other sources (the African Development Bank, the Islamic Bank for African Development, the Arab Bank for Economic Development in Africa and two National Commercial Banks, and so on).

International Food Policy Research Institute

The International Food Policy Research Institute (IFPRI) is committed to helping African governments identify areas for agricultural and rural investment and policy intervention, with the aim of making clearer the links between investments, agricultural growth, and poverty reduction. To this end, IFPRI's Development Strategy and Governance (DSG) division initiated the Strategic Analysis and Knowledge Support System (SAKSS). SAKSS compiles, analyzes, and disseminates data, information, and tools that help inform the design, implementation, and monitoring and evaluation of rural development strategies in order to make them more effective. This strategy is perceived as an international public good, and involves not only African governments and donors but also local and international research institutes and universities, the private sector, and nongovernmental organizations. As such, SAKSS is becoming a network among these key partners.

In addition, the IFPRI-led Agricultural Science and Technological Indicators (ASTI) initiative compiles, processes, and makes available internationally comparable data on institutional developments and investments in agricultural research and development worldwide, and analyzes and reports on these trends in the form of occasional policy digests for research policy formulation and setting priorities. The project involves a large amount of original and ongoing survey work focused on developing countries, but also maintains access to relevant data for developed countries. The activities involve collaborative alliances with a large number of national and regional research and development agencies, as well as international institutions.

Available Institutional Capacity

Nigerian government institutions lack the capacity to undertake food and nutrition assessment and analysis. This capacity gap, largely due to poor funding, inconsistent staff training, poor prioritization and haphazard coordination of efforts, has contributed to the dearth of nationally comprehensive and valid data and information on Nigerians' food and nutrition security status.

The various government institutions involved in making decisions and administering food and nutrition security programs in Nigeria need training in assessment and analysis. Such government institutions include the Planning and Policy Department of the Federal Ministry of Agriculture and Water Resources, the Monitoring and Evaluation Unit of the National Food Reserve Agency, the Projects Coordinating Unit, the Marketing Unit of the National Strategic Grain Reserve, and the Federal Ministry of Agriculture and Water Resources.

The Nigerian government's lack of food and nutrition experts and professionals such as biometricians and statisticians, agromarketing specialists and others with related qualifications will continue to pose a challenge. The National Bureau of Statistics, however, has good documentation in its archive of some aspects of food security but still does not have a comprehensive survey report specifically on food security.

Government research institutes are stronger in analysis. However, there is still a need for knowledge and capacity building in food and nutrition security assessment and analysis.

Some international and donor-funded institutions do have the requisite expertise, knowledge, and technology to conduct research. Such institutions include but are not limited to the International Food Policy Research Institute, the International Institute of Tropical Agriculture, the Famine Early Warning System Network, USAID/MARKETS, the Food and Agricultural Organization, the International Fund for Agricultural Development, World Bank, and the United Nations Development Programme. The coordinated planning and implementation of capacity

building in the counterpart government departments and institutions by these international institutions will benefit the country.

End-users of Data and Information on Food and Nutrition Security in Nigeria

A plethora of end-users of the data and information on Nigeria's food and nutrition security situation exist across the country. Without available data and information , decision making, planning, implementation, and monitoring and evaluation of food and nutrition security programs will be difficult.

Among the end-users of food and nutrition security information and data are:

- decision makers at various levels (for example, relevant committees of the National and State Houses of Assembly, the National Committee on Food and Nutrition of the National Planning Commission, the States Committee on food and nutrition, and the Local Governments Committee on food and nutrition),
- state and federal ministries of women's affairs and women in agriculture at the State Agricultural Development Program,
- relevant departments of the local, state and federal ministries of health
- relevant departments of the State and Federal Ministry of Agriculture and Water Entities (for example, the National Strategic Grain Reserve, the National Program on Food Security, the Planning and Policy Research Department, the National Food Reserve Agency (and its Nutrition Unit), and the Nutrition Department of the Federal Ministry of Health, among others),
- international and national research institutes with mandates geared toward helping Nigeria achieve food and nutrition security such as the International Institute of Tropical Agriculture, Root and Tuber Crop Expansion Program, National Horticultural Research Institute and the like,
- units of the Central Bank and the National Bureau of Statistics that gather data on food prices and production
- international agencies that focus on enhancing Nigeria's agricultural production and expanding its marketing opportunities, such as USAID/MARKETS, FEWS NET, IFPRI, FAO, World Bank, UNDP and other concerned UN agencies,
- farmers groups, the All Farmers Association of Nigeria, associations and cooperatives representing various staple crops and livestock and fisheries in Nigeria
- relevant faculties of academic institutions such as schools and universities of agriculture, departments of human nutrition, food technology, economics, extension services (listed in Table 8),
- the Nutrition Society of Nigeria and Food Basket Foundation International

