



FEDERAL REPUBLIC OF NIGERIA

**NATIONAL AGRICULTURE AND FOOD
SECURITY STRATEGY (NAFSS)**

(2010-2020)

**FEDERAL MINISTRY OF AGRICULTURE AND
RURAL DEVELOPMENT**

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ACRONYMS

ACCOMEX	Agricultural Commodity Exchange Market
ADP	Agricultural Development Project
APMEPU	Agriculture Project Monitoring, Evaluation and Planning Unit
APMEU	Agriculture Project Monitoring and Evaluation Unit
ARC	African Rice Centre
ARCN	Agricultural Research Council of Nigeria
ARIs	Agriculture Research Institutes
ATMs	Automatic Teller Machines
BOT	Build-operate-transfer
CAC	Corporate Affairs Commission
CAADP	Comprehensive Africa Agricultural Development Programme
CBN	Central Bank of Nigeria
CDM	Clean Development Mechanism
CITES	Convention on International Trade on Endangered Species
DAPRS	Developing Agricultural Policy and Regulatory Systems
DFID	United Kingdom Department for International Development
DFRRI	Directorate for Food, Road and Rural Infrastructure
EPZ	Export Processing Zones
FAAN	Federal Aviation Authority of Nigeria
FACU	Federal Agricultural Coordinating Unit
FAO	Food and Agriculture Organization
FDA	Federal Department of Agriculture
FDF	Federal Department of Fisheries
FDL	Federal Department of Livestock
FDRD	Federal Department of Rural Development
FERMA	Federal Roads Maintenance Agency
FGN	Federal Government of Nigeria
FIIRO	Federal Institute of Industrial Research
FMA	Federal Ministry of Agriculture
FMARD	Federal Ministry of Agriculture and Rural Development
FMAWR	Federal Ministry of Agriculture and Water Resources
FMENV	Federal Ministry of Environments
FMS&T	Federal Ministry of Science and Technology
FORMECU	Forestry Department, including Wildlife, Forestry Management and Coordinating Unit
FOODSNet	Food Systems Network
GDP	Gross Domestic Product
GHI	Global Hunger Index
ICP	Investment Climate Program
ICT	Information and Communication Technology
IDC	Industrial Development Center
IITA	International Institute for Tropical Agriculture
IFPRI	International Food Policy Research Institute
ILRI	International Livestock Research Institute

LGA	Local Government Area
MAN	Manufacturers Association of Nigeria
MARKETS	Maximising Agricultural Revenue in Key Enterprises
MDAs	Ministries Departments and Agencies
MDER	minimum dietary energy requirement
MEAs	Multilateral Environmental Agreements
M&E	Monitoring and Evaluation
MTSS	Medium-Term Sector Strategy
NACCIMA	Nigerian Chamber of Commerce, Industry, Mines and Agriculture
NACGRAB	National Centre for Genetic Resources and Biotechnology
NAFER	National Institute for Fresh Water Fishery Research
NAFPP	National Accelerated Food Production Project
NAFSS	National Agriculture and Food Security Strategy
NAIC	National Agricultural Insurance Company
NALDA	National Agricultural Land Development Authority
NAPRI	National Animal Production Research Institute
NARP	National Agricultural Research Project
NARSP	National Agricultural Research Strategy Plan
NASC	National Agricultural Seed Council
NASME	National Association of Small and Medium Enterprises
NBDC	National Biotechnology Development Agency
NBS	National Bureau of Statistics
NCA	National Council on Agriculture
NDE	National Directorate of Employment
NDP	National Development Plan
NEEDS	National Economic Empowerment and Development Strategy
NEPC	Nigerian Export Promotion Council
NFRA	National Food Reserve Agency
NFSP	National Food Security Programme
NGO	Non-Governmental Organization
NPA	Nigerian Port Authority
NPC	National Planning Commission
NIHORT	National Institute for Horticultural Research
NIPC	Nigerian Investment Promotion Council
NRCRI	National Root Crop Research Institute
OECD	Organization for Economic Co-operation and Development
PAD	Project Appraisal Document
PPAS	Policy, Planning and Agricultural Statistics
PPP	Public-Private Partnership
PIOC	Presidential Initiative on Cassava
PIOR	Presidential Initiative on Rice
PRODA	Product Development Agency
RAISE	Raising Agriculture Income and Sustainable Environment
R&D	Research and Development
RBDA	River Basin Development Authority
ReSAKSS	Regional Strategic Analysis and Knowledge Support System

RMRDC	Raw Materials Research and Development Council
ROT	Rehabilitate, Operate and Transfer
RTEP	Root and Tuber Expansion Programme
RUSEP	Rural Sector Enhancement Programme
SAKSS	Strategic Analysis and Knowledge Support System
SAP	Structural Adjustment Programme
SHETSCO	Sheda Science and Technology Complex
SMEDAN	Small and Medium Enterprises Development Agency
SPSF	Special Program on Food Security
TAD	Trans-boundary Animal Disease
WFS	World Food Summit

Table of Contents

EXECUTIVE SUMMARY	1
I. Background	1
II. Evidence Underpinning the Strategy Update	1
III. Strategic Focus of the Update.....	3
IV. Framework for Action.....	4
CHAPTER 1 INTRODUCTION.....	6
1.1 Background.....	6
1.2 The Vision and Mission of the FMA	7
1.3 Objectives and Characteristics of the Strategy Document.....	7
CHAPTER 2. SITUATION ANALYSIS	11
2.1 Global Food Insecurity	11
2.2. Food Insecurity in Nigeria.....	12
2.3 Historical Assessment of the Agricultural Sector	12
2.4 Structure of the Agricultural Sector	14
2.5 Challenges to Agricultural Development	17
CHAPTER 3. EVOLUTION OF POLICY IN THE SECTOR	19
3.1 Introduction	19
3.2 The Pre-1970 Period	19
3.3 Pre-Structural Adjustment Period (1970-1985).....	19
3.4 The Structural Adjustment Programme Period (1986- 1994).....	22
3.5 Post SAP Period (1995-2009).....	24
CHAPTER 4. STRATEGIC FRAMEWORK AND APPROACHES.....	27
4.1 Strategy.....	27
4.2 Approaches	28
CHAPTER 5 ROLES OF FEDERAL, STATE AND LOCAL GOVERNMENTS.....	47
5.1 Current Status of Assigned Roles	47
5.2 Problems Inherent in the Concurrent Listing of Agriculture	47
5.3 The Way Forward	48
CHAPTER 6. AGRICULTURAL RESEARCH AND DEVELOPMENT	51
6.1 Evolution of R&D in Nigerian Agriculture	51
6.2 Challenges	51
6.3 State of R&D in Agriculture by Private and Public sectors.....	56
6.4 Revamping Nigeria's Agriculture Research System.....	56

CHAPTER 7. DEALING WITH ENVIRONMENTAL ISSUES	59
7.1. Introduction.	59
7.2 Identifying Environmental Challenge facing the Agriculture Sector	59
7.3 Strategic Approaches.....	62
CHAPTER 8. PROMOTING APPROPRIATE INVESTMENT CLIMATE	64
8.1 Introduction	64
8.2 Investment Restrictions to Focus	64
8.3 The Scope for Public-Private Sector Partnership.....	69
CHAPTER 9. MONITORING AND EVALUATION	71
9.1 Roles and Objectives of M&E in Nigeria Agriculture Development.....	71
9.2 Current State of Agriculture-Related M&E System in Nigeria	72
9.3. Action Plan for an Improved M&E System.....	77
CHAPTER 10 ACTION PLANS	80
ANNEX I.....	105
The Evolution of Agricultural Policies in Nigeria	105
ANNEX II.....	109
LIST OF INDICATORS FOR AGRICULTURAL DEVELOPMENT CURRENTLY BEING COMPILED IN NIGERIA	109
ANNEX III	114
Monitoring Indicators	114
BIBLIOGRAPHY	117

EXECUTIVE SUMMARY

I. Background

The Federal Ministry of Agriculture and Water Resources (FMAWR), in responding to the 7-Point agenda (2007), published the **National Agriculture and Food Security Strategy, 2008-2011 (NAFSS)**. The vision of the strategy was to ensure sustainable access, availability and affordability of quality food to all Nigerians, in accordance with the spirit of the 1996 World Food Summit held in Rome. The draft update of the NSFP (2010-2020), takes into account the expectations of the Nigeria Vision20:2020, is aligned with the implementation framework defined in the FMAWR 5-Point Agenda and responds to the country's undertakings established in the Comprehensive Africa Agricultural Development Programme (CAADP) compact for 2009.

II. Evidence Underpinning the Strategy Update

The process of updating the strategy went through three stages. The first stage involved a technical stakeholder meeting in February 2009 in which a number of knowledge gaps were established. The second stage involved two sets of activities: (a) a retreat by key federal government staff to review implementation issues with regard to project execution and to establish which projects had succeeded and which had failed and the reasons for success or failure; and (b) focus reports commissioned to fill knowledge gaps identified in the first stage. The third stage involved a drafting exercise that brought together all available information along with consultation with various stakeholder groups, including the private sector. The updated strategy document was informed by recent research evidence, including the following:

Growth Imperatives and Commodity Choices: The need for agricultural growth, through productivity improvement, is paramount in the updated strategy, because of the weak agriculture performance since 1960 (Figure 1, Chapter 2). A background study for the CAADP process shows that the following factors are important in prioritizing agricultural growth at the sub-sector level:¹ the size of an individual sub-sector in the agricultural economy (share in agricultural GDP), the linkage effect of a sub-sector to the rest of economy (growth multiplier), the effectiveness of overall growth led by this subsector in poverty reduction (poverty reduction-growth elasticity) , and the market opportunities and price effect of this sub-sector's growth. The findings based on the application of these four factors are summarized in Table 3 (Chapter 2).

¹ Xinshen Diao, Manson Nwafor, and Vida Alpuerto (2009), Options for Agriculture Growth for Poverty Reduction, NSSP Background Paper 2, IFPRI-Nigeria.

Commodity Value Chain and Improving the Investment Climate: Research conducted for the strategy update notes the main challenges faced by agriculture in Nigeria.² They could be grouped under five principal inclusive categories: infrastructure inadequacies, limited access to improved technologies, financial market weaknesses, and resource market failures, and organizational and governance constraints. Complementing the focus on commodity value chain is also the effort to enhance the investment climate. Through the Nigerian Investment Climate Programme (ICP), a joint undertaking of the World Bank and United Kingdom Department of International Development (DFID), a process is underway primarily at the sub-national level to initiate investment climate reforms. The ICP has implemented pilot activities in tax administration, land administration and investor information. These pilot programmes have yielded important results and lessons in some states and are currently being transferred to other states. They aim at removing the restrictions, which are currently hindering the advancement of the agricultural sector in achieving the NFSP objectives of ensuring sustainable access, availability and affordability of quality food for all Nigerians. Consequently, the approach adopted in updating the strategy document addresses every component of the entire agriculture value chain for crops, livestock and fisheries with respect to each of the challenges facing the sector.³

Development Domain and Regional Heterogeneity: Research on development domains⁴ in Nigeria points to substantial regional heterogeneity in crop production and marketing potential. This heterogeneity is also aligned to the wide diversity in the poverty incidence across states and ecological zones.⁵ On the other hand, the functioning of federal system forces homogeneity of policy throughout the country. The 1999 Constitution of the Federal Republic of Nigeria puts agriculture on the concurrent legislative list, and broadly prescribes the roles and responsibilities of each tier of government as joint partners in the implementation of government's agricultural development policies. This has subsequently resulted in some form of disconnection at the federal, state and local government levels with respect to policy consistency, implementation, funding and sustainability which require further clarification.⁶ For example, in the case of fertilizer, the preliminary results of research conducted by IFPRI indicated that Federal

² Dayo Phillip, Ephraim Nkonya, John Pender, and Omobowale Ayoola Oni (2009), Constraints to increasing Agricultural Productivity in Nigeria: A Review, NSSP Background Paper 6, IFPRI-Nigeria.

³ The value chain is defined as the full sequence of activities or functions required to bring a product or service from conception, through the intermediary steps of production, transformation, marketing, and delivery to the final consumers.

⁴ Development domains refer to geographical locations sharing broadly similar development constraints and opportunities.

⁵ Bolarin T. Omonona (2009), Quantitative Analysis of Rural Poverty in Nigeria, NSSP Background Paper 9, IFPRI-Nigeria.

⁶ Christiana Okojie (2009), Decentralization and Public Service Delivery in Nigeria, NSSP Background Paper 4, IFPRI-Nigeria

Government involvement in procurement and distribution has not necessarily brought fertilizer to the end-user when it is required and in the desired quantity.⁷

III. Strategic Focus of the Update

On the basis of recent research information on the functioning of the agricultural sector in Nigeria, and additional information gathered during consultation on what has worked and what has not worked in the past, the updated strategy document focused on the following:⁸

Clarifying the Roles of the Three-tiers of Government: The updated strategy clarifies the responsibilities of each of the three-tiers of government in developing agriculture in Nigeria. The Federal Government's functions are delimited to the provision of a general policy framework (including macroeconomic policies) and guidance to all stakeholders on the direction which agriculture and the rural economy will pursue. The State governments would be concerned with procurement and distribution, through private sector channels, of all inputs, including fertilizers, needed by farmers in each given State; investments in rural roads and water supplies; and promotion of micro and rural credit institutions with support from the federal government and promotion of agricultural commodities development and marketing institutions. The Local Government authorities would take over progressively the responsibilities of the state governments with respect to:

- Provision of an effective agricultural extension service; provision of rural infrastructures; and management of irrigation areas of dams; and
- Mobilization of farmers for accelerated development of agriculture and rural areas through farmer organizations and local institutions; and coordination of data collection at the local government level.

Encouraging the expansion of Selected Commodities: In order to be selective and to maintain consistency with past and existing policy initiatives, 13 crops are emphasised as being of strategic importance and will attract primary attention in the quest for food security in Nigeria (Table 5 of Chapter 4). The crops are: cassava, rice, millet, sorghum, wheat, maize, sugar, cow peas, soya beans, tomato, cotton, cocoa, and oil Palm. These crops also meet the criteria of size, linkage effect, pro-poorness and market opportunities. Specific production targets would be defined during the preparation of the medium term sector strategy (MTSS) as the potential

⁷ Afua B. Banful, Ephraim Nkonya, and Victor Oboh (2009), Constraints to Fertilizer Use in Nigeria: Perspectives and Insights from the Agricultural Extension Services, NSSP Brief No. 6, IFPRI-Nigeria, conclude that according to extension agents, the primary constraint to fertilizer use is the physical absence of the product at the time it is needed, rather than problems of affordability or farmers' lack of knowledge about its importance.

⁸ As of the Nation Food Security document, key features of this updated document include programmes to provide a conducive environment for private sector involvement, encouraging commercial farming with substantial economies of scale as well as strategic linkages with small holder farmers, and the promotion of marketing systems with the specific purpose of significantly reducing post-harvest losses through adequate storage, processing and availability of appropriate market outlets.

growth ranges are known. With respect to livestock and fisheries, strategic commodities would be targeted at the locations specified in Table 6 (Chapter 4).

Promoting Knowledge Support Systems through R&D and M&E: A key characteristic of the updated agricultural strategy is the application of evidence-based processes, which applied the use of recent research findings to fill knowledge gaps. The approach highlights the importance of R&D in the agricultural development process.⁹ Recent research indicates that there is an urgent need to deal with the following challenges: (a) the multitude of agriculture research institutions; (b) the financing uncertainties associated with research institutions; (c) staffing development issues that need to be resolved through improved training facilities; and (d) weak research-extension linkages which impede new technologies reaching the end-user and thereby lowering adoption rates.¹⁰

The draft updated strategy document also subscribes to the use of results-based monitoring and evaluation (M&E) tools to track progress and demonstrate the impact of agricultural projects, programmes, and policies.¹¹ Results-based M&E differs from traditional implementation-focused M&E in that it moves beyond an emphasis on inputs and outputs to a greater focus on outcomes and impacts. Specifically, the M&E system proposed in the draft strategy document to support sustained agricultural development in Nigeria would ensure the following:

- That monitoring of implementation activities of major stakeholders are undertaken with a view to making necessary changes in implementation work plan so that policy objectives can be achieved.
- That evaluation and impact assessments of the agricultural programmes and projects are undertaken at appropriate times in order to ensure that the policy achieves the desired level of impact.
- That all agricultural sector stakeholders are involved in the M&E process.
- That that the national agricultural Strategy document is reviewed periodically.

IV. Framework for Action

The final chapter of this document outlines an action plan for the strategic choices by delineating actions that are critical for short, medium and long term reform. While the discussion provides a

⁹ Research and development constitute the scientific search for new and improved products and production process. As it relates to agriculture, R & D should result in the discovery of new and improved crop/seed varieties and improved agricultural processes, which include cultivation, harvesting and processing of agricultural products into agro-allied products, so as to raise factor productivity and income in agriculture.

¹⁰ The private sector should be brought in to collaborate through adaptive technology research, funding, and dissemination of results. In addition to injecting some funding, such collaboration would be a way to introduce demand-driven research into the system. Through introducing demand-driven research, exposing researchers to more competition and to best practices in research, private sector collaboration would contribute to the revamping of agriculture R & D. Pockets of private sector R & D do exist already that could be harnessed.

¹¹ Within the context of the CAADP Compact, Nigeria subscribed to the use of results-based monitoring and evaluation (M&E) tools to track progress and demonstrate the impact of agricultural projects, programmes, and policies. Building and sustaining results-based M&E systems is more of a political rather than a technical process, and requires continuous commitment, time, effort, resources, and political will.

direction for action (which is the objective of a strategy document), the excise of strategic planning is outside the scope of this document and should be taken up in the context of the medium-term sector strategy (MTSS), which is the planning document for the Federal Ministry of Agriculture. The National Agriculture Investment Plan (NAIP) within the framework of the CAADP compact provides the framework for the way forward.

CHAPTER 1 INTRODUCTION

1.1 Background. In 2008, the Federal Ministry of Agriculture and Water Resources (FMAWR), in responding to the 7-Point agenda (2007), developed the **National Agriculture and Food Security Strategy (NAFSS)**. The vision of the strategy was to ensure sustainable access, availability and affordability of quality food to all Nigerians, in accordance with the spirit of the 1996 World Food Summit held in Rome, and for Nigeria to become a significant net provider of food to the global community. The strategy set as its goals to (i) significantly improve Nigeria's agricultural productivity in the short-term; (ii) expand and improve large-scale production, improve storage and processing capacity, and provide the required infrastructure to support food supply stability in the medium-term; and (iii) seek to derive more than 50 percent of the country's foreign exchange through agricultural exports in the long-term.

Subsequently, the Government announced the ambitious vision for Nigeria to become one of the top 20 economies in the world by 2020 (**Nigeria Vision 20: 2020**). The vision statement brings together the key principles and aspirations of the National Economic Empowerment and Development Strategy (NEEDS) and the 7-Point Agenda and seeks to accelerate the country's economic growth and position it on a path of sustained and rapid socio-economic development.

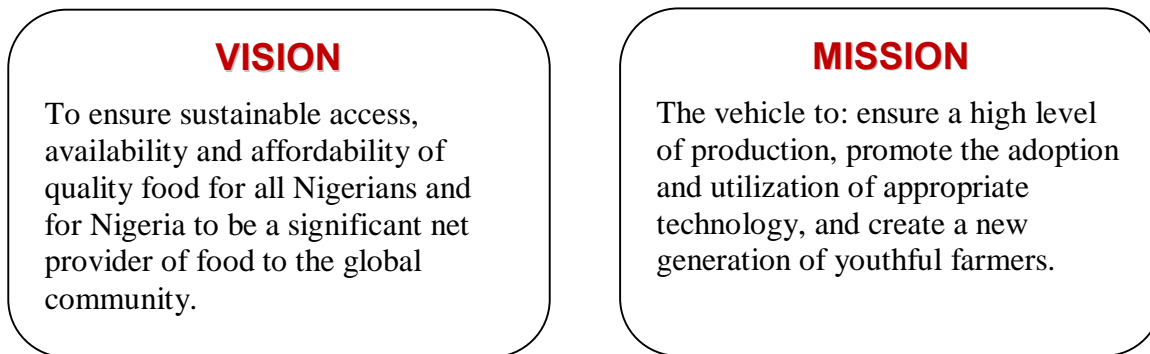
As a major driver of growth and poverty reduction, agriculture has a crucial role to play in meeting the objectives of NV20:2020. Thus by 2020, Nigeria aims at having a modern technologically enabled agriculture sector that fully exploits the vast agricultural resources of the country, ensures national food security and contributes significantly to foreign exchange earnings. To this effect, the NV20:2020 outlines the following strategic goals for agriculture for the next ten years (2010-2020):

- Rehabilitate and complete existing irrigation projects, establish new ones across the nation and provide incentives for the development of new community-based and privately initiated irrigation projects.
- Facilitate acquisition of farmlands and title holdings for agriculture production through an intensive review of the Land Use Act and encourage commercial agriculture through Public-Private Partnership (PPP).
- Significantly enhance the level of production, adoption and utilization of appropriate technology and mechanization of small, medium and large scale farms, making adequate provision for utilizing home-grown technology, promoting greater use of biotechnology tools in the selection and breeding of crops, livestock, fisheries and forestry, promoting the use of 'green' technology to ensure sustainable agricultural production; a safe and clean environment and adopting the use of natural river and/or stream flow; solar and wind to generate electricity to power agricultural equipment such as irrigation pumps.
- Create a new generation of farmers by incorporating modern technology, especially ICT (e.g. farmer information call services), incentives (e.g. scholarships, grants, soft loans), and professionalize agriculture to attract the youths and new graduates into agricultural

production, processing and marketing in order to sustain agricultural growth through the entire value chain.

1.2 The Vision and Mission of the FMA. In view of the above, the vision and mission of the Federal Ministry of Agriculture (FMA), in alignment with the country's food security objectives and the National Vision 20: 2020, are defined as (Box 1):

Box 1: FMA Vision and Mission



The vision of FMA is guided by a Five-Point Agenda, which is largely consistent with the four principles of the Comprehensive Africa Agricultural Development Programme (CAADP). The Five-Point Agenda is characterized by the five pillars as outlined in Box 2 and focuses on developing agricultural policy and regulatory systems, establishing agricultural commodity exchange markets, raising agricultural income with sustainable environment, maximising agricultural revenue in key enterprises, and promoting water, aquaculture and environmental resource management.

1.3 Objectives and Characteristics of the Strategy Document. This document is an update of the National Agriculture and Food Security Strategy (2010-2014). It articulates the strategic approach and action plans, as well as the required participants, definition of roles and responsibilities, to ensure the vision and mission of the FMA are attained and that the goals of the NV20:2020 would be met. It is aligned with the implementation framework defined in the FMA Five-Point Agenda and responds to the country's undertakings established in the CAADP compact for 2009.

Consistent with the vision and mission of the FMA, the strategies developed in this document are therefore informed by the following principles:

- **Pro-poor Orientation** - the strategy has a strong bias for poverty reduction through the promotion of pro-poor growth and employment generation that would benefit the poor and provide them with opportunities to improve their economic status. It also deals with the issue of youth unemployment with the objective of helping to stem the high exodus of the youth out of agriculture.