Table 8. Universities with departments of nutrition, food science and technology, agricultural economics and extension work

S/N	FEDERAL UNIVERSITIES	Address	WEBSITE ADDRESS
1	Abubakar Tafawa Balewa , Bauchi	P.M.B. 0248, Bauchi, Bauchi State, Nigeria	http://www.atbunet.org
2	Ahmadu Bello , Zaria	Zaria, Nigeria	http://www.abu.edu.ng
3	Bayero ,Kano	P.M.B. 3011, Kano, Nigeria,	http://www.buk.edu.ng, www.buk.edu.org, www.buk.edu.net
4	University of Petroleum Resources, Effurun	Effurun	
5	University of Technology, Yola.	P.M.B. 2076, Yola, Nigeria	http://www.futy.edu.ng
6	University of Technology,, Akure	P.M.B. 704, Akure, Ondo State, Nigeria,	http://www.futa.edu.ng
7	University of Technology, Minna.	P.M.B. 65, Minna, Nigeria	http://www.futminna.edu.ng
8	University of Technology, Owerri	P.M.B. 1526, Owerri, Imo State, Nigeria	http://www.futo.edu.ng, http://www.futoeduportal.com
9	Micheal Okpara University of Agriculture, Umudike	Umudike, Abia State	http://www.mouaportal.com, http://mouau.edu.ng
10	National Open University of Nigeria, Lagos.	Lagos	http://www.nou.edu.ng
11	Nigerian Defence Academy,Kaduna	Kaduna State	http://www.nigeriadefenceacade,edu.ng
12	Nnamdi Azikiwe University, Awka	P.M.B. 5025, Awka, Nigeria,	http://www.unizik.edu.ng
13	Obafemi Awolowo University,Ile-Ife	Ile-Ife, Osun State	http://www.oauife.edu.ng
14	University of Abuja, Gwagwalada	Abuja, FCT	http://www.uniabuja.edu.ng
15	University of Agriculture, Abeokuta.	Abeokuta, Ogun State	http://www.unaab.edu.ng
16	University of Agriculture, Makurdi.	Makurdi, Benue State	http://uam.mycportal.com
17	University of Benin	Benin, Edo State	http://www.uniben.edu.ng
18	University of Calabar	Calabar, Cross River State	http://www.unical.edu.ng
19	University of Ibadan	Ibadan, Oyo State, Nigeria	http://www.ui.edu.ng
20	University of Ilorin	P.M.B. 1515, Ilorin; Nigeria,	http://www.unilorin.edu.ng
21	University of Jos	P.M.B. 2084, Jos, Nigeria,	http://www.unijos.edu.ng
23	University of Maiduguri	P.M.B. 1069, Maiduguri, Borno State, Nigeria	http://www.unimaidportal.net, http://www.unimaid.edu.ng, http://www.unimaid.org
24	University of Nigeria, Nsukka	Nsukka, Enugu State, Nigeria	http://www.unn.edu.ng
25	University of Port-Harcourt	P.M.B. 5323, Port Harcourt, Rivers State, Nigeria	http://www.uniport.edu.ng
26	University of Uyo	P.M.B. 1O17, Uyo, Akwa Ibom State, Nigeria	http://www.uniuyo.edu.ng
27	Usuman Danfodiyo University	P.M.B. 2346, Sokoto, Nigeria.	http://www.udusok.edu.ng

Apart from the universities there are institutions and agricultural and farming associations in Nigeria that can carry out food and nutrition research. These are listed in Appendix 1.

Gaps in Knowledge and Policy

There exist a number of gaps in knowledge, policies, and programs in Nigeria. These gaps will consistently lead to failures in policy and interventions, poor targeting of the food insecure, bad program management, poor funding and resources allocation and ultimately, poor, inadequate, and ineffective responses to the challenge of food insecurity and malnutrition. The current gaps in knowledge, policies and programs are identified in this chapter.