Box 2: The Five-Point Agenda and the CAADP Principles

5-Point Agenda	CAADP Principles
<p>1. Developing Agricultural Policy and Regulatory System (DAPRS): This involves the strategic review and reform of key institutions in the agricultural sector, agricultural policy, advocacy framework, proactive legislation, sound policy on financing agriculture (credit and grant support) towards market competitiveness and an effective regulatory framework including fiscal incentives and tariff regimes to support backward integration.</p>	<p>(iv) Strengthening agricultural research, technology dissemination and adoption.</p>
<p>2. Agricultural Commodity Exchange Market (ACCOMEX): This will involve the establishment of an agricultural commodity exchange market with the objective of achieving efficient marketing and price information systems, institutional strengthening of private sector agro-input suppliers; ensuring accessibility, availability, affordability of agricultural inputs; agro-aviation development to facilitate the evacuation of agricultural produce to domestic and international markets; agro export handling/conditioning centres for the processing, packaging and labelling of produce to meet international standards; Guaranteed Minimum Price (GMP) mechanisms; much needed storage infrastructure in view of the large volume of produce involved; and Agricultural Information Management System (AIMS) to ensure the availability of information for the buyers, sellers and farmers on type, location and price of commodities at any particular point in time.</p>	<p>(ii) Improving rural infrastructure and trade-related capacities for market access.</p> <p>(iii) Increasing food supply and reducing hunger.</p>
<p>3. Raising Agricultural Income with Sustainable Environment (RAISE): This requires the focus on the development of the rural energy, rural markets, schools, communication, water and sanitation, transport and health as basic components for addressing the challenges of small and medium scale agri-business development in the area of value chain infrastructure development and infrastructure for sustenance of the environment. RAISE has two components: RAISE Small-Scale is a deliberate approach for integrating rural agribusiness development with social-economic district development, commencing with 400 sites; RAISE Medium-Scale targets young educated, unemployed persons to replace the present ageing farming groups as an out-grower based project, commencing with twelve sites.</p>	<p>(iii) Increasing food supply and reducing hunger.</p>
<p>4. Maximising Agricultural Revenue in Key Enterprises (MARKETS): This will create the necessary market infrastructure as well as implement the Guaranteed Minimum Price (GMP) policy, to propel the development of the agricultural sector by linking production to markets. The ultimate objective is to attain sustainable markets ecosystem, including agro-processing plants, cold chain stores, community warehouses, food centres in major cities, model highway markets and agri-business development centres</p>	<p>(ii) Improving rural infrastructure and trade-related capacities for market access.</p>
<p>5. Water, Aquaculture and Environmental Resource Management: This involves the development of 1,500 targeted RAISE sites with small dams and irrigation infrastructure facilities; flood control; early warning systems; agricultural cadastral through auto-photo mapping of farmlands; migratory pest control; bio-energy development; carbon credit project through a forestation and reforestation.</p>	<p>(i) Extending the area under sustainable land management and reliable water control systems.</p>

- **Market Orientation** - the strategy aims to facilitate the transition from subsistence farming to small, medium and large scale commercial agriculture by helping deal with market failures that continue to limit smallholder participation in the market. The focus on market would attempt to balance the relative role of supply and demand factors in promoting the growth of the agriculture sector.
- **Modernization** - the strategy subscribes to the use of adequate and quality agricultural inputs with a focus on selected commodities to raise agricultural productivity and outputs. Modernization efforts could also help stem the large movement of the youth from agriculture and the rural economy.
- **Private Sector Promotion** – the strategy is built around the promotion of the private sector through all the relevant phases of the agricultural commodity value chain. The differing roles of the public sectors at all three levels of government in establishing the enabling policy environment are defined.
- **Natural Resources Conservation** - declining soil fertility, indiscriminate removal of vegetation and soil erosion threaten the prospects for rapid output expansion in the sector. This calls for the need to emphasize the use of conservation methods for land and water, as well for livestock and fisheries. The interventions must lead to a paradigm shift from the prevailing rain-fed agriculture to an irrigated farming system in order to take maximum advantage of the available water mass in an efficient manner.

This document is divided into sections. Section A (chapters 2 and 3) summaries key issues pertaining to food security situation in Nigeria and briefly reviews the historical performance of the country's agricultural sector and outlines the policy factors underpinnings past performance of the sector. Section B (chapters 4 to 8) discusses the approaches to the National Agricultural Strategy formulation by the Federal Ministry of Agriculture and outlines the key elements of the value chain, and the respective roles of the public and the private sectors, and the farming community in Nigeria's agricultural development. Section C (chapters 9 and 10) deals with the implementation modalities, including the monitoring and evaluation framework, the action plan, and the implementation road map that defines target areas of government intervention to support private sector development in agriculture.

Section A: Background

This section summarizes the key issues pertaining to food security in Nigeria in the context of recent global food insecurity. It briefly reviews the historical performance of the agricultural sector in Nigeria and outlines the policy factors underpinning past performance of the sector.

CHAPTER 2. SITUATION ANALYSIS

2.1 Global Food Insecurity

Food insecurity exists when people do not have adequate physical, social and economic access to food, thereby meeting the requirement of access, availability, affordability and utilization.¹² This could result in undernourishment when caloric intake is below the minimum dietary energy requirement (MDER), defined as the amount of energy needed for light activity and a minimum acceptable weight for attained height. This concept varies by country and from year to year depending on the gender and age structure of the population. In 2009, the Food and Agriculture Organization (FAO) of the United Nations estimated that about 1.02 billion people world-wide were undernourished. The FAO noted that this represented more undernourished people than at any time since 1970 and constituted a worsening of the already unsatisfactory trends that were present before the current global financial crisis (2008-09). The increase in food insecurity could be attributed to high domestic food prices, low personal incomes and increasing unemployment associated with the global financial crisis.¹³

Table 1: **Prevalence of Undernourishment**
(Percentage of Undernourished to Total Population)

Region	Total Population (million) 2004-06	1990-92	1995-97	2000-02	2004-06
WORLD	6483.3	16	14	14	13
Asia & the Pacific	3518.7	20	17	16	16
The Caribbean	34.0	26	28	22	23
South America	373.5	12	10	9	8
Near East & North Africa a/	427.7	6	8	8	8
Sub-Saharan Africa a/	716.3	34	34	32	30
Central Africa	95.8	34	51	55	57
East Africa	248.8	45	44	37	35
Southern Africa	101.3	45	43	39	36
West Africa	270.4	20	16	15	13
Nigeria	141.4	15	10	10	8

Notes: a/ Provisional estimates for Afghanistan and Iraq (Near East & North Africa), Papua New Guinea (Asia and Pacific), and Somalia (East Africa) have been included in regional aggregates.

¹² The concept of food security used in this strategy document follows the definition of the 1996 World Food Summit, which states that: "Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy lifestyle."

¹³ FAO (2009), *The State of Food Insecurity in the World*, Rome

2.2. *Food Insecurity in Nigeria*

The 2009 FAO report indicates that during 2004-06 (the latest for which data are available), Nigeria had about 11.3 million people or 8 percent of the population reported as undernourished. The proportion of the population considered undernourished has declined from 15 percent in the early 1990s to 8 percent in the mid-2000 and the FAO projects that Nigeria is likely to meet the World Food Summit (WFS) target of reducing between 1990-92 and 2015, the number of undernourished people by half. On the other hand, the 2009 Global Hunger Index (GHI) published by the International Food Policy Research Institute (IFPRI), which ranks countries on the basis of the three dimensions of hunger (the number of undernourished as a percentage of the population, the prevalence of underweight in children under the age of 5 years, and the mortality rate of children under the age of 5 years) shows that Nigeria's progress in reducing hunger remains slow, but in line with worldwide progress. Nigeria's GHI for 2009 (based on data for 2002-07) remains in the alarming range at 18.4, compared to 24.4 for the 1990 GHI (based on 1988-92 data). The GHI ranges from 0-100 with 0 being a state of no hunger and 100 being the worst status of hunger.

Both the FAO and IFPRI reports suggest that a healthy agricultural sector can provide an economic and employment buffer in developing economies, especially in times of crisis. In addition, they point out that due attention may need to be given to developing the rural non-farm sector in parallel with agriculture, which is another key pathway out of poverty and food insecurity.

2.3 *Historical Assessment of the Agricultural Sector*

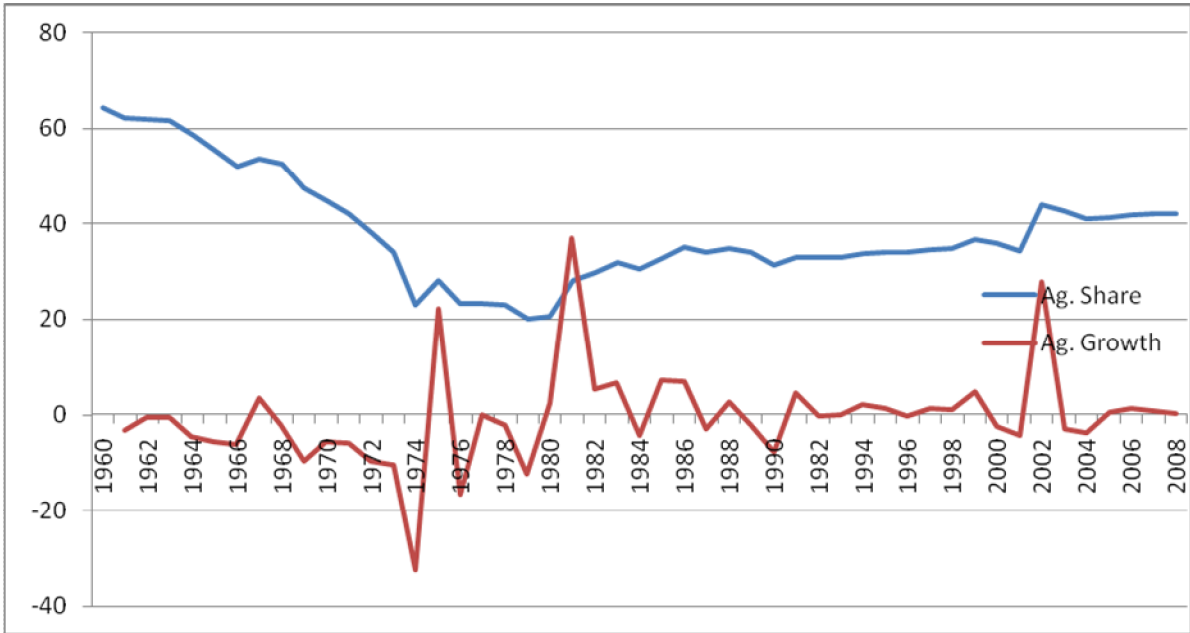
The history of Nigeria's agricultural development could be classified into four phases, namely pre-1970, 1971-1985, 1986-1994 and 1995 to date (CBN 2007). The era of relatively good performance of the sector occurred during the pre-1970 phase, when production activities in the sector were dominated by private operators. The era with the lowest performance was during the 1971-1985 period when there were substantial public sector intervention, with the Federal Government directly involved in production, processing and storage activities. The latter two phases saw a reduced direct intervention by the Federal Government thereby allowing markets to function and the subsequent return to growth in the sector.

The Pre-1970 phase was characterized by a declining share of agriculture value added to GDP, from greater than 60 percent in 1960 to about 45 percent in 1970 (Figure 1). Being a post-colonial era, elements of colonial agriculture policy persisted, with the marketing boards playing a pivotal role of extracting agricultural surplus through taxes, although the revenues were not used necessarily to support price stabilization as envisaged and instead supported the development of infrastructure, industries and social amenities. Along with declining share of agriculture in GDP, the overall growth performance of the sector also weakened on average.

The 1971-85 periods saw a much pronounced decline of the share of agriculture value added in GDP, partly because of the rising dominance of the oil sector but also because of the extreme

uncertainty in policy direction brought about by the increased government intervention in the sector. To support a vision of 'agri-business', new policy directions included the enactment of the Land Use Decree which vested the ownership of land in the state governments, and state acquisition of large tracks of peasant-held land for the River Basin Development Authority (RBDA) and the Agricultural Development Projects (ADPs), as well as for the development of dams, etc. These efforts were supported by the importation of massive quantities of fertilizers, chemicals, machinery, seeds, etc. and infrastructure developments (dams, feeder roads, farm service centers, fertilizer distribution centers and tractor hiring units). But growth performance during this period was highly erratic and associated with wide swings.

Figure 1: Agriculture Share of GDP, and Growth (Real terms, in percentage: 1960-2008)



Note: The wide fluctuations in the growth trend partly reflect breaks in the series as a result of rebasing.

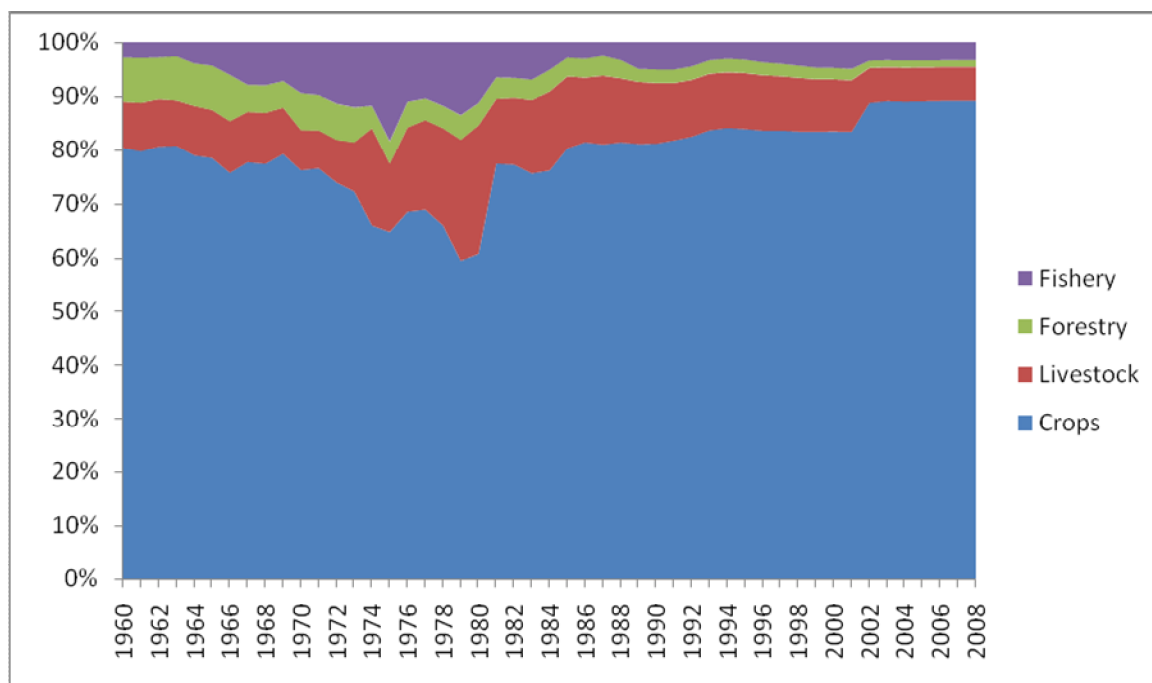
Source: CBN (2009).

The post-1985 periods saw an attempt to withdraw the Federal Government intensive interventions in the sector and to promote increased private sector development. The periods were also characterized by substantial market liberalization (especially under the Structural Adjustment Programme) and the share of agriculture value in GDP gradually increased. Growth performance was on average much better than in the previous two eras. Since 2001 the agriculture sector has generated over half of new jobs with an average annual 2003-2008 sector growth rate of about 7.0 percent. The current growth of agriculture has, nonetheless come from increasing use of land rather than gains in productivity.

2.4 Structure of the Agricultural Sector

There are four agricultural sub-sectors: crops, livestock, fisheries and forestry. The crop subsector contributes about 85 percent to the agriculture GDP, while livestock contributes about 10 percent, fisheries about 4 percent and forestry about 1 percent (Figure 2). Growth performance of the agriculture sector is therefore largely driven by the performance of the crop sub-sector on account of its dominance. While the share of the crop sector declined up to the 1980, the performance of fisheries saw a steady improvement through the past five decades. But overall, crops remain the dominant agricultural activity in Nigeria.

Figure 2: Share of Real Agriculture GDP of the Four Sub-sectors (1960-2008)



Source: CBN (2009)

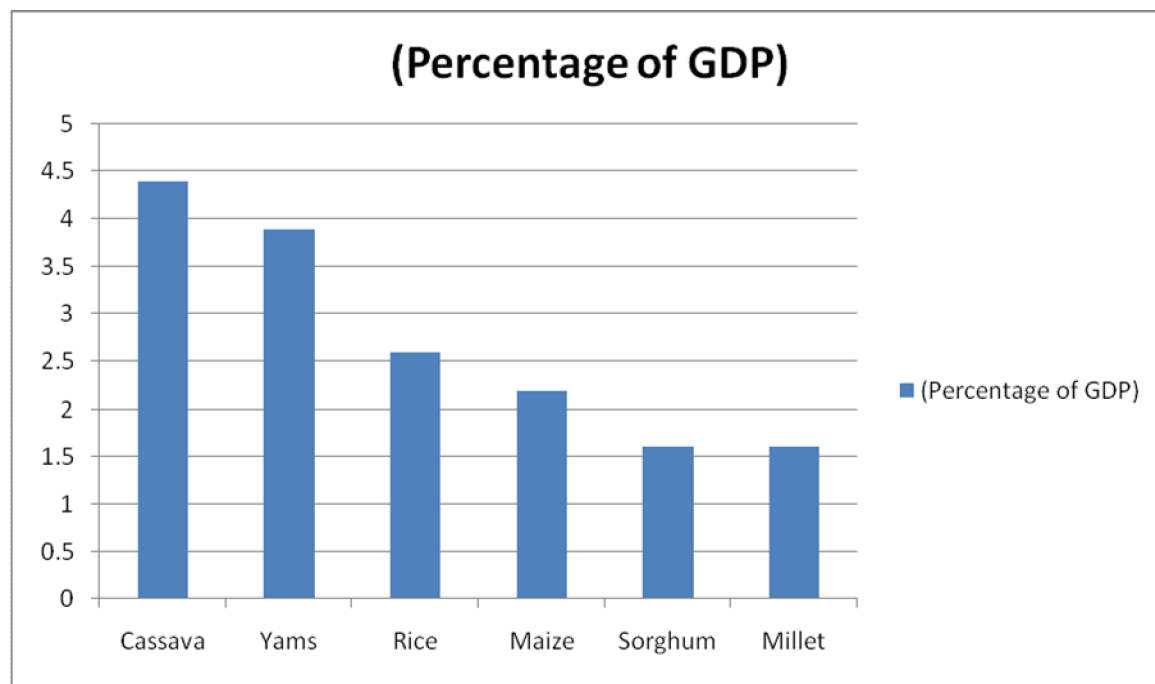
Of the crops sub-sector, roots (cassava, yam etc) dominate in terms of tonnage, although cereals (maize, sorghum, rice and millet, etc) are increasingly becoming important for domestic demand for food. The share of GDP accounted for by the key crops is depicted in Figure 3. The roots group accounted for 9.4 percent of GDP, while cereals accounted for 7.7 percent. Together the roots and cereals overwhelmed other crops that accounted for 9.1 percent of GDP, making up the total agriculture share of GDP at 29.7 percent in 2006. On the other hand, current yields of the key crops are substantially below their potential (Table 2). A key focus of this strategy is to facilitate the scope for yield enhancement.

Table 2: Estimated **Current Yield vs. Potential Yield (Selected Crops – mt/ha)**

Crop	Current Yield	Potential Yield
Cassava	12.3	28.4
Yam	12.3	18.0
Rice	1.9	7.0
Maize	1.4	4.0
Sorghum	1.1	3.2
Millet	1.1	2.4

Sources: Current yield from FMAWR/CBN; Potential yield from ReSAKSS (2009)

Figure 3: **Share of GDP by Major Crops (2006)**



Source: Table III.2 of Diao et al (2009).

A background study to support the CAADP process in Nigeria (Diao, et al, 2009) shows that the following factors are important in prioritizing agricultural growth at the sub-sector level: the size of an individual sub-sector in the agricultural economy (share in agricultural GDP), the linkage effect of a sub-sector to the rest of economy (growth multiplier), the effectiveness of overall growth led by this subsector in poverty reduction (poverty reduction-growth elasticity) , and the market opportunities and price effect of this sub-sector's growth. The findings based on the application of these four factors are summarized in Table 3.

While a very high growth goal for a small sub-sector can be set, the economy-wide impact of this sub-sector's growth is often small. Growth in a relatively large sub-sector generally creates more growth for the economy as a whole. The simulation analysis confirmed that even with double digit growth in a small sub-sector (e.g., wheat or sugar), its growth contribution in the overall agriculture or the whole economy will only be insignificant. On the other hand, a large agricultural sub-sector such as rice or cassava can create more growth in the whole economy if such sectors can become the leading force in the growth process.

Priority setting also needs to consider the growth multiplier effect among different agricultural sub-sectors. A sub-sector with strong linkages with the rest of economy can generate more gains in the economy as a whole than a sub-sector with weak linkages with the economy. A sub-sector that can stimulate domestic demand either through agro-processing or through generating income to a majority of farmers (e.g., cassava) often has stronger multiplier effect to the overall growth than a sub-sector that is only exported as primary materials.

Table 3: Factors for Prioritizing Agricultural Commodity Growth

	Size in the economy		Growth multiplier		Pro-poorness		Negative price effect		Opportunities
	Qualitative assessment	Ranking	Qualitative assessment	Ranking	Qualitative assessment	Ranking	Qualitative assessment	Ranking	
Growth led by:									
Cereals	Large	2	Large	3	Large	1			
Rice	Large	4	Large	8	Large	2	Small	7	Import substitutable
Maize	Large	7	Large	5	Large	5	Large	2	Feed industry development
Millet/sorghum	Large	5	Large	1	Large	3	Small	6	Food processing
Wheat	Small	13	Small	9	Large	11	Large	1	Import substitutable
Roots	Large	1	Large	6	Large	3			
Cassava	Large	3	Large	4	Large	7	Small	5	Exports through processing
Pulses	Large	6	Large	2	Large	8			Domestic processing and exports
Export-oriented crops	Small	9	Small	10	Small	12	Small	9	Scale up the size
Livestock	Small	8	Not measured		Large	9			
Poultry	Small	12	Not measured		Not measured		Large	3	Competitiveness and exports
Fishery	Large	10	Large	7	Large	6	Large	4	Food processing
Forestry	Small	11	Not measured		Large	10	Small	8	Wood processing

Source: Diao, et al (2009)

Negative price effect is often an indicator of market opportunities and the market constraints captured by the price effect have to be taken into account in an agricultural strategy. Growth is not only determined by productivity in production process of a targeted agricultural sub-sector. Instead, it is constrained by the market opportunities. Often, both domestic and export (or import

substitution) market opportunities are interrelated with the development of agro-processing industry, trade policies in both domestic and international markets, and market access conditions faced by producers. Thus, agricultural growth needs to be supported by pro-agriculture investments and interventions outside agriculture. This is the key for successful implementation of an agricultural strategy.

Finally, while agricultural growth is generally pro-poor, different types of agricultural growth can lift varying number of people out of the poverty (in total and in different locations) depending on a country's poverty distribution across regions and among households. Carefully assessing the linkages between sub-sector agricultural growth and poverty reduction at both national and regional (state) levels and taking advantage of such linkages are important steps to ensure agricultural growth to be pro-poor. This leads to the challenges faced by the sector, dealing with them for which this strategy document is directed.

2.5 Challenges to Agricultural Development

The main challenges faced by agriculture in Nigeria could be grouped under five categories:

- **Infrastructure inadequacies**, which include poor road network particularly feeder roads, markets and storage/processing facilities as well as inadequate irrigation facilities which limit agricultural production to only the wet season in many parts of the country. Some 80 percent of the respondents across the country in a 1995 survey identified infrastructure as the most critical constraint to the development of agriculture in Nigeria.
- **Limited access to improved technologies** in the form of the non availability of improved seeds, cuttings, breed, vaccines and agrochemicals, etc and the use of mainly hoes and cutlasses as the principal implement for crop agriculture at the small-holder level. Related to technological constraints are poor research and extension services as well as weak linkages with farmers for the uptake of innovations in areas such as seeds, pest and diseases controls.
- **Financial market weaknesses**, which may be attributed to inadequate and poorly targeted credit and the absence of competition in the supply markets as well as a well-defined effective demand structures as a result of low income and poverty.
- **Resource market failure**, which relate to land and labor market inefficiencies, the lack of enforceable ownership and control over land, and rent-seeking behavior of associated public agencies.
- **Organizational and governance constraint**, which relates to smallholdings, dispersed nature of farm settlement, and unorganized nature of farmer communities. Associated with the organizational deficiencies are policy ambiguities at all three levels of government.

These challenges are compounded by the characteristics of Nigeria agriculture. First, more than 70 percent of the farming population in Nigeria consists of smallholder farmers, each of whom owns or cultivates less than 5 ha of farmland (NARP 1994), but together accounts for 90 percent

of the total farm output. Many such farms are fragmented and scattered in different locations because of inadequate access to farm land under the current land tenure system. This has serious negative implication not only with respect to higher transaction costs but also makes mechanization difficult. Second, most Nigerian farmers operate at the subsistence level, with marketable surplus ranging between 0-25 percent depending on the household size. Farmers with large household sizes tend to have marketable surpluses that are usually lower than farmers with small household sizes. Third, the growth of the sector over the last ten years may be attributed mainly to acreage expansion and favorable weather, implying that the factors that impede productivity growth such as the low level of mechanization (use of technology), use of traditional varieties of seed, weather-dependent farming, low or zero application of fertilizer, difficult access to formal credit etc. are still binding.

CHAPTER 3. EVOLUTION OF POLICY IN THE SECTOR

3.1 *Introduction.*

In an effort to resolve the challenges confronting agriculture, a wide range of policies have been put in place over the years in Nigeria by various tiers of government. These policies addressed a broad range of objectives such as increasing agricultural productivity and contributing to food security, reducing poverty and improving the livelihoods of rural producers, increasing farm capacity to compete with imported agricultural products, diversifying agricultural exports, and managing the sustainable use of natural resources ó soils, water, forests, grazing ó on which agricultural activities depend on. The policy underpinnings of government intervention are reviewed below with the objective of sorting out which policies have worked and which have not worked. The review follows the four distinct agricultural and rural policy phases identified earlier: The first phase spanned the colonial period and the post-independence decade from 1960 to about 1969 (the pre-1970 era); the second covered the period from about 1971 to 1985; the third phase started from 1986 in the Structural Adjustment Programme (SAP) period to 1994; the fourth is the post-SAP era to date (spanning 1995-2009).

3.2 *The Pre-1970 Period*

The prevailing philosophy for agricultural development during this period was characterized by minimum direct government intervention. As such, the private sector and the small-scale resource-poor farmers determined the direction of agricultural development efforts in the country. The three Regional Governments (Eastern, Northern and Western, and later the Mid-Western), were merely supportive of the activities of these farmers and government efforts largely took the form of agricultural research and extension, export crop marketing, and price stabilization activities. Few of the ruling governments in the 1950s and 1960s did establish publicly-owned agricultural development corporations and launched a number of farm settlement schemes, but these actions were justified on social grounds as efforts to promote community participation in agriculture than direct intervention on their part. Exports boomed, in part as a reflection of the expansion in the world economy during the 1960s and the positive price developments that were favorable to primary agricultural commodities. Smallholder farmers responded to the positive terms of trade and the performance of the sector was good.

3.3 *Pre-Structural Adjustment Period (1970-1985)*

This period was characterized by oil revenue boom and high levels of public expenditures by the Federal Government, which together promoted an over-valuation of the local currency. The performance of the agriculture sector started to deteriorate, which further engendered the drive for increasing government intervention that resulted in a wide range of agricultural policies, programs and projects, some of which had the direct involvement of government in agricultural production. The policies that emerged during this period were largely designed to facilitate

marketing, reduce production cost and enhance producer prices as incentives for increased production. The main policy instruments employed during this period included:

(a) *Agricultural Commodity Marketing and Pricing Policy*

Six national single-commodity boards were established in 1977 to replace the regional, multi-commodity boards that had been operating since 1954. The six new boards were for cocoa, groundnut, palm produce, cotton, rubber, and food grains. The food grains marketing board was particularly unique in that it represented the first effort ever made to extend the marketing board concept to food crops. The National Grains Board handled maize, millet, sorghum, wheat, rice and cowpeas. It administered a guaranteed minimum price policy whereby floor prices were nationally set for each of the six grain crops as guaranteed minimum prices at which the board would intervene as a buyer of last resort if and when their market prices fell below the minimum. The board also operated a strategic grain reserve scheme. In spite of the guarantee prices not being substantially above the cost of production, they were not backed up by the required actions. Thus, weaknesses in the implementation modalities made it impossible to realize the benefits of the effort.

(b) *Input Supply and Distribution Policy*

Government policy on input supply and distribution focused on instruments for ensuring the adequate and orderly supply of modern inputs like fertilizers, agro-chemicals, seed and seedlings, machinery and equipment.

The key policy instruments adopted were:

- The centralization of fertilizer procurement and distribution in 1975 as a result of which all fertilizer procurement and distribution activities in Nigeria were effectively taken over by the Federal Government. In addition, the Federal Government also established a superphosphate fertilizer plant with the objective of reducing the country's dependence on foreign sources of fertilizer supply, although the performance of the plant was poor because of regular government intervention in its operation.
- The creation of a national network of agro-service centers to facilitate the distribution of modern inputs, including the provision of tractor and farm machinery services to farmers. But the government tractor services were not more efficient or effective than the private sector tractor hiring units.
- The creation of a National Seed Service (NSS) in 1972 to produce and to multiply improved seeds for rice, maize, cowpea, millet, sorghum, wheat and cassava, but adoption rates remained low.

Federal and State Government's involvement in the procurement of agricultural inputs has not been able to resolve the problem of inputs reaching the smallholder farmer. Preliminary research findings on the fertilizer distribution system by Banful, et al (2009) indicate that Federal

Government involvement in procurement and distribution has not necessarily brought fertilizer to the end-user when it is required and at the desired quantity.¹⁴

(c) *Agricultural Input Subsidy Policy*

In the early 1970s, input subsidy policy became centralized and its application extended to food crops. The policy instruments adopted comprised the following:

- Between 1976 and 1979, fertilizer attracted a 75 per cent subsidy, wholly borne by the Federal Government. The State governments were also required to provide subsidies as well as logistics support, but their contribution was limited and actual subsidies provided ranged from zero to 50 per cent.
- Various levels of subsidies were also extended to seed, agrochemicals, etc.
- Subsidies on tractor hire services that were mostly operated at the state level ranged from about 25 per cent to about 50 per cent of the actual cost of tractor services.

Although it was clear that the input subsidies had not worked in terms of their failure to reaching the intended beneficiaries, it is only in the recent past that an attempt at the voucher system is being made. The voucher system has proved successful in the piloted states (Kano and Taraba) is likely to be extended to other states. Improving the targeting of subsidies and establishing when they would be discontinued remain a challenge.

(d) *Agricultural Mechanization Policy*

The need for a coherent agricultural mechanization policy became very pressing in the early 1970s in view of an increasing shortage of agricultural labour that necessitated the substitution of some appropriate forms of mechanical power for human labour. In an attempt to achieve the objectives of an agricultural mechanization policy, an Agricultural Cooperatives Policy was developed to mobilize rural people for social and economic development. The mechanization program has largely not worked as emphasis was placed on the use of large tractors instead of seeking to improve the efficiency of simple agricultural tools.

(e) *Water Resources and Irrigation Policy*

The major instrument of water resources and irrigation policy was the establishment of eleven River Basin Development Authorities in 1977 with the overriding responsibility for the development of the country's land and water resources. They had mandate for land preparation, development of irrigation facilities and construction of dams, boreholes and roads. Little progress, nonetheless was made as the area irrigated remain under 2 percent of arable land.

(f) *Agricultural Extension and Technology Transfer Policy*

The most important feature of agricultural extension policy in the 1970s was the demise of the old system of state-based general agricultural extension service. The basic strategy for promoting the adoption of new technologies by farmers under the new system was the use of the National

¹⁴ Banful, Afua B. Ephraim Nkonya, and Victor Oboh (2009), Constraints to Fertilizer Use in Nigeria: Perspectives and Insights from the Agricultural Extension Services, NSSP Brief No. 6. The study concluded that according to extension agents, the primary constraints to fertilizer use is the physical absence of the product at the time it is needed, rather than problems of affordability or farmers' lack of knowledge about its performance.

Accelerated Food Production Project (NAFPP) launched in 1972 and the Agricultural Development Projects (ADPs) launched in 1972 covering the Gusau, Funtua and Gombe as enclave projects. Apart from the NAFPP, the government in an attempt to popularize agriculture and increase domestic food production launched a number of programmes; the most popular of these were the Operation Feed the Nation (OFN) in 1976 and the Green Revolution in 1980. To support the policy directions of the Government, two important legal enactments were undertaken, viz. the Nigerian enterprises promotion decrees of 1972 and 1977 and the Land Use Decree of 1978.

The Nigerian Enterprises Promotion Decree: This was also known as indigenization decree. The 1972 decree categorized all enterprises into two schedules. The first schedule with 28 enterprises was reserved exclusively for Nigerian investors and the second schedule with 25 enterprises kept open to joint participation by Nigerian and non-Nigerian investors, subject to a minimum of 40 percent equity participation by Nigerians. Following a review exercise, the 1972 decree was replaced by Nigerian enterprises promotion decree of 1977. Under the revised decree, all enterprises were categorized into three schedules. Enterprises in the first schedule were reserved exclusively for Nigerians; enterprises in the second schedule were those which required a minimum of 60 percent equity participation by Nigerians, while enterprises in the third schedule were those in which Nigeria must have a minimum of 40 per cent participation. The revised decree had a substantial negative effect on foreign investment in agriculture in Nigeria.

The Land Use Decree: The basic instrument of land use policy was the Land Use Decree promulgated in 1977. Under the decree, ownership of land was vested in the state governments in trust for the people and user rights were to be granted to the people through statutory rights granted by the state governors in respect of urban land, and by customary rights granted by local government councils in respect of rural land. There were also the provisions for soil survey and land evaluation facilities for the production of a comprehensive soil map of Nigeria. Certificates of occupancy were required to be issued by the state governors. The Land Use Decree has failed to resolve the issues related to land acquisition and therefore is under review.

3.4 The Structural Adjustment Programme Period (1986- 1994)

The main policies put in place during this phase included:

(a) Fiscal Policies:

A five year tax-free period for profits earned by companies engaged in agricultural production and agro-processing activities was provided.

(b) Monetary Policies:

The following were the monetary policies of the government that were of consequence to agriculture.

- Liberalization of terms for agricultural loan such that small-scale farmers could obtain loan up to N5, 000 without any tangible collateral.
- Deregulation of interest rates that increased banks' lending rates to 15 percent but limited rates to 10-11 percent for agricultural loans.

- Extension of repayment period from 4 to 7 years of commercial banks' loans for investors in long-gestation cash crops and for mechanized large scale farming in 1988.
- The requirement that a minimum of the total deposit of a rural bank that is devoted for agricultural loans was raised from 40 to 45 percent in 1988.
- Establishment of Peoples Bank of Nigeria in October 1989. During the period under review, the bank had over 169 branches all over the nation and its lending rate was raised from the stipulated 5 percent to 15 percent in 1990 but required no tangible collateral or security.
- Establishment of community banks in 1990 that were charged with the responsibility of providing banking services specifically at the rural level.

(c) Trade Policies:

The trade policies included the abolition of commodity boards, many import levies and the reduction of some excise and export duties; export promotion of non-oil goods, including agricultural commodities; and import substitution measures used to place a ban on some food and industrial raw materials in order to encourage local production and hence promote self-sufficiency in domestic food production. A ban was placed on the importation of rice, maize, wheat and barley during this period.

(d) Agricultural Support Service Policies

- **Water Resources and Irrigation:** Re-organization of the River Basin Development Authorities in 1986 to concentrate only on water resources management and land development, including provision of irrigation facilities. In 1993 FADAMA I, a programme on dry-season farming initiative, was launched.
- **Employment:** Establishment of National Directorate of Employment (NDE) in 1986 to promote employment programmes with a special school leaver and agricultural graduate programme both meant for keeping the interest of rural youth in agriculture and for assisting agricultural graduates in establishing farms of their choice.
- **Agricultural Insurance:** Establishment of the National Agricultural Insurance Company (NAIC) in 1987 to operate and administer the Nigerian Agricultural Insurance scheme.
- **Agricultural Land Development:** Establishment of a National Agricultural Land Development Authority (NALDA) in 1991 to execute a national agricultural development programme for small scale farmers organized on group basis.
- **Agricultural Training and Manpower Development:** Training is one of the strategies of the Nigerian government for agricultural development. This has resulted in the establishment of Faculties of Agriculture in all the conventional Universities, Colleges and Institutes of Agriculture, followed in 1988 to 1992 by the establishment of three Universities of Agriculture.

(e) Rural Development Policy:

This period marked the first time that policy attention was given to rural development. In 1986, the Directorate for Food, Road and Rural Infrastructure (DFRRI) was established. This directorate was responsible for the construction of rural feeder roads, rural water supply schemes, and rural electrification projects.

(f) *The 1988 Agricultural Policy Document:*

In 1988, a more holistic and articulated agricultural policy document of Nigeria was launched. In general, this period was associated with sound policy foundation that formed the basis for agricultural sector reform in Nigeria.

3.5 *Post SAP Period (1995-2009)*

There were no significant policy pronouncements during this phase prior to 1999. Much of the initiative made in the previous period fell into disuse. As such, the period was characterized by substantial importation of agricultural products while programmes to support agriculture witnessed policy uncertainties. Expenditures on agricultural programs declined with concomitant effect on capital projects.

The situation was reversed in the post 1999 period with the initiation of several economic reforms that touched the agricultural sector. The FGN in 2004 placed a ban on the importation of several agricultural food products in order to encourage local production, but such bans were largely misplaced. The 1988 agriculture policy document was reviewed and re-launched in January 2005. Some of the policy instruments that evolved in the post 1999 phase are listed below.

1999 - Special Programme on Food Security.

1999 - Root and Tuber Expansion Programme (RTEP).

2000 - Integrated Rural Development Strategy.

2001- Presidential Initiatives on special crops (rice, vegetable oil and cassava): Presidential initiatives emerged out of the government's concern that the agricultural sector has had a diminished capacity to provide the nation's food and industrial raw materials and to generate foreign exchange. The presidential initiatives encouraged the production of cassava, rice, vegetable oil, tree crops, livestock, and aquaculture products. For example, the Presidential Initiative on Cassava (PIOC), introduced in 2002, aimed to move Nigeria from a mere dominance in tuber production to be at competitive edge in industrial production of starch, chips, and flour. The Presidential Initiative on Rice (PIOR) aimed at the attainment of national self-sufficiency in rice production by 2005, food security, and the ability to export by 2007.

2003 - FADAMA II programme.

2003 - Cocoa Rebirth Programme.

2004 - National Economic Empowerment Programme (NEEDS).

2004 - New agricultural policy. This document provided more detailed policies to include important areas of agriculture which were not emphasized in the 1988 Agricultural Policy Document. They are agricultural biotechnology, agricultural development fund, animal vaccine

production, veterinary drug manufacture, agro-chemical manufacture, water management, and adaptive technology.

2006 ó National Fertilizer Policy for Nigeria.

2007 ó The 7-Point Agenda: This encompassed, power and energy, food security, wealth creation, transport sector, land reform, security, and education. With respect to food security, the reform is primarily agrarian based. The emphasis on the development of modern technology, research, financial injection into research, production and development of agricultural inputs to revolutionize the agricultural sector leading to an expected 5 ó 10 fold increase in yields and production. The increased productivity is expected to result in massive outputs for domestic and commercial use as a result of technological knowledge transfer to farmers. The agriculture sub-component of the 7-Point Agenda is spelled out in the 5-Point Agenda of FMAWR. The key programmes of the 5-Point Agenda are: Developing Agricultural Policy and Regulatory Systems (DAPRS), Food Systems Network (FOODSNet), Rural Sector Enhancement Programme (RUSEP), Agricultural Commodity Exchange Market (ACCOMEX), Raising Agriculture Income and Sustainable Environment (RAISE), Maximising Agricultural Revenue in Key Enterprises (MARKETS), and Water Aquaculture and Environmental Resource Management.. The chronological listing of the principal initiatives during the period is provided in Annex I These policies form the basis of the strategic approaches adopted in subsequent chapters of this strategy document. But it also raises questions about the consistency of policy over the years.¹⁵

¹⁵ V. M. Manyong, et. Al (2005), Agriculture in Nigeria: Identifying Opportunities for Increased Commercialization and Investment, IITA: Ibadan, conclude that the constraints to the effectiveness of past agricultural policy include policy instability, inconsistencies in policies, narrow base of policy formulation, poor implementation of policies and weak institutional framework for policy coordination.

Section B: Strategy Formulation

This section discusses the approaches to agriculture strategy formulation adopted by the Federal Ministry of Agriculture. It outlines the elements of the agriculture value chain and highlights the roles that could be played by various stakeholders: the three-tiers of government, the private non-farm sector, and the farming communities. The roles to be played by each tier of government in Nigeria are clarified.

CHAPTER 4. STRATEGIC FRAMEWORK AND APPROACHES

4.1 Strategy

The formulation of a strategy involves a time bound prioritization and selectivity. This process requires knowledge (evidence-based) and the making of choices to achieve a particular goal. In effect, a strategy refers to a set of actions to achieve a particular goal based on questions such as: what do we do? For whom do we do it? How do we achieve our goals? These processes are illustrated in Figure 4.

First, to determine what is to be done, there is a need to conduct a strategic analysis, which deals with the nature of existing conditions and an understanding of important external factors and challenges that may influence that condition. This exercise has been provided in section A (the background) discussion of this document.

Figure 4: The Strategy Formulation Process



Second, to determine where to go and how to get there, strategic choices, which deal with an understanding of the nature of stakeholder expectations, would need to be made. Such an exercise to identify strategic options, evaluate and select such options is the focus of the present chapter.

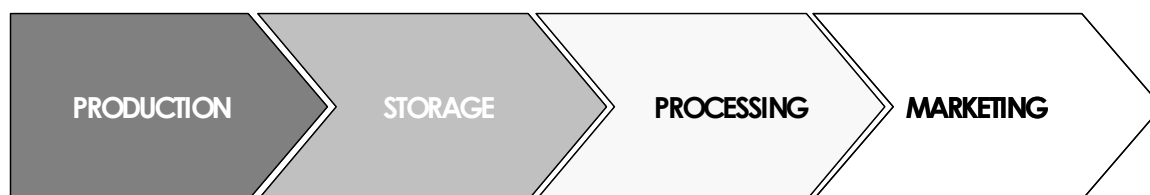
Finally, the resulting choices would need to be translated into actions for strategy implementation. While the final chapter of this document outlines an action plan for the strategic choices discussed in this and subsequent chapters, the exercise of strategic planning is outside the

scope of this document and would be taken up in the context of the medium-term sector strategy (MTSS), which is the planning document for the FMAWR.

4.2 Approaches

The approach adopted in this strategy document addresses every component of the entire agriculture value chain for crops, livestock and fisheries. The value chain is defined as the full sequence of activities or functions required to bring a product or service from conception, through the intermediary steps of production, transformation, marketing, and delivery to the final consumers. Figure 5 illustrates the sequence of the value chain. In this process, the Federal Government will set the direction, while the organized private sector as well as the State and Local Governments will drive execution. Chapter 6 defines the relevant roles of the three tiers of government. The key challenges, strategic objectives, and initiatives are defined for each component of the agriculture value chain for crops, livestock and fisheries and presented in the following sections of this document. Issues of stakeholder involvement, supporting governance structure and the required linkages for implementation are discussed in subsequent chapters of this document.

Figure 5: Agriculture Value Chain



A) Crops:

In order to be selective, and maintain consistency with past and existing policy initiatives, 13 crops are emphasised as being of strategic importance and will attract primary attention in the quest for food security in Nigeria. The crops are:

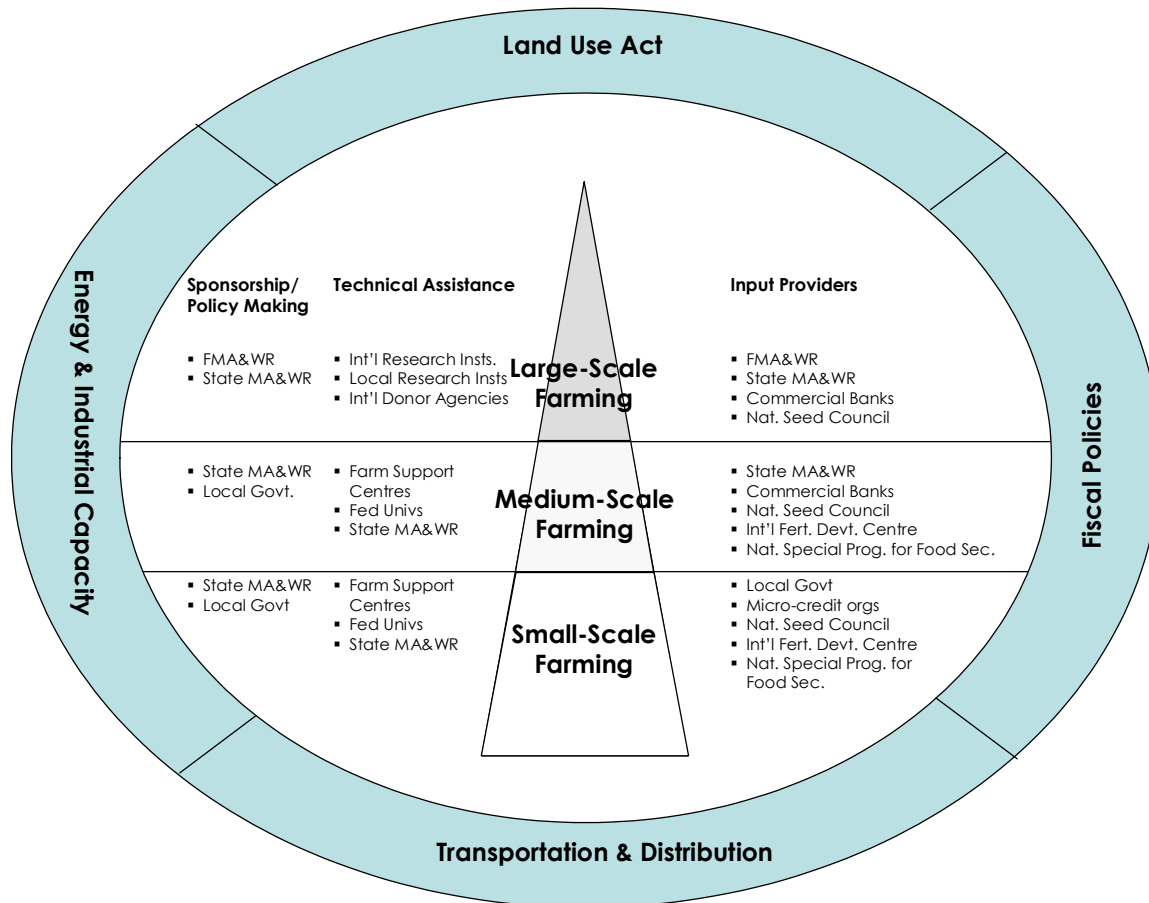
- Cassava
- Rice
- Millet
- Sorghum
- Wheat
- Maize
- Sugar
- Cow peas
- Soya beans
- Tomato
- Cotton
- Cocoa

- Oil Palm

These crops also meet the criteria of size, linkage effect, òpro-poorness and market opportunities established in Table 3 (Chapter 3). Specific production targets would be defined during the preparation of the medium term sector strategy (MTSS).

There are several approaches that may be used to influence increases in crop production in Nigeria either directly or indirectly. The interplay of these approaches for increased production is depicted in the schematic illustration below (Figure 6), which highlights the principal challenges of the sector in terms of the limitations of the land use act, poor energy and industrial capacity, weak fiscal policies, and poor transport and distribution systems:

Figure 6: Approaches to Increased Agriculture Production in Nigeria



The main production initiatives that will be pursued are highlighted below:

(i) Treatment of different farm-size groups

Land acquisition and preparation schemes will be created in specific locations nation-wide to attract large-scale farmers into Nigeria as well as catalyze the up-scaling of the operations of medium-scale farmers into large-scale farming. Government will provide fiscal incentives, such as tax credit schemes on agricultural inputs, to promote large-scale operations. Collaborating with commercial banks, support will be provided in the form of up-front lump-sum credit to support these schemes. Actions that will be taken in this regard include:

- A special capital fund will be established for on-lending to large-scale farmers to finance farm set-up.
- Effort will be made to promote large-scale farming to produce strategic crops through the application of the principles of private-sector partnerships.
- State and local governments will also provide support and infrastructure e.g. power, access roads. However, the Federal government will be responsible for the construction of large dams and associated irrigation facilities, which the state governments would take responsibility for small dams and wash bores.
- Commercial banks will be encouraged to provide Federal Government-guaranteed funding for farm operations

With respect to medium-scale farming, special collaborative programs will be established to support medium-scale farmers with features such as machinery leasing schemes, increased access to funding, agribusiness support etc. These programs will be funded and managed by the private sector.

Similarly, an aggressive program will be established to support small-scale farmers through an overhaul of the support system for small scale farming in Nigeria. This process will also target young and educated to take up farming through the improved access to funding), establishment of guaranteed minimum pricing for products and provision of continuous technical support. In order to deal with the large size of small operators, farmers associations will be promoted through which technical and funding support will be provided to these farmers.

Land Acquisition/ Cadastral Mapping

To effectively manage and coordinate the utilization of all land in Nigeria, the Federal Government in collaboration with the states will commission a land mapping/ cadastral exercise in every state of the country. Along with this process, the Land Use Act will be reviewed to cater for the use farm lands as collateral to facilitate access to formal credit by farmers. The State government will facilitate access of land to farmers. A registry of farmers will be established.

(ii) Land Management

Land management techniques would be promoted, especially with respect to the application of fertilizers.. The media will be encouraged to educate farmers on fertilizer recommendations and applications. Soil testing and fertility status will be done for all soils in the country and reclamation of degraded agricultural lands will be conducted for acidic and salt affected soils.

(iii) Focus on Strategic Crops

The focus on strategic crop will be region-specific (Table 5). The objective is to encourage specific locations to focus on the production of specific crops for which it has comparative advantages with the goal of achieving optimal productivity. Farmer Support Centres for these crops will be established in selected locations to serve as demonstration, research and support centres. Similarly, centres for fishery and livestock will also be created in strategic locations across the country.