Gaps in Knowledge

The knowledge base needs extensive strengthening by key government actors and stakeholders involved in the planning, implementation, monitoring and evaluation, supervision and reporting of food and nutrition security programs and interventions in Nigeria. Some of the identified gaps in knowledge include the need to better understand the following:

- Cost effectiveness of farming inputs and financial resources in the Shelian zone and other part of the country (Little is known about how the nutritional status of children changes across the seasons and detailed profiling is needed to better understand how major hazards such as drought, encroaching desertification, and changing market conditions affect household food security in the major livelihood zones identified.)
- Impact of the market liberalization process on the livelihoods of pastoral households (Detailed profiling of the identified livelihood zones is necessary to understand how resource induced migrations, conflict potentials, and changing market conditions affect the food security of pastoral households.)
- Impact of seasonal flooding, perennial pressure on the land, constrained access to inputs, escalating conflicts, and environmental degradation on small holder farm households in southern Nigeria (There is a need to better understand the role of markets in mitigating food insecurity in southern Nigeria in view of the strategic link between major markets in the north and southern Nigeria, which are major consumption markets for cereals and livestock. The influence of the southern market on cross border trade between northern Nigeria and neighboring countries as Chad and Niger (Little is known about cross-border activities between Nigeria and neighboring countries such as Ghana, the Republic of Benin. A comprehensive assessment and characterization of the livelihood systems in southern Nigeria is evidently lacking.)
- Ways to mainstream nutrition considerations and activities into poverty reduction, agricultural development policies and food security interventions (There is a need to understand and appreciate the distinctness of nutrition and r prioritize its appropriate integration into all sectors and departments working on food security in Nigeria.)
- Impact of seasonal variations, environment, and livelihoods on food uses, consumption patterns, food-coping strategies, food security, and nutrition status
- Gender roles in achieving household food and nutrition security
- Impact of the integration of gender, environment, nutrition, and agricultural activities in achieving livelihoods for women and household food and nutrition security
- Measurement of food insecurity and malnutrition on the various life cycles (A comprehensive national assessment, analysis, and characterization of the Nigerian population by life cycle across gender and regions is needed.)
- Females' access to food and social safety nets and rural infrastructures and the impact this access has on food security, nutritional status, health conditions, and productivity
- Impact of various programs and policy shifts on the food production levels of rural people and their purchasing power, food utilization and nutritional status across production seasons and in the various regions

- Gender roles in wholesaling and retailing food commodities as they affect income, livelihood, coping strategies, and food and nutrition security.

Policy and Programmatic Gaps

There are several policy and programs gaps in the nation's quest for food and nutrition security, which include:

- Comprehensive policies to empower women with knowledge, skills, and inputs for agricultural production and marketing
- Policies to involve the private sector in agricultural production.
- Policies on self-sufficiency in the production of fertilizers and other inputs
- Policies on to monitor and regulate the prices of food commodities across the country
- Pro-poor policies to improve food access and consumption by the rural and urban poor.
- Strategic policies on the use and processing of agricultural products
- Policies to build capacity for early warning, surveillance and emergency responses to food crises, insecurity and hunger (It is important also to have adequate data and information, nationally, on the location of the food insecure in Nigeria.)
- Policies that provide social safety nets for the poorest of the poor, in the rural and urban areas, so as to cushion the impact of the food crisis

Actions Needed

A general review of national policies on agricultural development and food security is needed to inform appropriate initiatives for action and intervention. The needed reviews and initiatives include:

- the encouragement of a massive entry of young farmers with loan and grants as the older farmer generation Ages and retires,
- the introduction of various incentives and infrastructures to foreign and local interests through land acquisition and preparation schemes for large scale farming operations,
- a review of the Land Use Act (The review will provide greater access to land by individuals, enabling them to use it as collateral and thereby make it easier for them to access loans for agricultural production.),
- an emphasis on the comparative advantage of food crop production by states and regions of the federation, (This emphasis will go a long way in assuring food security in the various regions and country as a whole.),
- the creation of an enabling environment for private participation and leadership in agricultural production, marketing, and processing,
- the implementation of fiscal policies such as duty waivers for the importation of agricultural inputs and tax credits and waivers of levies on agricultural activities,
- a rapid development of the rural sector, especially the provision of rural roads for the conveyance of farm produce to the urban centers,
- the creation of an enabling environment for the private sector to lead activities in food commodity and product storage, processing, and transportation,
- a better-organized extension services program that transfers knowledge and information to local farmers
- a focus on the issue of food security within the context of agricultural development and food policy (The National Economic Empowerment and Development Strategy (NEEDS II) presents a formidable blueprint for addressing and realizing the potential of agriculture and rural economy while the integration of nutrition as a cross-cutting issue provides the much-needed policy framework for achieving food and nutrition security.),