Table 5: Locations Known to Grow Strategic Crops

	North East	North Central	North West	South West	South East	South South
Crops	Wheat Rice Maize Millet Sorghum Vegetables Sugar Cane Cassava Cow pea Tomato Cotton	Rice Maize Millet Sorghum Yam Vegetables Sugar Cane Cassava Cow pea Tomato Cotton	Wheat Rice Maize Millet Sorghum Vegetables Sugar cane Cassava Cow pea Tomato Cotton Ginger	Rice Yam Vegetables Cassava Cowpea Cocoa Oil Palm	Rice Yam Vegetables Cassava Cocoa Oil Palm	Rice Yam Cassava Vegetables Cocoa Oil Palm

Strengthening and Expansion of Agricultural Extension Services

The capacity of the agricultural extension service will be strengthened by equipping the state governments to establish farm support centres as òone-stopö facilities in each local government, in partnership with the private sector to train and disseminate new farming techniques. The centres will also be used to distribute inputs. The framework to be used is illustrated in Figure 7.

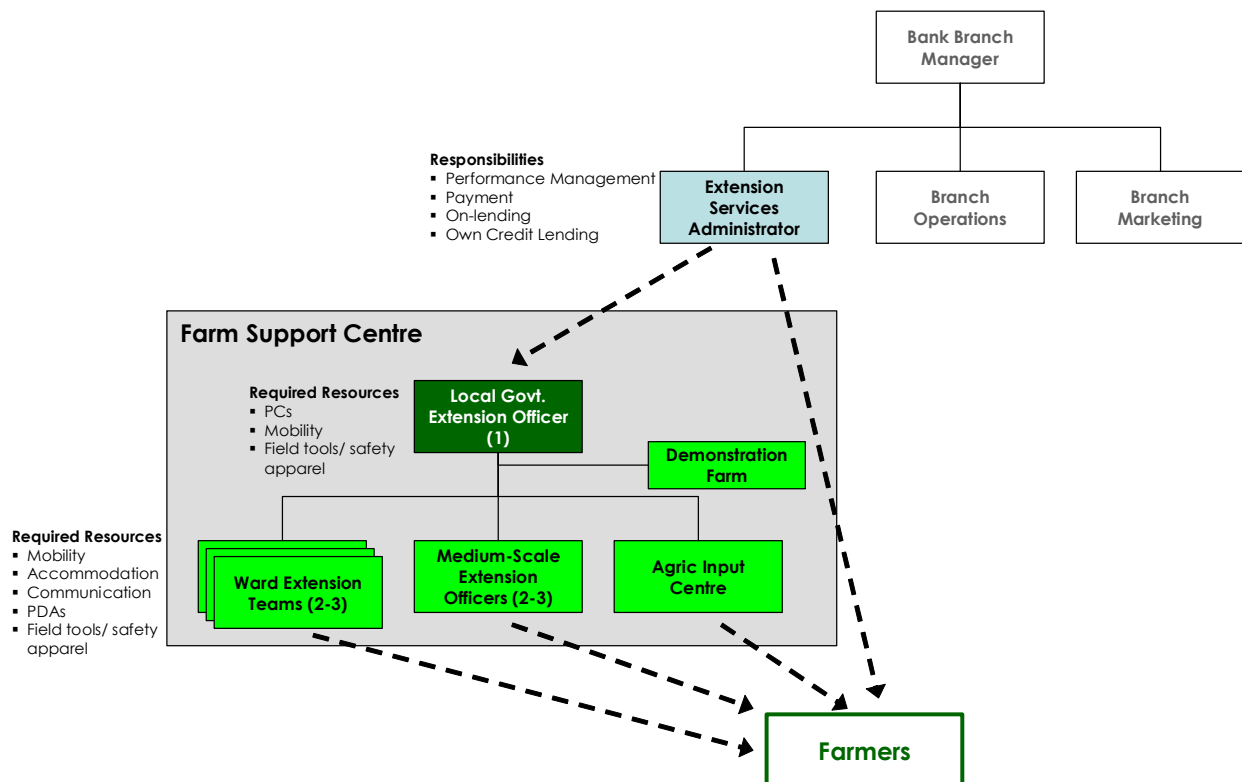
Expansion in Irrigation Facilities

A private sector-driven initiative will be promoted to support significant expansion of the irrigation system in Nigeria. The objective is to ultimately convert the 3.14 million hectares of irrigation potential beyond the current 220,000 hectares of irrigated land by tapping into the huge 60 billion cubic meter of underground water along with the 267.7 billion cubic meter surface water in the country.

Provision of Strategic Inputs for Production

Key elements undermining the productivity of the Nigerian agriculture sector is the inadequacy of strategic inputs. There are four (key inputs that would be the focus of the strategy, which once addressed will significantly transform the production base of the sector. They are fertilizer, farm machinery, improved seeds and irrigation facilities.

Figure 7: Private Sector-led Extension Services Provision & Supervision



Livestock and Fisheries

The domestic production of livestock and fisheries is about 30 percent below the domestic demand the products. The shortfall is made up through imports from neighbouring countries. The factors contributing to the poor performance in livestock include:

- É Poor genetic quality (slow growth of animals and low milk yield)
- É A production system which is labour intensive in an environment of labour shortage
- É Limited input quality and supply, including limited grazing land
- É Prevalence of trans-boundary animal diseases (TADs)
- É Lack of efficient and hygienic livestock processing facilities
- É Uncoordinated livestock marketing system

The approach to be adopted will thus attempt to reduce and eliminate the above constraints. They include:

(a) Dealing with the issue of trans-humance livestock production (nomadic pastoralists)

Trans-humanance livestock production is the predominant form of ruminant livestock rearing in Nigeria by the nomadic Fulanis, who own at least 90 percent of the cattle population in Nigeria.

They are however constrained by the following:

- The seasonality and availability of grazing material along the stock routes
- Dwindling grazing areas from over-grazing, desert encroachment, and human population growth and urbanization
- Limited watering points along the stock routes
- Non use or lack of feed supplements
- Lack or unaffordable veterinary services
- Gradual shift from the present predominant transhumance pastoralism to semi-intensive and finally intensive system of production

To deal with these challenges,, the following broad strategies will guide activities of the sector:

- Gazetted grazing reserves would be developed and provided with essential infrastructure, such as earth dams, nomadic schools, and improved pasture
- Appropriate demarcation along the stock routes would be made
- Animal health facilities and livestock extension services in the grazing reserves and along the stock routes would be provided.

Focusing on Strategic Animal Commodities

In order to ensure the highest impact from the program of intervention, livestock and fisheries will be reclassified by product type of strategic importance as noted in Table 6. The objective is to encourage specific states to focus on the production of specific livestock commodities for which it has comparative advantage with the goal of achieving optimal productivity.

Table 6: Strategic Livestock Commodities

	North East	North Central	North West	South West	South East	South South
Livestock & Fisheries	Beef	Beef	Beef	Beef	Beef	Beef
	Milk	Milk	Milk	Milk	Milk	Milk
	Poultry	Poultry	Poultry	Poultry	Poultry	Poultry
	Egg	Egg	Egg	Egg	Egg	Egg
	Pork	Pork	Pork	Pork	Pork	Pork
	Mutton	Mutton	Mutton	Mutton	Mutton	Mutton
	Fish	Fish	Fish	Fish	Fish	Fish

Strengthening and Expansion Extension Services

Similar to crop agriculture, livestock extension service will be strengthened and expanded with the state governments supported to establish farm support centres as 'one-stop' facilities in each local government in partnership with the private sector to train and disseminate new farming techniques with the objective of improving livestock production. The centres will also be used to provide inputs.

(d) Provision of Strategic Inputs for Livestock and Fisheries Production

A key factor undermining the productivity of the Nigerian livestock sector is the inadequacy of strategic inputs. In this respect two broad activities would be adopted:

Brood Stock and Fingerlings Development and Distribution:

The National Animal Production Research Institute (NAPRI) as well as the National Institute for Fresh Water Fishery Research (NIFFR) will be strengthened to provide high yield, high resistant certified brood stock and fingerlings for livestock and fisheries. The research and partnership frameworks for the council and these institutes will therefore be enhanced to perform these roles. The Federal government will support the establishment of hatcheries in each geo-political zone while state governments will support the supply of the day-old chicks, brood stocks and fingerlings to farmers.

Livestock/Fish Feed production & distribution

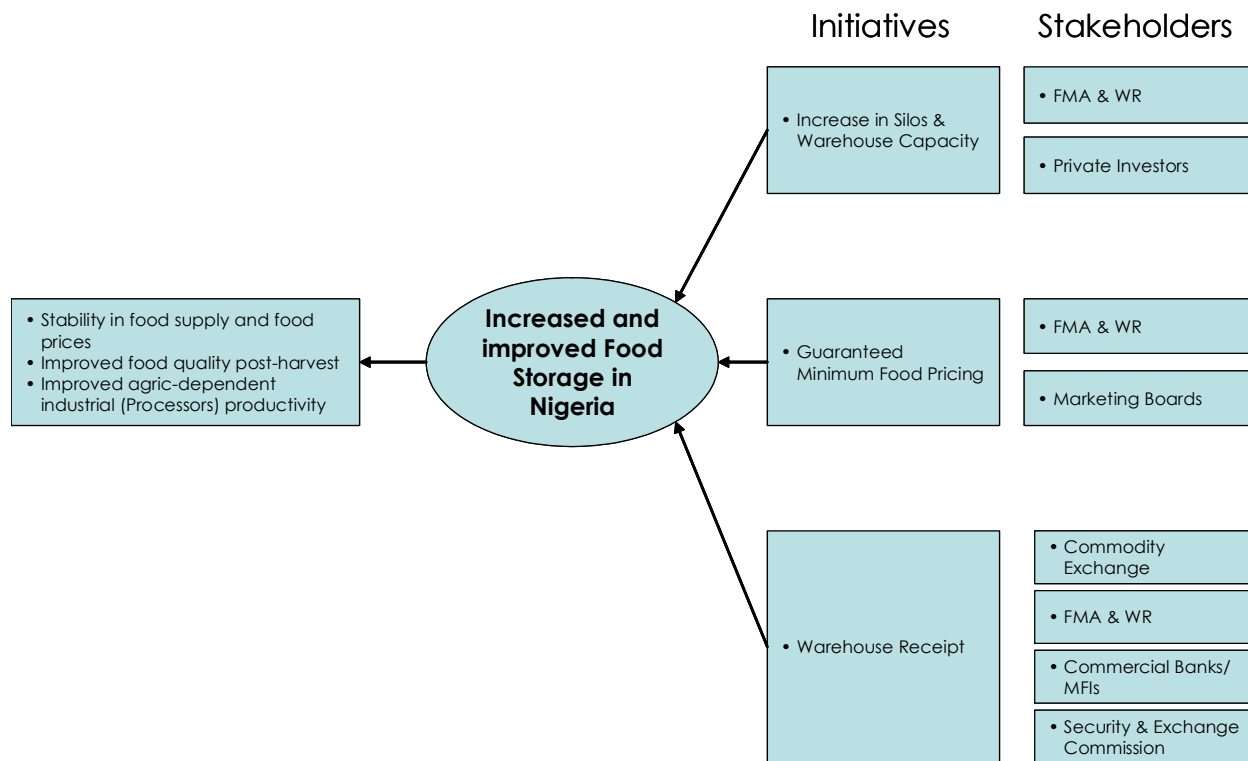
The national production capacity for livestock/fish feed and pre-mix will be significantly improved with the objective of ensuring 100 percent local productions by 2011. Focus will be on defining feed quality standards, significantly improving the quality of livestock feed as well as

enhancing the capacity utilization of existing feed plants. Also, new plants (large, medium and small-scale) for livestock, poultry and fish feed will be established with the objective of achieving self sufficiency by 2011. Incentives and flexible financing terms will be provided to local feed supplement and premix manufacturers to enhance availability and quality of livestock and fish feed.

(A) Storage

The overall objectives of improving food storage in Nigeria as a means of guaranteeing food security is to ensure stability in food supply and avoid price volatility, improve food quality and adequate local supply of products for industrial processing, and contribute to global supply. The factors consider in order to achieve these objectives are depicted in Figure 8. The key elements in the schema with respect to crops are outlined below:

Figure 8: Paths to improvement in Food Storage in Nigeria



Improving the Nation’s Strategic Food Reserve

An initiative will be established to significantly improve the storage capacity of the national food reserves system through the completion of the ongoing construction of 28 new silos. The objective is to achieve a storage capacity of 1 million metric tonnes. It is intended that 5 percent of the annual production of the strategic crops will be kept as national strategic reserves at the Federal Government level. Similarly, the state governments will construct new silos and

warehouses to hold 10 percent of annual production as buffer stock within their states. PPP concessions will be explored to finance and manage the new silos. Quality objectives and targets will be agreed with the concessionaries.

Improving Farmers' Warehousing Capacity

To improve the quality and shelf life of products, farmers/ warehouse keepers will be trained in harvesting and storage techniques. A Private Sector-led initiative will be pursued to build an additional 200,000 metric tonnes capacity of product warehouses as well as capacities for silos and conditioning centres. The conditioning centres will be built as close to the points of evacuation as possible. Adequate special purpose vans will be procured for use in transporting perishable products from points of production to these conditioning centres. In addition, a warehousing licensing and monitoring framework will be established to set financial, operational and quality standards for warehouses and monitor compliance through licensed warehouse inspectors.

Livestock and fish storage, on the other hand, requires a relatively different approach from crops. Because of the wetness of most livestock and fish products, it will be necessary to promptly condition the environment of the products post-slaughter or capture to eliminate the possibilities of contamination. Consequently, appropriate meat, fish and other livestock products preservation facilities will be set up at proximal locations close to abattoirs and fish-handling ports and near eventual sales outlets. Because of the disperse nature of animal slaughter across the country, it will be necessary for local governments with the assistance of states to set up meat and fish stores with appropriate infrastructure. Livestock and fish products retailers can source their stock from these stores for eventual disposal at the conditioned sales outlets.

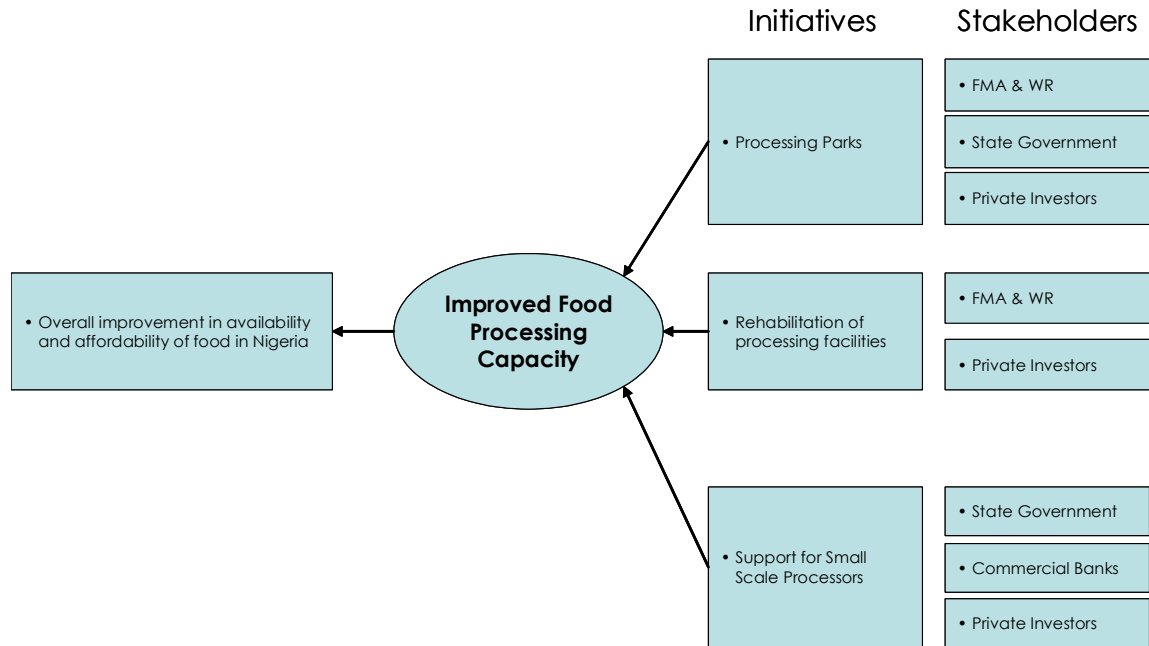
(i) Distribution Systems

Distribution of livestock products will be encouraged in appropriately refrigerated vans for meat, fish and eggs as well as well aired vans for live birds. The existing mode of transportation of live large animals by truck leads to an inordinate loss of at least 2 percent of live weight and quality of meat. The intervention in this scheme will build on promoting the localization of animal processing at the points of production, transportation in refrigerated vehicles, and storage in conditioned facilities and sold from hygienic outlets.

(B) Processing

The role of processors in achieving food security cannot be over-emphasized, especially in ensuring the availability and affordability of food. Key initiatives will be commissioned to improve the food processing capacity in Nigeria. The schematic below (Figure 9) illustrates these initiatives and the nature of stakeholder involvement.

Figure 9: Paths to improvement in Food Processing in Nigeria



The main activities to be promoted under crops include:

Agro-Industrial Parks

The States and Federal Government will collaborate to establish Agro-industrial parks in every senatorial district nation-wide and will be private sector-managed. Each will house industries with modern factories and processing plants associated with grading systems and standards, quality controls, quarantine services, power security and water. These agro-industrial parks will be situated close to production areas as possible to reduce the logistical constraints posed by distance.

Support for Small-scale Processors

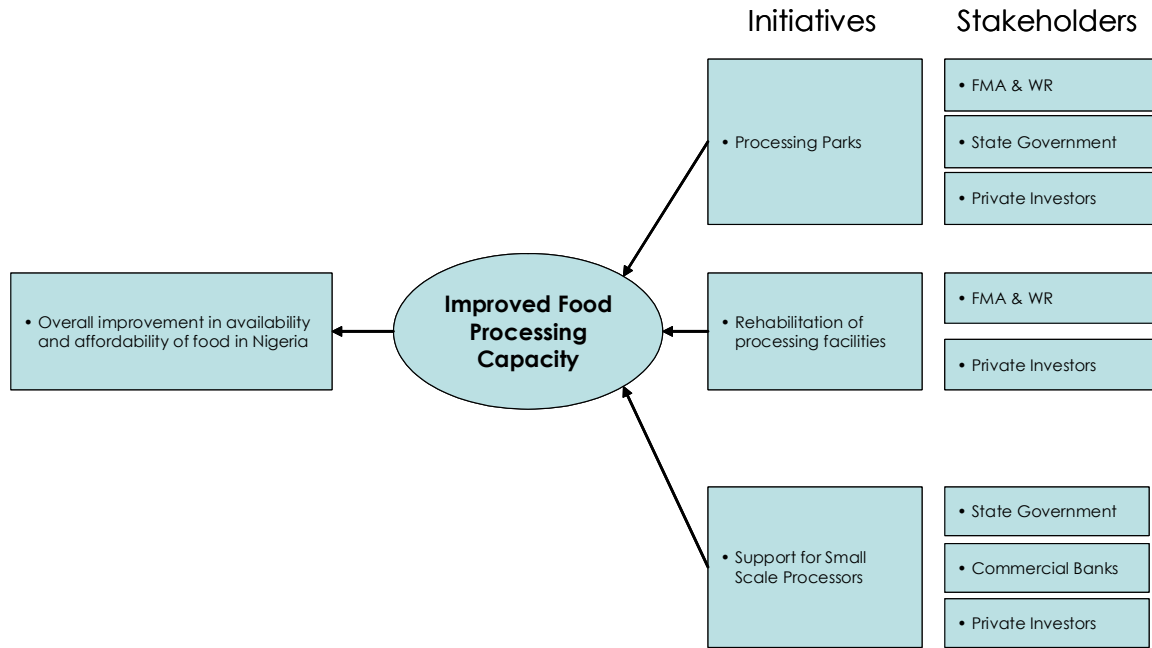
Financing for small scale processors will be provided in partnerships with commercial banks. Fiscal incentives will also be provided for the importation of processing machines for the sector.

Rehabilitation of Existing Processing Facilities

Government owned processing companies requiring rehabilitation will be revitalized to achieve to full operations using the Rehabilitate, Operate and Transfer (ROT) under PPP schemes.

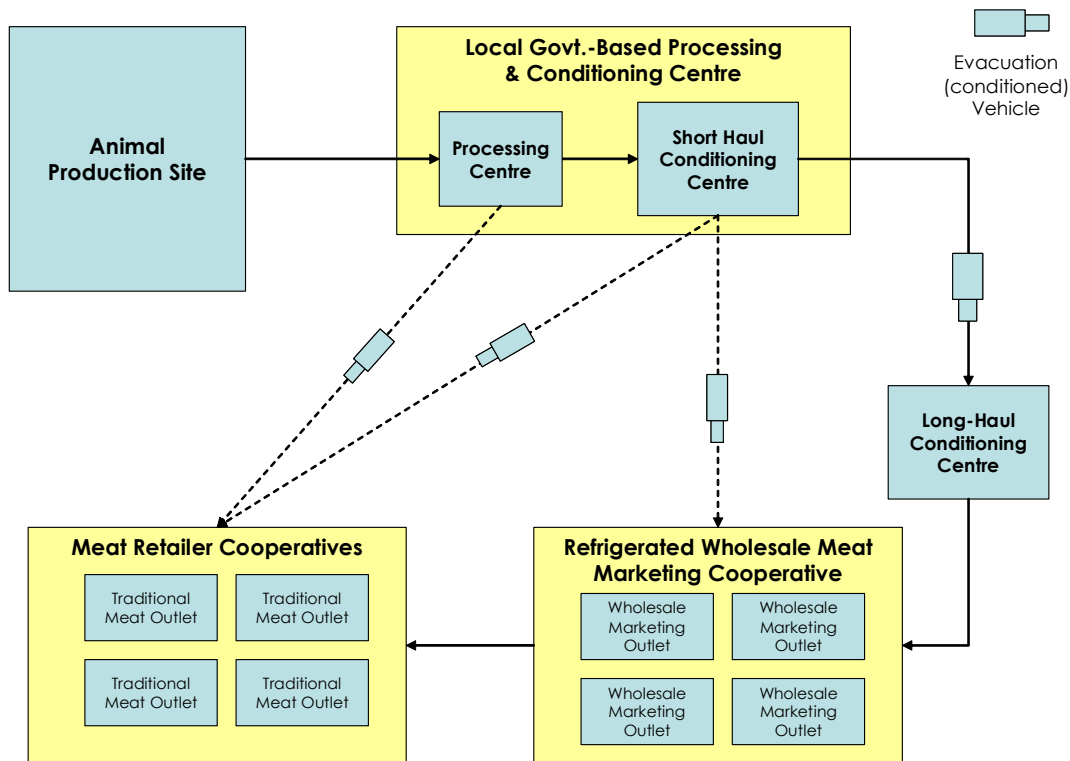
Under livestock and fisheries, the main initiatives will be to improve the livestock processing capacity in Nigeria. The schematic below describes these initiatives and the stakeholder involvements:

Figure 10: Paths to improvement in Livestock Processing in Nigeria



The processing and distribution value chain is illustrated in Figure 11 below:

Figure 11: Livestock Processing/Distribution Value Chain



In this framework, livestock will be processed at appropriately sized abattoirs, located in areas of high concentration. The abattoir will have adjoining refrigerated space to ensure a quick drop in the temperature of the meat. From the storage facility, commercial wholesalers/retailers pick up livestock/poultry/fish products for distribution in their catchment areas in refrigerated vans/trucks. Meat is subsequently sold through meat outlets that are conditioned. Responsible regulatory agencies will set appropriate processing/hygiene standards for the various units of the value chain.

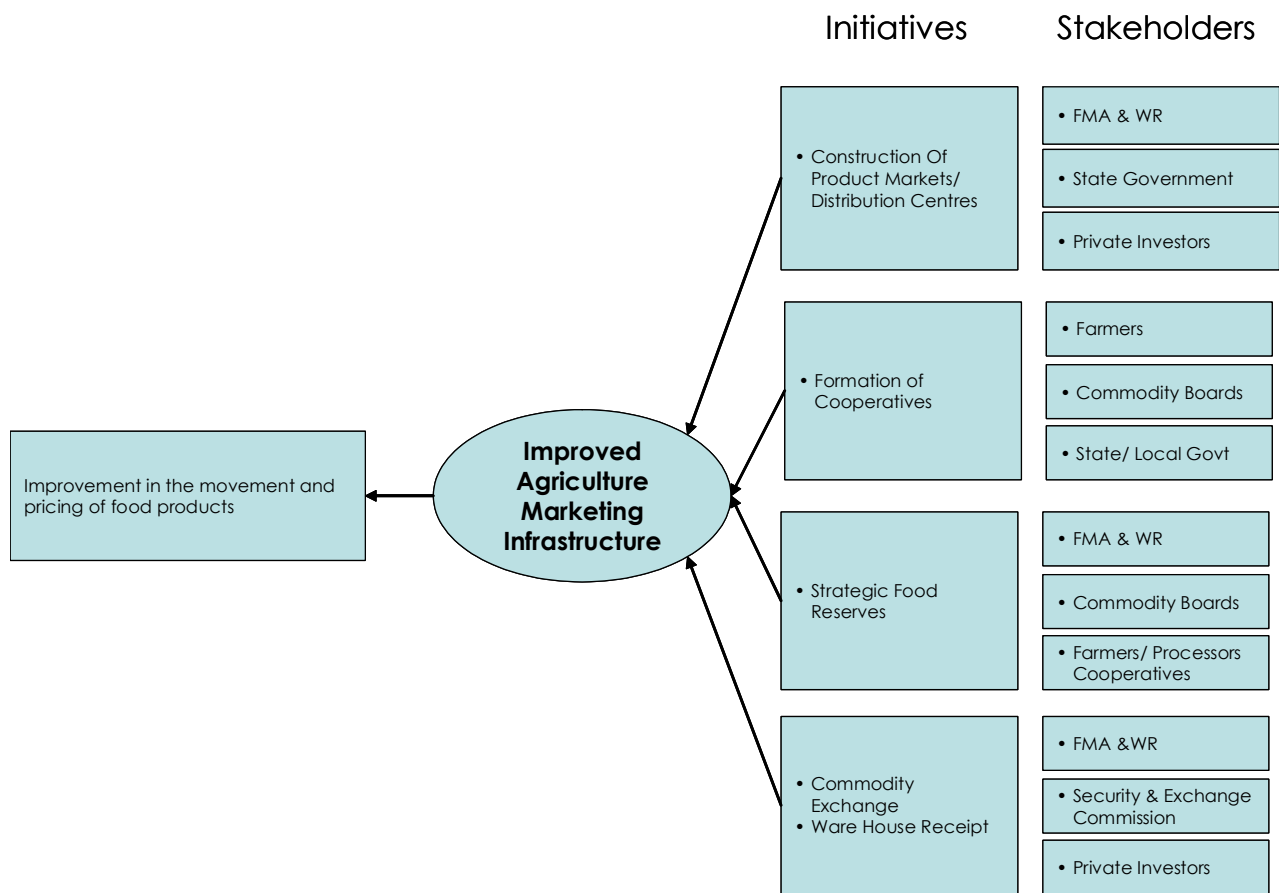
(a) Processing Parks

States and Federal Government will collaborate to establish Agro-industrial parks which will be located in every senatorial district nation-wide and will be private sector-managed. Each will house industries that would include structured modern factories and processing plants with grading systems and standards, quality controls, quarantine services, power security and water. These agro-industrial parks will be situated as near the production areas as possible to reduce the logistical constraints distance may pose.

(C) Marketing

This strategic framework would be incomplete without a discussion on developing efficient infrastructure for the marketing of agricultural products. An efficient market infrastructure is a precondition for improved agricultural output, by providing an enabling environment that helps to generate stable prices to producers and consumers. Figure 12 outlines the basic structure of such a framework. It outlines the nature of initiatives and points to the likely stakeholder who will be responsible for carrying them out.

Figure 12: Improvements in Agriculture Marketing

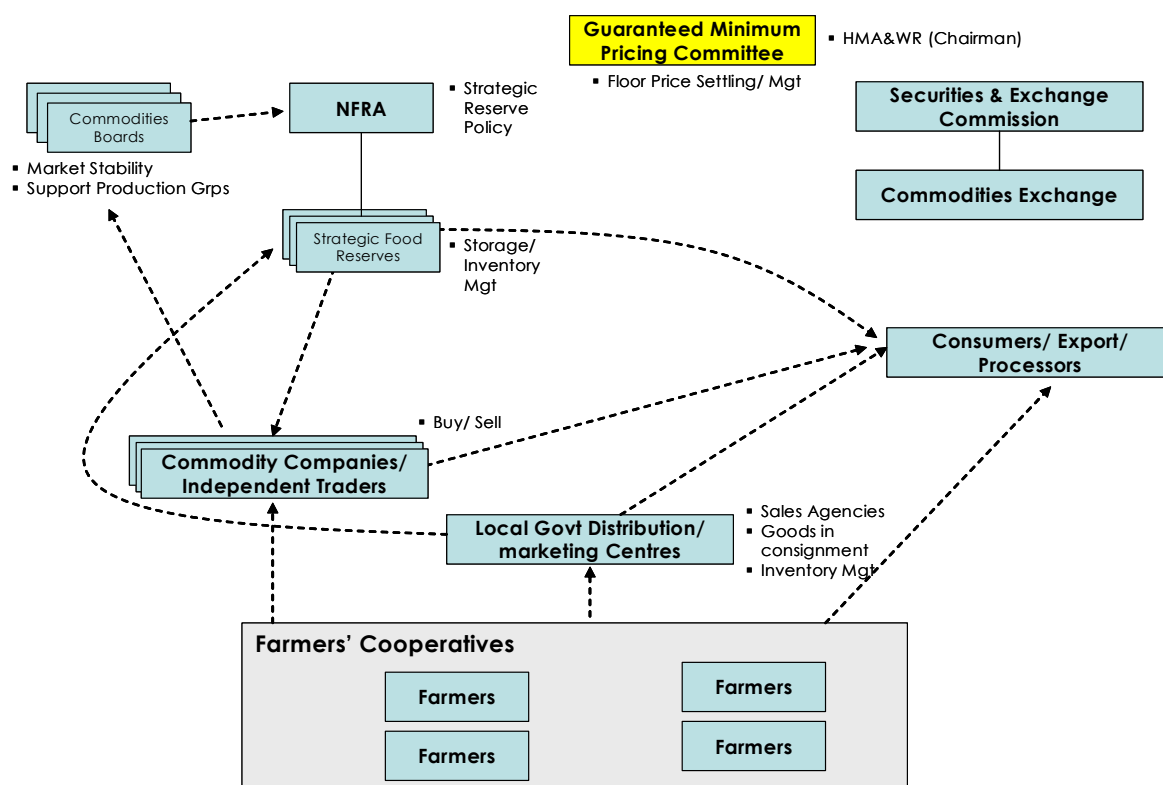


Principal elements of the program include:

- **Setting of Guarantee minimum pricing**

State Governments will be encouraged to institute “Guaranteed Minimum Pricing” thereby operating as the “Buyer-of-Last-Resort” for the identified strategic agriculture commodities. Licensed buying agents will be responsible to procure on behalf of the state governments. The program will be operated through the food reserve marketing framework outlined in Figure 13.

Figure 13: Food Reserve Marketing Framework



- **Construction of product distribution/marketing centres**

Product markets or distribution centres will be set up in each local government. The distribution centres shall be sited in locations that are easily accessible to buyers and sellers. There shall be appropriate storage facilities around every distribution centre.

- **Undertaking of Investment in Transport network**

In order to make it easy for rural and smallholder farmers to take their product to the nearest product market, there will be strategic investment in the rehabilitation of roads and other transport network, especially around areas where there is significant agricultural activities.

- **Establishment of Agriculture Commodities Boards**

Commodities boards will be set up for select products. The Boards will coordinate the marketing of the product of members. Specific roles for a marketing board shall be determined by each board's mandates, operating procedures, and marketing plan. The marketing plans will vary depending on the degree to which the board influences how producers sell their commodities and how companies that purchase agricultural commodities (i.e. food processors, dealers) source and purchase their requirements.

Depending on their operating procedures, some boards may simply provide market information to their producer members and support research and promotion, while others could also negotiate with buyers to determine the price that will be paid to farmers.

In consultation with the NFRA, marketing boards may recommend minimum price for some farm product that would be guaranteed by the government under a farm product insurance scheme.

- **Re-engineering the Concept of Commodity Exchange**

The operations of the Abuja commodity exchange market will be re-engineered in preparation for full operations to support full trading of agricultural products as well as warehouse receipts/warrants as securities. The right legal and regulatory environment will be established to facilitate its operations.

5. SUPPORTING THE VALUE CHAIN

To support the approach discussed in the previous chapter, a number of critical infrastructure issues would need to be dealt with. This chapter discusses the critical infrastructure constraints to agriculture (including power, telecommunications, transport, storage and markets); explore the inter-sectoral linkages among these infrastructure nodes; and discuss how issues of ownership, management and financing sources associated with these infrastructure outlets will be dealt with.

5.1 Infrastructure

Infrastructure is critical to the development and operation of the value chain for agriculture in Nigerian. Agriculture infrastructure serves as important binding constraint that limits increased productivity and production in Nigeria. For example, research studies have shown that the absence of market structures and/or feeder roads have combined with inadequate processing and

storage facilities to discourage the adoption of higher-yielding varieties of grains. Farmers have realized that under the present circumstances substantial share of harvested farm products are wasted as a result of the lack of processing facilities and inadequate storage.

Table 7 provides data on infrastructure indicators for Nigeria, as compared with the averages for Sub-Saharan Africa, low-income countries and the OECD countries. Although the disparity between the urban and rural areas in Nigeria is not provided in the table, the available information shows that it is precarious. In areas such as the consumption of power and the access to water, Nigeria performed worse than the average low income country. The reasons for the poor state of infrastructure could be attributed to market failure associated with the past dominance of the public sector in infrastructure.

A central objective of this strategy document is to deal with the challenge of food processing in order to help transform perishable farm products into income so as not to discourage investments at the on-farm production sub-sector. This requires dealing with the challenges posed by the lack of electricity, poor transportation and the limited access to credit. Storage in cribs or silos would be promoted to address seasonal fluctuations in especially the supply of grains, thereby leading to price stabilization. Where storage facilities are available, procedures will be put in place to deal with logistics and so that they work for the benefit of farmers.

In some parts of the country, the nature of the benefits derived from the market infrastructure is closely linked to the condition of feeder/rural roads that connects market places with farms. The strategy will deal with issues related to the status of feeder roads, distance to market place and cost of transportation which conspire to discourage farmers' investments in agricultural production and productivity. This will help lower the cost to middlemen who bear the risks and responsibilities for intermediating between the farm-gate and the market, thereby assisting in stabilizing market prices, while keeping farmer margins attractive.

Available irrigation facilities have been useful for making farming activities possible during the dry season vegetable farming season by permitting increased productivity and production beyond the levels rain-fed farming can support. The demand for irrigation facilities by farmers is nationwide with the objective to increase the number of cropping seasons especially for grains. This strategy supports the movement towards small-holder irrigation systems.

Table 7 Comparative Infrastructure Indicators

Indicators	Nigeria	Sub-Saharan Africa (Average)	Low Income Countries	OECD (Average)
GNI per capita, Atlas method (current US\$)	640	1454	471	33470
Access to electricity (% of population)	40	27	26	..
Electric power consumption (kwh. per capita)	68	719	642	8769
Improved water source (% of population with access)	48	65	63	99
Improved sanitation facilities (% of population with access)	44	37	38	..
Total telephone subscribers per 100 inhabitants	15	19	9	..

Source: World Bank, World development Index

5.2 Inter-sectoral Linkages

This section looks at policies to support better inter-sectoral linkages within government to support improvements in infrastructural facilities. Within the last eight years there have been dramatic improvements within the telecommunication sector of the Nigerian economy. Information and communication technology (ICT) has touched many aspects of the Nigerian economy in a significant way. For the agricultural export sector, the use of internet facilities, electronic funds transfers and emails have changed the way of doing international business. On the domestic scene, the price transmission via cell phones, automatic telling machines (ATMs) and transaction alerts on bank accounts have facilitated and eased business transactions. Although the pricing of existing services are high on account of high setting-up cost and economies of scale, they are likely to decline over time. Although there is no official relationship between the Ministries of Information and Agriculture by way of direct inter-sectoral linkage at the moment, the Ministries will seek to establish such ties in order to make ICT better serve the interest and purpose of farming communities in terms of coverage, access and costs of information for decision-making in the agricultural sector.

Road haulage is the popular means of transportation in rural Nigeria where agricultural production is prominent. In the absence of alternative inter-modal means of transportation, excessive pressure is presently placed on the road system, thus requiring constant maintenance and expansion. . While the Federal Roads Maintenance Agency (FERMA) is charged with the responsibility of maintaining inter-state roads and the States' Ministries of Works maintain inter-city roads within the States, the local governments and the Federal Department of Rural

Development (FDRD) are charged with the construction and maintenance of rural feeder roads. The FDRD which is situated within the Federal Ministry of Agriculture will be strengthened and its linkage with the ministry streamlined with respect to developments within the sector.

Special attention would be provided to the few freshly-harvested/prepared agricultural products that are air-freighted to Europe and other destinations around the world. These products are usually high-value and highly-perishable and include products like snails, plantains, mangoes, etc that are of tropical origin but in high demand overseas. The responsible agencies involved with the handling of these products include the Department of Customs and Excise, Plant Quarantine Unit, Federal Aviation Authority of Nigeria (FAAN), etc. The FMAWR will monitor these parastatals to ensure they play their respective roles.. Other export agricultural products like cocoa, coffee, cotton, cashews, hides and skins, etc depend mainly on the shipping sector, making the Nigerian Port Authority (NPA) and the seaports important to agriculture. There have been reported cases of port congestions but this is usually for in-country bound cargoes rather than outgoing cargoes. Other inefficiencies in the ports sector, which are usually administrative in nature would be addressed.

Improved communications are central to market development in the agricultural sector. There are many media houses and institutions such as the News Agency of Nigeria, Federal Radio Corporation, and Nigerian Television Authority at the federal level that support the communication needs of agriculture. But there is no clear and explicit inter-sectoral linkage between the media houses and the agricultural sector as information flow is provided on a needs basis..This strategy seeks to develop systematic linkage, possibly with news reporters specializing in agriculture and domicile within agriculture departments to regularly provide updates on developments in the sector. Efforts will especially be made to reach NTA stations at the states level, states broadcasting corporations, states television stations and the print media. The privately-owned print media would be reached on a needs basis.

Also related to improved communications, is the workings of the agriculture and agriculture-related agencies and associations. Informal linkages exist with public institutions like SMEDAN (Small and Medium Enterprises Development Agency), RMRDC (Raw Materials Research and Development Council), FIIRO (Federal Institute of Industrial Research, Oshodi), NDE (National Directorate of Employment), NASME (National Association of Small and Medium Enterprises), Manufacturers Association of Nigeria (MAN) and the IDCs (Industrial Development Centers) within and outside the Ministries of Industry and Science/Technology that seek to provide support and/or build capacities of young agro-industry entrepreneurs. This strategy will seek to strengthen these linkages by supporting capacity-building in these agencies. Special effort would be made to strengthen the linkage with the Federal Ministry of Commerce and its parastatals like the Nigerian Export Promotion Council (NEPC), Nigerian Investment Promotion Council (NIPC), and Nigerian Chamber of Commerce, Industry, Mines and Agriculture (NACCIMA). The renewed interest in promoting access to irrigation would require that linkages with agencies associated with water development systems are high priority. The need for close links between agriculture and water explains why the FMAWR is so constituted to include the two sectors. Such parastatals like River Basin Development Authorities (RBDAs), Special Program on Food Security (SPFS), FADAMA III are focused on irrigation water provision for agricultural production purpose. These irrigation initiatives of varying scales are linked to value chains of

interest to this agricultural strategy. Irrigation schemes range from very large dams to wash bores depending on the number of farms and communities to be served.

Finally, the strategic grains reserve scheme of the federal government within the Federal Ministry of Agriculture is constructing and managing silos and cribs in various parts and sections of the country to serve food security and price stabilization purposes.

5.3 Public/Private partnership

The federal government is pursuing efforts at forming partnership with private sector entrepreneurs and foreign private investors towards the expansion of infrastructure. The more challenging aspect concerns the management of the infrastructure facility, especially when the provider is not the same entity as the one which maintains it. For example, rural feeder roads are usually constructed by private companies, but are maintained by public entities. In this regard, this strategy will pursue models such as the build-operate-transfer (BOT) whereby the provision is closely linked with management. An alternative would be to build and out-source management to professionals who would operate under agreed terms but these would involve projects for which government has clear comparative advantage in funding (such as those established through government-to-government agreements).

The strategy also seeks to promote the provision of infrastructures such as boreholes, silos, cribs, processing equipments to be collectively owned by cooperative group members, associations, individuals, religious organizations, etc. This approach will allow the employment of different ownership and management models.

To promote the provisioning of public/private partnership in infrastructure, this strategy will pursue three major financing arrangements. First, direct Governments` budget resources would be provided through the annual budgets. Second, the Government will facilitate private sector borrowing from financial sources (local and international) and third, the government will seek partnerships/concessions with the private sector (within and outside Nigeria). Finally, the State and local governments through their budgets would be encouraged to finance the expansion and maintenance of rural infrastructure within their jurisdictions, especially with respect to rural feeder roads and rural electrification.

CHAPTER 5 ROLES OF FEDERAL, STATE AND LOCAL GOVERNMENTS

5.1 *Current Status of Assigned Roles*

The 1999 Constitution of the Federal Republic of Nigeria puts agriculture on the concurrent legislative list, and broadly prescribes the roles and responsibilities of each tier of government as joint partners in the implementation of government's agricultural development policies. This has subsequently resulted in some form of policy disconnection at the federal, state and local government levels with respect to policy consistency, implementation, funding and sustainability. The lack of clarity on the exact comparative advantage of each tier of government has been identified as being partly responsible for the inability of the agriculture sector in meeting its stated goals. Proper articulation and clarification of the roles and responsibilities of each tier of government would help to reduce overlaps and gaps in agricultural interventions and improve the efficiency and effectiveness of public investments and service delivery in the sector.

The 2001 National Policy Thrust on agriculture specifically referred to the existence of role duplication and overlap of functions in previous policies which need to be removed for better resource utilization. Many of the roles still in the remit of the Federal government under the 2001 agriculture policy thrust would of necessity devolve to either the State or the Local Governments which are better positioned to effectively perform the roles by virtue of their closeness to the grassroots where the primary actors or beneficiaries reside. For example, development of grazing reserves, stock routes, corridors, watering points and forest reserves; seed industry development, seed law enforcement and seed quality control; inputs supply and distribution including seeds, seedlings, brood stock and fingerlings; maintenance of fishing terminals and other fisheries infrastructure are best handled at the local government level.

As it stands, the 1999 Constitution does not clearly specify the roles of LGs in agricultural development as it merely states that LGs are to participate in promoting rural development. Similarly, in previous national policy documents on agriculture, the roles for LGs reflect the vagueness embodied in the Constitution. Consequently, over the years, inadequate efforts have been made to ensure that LGs were empowered technically and financially to perform the roles assigned to them.

5.2 *Problems Inherent in the Concurrent Listing of Agriculture*

Five major problems may be identified in the present arrangement of responsibilities between the various levels of governments in the agriculture sector. These are:

- The overwhelming concentration of agricultural institutions at the federal level as against the complete absence of the same at the local government level, where they are more needed, is not conducive for promoting inclusiveness and

building the required capacity at the grass-root agents to support the intended beneficiaries in the performance of their expected roles;

- The existing system tends to propagate *social exclusion*, which has effectively alienated or detached agriculture stakeholders from the social relations and institutions in the sector and prevented them from fully participating in the prescribed activities of their profession;
- The absence of functional and/or functioning State Councils of Agriculture has resulted in the failure to provide adequate guidance on the development and implementation of programs and projects in line with established agricultural policies;
- The resulting non-performance of required responsibilities in the sector that have been assigned to the various tiers of government and, in most instances, the wrongful performance of roles that should more correctly belong to some other tier of government; and
- The inadequate development of human resource capacity in the sector resulting from the failure to budget for staff/farmer training activities by all the three tiers of government.

5.3 The Way Forward

To support the strategic directions defined in this document; this strategy builds upon previous initiative and proposes the following approaches:

(a) The Federal Government undertakes to pursue the following roles:

- The provision of a general policy framework (including macroeconomic policies) and guidance to all stakeholders on the direction which agriculture and the rural economy will pursue;
- Within the revenue allocation framework, maintenance of timely and predictable flow of financial resources into agriculture and rural development;
- Research and Development of appropriate technology for agriculture pertinent to the nation as a whole, including biotechnology that will help increase the yield of agricultural produce. This may include seed industry development, seed law enforcement and seed quality control;
- Construction and management of impounded water, supervision of large dams and irrigation canals and maintenance of pumping facilities;
- Control of pests and diseases of national and international significance in the context of an integrated production and pest management. This could include the establishment and maintenance of virile national Animal and Plant Quarantine Services;

- Promotion of export of agricultural commodities, through for example, the Export Processing Zones (EPZ). In this context, seek a periodic review of the provisions of agreements on agricultural trade reached between Nigeria and international partners;
- Establishment of an Agricultural Insurance Scheme;
- Maintenance of Strategic National Food Reserve for purposes of food security;
- Coordination of an agricultural data and information management system;
- Protection of Nigeria's Exclusive Economic Zone for fisheries resources;
- Promotion of tree crops production for their economic and environmental importance; and
- Development of grazing reserves, stock routes, corridors, watering points and forest reserves.

(b) State Governments

- Promotion of micro and rural credit institutions with support from the federal government through the Central Bank of Nigeria and other relevant federal institutions;
 - Procurement and distribution, through private sector channels, of all fertilizers needed by farmers in each given State;
 - Promotion of agricultural commodities development and marketing institutions;
 - Maintenance of fishing terminals and other fisheries infrastructure including Cold Rooms;
 - Development and management of irrigation areas of large dams;
 - Management of impounded water and downstream structures of large dams;
-
- Promotion of trawling, artisanal and aquaculture fisheries, and fish feed production;
 - Promotion of primary production of all items of agricultural produce through the provision of virile and effective extension service;
 - Promotion of the production of inputs for crop, livestock, fish and forestry;
 - Ensuring access to lands by those who wish to engage in farming;
 - Development and management of the irrigation areas of large dams;
 - Management of impounded water and downstream structures of large dams;
 - Promotion of appropriate farm mechanization;
 - Grazing reserve development and access to water for livestock;
 - Manpower training and development;
 - Control of plant and animal pests and diseases;
 - Maintenance of buffer stocks of agricultural commodities;
 - Investments in rural roads and water supplies
 - Promotion of tree crops production for its economic and environmental importance; and
 - Ownership, management and control of forest estates held in trust for the local communities.

(c) Local Government

The Local Government authorities will take over progressively the responsibilities of the state governments with respect to:-

- Provision of an effective agricultural extension service;

- Provision of rural infrastructures;
- Management of irrigation areas of dams;
- Mobilization of farmers for accelerated development of agriculture and rural areas through cooperative organizations and local institutions;
- Provision of land for new entrants into farming in accordance with the provision of the Land Use Act;
- Promotion of the production of inputs for crop, livestock, fish and forestry;
- Promotion of appropriate farm mechanisation; and
- Coordination of data collection at the local government level.

Justification

(i) Roles such as promotion of micro-credit, agricultural commodities marketing, and maintenance of fishing terminals are to be taken over by state governments with support from the federal government because state governments are best suitably placed to carry out these roles most effectively. Activities such as promotion of tree crops production for its economic and environmental importance would be the joint responsibilities of the states and the federal government because of the need to promote the production of certain tree species which do not have immediate and direct economic benefits. The federal government commits itself to funding such activities because of its environmental benefits. The responsibility for input procurement, particularly fertilizer will be undertaken by the private sector with the state governments playing a regulatory role. The federal government will continue to establish and maintain the fertilizer quality.

(ii) State governments will share responsibilities with the local government authorities in such areas as: promotion of the production of inputs for crops, livestock, fisheries, and forestry; procurement and distribution of fertilizers to farmers in their areas since they will be more knowledgeable about which types of fertilizers the farmers will need; ensuring access to land by those who wish to engage in farming; development of irrigation areas of large dams; management of impounded water and downstream structures of large dams and small irrigation schemes; and promotion of appropriate farm mechanisation. These are activities which take place at the primary levels and so need to be handled as much as possible by the tiers of government that are closest to the farmers/practitioners at such levels.

CHAPTER 6. AGRICULTURAL RESEARCH AND DEVELOPMENT

6.1 *Evolution of R&D in Nigerian Agriculture*

Research and development constitute the scientific search for new and improved products and production process. As it relates to agriculture, R & D should result in the discovery of new and improved crop/seed varieties and improved agricultural processes, which include cultivation, harvesting and processing of agricultural products into agro-allied products, so as to raise factor productivity and income in agriculture.