- the integration and coordination of the National Agricultural Policy and the Food and Nutrition Policy with the National Economic Empowerment and Development Strategy (NEEDS), and the Millennium Development Goals (MDG).
- a continued commitment to funding, provision, and strengthening of institutional arrangements for implementing the various presidential initiatives on cocoa, cassava, rice, livestock, fisheries, and vegetables.
- a review with an eye to bolstering the Nigeria Agricultural Insurance Scheme because its operation is crucial to secure and protect agricultural investments from shocks (This will also encourage lending institutions to commit funds to the agricultural sector.),
- the pursuit and implementation of the food and nutrition safety net program, the Home Grown School Feeding and Health Program (HGSFHP), in all the states of the federation (The program objectives, if sincerely implemented with the aid of nutrition professionals, will immensely contribute to securing food and nutrition security for Nigerian school children.),

Other worthwhile initiatives include those initiated by the president in collaboration with the Food Security Technical Group of the Federal Ministry of Agriculture (Okunmadewa 2008). Some of these initiatives are currently being implemented. They include:

- the initiation of an in-depth food security analysis with a view to providing bi-weekly price information and identifying Early Warning Alert Indicators. The Food and Agriculture Organization coordinates this effort;
- an effort to convene a Food Security Awareness Conference for stakeholders focusing on the various stages of food Insecurity and appropriate mechanisms (The Nigerian Institute of Social and Economic Research is designated to arrange this activity.);
- an effort to foster public awareness of the food crisis and build a partnership with the press (This effort is to be coordinated by the Federal Ministry of Information and National Orientation.);
- special studies on a broad-based assessment of the factors responsible for hunger and food insecurity to draw out far-reaching implications and policy alternatives (The Ministry of Agriculture is coordinating these studies.); and
- the development of a Nigerian Food Crisis Response Program (for which the Food and Agriculture Organization has released US$500,000).

Summary, Conclusion and Recommendations

Summary

Food is a basic requirement for sustaining life. Adequate intake of food is critical for achieving health and productivity goals. Globally, food has economic, strategic, and political significance, with the food subsector contributing significantly to the gross domestic product, export earnings, employment, and the industrial growth of nations. The continued rapid population growth in Nigeria poses a challenge to meeting the food needs of more than 140 million people.

Food security is a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe, and nutritious food that meets their dietary needs and preferences to sustain an active, healthy life.

Factors such as income, educational level, and household size are known to affect household food security, as they directly affect economic access (effective demand) and the sustenance of such access. Food insecurity, hunger, and poverty are closely linked. Malnutrition is the most serious consequence of food insecurity. Adult malnutrition results in lower productivity on farms and in the labor market. In women, it also results in fetal malnutrition and low birth weights. Fetal and infant undernutrition lead to lower cognitive development and poor school performance. Nutritional deficiencies are responsible in part for poor school enrollment, absenteeism, early dropout, and poor classroom performance with consequent losses in productivity during adulthood.

The immediate causes of food insecurity stem from a complex set of underlying causes at the household level: Insufficient access to food, poor maternal and child-caring practices and inadequate access to clean drinking water, safe sanitation and health services. The well-being of a population is not only determined by the quantitative measures of consumption and income but also by social indicators such as life expectancy, health, and education, which serve an important complementary function. These dimensions of well-being are, however, often difficult to measure. Many people in the rural areas have poor access to healthcare and education and are characterized by low income. These factors are known to affect access to adequate food and the use of food. The exclusion of females from decision making that affects how household resources are allocated is another challenge to household food security in most parts of Nigeria. The issue of livelihood is therefore underscored here. People are considered acutely food insecure if they experience a large reduction in their major source of food and are unable to make up the difference through new strategies or when many of them are using marginal or unsustainable coping strategies.

Vulnerability to poverty, in its various dimensions, is not just a function of the environment a person lives in. It is also the product of risk, of a person's conditions and actions. Risk relates to events possibly occurring that are beyond the direct control of individuals and households. Poverty is a cause and consequence of food insecurity and malnutrition. Vulnerability to poverty is strongly related to the concept of food insecurity, highlighting the element of risk that households face in their production, income, and consumption activities. Vulnerability means that a specific population group will experience an acute decline in its food access.