Agricultural research in Nigeria started about a century ago in the Moor Plantation. In 1992, a major attempt to strengthen the agricultural research system was made with the launching of the National Agricultural Research Project (NARP). It was intended to be a seven-year project as the National Agricultural Research Strategy Plan (NARSP) was formulate, to run for the period 1996-2010 in three 4-year sub-plans(1996- 2000, 2001-2005 and 2006-2010). The NARSP aimed at improving the quality and effectiveness of research output, to be achieved through rehabilitation of infrastructural facilities of ARIS, and the strengthening of collaboration with international research agencies. As a follow-up, the Agricultural Research Council of Nigeria (ARCN) was established in 1999 with the main mandate of coordinating, supervising, and regulating agricultural research as well as training and extension programmes of the research institutes. The ARCN did not effectively take off until 2007.

The NARSP contains an element which involves restructuring and rationalization of the number of research institutes and personnel. A review of the 1992-1999 NARP concluded that it had limited success, and this was due to the lack of counterpart funding from the Federal Government to match the World Bank's contribution, as well as the unsatisfactory management of the project's financial assets. Specifically, it was noted that of a budget of \$104.1 million for the project, the World Bank was to contribute \$74m million and the Federal Government to contribute \$26.1million. As at the time the project was terminated in 1998, the total cost was \$89.7million, of which the Federal Government contributed \$7.8million. The review also concluded that project funds were mismanaged, especially in the area of procurement, and that this led the World Bank to terminate its funding to the project (Beintema and Ayoola, 2004).

6.2 *Challenges*

Multitude of Agriculture Research Institutions: Agricultural research in Nigeria is carried out mainly by public sector agencies, which comprise specially designated agricultural research institutes and centres, and higher education institutions (including three universities of agriculture).

There are 22 public research agencies engaged in agriculture research, fifteen of these fall under the supervision of the Federal Ministry of Agriculture and Rural Development (FMARD), Five of them fall under the Federal Ministry of Science and Technology (FMS&T), one each under the Federal Ministry of Environments (FMENV), and the National Planning Commission (NPC).

Each of the institutes is semi-autonomous and is governed by a Board of Directors. Table 8 lists the agencies and their mandates, which vary from research into the development of technologies and crop varieties to improve specific crops either in the upstream or downstream stages of production to research into fisheries and livestock. Additional mandates are to promote the linkage between agriculture and industry through research into transforming agricultural raw materials into industrial products for commercial purposes.

Table 8: List of Nigerian Agricultural Research Institutes and their mandates

	Research Institute	Mandates
1	National Veterinary	<ul style="list-style-type: none"> • Research into all aspects of animal diseases, their treatment and control, • Development and production of animal vaccines and sera.
2	Lake Chad Research Institute	<ul style="list-style-type: none"> • Research into genetic improvement of millet, wheat, barley and massakwa sorghum; and • Total farming system for the North East agro-ecological zones covered by Borno, Jigawa, Yobe, Gombe, Bauchi and Adamawa states.
3	National Animal Production Research Institute (NAPRI)	<ul style="list-style-type: none"> • Research into genetic improvement of all animals (poultry, cattle, sheep, goats, pigs, donkey, horses, production and animal products); and • Research into genetic improvement, management and development of pastures and rangelands.
4	Institute of Agricultural Research and Training	<ul style="list-style-type: none"> • Research into genetic improvement of kenaf, jute and soil and water management; and • Research into the total farming systems for the South-West agro-ecological zones covered by Lagos, Ogun, Oyo, Osun, Ondo, Ekiti, Edo and Delta states.
5	National Agriculture Extension Research Liaison Service	<ul style="list-style-type: none"> • Development, collation and dissemination of appropriate agricultural technologies. • Monitoring and evaluation of Agricultural technology and its dissemination. • Collation and evaluation of agricultural information.
6	National Cereal Research Institute	<ul style="list-style-type: none"> • Research into the genetic improvement of rice, soyabean, beniseed and sugarcane. • Total farming systems for the ecological zone covered by Kwara, Kogi, Niger, Plateau, Nassarawa, Taraba, Benue states and the Federal Capital Territory.
7	National Root Crop Research Institute	<ul style="list-style-type: none"> • Research into the genetic improvement of cassava, yam, coco-yams, Irish potato, ginger and sweet potato. • Research into the total farming systems for the south-east agro-ecological zone covered by Anambra, Enugu, Cross River, Imo, Abia and Rivers

		states.
8	Rubber Research Institute	<ul style="list-style-type: none"> • Research into the genetic improvement, production and processing of rubber, gun Arabic and other latex producing plants.
9	National Institute for Oil Palm Research	<ul style="list-style-type: none"> • Research into the genetic improvement, production and processing of oil, raphia, date, and ornamental palms, coconut and shea tree.
10	Cocoa Research Institute of Research	<ul style="list-style-type: none"> • Research into genetic improvement of Cocoa, cashew, tea, coffee and kola.
11	National Institute For Horticultural Research	<ul style="list-style-type: none"> • Research into genetic improvement and production of fruits and vegetables as well as ornamental plants nationwide.
12	Institute for Agricultural Research	<ul style="list-style-type: none"> • Research into genetic improvement of sorghum, groundnut, cowpea, cotton, sunflower; and • Research into the total farming systems for the North-West agro-ecological zones covered by Kano, Sokoto, Katsina, Kaduna, Kebbi and Zamfara States.
13	Nigeria Stored Product Research Institute	<ul style="list-style-type: none"> • Research into the improvement of storage of major food and industrial crops; • Research studies on stored product and pests, and • Research into pesticide formulation and residue analysis.
14	National Institute for Fresh Water Fisheries Research	<ul style="list-style-type: none"> • Research into the genetic improvement of freshwater fish species and their production in Nigeria. • Research into long term effects of man-made lakes on the ecology and environment.
15	National Institute for Oceanographic and Marine Research	<ul style="list-style-type: none"> • Research into the resource and physical characteristics of the Nigerian territorial waters and the high sea beyond. • Research into the genetic improvement of marine and brackish water fish species and aquatic resources, their production and processing.
16	Forestry Research institute of Nigeria	<ul style="list-style-type: none"> • Research into Forestry resources for the sustenance of the forest.
17	National Institute for Trypanosomiasis Research	<ul style="list-style-type: none"> • Study of Trypanosomiasis And Onchocerciasis, the methods of treatment, and control in livestock and humans.
18	National Centre for Agricultural mechanization	<ul style="list-style-type: none"> • Development of simple agricultural mechanization
19	Federal Institute of Industrial Research	<ul style="list-style-type: none"> • Accelerate industrial development through matching of raw materials with industrialization projects and upgrade of indigenous production techniques.
20	Nigerian Institute for social and Economic	<ul style="list-style-type: none"> • Agricultural research is one of its research mandates.

	Research	
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Source: FMAWR, National Food Security Programme pp69-70, Omoti(2009),&NITAG Consults Ltd.p50.

Complementary these research agencies are the Sheda Science and Technology Complex (SHETSCO), Raw Materials Research Development Council (RMRDC), Product Development Agency (PRODA), National Centre for Genetic Resources and Biotechnology (NACGRAB), and National Biotechnology Development Agency (NBDC), as well as the international agencies such as International Institute for Tropical Agriculture (IITA), African Rice Centre (ARC), and International Livestock Research Institute (ILRI). Despite the multitude of research institutions Nigeria's agricultural research performance has declined since the 1980s. This might be due to the uncertainty of financing as a result of falling oil prices and the general depressed state of the economy.

Financing Uncertainties. Total agriculture R&D spending, after a few years of growth in the 1970s, fell by two-thirds from an average of about N4.3 billion in the mid-1970s to less than N1.0billion in the mid-1990s. Combined with higher education universities research spending, total R&D spending which was N4.9 billion in the mid-1970s declined to 3.4 billion in 2000. Research spending per researcher, which was estimated to be \$171,000 in 1971, also declined to \$7800 in 2000 (Beintema and Ayoola, 2004).

Furthermore, total research spending as a percentage of agricultural GDP, an indicator of agricultural R&D in 2000, was \$0.38 for every \$100 of agricultural output, compared to \$0.81 in 1981. In 1995 when Nigeria's research spending was \$0.16 for every \$100 of agricultural output, comparative figures for Africa and developing countries was respectively \$0.85 and \$0.62.

Fund releases to agricultural research agencies mirror the experience of most of public sector agencies in Nigeria. Often many adjustments are made to the budget proposal, and by the time the budget is approved it bears little semblance to the planned budget, and worse still actual releases often reflect a marked short-fall from the approved budget.

Funding-related weakness also induced human resource/manpower capacity weakness. With sharp fall in funding, restructuring occurred and jobs became insecure in a number of these agencies. Furthermore, qualified and experienced research staffs left for either universities or international research centers. These could not be replaced because of the freeze on public sector employment. Beintema and Ayoola (2004) report that 1,352 full time equivalent researchers were employed in 22 research institutes and 59 higher education agencies engaged in agricultural research in Nigeria. Of these, 839 were in research institutes and 513 were in the higher education institutes. However, a growing number of qualified staff leaves the institutes for the universities.

Staffing Development. According to Beintema and Ayoola (2004), in 2000, some 80 percent of researchers had graduate level training; one-third of this had Ph.D. degree, with a higher proportion being in the universities. Similarly, according to Omoti (2009) of the total research staff strength of 394 in four research institutes in 2009, 24.9 percent had a PhD, suggesting that 75 percent of the staff have not obtained the full requisite qualification under the extant

conditions of service of research institutes (Table 9). There are therefore both skill gap and succession challenges.

Table 9: Research staff profile of some Research Institutes in 2009.

Institute	PhD	MSc	BSC/DVM	Total
No of Researchers (headcount)				
NIFOR	26	27	43	96
NVRI	12	48	92	152
NRCRI	29	36	26	91
IAR&T	31	24*		55
Total	98			394

*Not disaggregated into MSc. and BSc

Source: Omoti (2009)

Funding has also affected the level of support staff per researcher, due to retrenchments. For example, 18 public research agencies sampled by Beintema and Ayoola (2004) employed 2,500 fewer support staff in 2000 than the 1991 level, resulting in one-third reduction in support staff per researcher ratio from 13:4 to 8:8. In the case of NIFOR and NRCRI each reduced its support staff by 1000, and for NIFOR this resulted in 11:6 ratio in 2000 compared to 30:2 in 1991.

The structure of the institutes' expenditure further throws up a source of weakness. In 1991-2000, salaries accounted for 55 percent of total spending, while operational cost accounted for 22 percent and capital cost account for 23 percent of total spending. This suggests that the bulk of the spending goes on personnel cost. With increases in salaries in recent years, this pattern has tended to continue. See table 10 for an example in the case of NIFOR.

Table 10: Operating and Capital Expenditure at the NIFOR 2001 to 2008

	2001	2002	2003	2004	2005	2006	2007	2008
	Million (N)							
Operating and program costs	125.1	98.5	142.5	143.6	165	306.6	402.7	503.4
Capital Costs	41.9	44.9	26.6	45.3	83.8	144.4	251.8	402.9
Total	167	143.4	169.1	188.9	248.8	451	654.5	906.3

Source: Omoti (2009)

The continued low level of capital and overhead funding has also affected infrastructure maintenance as well as the ability to undertake productive research. For example, NIHORT's operational fund in 2002 amounted to N700, 000 when its yearly electricity bill was N550, 000. In such situations, agencies resort to diverting their capital budgets, meant for experiments and staff development, to pay overhead bill.

Many of the research institutes also faced management challenges. This manifested in administrative overlap, poor coordination among the agencies, duplication of research efforts, lack of priority setting, poor evaluation of effort and slow adoption of information technologies and management information systems. Institutes, therefore, lag behind their counterpart in other countries in latest knowledge in agriculture research.

Weak Research Extension. Lastly, weak research-extension linkages constitute additional challenge for agricultural research institutions in Nigeria. As such, many new technologies are hardly known to end-users and therefore lie on the shelf. This has meant that adoption rates of developed technologies are low. The limited research funding is thus not put into profitable end-products.

The above weaknesses have greatly hindered the ability of most of Nigerian agricultural research institutes to achieve much on their mandated since the 1980s, and this may have contributed to low productivity- induced agricultural output growth.

6.3 *State of R&D in Agriculture by Private and Public sectors*

R&D is essentially a public good whose social benefits tend to exceed private benefits. Because of its public good nature, governments in developing countries tend to encourage public research agencies in agriculture to share their research results at no charge. Coupled with the long gestation period of most agriculture crops and the lengthy approval process for new varieties, there is little incentive to the initiation of research activities by private sector companies. Comparative advantages in R&D in agriculture, therefore, currently lie with the public sector, where as in other developing countries, accounts for about 84 percent of the funding. The limited level of private involvement in research in agriculture in Nigeria take the form of few agro-allied companies being engaged in adaptive research funding activated through public sector agencies. These are for seed multiplication, brewing, food processing, agro-chemicals, and farm machinery.

In the face of low private sector involvement in agricultural research, collaboration has been between government research agencies and a number of international research centres, notably the IITA, ARC /WARC and ILRI. These collaborations have brought some positive impact on agricultural research in Nigeria, but it is still falls short of what is required, given the size of Nigerian agriculture.

6.4 *Revamping Nigeria's Agriculture Research System*

The task of revamping R&D in agriculture will be the function of the Agricultural Research Council of Nigeria (ARCN), whose function would include:

- enhancing funding for R&D,
- boosting human resource development
- developing and upgrading of research infrastructure and facilities
- improving dissemination and use of research results
- dealing with organizational management of the system
- enhancing the partnership between private and public sector for demand-driven and competitive research systems.

Funding is perhaps the most pressing constraint to revamping agriculture R&D. The problem of substantial deviation between approved budget and actual expenditures would be dealt with. Efforts would be made to limit adjustments to the planned budget which result in approved budget bearing little semblance to planned budget. The recommendation of the Maputo Declaration, which states that nations allocate 10 percent of their budget to agriculture, would be used to guide the budget for R&D.

Human resources development for R&D would be boosted to revamp the sector. Effort would be made to scale up manpower development in ARIs so as to enhance qualitative and quantitative research manpower capacity of ARIs. Programs to encourage retention of qualified and competent staff will be initiated.

Infrastructural facilities have further deteriorated since NARP. Apart from aging and obsolete equipment, inadequate and under-equipped laboratories, power supply constraints have posed great challenges to effective R&D. Programs will be put in place to upgrade infrastructural facilities in ARIs, including laboratories and equipment, power supply and ICT facilities.

Effective dissemination and use of research results is another means of revamping agriculture R&D that is the focus of this strategy document. The action that would be undertaken includes the reactivate and strengthens extension services for effective dissemination. Farmer participatory research will be encouraged and media-integrated dissemination approach will be initiated.

Capacity building is also necessary to revamp the extension system. Extension agents would be expanded and regular skill upgrade mechanisms would be put in place.

Organizational management of the agricultural research system would be restructured for effectiveness. In this context, the number of existing institutions will be rationalized. This would help reduce duplication of efforts and make for more effective coordination among the institutes. Establishment of a central coordination would also make it easier to introduce user (farmer) participatory research approach to R&D, which has been demonstrated as an effective way of ensuring uptake and adoption of research results.

In addition, a mechanism for regular peer review and evaluation of research outputs of ARIs will be instituted. This would introduce competition into research effort as institutes will strive to obtain high rating in the evaluation exercise. The process would be further strengthened if private sector stakeholders, especially farmers' groups, agro-allied industries among others, become part of the review panels. In summary, a central coordination of agricultural research system would be introduced under the auspices of the ARC/N to develop research strategy and reduce duplication and cost of research in the sector, introduce central peer review of research outputs and performance rating of ARIs as a basis for increased funding.

Partnership with Private Sector. Agriculture R & D would be revamped if private sector participation is injected. The private sector would be brought in to collaborate through adaptive technology research funding and dissemination of results. In addition to injecting some funding, such collaboration would be a way of introducing demand-driven research into the system.

Through introducing demand-driven research, exposing researchers to more competition and to best practices in research, private sector collaboration would contribute to revamping of agriculture R & D. Pockets of private sector R & D do exist already that could be harnessed.

CHAPTER 7. DEALING WITH ENVIRONMENTAL ISSUES

7.1. *Introduction.*

In 1999 all units and departments in the different Federal Government agencies dealing with respective aspects of the environment were pooled together to form the Federal Ministry of Environment (FMENV). This was done to eliminate duplication and overlap of functions. The ministry is thus made up of:

- The Forestry Department, including Wildlife, Forestry Management and Coordinating Unit (FORMECU), from the then Federal Ministry of Agriculture and Rural Development.
- The Soil Erosion and Flood Control Department, from the Ministry of Water Resources.

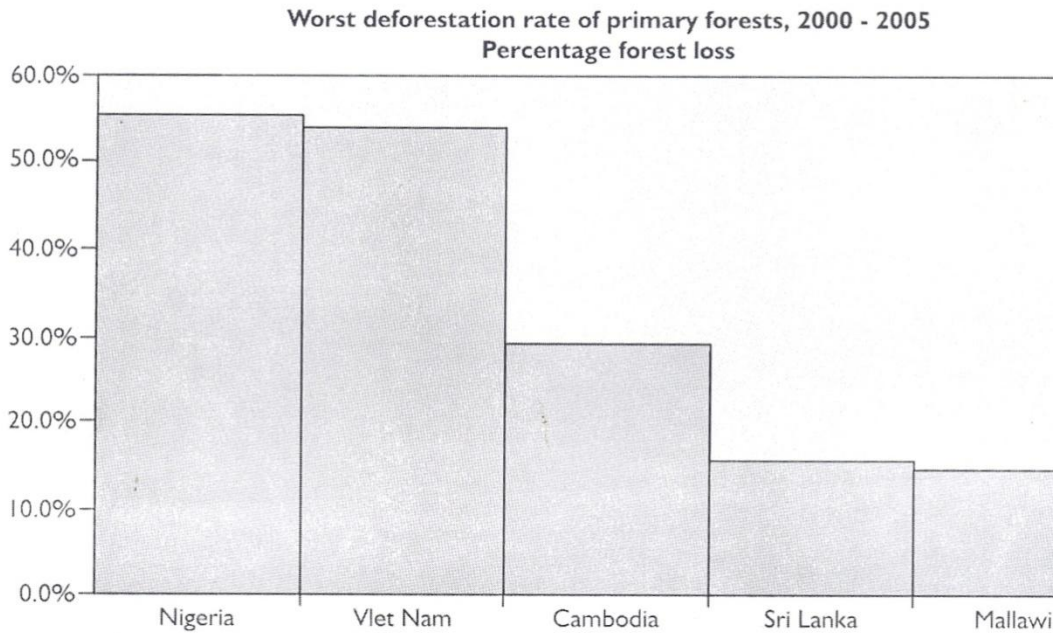
Two more agencies were, in addition, transferred in August 2000 from the Federal Ministry of Agriculture to the FME: they are the National Park Service and Forestry Research Institute of Nigeria (FRIN). FMAWR does not deal with environmental issues directly, but does so through transfer of information to FME.

7.2 *Identifying Environmental Challenge facing the Agriculture Sector*

Four primary environmental issues constitute priority areas for Nigeria ó they are deforestation, drought and desertification, erosion and flooding, and climate change, all of which relates to agriculture. Six additional problems form a subset of the primary environmental concerns, viz., gully erosion, fisheries loss, coastal erosion, wildlife and biodiversity loss, air pollution and water hyacinth.

Deforestation The rate of deforestation of the primary forest in Nigeria ranks among the highest in the world (Figure 14). Land use estimates between 1976 and 1995 shows that undisturbed forests cover in Nigeria reduce by 53.5 percent from 25,951 sq.km in 1976 to 12,114 sq. km. in 1991 (FORMECU, 1998). The indiscriminate conversion of the forest into agricultural use and fuel wood extraction is rampant. Grazing animals do so in an intensive manner and bush burning is persistent. As a result, the fallow periods allowed in shifting cultivation is reduced or completely absent in some cases. The use of marginal land for agricultural purposes is therefore on the increase.

Figure 14: The worst deforestation rate of primary forests, 2000 -2005



Source: Agagu O.K. (2009): Threats to the Nigerian Environment: A Call for Positive Action, Seventh Chief S.L. EDU Memorial Lecture 2009.

Drought and Desertification. Desertification as defined in chapter 12 of Agenda 21 and in the International Convention on Desertification is the degradation of the land in arid semi-arid and sub-humid dry areas caused by climatic changes and human activities. It is accompanied by a reduction in the natural potential of the land and depletion in the surface and ground-water resources. It has serious negative repercussions on the living conditions and the economic development of the people affected by it. Drought occurs frequently in the areas affected by desertification, which is generally a feature of their natural climate.

In terms of vegetation, the northern part of the country is of Sudan, Savanna and Sahel vegetation in the extreme part. These ecological zones are most vulnerable to climatic and human pressures. It is an established fact that the pressing environmental challenge in the dry land of Nigeria is desertification with associated problems of drought and other negative consequences on livelihood of the population.

It is estimated that Nigeria is losing over 350,000 ha annually to deforestation, which is a major anthropologic cause of desertification. It has been estimated that about 50 percent and 75 percent of Adamawa, Bauchi, Borno, Gombe, Jigawa, Kano, Katsina, Yobe, Sokoto, and Zamfara States are seriously affected by desertification. These States with a population of about 46 million people account for over 33 percent of the country's total population and about 35 percent of the country's land area. The exact extent and severity of desertification in Nigeria have not been fully established nor has the rate of progression properly documented. However an estimate of 0.6 Km per year progression is recorded in the National Action Programme to

Combat Desertification in Nigeria. Apart from increasing the prospects of poverty, desertification leads to migration of populations, and exacerbates resource related conflicts that threatens national or regional security.

Population pressures result from overgrazing and over-exploitation of marginal lands has aggravated the problem. The pressure of immigrating human and livestock populations from the frontline states are absorbed by buffer states such as the Federal Capital Territory (FCT), Plateau, Taraba, Niger, Kwara and Kaduna States. Studies have estimated these buffer states as having about 10-15 percent of their land threatened by desertification.

Erosion & Flooding. Erosion is one of the most critical environmental problem affecting different parts of the country. The National Erosion and Flood Control Policy in 2005 estimated that 10 percent of the country's land mass was under severe erosion problems. The report further stated that more than 50 percent of the affected areas was concentrated in the southeast of Nigeria. With increasing human activities coupled with a number of natural forces, coastal and Marine erosion and land subsidence have been recorded in the coastal areas of Lagos, Ogun, Ondo, Delta, Rivers, Bayelsa, Akwa Ibom and Cross River States, which has resulted in oceanic surging (Vision 2010 Committee, 1997).

Flooding is a common occurrence in many parts of Nigeria. Heavy rainfall and poor watershed management are two major causes of flooding in Nigeria. Moreover, human activities such as land clearing for agricultural purposes, poor dam construction and deforestation may contribute to flooding. The most flood prone areas in Nigeria include:

- Low lying coastal areas of southern Nigeria where annual rainfall is quite heavy, such as Calabar, Warri, Port-harcourt and Lagos.
- The flood plains of the major rivers such as the Niger, Benue, Gongola, Sokoto, Hadejia, Kastina Ala, Donga, Kaduna, Gurara, Ogun, Anambra, etc.
- The flat, low lying areas around and to the south of lake Chad which may be flooded during and even a few weeks after the rains.

Erosion of various types, including sheet, rill and gully, is affecting nearly all parts of Nigeria. Gully erosion is most visible in Anambra, Enugu, Imo, states including Ekiti, Gombe and Kogi. By 1997, the government estimated that there were more than 2000 active gully erosion sites spread across the country.

Sheet erosion is not prominently visible whenever it occurs, but it removes the surface's solid layers by rainfall runoff down slopes thereby resulting in soil degradation and impoverishment, loss of farmlands, pollution and so on. Sheet erosion is found to be active in Anambra, Imo Plateau and Sokoto States including Kwara. Generally, erosion leads to the depletion of farmlands, loss of forest resources and reduction in agricultural outputs. Also, there is loss of land resources for other developmental purposes.

Climate Change. Climate change is the most serious environmental tragedy threatening the earth today. Agriculture is dependent on climate and sensitive to climate change. Sustainable

agricultural practice as well as sustainable forest management can contribute to meeting climate change concerns. Notable evidence of climate change in Nigeria includes:

- The drying up of most lakes and natural pond in Nigeria, in a period of less than 30 years e.g. lake Chad
- The òharmattanö season has been reduced to barely 2 months, December to January (instead of November to March).
- The disappearance of some species of flora and fauna.
- Sahara desert encroachment speed at the rate of 0.6Km per annum.
- Flooding of coastal areas like the Bar beach in Lagos.

A DFID report in February 2009 on the Impact of Climate Change on Nigeria's Economy indicates that the country is likely to be one of the most negatively impacted countries in the world as a result of climate change¹⁰. The reasons given are:

- its low lying coastline that is highly populated with a heavy concentration of GDP generating industry and infrastructure, and
- the fact that the vegetation of the northern part of the country is Sahel, with problems of drought and desertification.

Nigeria is not a major contributor or greenhouse gas emissions when compared with the developed, industrialized countries. The country supplies oil and gas to countries with high greenhouse gas emissions.

The exploitation of gas and oil for export from the Niger Delta contributes to global warming, damages the environment and hurts communities living near these projects. Oil fields in Nigeria's Niger Delta contain crude oil mixed with very large amounts of gas. Major oil companies operating there separate the oil from its associated gas at flow stations, where the gas is simply burned off, serving no useful purpose and contaminating the air and lands of local communities. The issue of gas flaring is crucial in sensitive ecosystem of Niger Delta with debilitating effects like acid rain, oil pipeline burst and attendant disasters, unwholesome noise, high temperatures, retarded crop yield, corroded roofs and so on. The gas flared in Nigeria contains high amounts of methane and carbon dioxide (major greenhouse gases) and is also a major contributor to global warming. It produces more emissions than the rest of sub-Saharan Africa combined.

7.3 *Strategic Approaches*

Nigeria is party to a number of Multilateral Environmental Agreements (MEAs) including:

- Convention on Biological Diversity
- Protocol on Bio-Safety to the Biodiversity Convention(the Cartagena Protocol)
- Framework convention on climate change (UNFCCC)
- Convention to combat Desertification
- Convention for the protection of the Ozone layer (1985)
- Convention on International trade on Endangered Species (CITES)

These conventions are internalized into the national agenda and those of the States and overseen by FME. Specific to agriculture, FMAWR will pursue two strategies: (i) bio-fuel production for carbon credits, and (ii) monitor environmental indicators in order to institute mitigating policies as appropriate.

Bio-fuel and Carbon Credits.

The main sources of bio-fuel in Nigeria are raw materials such as cassava, sugar cane, soya beans, etc., but these compete for use as food. But other sources exist in Nigeria which are characterized with limited competition. They include non-edible sources such as the jatropha plant and the waste from sweet sorghum and sugar cane, which do not affect the food chain. Jatropha is a tropical and semi-tropical plant that does well in soils that are not ideal for food production. It is largely neglected in Nigeria, growing wide in many parts of the country. In addition, the use of Jatropha seeds as feedstock for bio-fuel production will add value to the envisaged use of jatropha plantations to combat desertification, control erosion and reclaim degraded land.

Because bio-fuels are non-polluting source of energy, the process of production and sales will lead to the generation of carbon credit for Nigeria in line with the Clean Development Mechanism (CDM) of the Kyoto protocol. The carbon credits will be earned as a result of the replacement of GHG fuels with bio-fuel. The benefits of the revenues from the carbon credit will go to the producers of bio-fuel at the different levels of the value-chain.

Key Environmental Indicators.

The following environmental indicators will be monitored by the FMAWR through the monitoring and evaluation (M&E) discussed in the next chapter (Annex III):

CHAPTER 8. PROMOTING APPROPRIATE INVESTMENT CLIMATE

8.1 *Introduction*

In an effort to enhance the investment climate, the Nigerian Investment Climate Programme (ICP), a joint undertaking of the World Bank and United Kingdom Department of International Development (DFID), has been operating primarily at the sub-national level over the past two years. The ICP has implemented pilot activities in tax administration, land administration and investor information. These pilot programmes have yielded important results and lessons in some states and are currently being transferred to other states. They aim at removing the restrictions, which are currently hindering the advancement of the agricultural sector in achieving the NFSP objectives of ensuring sustainable access, availability and affordability of quality food for all Nigerians. Some of these restrictions include the following:

- Land acquisition and registration
- Access to credit
- Licensing/Registration.

8.2 *Investment Restrictions to Focus*

Land Acquisition and Registration

The World Bank Assessment of the Investment Climate report (World Bank, 2009) states that about 25 percent of firms, both local and international, consider access to land a significant constraint to business. The report further states that the two major reasons for this are the cost of land and the procurement process.¹⁶ One of the strategic goals for agriculture in Nigeria for the next 10 years, under the Vision 20:2020, is to facilitate the acquisition of farmlands and title holdings for agricultural production through an intensive review of the Land Use Act and by so doing, encourage the expansion of commercial agriculture through Public Private Partnership (PPP).

The World Bank and the United Kingdom Department for International Development (DFID) in partnership with the government of Nigeria have commenced a pilot scheme in for four states (Lagos, Kaduna, Cross River and Kano) as part of the ICP. Part of this scheme focused on land administration. The issues highlighted in the World Bank Assessment of the Investment Climate in Nigeria report were addressed in the implementation of the ICP pilot scheme and the state representatives were given recommendations to review and reform land management policies.

The outcome of the peer learning component of the Investment Climate Programme is reported in the World Bank *Doing Business Report 2010* (World Bank, 2010). The 2008 edition (World Bank 2008) recommended the elimination of certain processes to ease the process of land

¹⁶ G. Larossi, et al (2009), An Assessment of the Investment Climate in Nigeria

acquisition in Nigeria. The state government representatives were advised to eliminate or simplify the process of obtaining a governor's consent, lower the property transfer fees or introduce flat rates, and replace physical inspections with a standardized schedule of property values, amongst other things. Although states like Kano, Kaduna and Lagos have implemented some of these recommendations, for the majority of the states much more needs to be done to meet these recommendations.

The implementation of the ICP in the pilot states has reduced the cost and processing time of land acquisition and registration thus making the acquisition of farmlands and title holdings for agricultural production easier in those states. In Lagos state for example, where the 30 day governor's consent was introduced, the total number of applications has continued to increase annually and this is as a result of reduction in cost and processing time. It is the objective that states which have not yet adopted the ICP approach will learn from their peers and in turn implement the process. It is anticipated that once all states have implemented this process, commercial agriculture through Public Private Partnerships will be encouraged.

Access to Credit

The lack of reliable access to credit is a major impediment to improving small farm operations and enhancing the livelihoods of rural households. The issue of accessing credit is also a major challenge for farmers especially with respect to access to insurance facilities. Crop insurance exists in Nigeria but it imposes an extra cost on resource poor farmers and is only patronized when imposed by financial institutions as a condition for a formal credit.

The World Bank assessment of the investment climate in Nigeria notes that access to finance seems to be more of a problem in the less industrialized states in comparison with the more industrialized states, although there is a significant variation of perception across the states. An example of the variation in perception is that of Bauchi where 77 percent of firms perceive access to finance as a major constraint, while in Sokoto only 20 percent of the firms perceived it as a major constraint. The evidence suggests that firms in the more industrialized states find it easier to access finance than those in the less industrialized states. As a result of the constraints in accessing credit, most entrepreneurs predominantly rely on their own personal funds and retained earnings while others rely on credit from suppliers and advances from customers. Another small proportion of entrepreneurs borrow money from family and friends, thus highlighting the fact that the formal financial sector is used for only a small percentage of Nigerian businesses' financial needs (Table 11).

This strategy aims to encourage financial institutions in Nigeria to improve on the facilities they provide to their customers especially to entrepreneurs in the agriculture sector. The Assessment of the Investment Climate in Nigeria (2009), states that only 8 percent of Nigerian firms have an overdraft and only half the amount have access to lines of credit. Without access to facilities such as these, many businesses will experience constrained growth and difficulty managing their cash flow as they would have to rely heavily on their retained earnings and supplier credits. Building on past strategy objectives for private sector development, some banks are increasing their lending for small and medium sized enterprises (SMEs) while microfinance institutions are entering the market. Steps will be taken to accelerate this trend during the shorter to medium

term, particularly if the key FSS 2020 initiatives, such as credit bureau and secured financing reforms proceed as scheduled.

Table 11. Sources of Short-term Finance in the Nigerian Formal Sector
(Percentage of short-term financing)

Sources	Average	Small	Medium	Large	Domestic Ownership	Foreign Ownership
Internal funds/Retained earnings	70	70	71	61	70	69
Borrowed from banks and other financial institutions	1	1	2	2	1	6
Purchases on credit from suppliers and advances from customers	25	25	25	35	25	23
Borrowed from family, friends and other informal sources	4	4	2	1	4	1

Source: ICA survey (G.Larossi, et al, 2009)

Licensing/Registration

Starting up an agricultural or any other type of business in Nigeria can be a burdensome process. Agencies such as the Corporate Affairs Commission (CAC) and stamp duty offices have different performance levels in the different states. There are also variations in departmental taxes and local licensing fees for business premises in each state, which could constitute a major bottleneck in obtaining licensing. In Abuja, for example, which is regarded as the top-ranked city for starting a business in the country, it takes only five procedures, 22 days and 58.5 percent of income per capita to open a business. On the other hand, in Bayelsa state, it takes almost an extra month to complete the same incorporation process due to the high number of procedures requiring 11 processes. Overall, according to the World Bank 2010, five procedures are federal and uniform across the country. They include the name-availability search, the stamping of incorporation documents, and incorporation with the CAC and tax registration with the Federal Inland Revenue Service (FIRS). Thus, the fact that it takes an extra 6 procedures to process incorporation in Bayelsa state could be a turn off to prospective business entrepreneurs and negatively affect business registration. The table 12 above highlights the Abuja as the territory with the least procedures and the least number of days for completing the registration/licensing process. The table highlights state rankings for business registration and licensing from the Doing Business in Nigeria 2010 report. The aggregate ranking measure ranges from 1-37, with the lower values indicating more efficient regulation.

Based on the recommendations of the *Doing Business report 2010*, this strategy document aims at giving the CAC the responsibility to collect stamp duty fees, along with other registration fees to be transferred to the Federal Inland Revenue Service (FIRS). This along with other recommendations in the Doing Business report will speed up the registration process and reduce the burden placed on new business owners. Another inconvenient requirement for Nigerian entrepreneurs is the "Premises Registration" which necessitates the payment of a fee for a permit

to operate business within the state. The registration process is expensive and constitutes a burdensome administrative bottleneck. This would be resolved by requiring different state governments to consider consolidating registration with other existing revenue streams. Where permit streams will be affordable, the procedure will be faster and simpler and new businesses will be more likely to comply with registration requirements. In Kebbi and Zamfara states, for example, the business premises permit can be obtained in one day at a single-access point within the Ministry of Commerce, against a small flat fee. In contrast to this, most states require multiple steps for registration and have no fee schedules. If the premises registration process serves no particular regulatory function, states could consider eliminating the permit as it would reduce the bottlenecks in business registrations in all states in the country.

Table 12. An Overview of the Timescale for Business Registration in Nigerian States

State	Starting a Business Ranking	Number of Procedures	Time (days)	Cost (% of income per capita)	Minimum Capital (% of income per capita)
Abia	18	9	33	67.8	0
Adamawa	20	7	44	74.7	0
Akwa Ibom	7	8	34	65.1	0
Anambra	27	9	39	84.4	0
Bauchi	21	10	36	64.9	0
Bayelsa	37	11	47	84.7	0
Benue	10	8	36	65.0	0
Borno	11	8	34	71.4	0
Cross River	35	9	47	103.7	0
Delta	31	9	51	84.4	0
Ebonyi	28	10	39	68.4	0
Edo	16	8	45	60.5	0
Ekiti	32	9	40	103.7	0
Enugu	21	9	31	97.5	0
FCT, Abuja	1	5	22	58.5	0
Gombe	4	8	24	66.2	0
Imo	33	10	39	85.9	0
Jigawa	17	7	35	81.2	0
Kaduna	14	9	31	69.5	0
Kano	26	9	38	77.8	0
Katsina	25	9	37	77.8	0
Kebbi	3	8	30	61.7	0
Kogi	2	8	28	61.8	0
Kwara	19	8	34	87.5	0
Lagos	8	8	31	77	0
Nasarawa	12	7	29	87.6	0
Niger	9	7	32	74.7	0
Ogun	36	10	40	90.9	0
Ondo	33	10	37	90.9	0
Osun	30	10	35	86.1	0
Oyo	24	9	31	110.2	0
Plateau	4	8	31	63.7	0
Rivers	29	10	38	71.7	0
Sokoto	23	9	31	103.7	0
Taraba	6	8	33	60.0	0
Yobe	13	8	38	61.9	0
Zamfara	15	8	36	71.5	0

Source : World Bank Doing Business Report 2010

8.3 *The Scope for Public-Private Sector Partnership*

Agricultural reforms in the past have been focused on eliminating government control and increasing the producer price of tradable agricultural commodities but placed little emphasis on developing the institutions needed to support private sector activity. It was expected that improving price incentives and liberalizing markets would be enough to generate a supply response and create well functioning markets. The private sector was expected to take over the institutional functions the state had been providing.¹⁷ But the outcome from this policy approach has been below expectation. First, in the areas of restriction discussed earlier, it is clear that the private sector has been unable or unwilling to supply credit and marketing services to farmers. Second, although the elimination of policies enforcing a uniform, nationwide price has been a boon for many producers and consumers close to markets, it has often left farmers in Nigeria and most other sub-saharan countries worse-off than they were before liberalization.

To resolve this contradiction, the government and other relevant public sector organizations will expand its partnership with the private sector on agricultural issues. The private sector would be encouraged to participate in the supply of inputs which may lead to a gradual reduction of the role of the state in this area. The private sector would be the main driver of competitive commodity value chains and the promoter of farmer group/outgrower marketing schemes. For this to succeed, the government would provide an enabling environment for commercial operations. Small farmers would be helped to organize themselves into viable associations or groups that would enable them to respond to market demands. To support this process, the government will work in partnership with the private financial institutions to provide access to loans and overdraft facilities to farmers.

A successful Public Private Partnership in the agricultural sector will require more than private sector willingness and involvement. The federal government would ensure:

- The financing the social element of basic transport and handling infrastructure.
- Providing policy continuity for, and judiciously applied subsidies to small farmers.
- Undertaking an active programme of sensitization, advocacy, training and mentoring of State and Local Government agencies and their field staff with regard to development approaches, partnerships and collaboration.

To complement the process, public agencies (such as regulatory bodies and agricultural research institutions) would become more accountable to private stakeholders. This would initiate multi-stakeholder meetings to discuss ideas and possibly find ways to overcome some of the constraints in the agricultural markets. Public policy would support institutional innovation in co-ordination, with state and private actors working in partnership. Under such circumstances, improvements in sector performance should be achieved without major additional cost to the public finances.

¹⁷ International Food Policy Research Institute; Food Policy Report, October (2000)

Section C: Implementation Modalities

This section deals with issues of implementation modalities and includes monitoring and evaluation, the action plan and implementation road map. The implementation roadmap is in table 13 and is outlined in a matrix that defines target areas of government intervention to support private sector development in agriculture. The monitoring and evaluation (M&E) framework is also defined.

CHAPTER 9. MONITORING AND EVALUATION

9.1 *Roles and Objectives of M&E in Nigeria Agriculture Development*

There is a general consensus among development partners, both from developing and developed countries, on the need for improving the performance of development programmes. The international community, including Nigeria, has subscribed to the use of Results-based monitoring and evaluation (M&E) tools to track progress and demonstrate the impact of agricultural projects, programmes, and policies. Results-based M&E differs from traditional implementation-focused M&E in that it moves beyond an emphasis on inputs and outputs to a greater focus on outcomes and impacts. Building and sustaining results-based M&E systems is more of a political rather than a technical process, and requires continuous commitment, time, effort, resources, and political will.

In Nigeria, where a substantial portion of funds for agricultural development programmes and projects come from non-governmental sources such as multilateral development institutions and donor organizations, sustained inflow of external funds can be enhanced if governments and agricultural development institutions in the country are sufficiently responsive to the need of external stakeholders to demonstrate tangible results through the establishment of a functioning and effective M&E system.

Secondly, sustainable agricultural development can only be enhanced if the internal stakeholders (farmers and other agricultural value chain operators such as financial institutions, insurance, input suppliers, processors, marketers, and NGOs) within the agricultural sector have the required level of confidence in the effectiveness of government agricultural policies and programmes. This confidence is enhanced by putting in place an adequate M&E system that would ensure that adequate periodic monitoring and evaluation activities are carried out to assess the level of accomplishment of the set objectives of this policies, programmes and projects. A good M&E system will afford the nation the opportunity to periodically review the agricultural strategy document to further boost the performance and development of the agricultural in Nigeria.

Specifically, an effective M&E system for sustained agricultural development in Nigeria would ensure the following:

- That monitoring of implementation activities of major stakeholders are undertaken with a view to making necessary changes in implementation work plan so that policy objectives can be achieved.
- That evaluation and impact assessments of the agricultural programmes and projects are undertaken at appropriate times in order to ensure that the policy achieves the desired level of impact on the rice value chain development.
- That all agricultural sector stakeholders are involved in the M&E process.
- That that the national agricultural Strategy document is reviewed periodically.

Even though monitoring and evaluation should be a very important component of the country's agricultural project development process, the extent of future monitoring and evaluation of

project output, early result and impact would depend on the resources and expertise available to capture and analyze the relevant data. Hence there is the need to strengthen the M&E systems in the country to meet the challenges of assessing the outputs and impacts of agricultural development programmes and projects set forth in the National agricultural strategy document. Since efficient agricultural production and trade requires elements of information exchange, communication, transactions, knowledge and skill transfer, this strategy document would need to place some reasonable degree of importance on monitoring and evaluation of policies and programmes so as to facilitate evidence based planning and implementation. That is the document should place emphasis on measurement of performance against targets so as to keep track of policies and programmes.

9.2 *Current State of Agriculture-Related M&E System in Nigeria*

Evolution of Monitoring and Evaluation in Nigeria

The monitoring and evaluation of programmes and projects at the national level in Nigeria started as far back as the 1960s when the National Development Plans (NDPs) were instituted by the Federal Government. The M&E system then was limited to oversight of utilization of resources provided in the budget for various sectors of the economy with respect to both recurrent and capital expenditures. However, the M&E system in the agriculture and rural development sector was not institutionalized until the late the seventies under the World Bank-Assisted Agricultural and Rural Development Projects (ADPs). The design of the ADPs included planning, monitoring and evaluation (PM&E) units that monitored the performance of the project intervention areas as well as generated various statistics for the computation of indicators. In 1975, the FMAWR set up the Agriculture Project Monitoring, Evaluation and Planning Unit (APMEPU) as a central independent unit to supervise and provide technical direction to the PM&E related work of the ADPs, including the responsibility for developing appropriate monitoring, evaluation and management information system for the ADPs. The name of the unit was changed to Agriculture Project Monitoring and Evaluation Unit (APMEU) when the planning function was removed in 1987. The APMEU also liaised with other related organizations in promoting the collection of reliable agricultural data and statistics in the country.

The Federal Agricultural Coordinating Unit (FACU) was established in 1981 through a World Bank loan to complement APMEPU's supervisory role in M&E of the ADPs. It had the main responsibility for identifying, appraising and facilitating the take-off of new ADPs in the country. FACU also provided technical assistance and implementation support to the ADPs in the areas of work plan and budget preparation, technical backstopping in extension, research and infrastructural development. FACU and APMEU were merged in 2001 to form the Project Coordinating Unit (PCU) and charged with the responsibility of carrying out the functions of the two units. In 2007, the PCU was merged with some departments in the Ministry of Agriculture to form the National Food Reserve Agency (NFRA), which remains one of the institutions in Nigeria that collect and disseminate reliable agricultural data. NFRA is basically an intervention implementation agency which provides technical support, supervision, data generation and documentation services for both government initiated and donor assisted agricultural development initiatives.

Institutional Arrangements for Agriculture Related M&E in Nigeria

Most Ministries, Departments and Agencies (MDAs) in Nigeria have units/divisions that are responsible for M&E activities. In FMAWR, the technical departments (Federal Department of Agriculture (FDA), the Federal Department of Fisheries (FDF), the Federal Department of Livestock (FDL)), Agricultural Research Council of Nigeria (ARCN), National Food Reserve Agency (NFRA), National Agricultural Seed Council (NASC), have M&E units that carry out monitoring and evaluation functions of the ministry. Currently, they are engaged mainly in the monitoring of inputs and outputs of agriculture related projects. These M&E units are expected to submit reports on project performance to other external donors and feed the senior executives of the FMAWR with M&E output for decision making, including the National Council on Agriculture (NCA), which is the highest policy making body for agriculture and rural development, that use it to assess the performance of the agricultural sector/projects and for policy formulation.

The Policy, Planning and Agricultural Statistics (PPAS) is the department responsible for collation of agricultural statistics and maintenance of agricultural data bank. The data bank includes statistics generated by other technical departments in the FMAWR and agencies like the NBS, CBN and State Departments of Agriculture. The M& E division of the PPAS has responsibilities for monitoring projects directly under the supervision of the FMAWR and has a nationwide mandate for food intelligence and market information. The division carries out routine M&E activities in collaboration with the M&E cell of the technical departments in the FMAWR. It is intended that under the CAADP process, a Strategic Analysis and Knowledge Support System (SAKSS) node will be established in PPAS.

At the National Food Reserve Agency (NFRA), the M&E unit is under the Department of International Collaboration and Partnership of NFRA and is responsible for data collection, analysis and dissemination and mandated to provide M&E support for efficient and effective implementation of projects/activities. NFRA is now a full-fledged department under the FMAWR and coordinates most of the donor-supported ARD programmes in the country. The agency is also responsible for supervising and monitoring the implementation of the activities of the ADPs, especially those being funded under the tripartite arrangements (International Donor Partner, FGN and State Government). The agency has an M & E system that generates relevant information on the status of project implementation on the donor-supported projects as envisaged in the project appraisal documents (PAD). Currently, NFRA possesses the most developed M&E system among government Ministries Departments and Agencies (MDAs) responsible for

delivering Agricultural targets in Nigeria. Most projects¹⁸ supervised by NFRA have an M&E framework developed at inception.

There are other important institutions that collect, collate and distribute agriculture related statistics useful for monitoring and evaluation. Major among this class of institutions is the National Bureau of Statistics (NBS). Some other institutions that are responsible for the performance of statutory oversight function for monitoring and evaluation include; National Planning Commission (NPC), Budget Monitoring and Evaluation Department of the Budget Office of Federation (BOF), Budget monitoring and Price intelligent Unit (BMPIU), National Assembly Public Account Committees, National Economic Intelligent Committee (NEIC), Office of Accountant General of the Federation (OAGF) and the Office of the Auditor General of the Federation (OAUGF), and the Budget, Monitoring and Evaluation (BME) Department of the Federal Ministry of Finance (MOF).

All the states of the federation and FCT have established Agricultural Development Projects (ADPs) with functional M&E components. Most of the states' ADPs also have trained and experienced M&E personnel to undertake monitoring and evaluation of project performance and impact. The ADP system has in place mechanism for an elaborate programme of data generation. This is carried out through the instruments of routine management information system (MIS) reports, surveys and studies. They also use the Programming Budgeting and Monitoring System (PBMS) format in addition to ad-hoc surveys to generate relevant information for tracking project performance. These projects benefit from tripartite funding (World Bank, FGN, State Government) to undertake M&E tasks. The ADPs currently generate and disseminate monthly, quarterly, annual project's reports for the information and decision making by relevant authority. They also conduct baseline surveys, village listing survey, large scale reconnaissance survey, crop area and yield survey, market prices, adoption rate and impact studies to generate data for composing indicators for project assessment.

There is a strong linkage between the various organs of governments and other key stakeholders in monitoring and evaluation of projects. In the case of Agricultural and rural development projects, the NFRA and the DDPAS M&E unit of the FMAWR produce monitoring reports on the status of implementation of Agricultural and rural development projects. These reports are utilized by the national and external monitoring system Project reports such as annual reports, mid-term reports, and Project Completion Review (PCR) that are jointly generated by the key stakeholders provide useful information for constructing indicators for measuring project outputs, outcomes and impacts.

The Civil societies are gradually being integrated into the country's monitoring system. For instance, under Fadama II project, project beneficiaries and the rural NGOs are directly involved

¹⁸ NFRA is currently involved in the support of about 11 projects : National Food Security Programme (NFSP), National Programme for Food Security (NPFS), Rural Finance Institution Building Programme (RUFIN), Rural Micro Enterprise Development Programme (RUMEDP), IFAD/FGN/NDDC CBNRMP-ND, (AfDB/FGN-CBARDP, Bauchi, National Fadama (III) Development Project (NFDP - III), Multinational NERICA Rice Dissemination Project, Commercial Agriculture Development Project, National Fadama II Development Project (NFDP - II), IFAD Community Based Agriculture and Rural development Programme (IFAD ó CBARDP), Katsina.

in participatory project monitoring. Through the donor project support, they are trained and equipped to undertake M&E. Some civil societies and private sector operators are also being engaged by the Office of Senior Special Assistant to the President on MDGs (OSSAP-MDGs) in the monitoring of projects implemented under the debt relief gains. While the field enumerators generate information from the rural communities, the states through the network of ADPs supply such information to users directly or through the NBS and other agencies.