A large proportion of the Nigerian population lives below the poverty line (on less than one dollar a day). In the long term, raising the incomes of the poor will also be one of the best

strategies for ensuring food security. The impact of agricultural programs on women's income, for example, is thought to have important implications for the food access of their children.

Nutritional deficiencies have been found to contribute to the high rates of disability, morbidity, and mortality in Nigeria, especially among infants and young children (NPC and UNICEF 2001). Child mortality is one of the best indicators of a country's level of development and the PROFILE analysis in Nigeria showed that one infant in ten dies before the age of one and one child in six dies before the age of five. Twenty-one percent of infant deaths were related to poor breastfeeding practices in Nigeria, which meant that if no action was taken to protect, promote, and support breastfeeding, then 1 million Nigerian infants will die between now and the year 2015. This represents 275 infant deaths per day for the next ten years.

Despite a marginal reduction in the number of the undernourished, an unacceptable situation still exists in Nigeria as the country has been far less successful in combating its high level of malnutrition (IFPRI 2001). Protein-Energy Malnutrition (PEM) is the greatest single cause of child mortality. If no action is taken, PEM will be the underlying cause of about 2.5 million child deaths between now and the year 2015. This is about 700 deaths per day for the next 10 years, which is five times the estimated number of child deaths attributable to HIV/AIDS over the same period of time.

There have been efforts aimed at providing the necessary policy environment for addressing food insecurity and malnutrition in Nigeria. Recent government policy pronouncements and plans of action reveal an awakened drive toward food security. But this drive is accompanied by a lack of commitment, inconsistency in policy and programs, poor targeting, improper coordination, and other problems. This means the various policies have failed to achieve their desired goals in Nigeria.

Planning and effective implementation of programs at the national, state and community levels are hence required to further reduce the current level of undernourishment among children and adults and to improve their nutritional status. The rapid implementation of local and national government policies that reduce child malnutrition is needed.

There is a dearth of national surveys providing data that can be used to analyze food insecurity and the nutrition situation in rural Nigeria. Though there have been a number of individual and institutional efforts to generate such data for Nigeria, these efforts are hampered by inadequate funds. There is a strong need to institute a comprehensive national survey on food insecurity and nutrition indicators across all the geopolitical zones that is disaggregated by gender, age, household level and whether the household is urban or rural. These surveys need to be consistently carried out at least every four years.

Perceived and actual responses from the field confirm the inadequate capability of government institutions to assess and analyze food and nutrition in Nigeria. This capacity gap is largely due to poor funding planning and understanding, inconsistent staff training and haphazard coordination. The gap has led to the dearth of nationally comprehensive valid data and information on the food and nutrition security status of Nigerians. Assistance from international institutions in building up the capacity of the relevant government departments and institutions and better planning will in no small way benefit the country.

Despite the availability of different policies and programs that address food security the most critical is the human infrastructure which will drive those services in all their ramifications. Findings from the assessment reveal a poor level of and increased need for professionals

trained and competent in food and nutrition assessment and analysis. Across the various departments of the Federal Ministry of Agriculture, a large gap exists regarding the professionals who apply the food and nutrition security lens to their program objectives. Their inability to design, plan, implement, monitor, evaluate, analyze and report on efforts to provide nutrition and food security is evident. The provision of appropriate schemes of service for nutritionists and their location in all relevant ministries will help ensure that food and nutrition security services are properly rendered. The lack of an appreciation on the part of the existing professionals of the multisectoral and multidisciplinary nature of nutrition constitutes the greatest barrier to an awareness that nutrition must be approached as a cross-cutting issue. This fact alone makes the provision of integrated services difficult.

Conclusions

This review provides a comprehensive set of information on rural Nigerians' food and nutrition security. It clearly showed the gaps in existing knowledge, along with the need to foster capacity of Nigerian institutions to generate and analyze the food and nutrition security situation of rural Nigerians on a continuous basis. It also demonstrated the need to facilitate collaboration among all stakeholders with a corporate review of child survival programs in Nigeria, in order to determine new directions. The new directions and plan of action must coordinate nutrition and child survival interventions among all partners at all levels, especially in the various government ministries and agencies. This multistakeholder and multidimensional approach is required if nutrition activities are to improve. Continued education, advocacy, community mobilization, and involvement by all stakeholders will help to enhance the ability of communities to manage their food and nutrition security situation.

Recommendations

- Efforts at achieving food security should address income poverty by providing safety nets for households, especially in the rural areas of Nigeria.
- Policy issues addressing environmental sustainability and a healthy stimulating environment must also be given priority.
- Nutrition must be mainstreamed into all efforts, policies, and programs, by all stakeholders who address food insecurity and malnutrition in rural Nigeria and in the country as a whole. Sincere attention to nutrition as a critical determinant of development with increased funding is needed to reverse the unacceptable negative food and nutrition security trend.
- There is a critical need for a comprehensive food and nutrition security situation assessment and analysis across Nigeria, especially with an emphasis on the rural areas of the country.
- Agro-ecological conditions that constrain adequate food production should be tackled an emphasis needs to be placed on providing adequate health services, and a healthy environment and care for mothers, especially in the rural areas.
- It is important to have a comprehensive national survey on food insecurity and nutrition indicators across all the zones, further disaggregated by gender. This survey also needs to be periodically carried out at least every four years.
- There is a need to build the capacity of the various government institutions that make decisions affecting food and nutrition security in Nigeria and assess and analyze the issue.

- A sustained intervention in food security with consistent policies favoring massive direct government investment in the agricultural sector is needed.
- Policies and feasible programs aimed at mitigating the impact of HIV/AIDS, especially in the agricultural sector, are urgently needed.
- The Land Use Act, a major hindrance to adequate food production, should be reformed as soon as possible because it limits women's access to land.
- Producers' food storage capabilities need be improved with the enhancement the Strategic Grain System's capacity to reduce postharvest losses. Moreover, the country's inadequate food processing capability needs to be addressed through the provision of infrastructure.
- An effective market structure with efficient distribution channels is needed to enhance the stability of the food supply, pricing, and adequate access to food.
- Institutional arrangements are needed to guarantee the execution and continuity of infrastructure programs.

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Appendix 1: Relevant Institutes and Associations in Nigeria

Research Institutes

- Animal Health Research Institutes
- Animal Production, Fisheries and Oceanography Research Institutes
- Arable Crops Research Institutes
- Cocoa Research institute of Nigeria (CRIN)
- Forestry Research institute of Nigeria
- Forestry, Horticulture and Tree Crops Research Institutes
- Institute for Agricultural Research (IAR)
- Institute of Agricultural Research and Training (IAR&T)
- Lake Chad Research Institute (LCRI)
- National Agricultural Extension Research and Liaison Services (AERLS)
- National Animal Production Research Institute (NAPRI)
- National Cereals Research institute (NCRI)
- National Horticulture Research Institute (NIHORT)
- National institute for Freshwater Fisheries Research (NIFFR)
- National Root Crops Research Institute (NRCRI)
- National Stored Products Research Institute (NSPRI)
- National Veterinary Research Institute (NVRI)
- Nigerian institute for Oceanography and Marine Research
- Nigerian Institute for Oil Palm Research (NIFOR)
- Nigerian Institute for Trypanosomiasis Research (NITR)
- Rubber Research institute of Nigeria (RRIN)

Farming/Agricultural Associations

- African Agricultural Market Information Network
- African Seed Trade Association
- Agro-Chemical Association of Nigeria (Croplife Nigeria)
- Agrochemicals Group of Manufacturers Association of Nigeria
- All Farmers Association of Nigeria
- Association of the Industry of Seeds and plants
- Bauchi State Agri-Input Dealers Association
- Central Bank of Nigeria
- Department of Trade, Federal Ministry of Industries
- Developing Agri-Input Markets in Nigeria (IFDC-project)
- Farm and Infrastructure Foundation
- Farmers Development Union
- FCT Agri-Input Dealers Association
- Fertilizer Producers and Suppliers Association of Nigeria
- Food Basket Foundation International
- Groundnut Association of Nigeria
- Kano Agricultural Supply Company
- Manufacturers Association of Nigeria
- National Farmers Association of Nigeria
- Network of Farmers' Organizations and Agricultural Producers of West Africa
- Nigeria Cassava Association
- Nigeria Soya bean Association
- Nigerian Agri-Input Dealers Association

- Nutrition Society of Nigeria
- Oyo State Agri-Input Dealers Association
- Rice Farmers Association of Nigeria
- Seed Association of Nigeria
- Strengthening Regional Networks of Market Information Systems and Traders Organizations in West Africa (IFDC Project) (MISTOWA)