Thus, Nigeria has basic institutional framework and manpower that can be further capacitated to carry out effective monitoring and evaluation of agriculture and rural development project. Greater coordination between various agencies will contribute to optimum utilization of scarce resources and avoid the situation of production of inconsistent data by different agencies.

Current Practices in the Use of Agric Related M&E Information in Nigeria

A sizeable though inadequate amount of agriculture-related M&E information are generated quarterly and annually on ad-hoc basis by organizations such as NFRA and to a lesser extent NBS, DPPAS, and the technical departments of FMAWR. Data for input and output performance monitoring is obtained through routine project MIS report while outcome and impact assessments use data from surveys and project specific studies. At the levels of project management, M&E information collected on quarterly basis are used by the management of each agricultural related project to monitor project activities while annual data are often used to monitor project outputs. Limited outcome and impact assessments are also done periodically based on available data. For routine outcome and impact assessments to be done more appropriate data collection formats and techniques need to be put in place.

M&E generated data are usually released to the appropriate public and private user groups for the purpose of decision making usually through quarterly and annual publications. There is substantial evidence that data from M&E reports are used in decision making especially at the levels of project management, medium term planning, annual budget preparation, and policy making. These data are also utilized in annual budget preparation by the various units within the FMAWR. The data on project activities and outputs serve as important benchmarks for future plan of activities and expected outputs. Not much of early outcome data are currently used for annual budget preparation.

At the level of Medium term planning, the planning units of all technical departments and agencies of the FMAWR contribute data to the planning process through the Departments of Policy, Planning and Agricultural Statistics (DPPAS) of the FMAWR. The data are used at the level of the FMAWR to design agricultural sector plans, programmes, and projects. These data are also passed across to the National Planning Commission (NPC) which also receives inputs from the NBS to support the preparation of comprehensive multi-sector national plans. The dearth of data on project outcome and impact variables is also a major deficiency of this use category.

Even though M&E generated data are expected to guide policy, these data are either not the right type or are not being used. M&E system is currently generating inputs and outputs data that are not as useful in guiding policy making as outcome and impact indicators. To provide appropriate agriculture data to guide policy and programme planning, more efforts need to be put into generating and using data for outcome and impact indicators. This would necessitate that the mechanisms should be put into place to construct all required outcome and impact indicators of agriculture related programmes and projects.

From the foregoing analysis, it is evident that M&E in all the institutions listed above is limited in coverage, often restricted to their allocation of business within the Government. The focus of national M&E is generally more on capital projects as they relate to inputs and financial releases rather than outputs and outcomes. According to a Baseline Diagnostic Study of the Current MDGs Monitoring & Evaluation System in Nigeria, commissioned in 2006 by the Office of Senior Special Assistant to the President on MDGs, there is no evidence of evaluation of project impacts happening at the moment, except in the donor-funded projects for which evaluation is mandatory. The study concluded, *“in most Ministries, Departments and Agencies of government, M&E operation is limited and often constrained by lack of relevant expertise and resources. Further, it is evident that the extent of monitoring being carried out is limited and partial, and does not adequately address the linkages between activities and results, or the link between the latter and existing sectoral planning. The focus is entirely on the capital budget and to some extent on the recurrent budget”*.

Strength and Weaknesses of the Agriculture Related M&E System in Nigeria

There exists a national structure in place for the collection of agriculture related data. The ADPs and the NBS both have a well established network of well trained data gathering personnel for agriculture related M&E system. This makes it easier to collect standardized data and use standardized methodologies including design of questionnaire across the nation. The personnel at the states level of the ABPs and NBS also have some capabilities for data processing and analysis. Thus state level data can be processed and analyzed in a disaggregated manner using the same standard format agreed nationally. Thus there is fair structure on ground for vertical integration of M&E system from Community levels to LGA to state to zonal and national levels. However, data collation from community to LGA to State and to national levels has continued to face lots of challenges in the past decade. It has become a challenge for the national offices of MDAs to receive required data in the right quantity and quality and at the right time from the lower levels due to lack of adequate personnel, equipments and funding.

Furthermore, the agriculture related M&E system in Nigeria lacks sufficient horizontal coordination both within and between MDAs. Within NFRA which is easily the most organized collectors of project specific agriculture related data, there is need for better horizontal coordination of data collection among the numerous programmes and projects under its supervision. Horizontal coordination of data among departments in the FMAWR is also currently inadequate because of the current state of low activity in the M&E division of the DPPAS. There is very little information sharing going on between MDAs that has to do with delivery of agricultural targets in Nigeria. For example, there are no regular forums for the coordination of information from the different data generating agencies and departments.

The M&E department of the NPC is also not currently performing the role of coordination of information across sectors adequately. The M&E department is currently undergoing a process of restructuring. The consequence of this lack of horizontal coordination is that different institutions produce different sets of data for the same agriculture related inputs, outputs, outcomes and impacts.

Most donor sponsored projects have inbuilt monitoring and evaluation components with provisions for carrying out surveys and impact studies. This is not so for most government initiated projects. Externally funded projects usually identify and list suitable indicators, include long term results indicators in the monitoring framework, accept M&E as an activity under the project and provide funds for it. On the other hand, nationally funded projects focus more on activities which has direct linkage to project objectives (project objectives and goals are usually well defined) and does not often assign adequate priority to M&E. Indicators selected for monitoring are usually limited to keeping a watch over the physical and financial progress, i.e. timely supply of inputs and project outputs. M&E system is better appreciated by donor funded rather than solely government funded projects.

The M&E in most institutions involved in delivery of agric targets focus more on capital project as they relate to inputs and financial released rather than outputs and outcomes. There is not much evidence of evaluation of project impacts going on due to the absence of baseline data for most projects. Currently, the extent of monitoring and evaluations being carried out is limited and partial and does not adequately address the linkage between the later and existing sector planning.

9.3. *Action Plan for an Improved M&E System*

Consistent with the Nigerian Vision 20:2020 document, the program of enhancement will be categorized into 3 distinct phases: short term or sectoral repositioning stage (2010-2012), medium term or consolidation Stage (2013-2016) and long term or sustenance stage (2017-2020). Consequently, data collection for periodic evaluation of the programmes under this strategy will be consolidated at the end of each of the 3 planning periods. In this regard, as per the 5-point agenda of the FMAWR, the current structure of the Nigerian agricultural M&E system will be substantially improved. This will be done broadly by: establishing the standards for adequate monitoring and evaluation of quality; and enhancing the elements of human capacity development index in data collection. The national agricultural M&E system under the updated agricultural strategy is expected to operate as follows:

The PPAS of the FMAWR would be the apex institution responsible for coordinating the agriculture-related M&E system in Nigeria. The M&E departments of implementing agencies at the federal level would report to PPAS of FMAWR. The staff of M&E units of implementing agencies would be employed by the PPAS and posted to agencies. They would report both to the agency and PPAS directors.

The PPAS departments of the State Ministries of Agriculture would be responsible for coordination M&E activities at the state level. The M&E units of all implementing agencies at the state level would report to both the State level PPAS and the implementing agency at the

federal level. For example the ADPs would report to both the State PPAS and NFRA. The state PPAS would report relevant state level agricultural statistics to the PPAS of the FMAWR.

The National Bureau of Statistics (NBS) which is the apex institution for coordinating national information system would play a supervisory role by overseeing the whole process of production and dissemination of national agricultural statistics.

In line with the CAADP strategic framework which embodies the principles of peer review and dialogue, information generated through M&E will be subjected to periodic peer review and dialogue at the state, national and regional levels so as to stimulate and broaden the adoption of best practices, facilitate bench marking, mutual learning and ultimately raise the quality and consistency of the Nigerian agricultural strategy. These reviews would come up at the end of the 2010-2012, 2013-2016 and 2017-2020 periods of programme implementation.

Requirements by Agencies for Monitoring and Evaluating Performance (indicators)

Each programme/project in the agricultural strategy document will have clearly identifiable performance targets. Most of targets proposed below are output targets (Annex III). Appropriate performance indicators which incorporate inputs, outputs, outcomes and impact factors, will be specified for each identifiable target.

Data Collections and Analysis

The current data situation in the country would need improvements to effectively meet the needs of indicators necessary for M&E of agriculture and rural development. Currently, the major sources of M&E data are from project MIS system, project specific surveys and studies, mandatory periodic censuses and surveys. Organizations such as NFRA and the technical departments of the FMAWR are currently the most important sources of project specific data useful for M&E. The data supplied through this departments and agency can be regarded as inadequate in terms of timeliness, quality, and quantity. For example, even though a number of projects under the supervision of NFRA have very detailed M&E plans with numerous well specified performance indicators, the availability of actual data to construct such indicators has remained a major challenge.

Effort will be made to clearly specify how performance would be monitored during implementation of the current strategy. For this, procedures for data generation and assessment of knowledge products, especially with respect to handling of data storage and exchange, as well as cutting edge methodologies for policy and strategy analysis would be specified. The sector would put an effective system in place to generate the data needed for the construction of the identified performance indicators. In order to achieve some measure of synergy in the process of production of agricultural statistics through collection and analysis of agricultural data, the DPPAS of the FMAWR would be the primary institution charged with the responsibility for the production of agricultural statistics in Nigeria. The framework to be followed would work as follows:

First, data collection instruments for shorter term monitoring would be designed by the M&E departments of the implementing agencies. The M&E departments of implementing agencies

will also collect updated information on project implementation on a quarterly basis and analyze same for use of project management.

Second, data collection instruments for longer term monitoring would be designed by the DPPAS of the FMAWR in collaboration with the M&E departments of the implementing agencies. The M&E departments of implementing agencies will collect updated information on project implementation on an annual basis and send data to the PPAS for analysis.

Third, data collection instruments for impact evaluation would be developed by the PPAS in collaboration with the National Bureau of Statistics (NBS). These formats will be used to collect data at the inception, midterm and end of a project. Data collection methodology will be provided by the NBS and actual data collection will be carried out by the NBS in collaboration with the PPAS and implementing agencies. Analysis of impact evaluation data will be done by the NBS and feedback information disseminated to the PPAS and implementing Agencies.

Data Reporting and Dissemination

A major deficiency of the current agriculture related M&E system in Nigeria is the inadequacy in the agricultural statistics reporting and data dissemination system. The system is characterized by multiplicity of agricultural statistics which are published by various public and private sector agricultural data generating organizations. Another problem is that of lack of timeliness and accuracy of agricultural statistics generated through the M&E process. There is also the problem of inadequate dissemination of agricultural statistics to end users due to lack of effective coordination of the process.

Under the enhanced M&E system, reporting of agricultural statistics for short term monitoring would be done at the level of the implementing agencies. The collection of agricultural data for longer term monitoring would be done at the level of the PPAS of the FMAWR and the state Ministries of Agriculture. The dissemination of generated agricultural statistics and information would be the responsibility of the NBS. All agricultural statistics would be released to users outside the FMAWR through the NBS. This will ensure consistency in data reporting and dissemination. Dissemination would be done through both paper and electronic outlets. The NBS and the PPAS of the FMAWR would maintain an agricultural data dissemination website which would be periodically and systematically updated.

CHAPTER 10 ACTION PLANS

This chapter summarizes the implementation roadmap for the principal agricultural commodities on the basis of the framework defined in Section B and summarized in Table 13. The following sections outline the assumptions behind the role of the three tiers of government.

A. Crops:

- The essential crops to be targeted during the planning period are chosen based on the demand pattern, comparative advantage in their production and the prospects for exports. The targeted commodities are: cassava, rice, millet, sorghum, wheat, maize, sugar, cow peas, soya beans, tomato, cotton, cocoa, and oil palm. *Jatropha* is added to meet environmental mitigation objectives.
- It is recognized that the critical inputs are needed to support the process. The government, at all three levels, will endeavor to:
 - Help improve access to land through community mobilization and to provide adequate incentives for small and medium scale farms to gradually expand to large scale farms.
 - Encourage the private sector to invest in the hiring of tractors to help reduce the drudgery associated with farm labour and to provide such support to help reduce hiring and operation costs. To this end, at least 100 hiring units/enterprises will be assisted on yearly basis per state during 2010-15 to supplement the activities of the State Ministries.
 - Promote the use of fertilizer for increased productivity by encouraging the private sector to purchase and sell sufficient quantities as and when needed according to the dictates of the various ecological zones.
 - Ensure that agrochemicals are made much more available through the strengthening of the marketing arrangements involving the private sector and particularly the farmer organisations. Appropriate herbicides, insecticides, fungicides etc being recommended by relevant agencies and the extension services delivery system will be promoted through assistance provided to these agencies in order for them to achieve their goals.
 - Facilitate the availability of improved seeds by assisting the private companies currently engaged in the production of different types of seed, stem cuttings, and cultivars for these important crops and those to be later identified and to develop other crops of high economic importance.
 - Reorganize the extension service system to be able to stand on its own and be more effective. A monitoring and evaluation framework has been put in place that will give incentives to the staff and promptly correct weaknesses in the system whenever they are found wanting.

- Meet the need for irrigation facilities and services to ensure year-round cultivation for certain crops in some ecological zones. The existing RBDAs will be strengthened and small scale irrigation facilities will be put in their place in strategic zones. The issue of environmental sustainability of the area will be considered in these pursuits.

B. Livestock:

The following policies will be put in place to support the development of livestock:

- Commercial production of cattle, goat, sheep, pigs, and poultry: Incentives will be provided to the private sector to increase the production of these animals. Credit will be provided by the various development and commercial banks, particularly the NACRDB. The CBN's role in ACGSF will be further strengthened and Banks will be further encouraged to more effectively participate in the scheme. Abattoirs will be constructed and electricity supply will target strategic areas to enhance processing and storage activities throughout the country.
- Inputs such as feed, vaccines and drugs will be made available to enhance the production of livestock. The private sector will be encouraged through access to credit and research results to increase the production of inputs and to standardize quality for efficient production.
- Hatchery development is critical to the supply of chicks. The government will establish strategically these in many parts of the nation under the PPP initiatives. Research will be encouraged in the development of technically and economically efficient equipment and processes.
- Dairy development would be promoted to produce the needed milk for domestic consumption and export. Incentives would be provided in the areas of research and credit.
- Grazing reserves would be expanded for increased supply greens and production of hays. These will be established through PPP initiatives in strategic areas of the country, but especially in those communities where conflicts usually occur between the Fulani cattle breeders and the crop farmers over right of way.

C) Fisheries (capture and cultured)

- Provision of land is only essential for the cultured fisheries and these will be encouraged in strategic areas, taking into consideration the environmental implications of using wet or endangered lands for this purpose. Where there are rivers, policy initiatives will be put in place to protect the right of the artisanal, small and medium scale farmers. The large scale farmers and the trawlers will be encouraged to catch more but only the large fishes so as not cause elimination of desired species through catching of young/small ones.

- Production of fingerlings will be further encouraged to enhance the increased production of fish in the country through improved access to credit by the development and commercial banks strategically targeted for this purpose. Research will be commissioned for the production of high quality fingerlings.
- Fish feed is key to increased fish production. Hence the private sector will be encouraged to invest more in this enterprise. PPP initiatives will be adopted apart from directly targeted access to credit from the development and commercial banks to these investors spread throughout the country.
- Extension services in fisheries development will be improved and training of core extension personnel will be mounted. Research and extension network and farmer linkages will be further developed so that the farmers will be reached on a timely basis.
- Government will promote the local production of facilities like boats, ships, nets, etc to compliment those imported and would be made available to the fish farmers through an arrangement with the private sector and relevant professional bodies. Communities will be encouraged to set aside strategic areas for bore holes and the widening of the course of rivers to increase the supply of quality water. Environmental management steps will be taken into consideration so as not to cause pollution and impact negatively on the environment.
- Production of liming and other inputs such as poultry droppings will be encouraged to be undertaken in a non hazardous manner and packaged by the private sector through the provision of targeted access to credit by NACRDB as well as the funding research, commercialization of the research findings and building appropriate extension network for benefit of the farmers.

Table 13: Implementation Road Map

Objective 1: Secure The Food and Feed Needs of The Nation						
Goal 1: <i>To achieve a 3-fold increase in domestic agricultural productivity by 2015 and 6-fold increase by 2020</i>						
Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Time-line
<p>1) Promote greater use of highly productive and disease-resistant crops (particularly, rice, wheat, maize, yam, tomato, sugarcane, cotton, cassava, cocoa, jatropha, oil palm),</p> <p>2) Livestock, poultry and fish strains, breeds and species.</p>	<p>a) Review extant policies to promote the production and increased use of certified improved seeds and all other planting materials including cultivars of economically important crops as well as fish fingerlings and seed stock of livestock species.</p>	<p>FMA&WR; NAERLS; NRTRI; CRIN, NIFOR; NASC</p>	<p>NPC; FAO; World Bank; NFRA; State MAs ; NGOs</p>	<p>PPP-driven Funds; CBN; DPs</p>	<p>FMA&WR; NFRA; NAERLS; NCRI; CRIN, NASC, NIFOR; ARCN</p>	<p>Short term</p>
	<p>a) Promote the formation of and strengthen the existing agricultural producers association/organization and cooperatives to</p>	<p>NFRA; States; LGAø; ADPø RBDAø; NFWRI; NAPRI; NAERLS, NGO, NIOMR</p>	<p>World Bank; IFPRI; DPs; State MAø; LG Agric. Depts.</p>	<p>CBN; World Bank; DPs; NACRDB; MFBø; Private Sector</p>	<p>NAERLS; NAPRI; State NFWRI Coop. Divs, NIOMR; NFRA; ARCN</p>	<p>Short Term</p>

	ensure more efficient access to inputs and other essential resources					
b) Significantly increase the yield of crops, livestock and fisheries through the use of hybrid seedlings, feedstock and improved breed.	a) Breed and distribute high yielding varieties/cultivars of economic importance crop, livestock and fish species.	ARCN; LiveGETA; Agric Res. Institutes; Faculties & Univs.of Agric LBMCs; ADPs; RBDAs; SMAs; LGAs.	FAO; World Bank; FMA & WR; Org. Private Sector Community, NBS		ARCN; NIAS; ACN; NVMA; NSAP; FLD; NGOs	Short term
	b) Provide incentives for the growth of commercial seeds and breeding companies to provide improved planting materials and breed stocks	FMA & WR; Fed. Mins. of Comm. and Ind.; State Govts.	FGN; State & LGCs; DPs; World Bank	CBN; Private Sector; NGOs; DPs	ARCN; NIAS; ACN; FLD; FDA; NFRA, NGOs	Short term
3) Significantly increase the supply of improved inputs for the production of crops, livestock and fish	a) Increase fertilizer usage for increased soil fertility and improved crop yield through -provision of subsidy and commissions as appropriate -engaging input service providers in	FGN, States, LGCs, private sector	DPs, private sector	FGN, States, LGCs, DPs	FGN, NFRA; States, LGCs, DPs NASC	Medium term

	<p>the distribution of fertilizer</p> <ul style="list-style-type: none"> -involvement of cooperatives and commodity associations for better assessment of fertilizer requirements 					
	<p>b) Increase the supply of improved seedlings as well as seeds, breed stock, fingerlings, etc. through provision of subsidy training in seed production, seed enterprise development and marketing</p> <ul style="list-style-type: none"> -establishment of Farm - Service Centres (one per LGA) as a one-stop input sales outlet -monitoring of seed quality 	FGN, States, LGCs, private sector	DPs, private sector	FGN, States, LGCs, DPs	FGN, States, LGCs, DPs, NASC	Medium term
	<p>c) Increase the use of relevant agro-chemicals for higher agricultural productivity under a completely deregulated and</p>	FGN, States, LGCs, private sector	DPs, private sector	FGN, States, LGCs, DPs	FGN, States, LGCs, DPs, NASC, NFRA	Medium term

	outsourced service delivery system involving cooperatives. The establishment of Farm Service Centres in LGAs will be facilitated for effective operation of the system. The FAO set rules on the distribution and application of agrochemical products will be enforced. Environmental sustainability will be ensured					
	d) Increase the supply of improved fishing inputs to fishermen in coastal and inland states through -provision of subsidy -formation and registration of capitalized fishers cooperatives, -establishment of fish feed mill enterprises(one per state) -establishment of	FGN, States, LGCs, private sector	DPs, private sector	FGN, States, LGCs, DPs	FGN, States, LGCs, DPs	Medium term

	Fisheries Service Centres (one per State) where input repair facilities will also be provided					
4) Explore and exploit the genetic potentials of the local and exotic breeds of crops, livestock and fish through enhanced Research and development	a) Promote the creation and selection of elite foundation stock of crops, fish and livestock species and subject all local domestic livestock, poultry and fish breeds/species to trait-group evaluation to facilitate selective breeding of desired traits of economic importance	Agric Res. Institutes; LiveGETA; Faculties and Universities of Agric., ARCNCoordinated.	FAO (DAD-WAnGR); FLD/FDA; CGIAR; ILRI, ICRISAT, IRRI	PPP; CBN; World Bank; IFAD; DPs	ARCNC; NIAS; NSAP; FISON; ACN, States, NGOs	Long term
	b) Establish national livestock genetic exploration technology agency (LiveGETA) together with livestock breeding & multiplication centres (6 No.) under the ARCNC.	ARCNC; FAO (DAD-WAnGR); Universities. NAPRI	FMA & WR; World Bank, ILRI	CBN; PPP; DPs	ARCNC; NIAS; Universities; FLD; NGOs	- Short term

5) Professionalize agriculture and promote educational and professional training incentives to encourage young people embrace agricultural production, processing, extension and marketing.	a) Ensure charter of all agricultural sub sectors and register and certify all practitioners to avoid quacks in the industry.	ARCN; NIAS; ACN; AFAN; Agro-Professional Assocs. (APAø)	FMA & WR; Private Sector Community; World Bank; NBS	Budget; CBN; Private Sector; DPs	NFRA; FLD; FDA; APAs; NGOs; NPC	Medium term
	b) Establish modern farm villages across the nation to serve as model villages/communities for Research and Development.	FMA & WR; States; ADPø; RBDAø; LGAø	FMA & WR; State MAø; ADB; DPs; Private Sector; NGOs; NPC	FGN; PPP; DPs; States & LGCs, CBN; NACRDB;	NAERLS; ARMTI; NFRA; Private sectors & NGOs; States; LGAø	Medium term
	c) Facilitate the acquisition of farmlands, enhanced inputs and financing for agriculture graduates through Public-Private Partnership (PPP) initiative.	FGN; States; LGCs; Communities	World Bank; FAO; IFAD; FMA & WR; State MAø; Private sector; NDE; NAPEP;	PPP; CBN; NACRDB; MFBø; Credit Schemes	NFRA; FDA; FLD; NGOs; Private sector	Long term
	d) Expand and strengthen Food Technology Departments in tertiary institutions to train the manpower required in the food processing	FMed; States & LGCs; FMSc & Tech.; FMInd ; Universities & Colleges	FGN; DPs, Universities, Monotechnics & Polytechnics	FGN; States; DPs, Private sector	NUC; NBTE; NIFST; NFRA; DPs; Private sector; NGOs	Medium term

	industry and to conduct research relevant to this industry					
<i>Goal 2: To transform the Nigerian agricultural production system to be a substantially mechanized farming system by 2020</i>						
Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
1) Promote modernization of the production systems for crops, livestock, poultry and fisheries including processing, transportation storage, preservation, packaging and marketing.	a) Promote appropriate mechanization at all levels of the value chain.	Research Institutes; NOTAP; Universities, Monotechnics & Polytechnics; NCAM; NASENI; FMA & WR; FMIInd	FMSci & Tech; FMA & WR; NPC; Private Sector; States; NGOs	PPP; CBN; Commercial & Development Banks; DPs;	FDA; FLD; ADPø; States & LGCs; SON; Private sector	Medium term
	b) Develop local capacity to fabricate, manufacture and maintain appropriate machineries across the value chain	Research Institutes; NOTAP; Universities, Mono-technics & Polytechnics; NCAM; NASENI; FMA & WR; FMIInd	FMSci & Tech; FMA & WR; NPC; Private Sector; States; NGOs	PPP; CBN; Commercial & Development Banks; DPs;	FDA; FLD; ADPø; States & LGCs; SON; Private sector	Medium term
	c) Increase tractor density as well as ease of access (availability and affordability) to the end users.	FGN, States, NCAM; FMAWR;	NPC; Private Sector;; NGOs	PPP; CBN; Commercial	FDA; ADPø; States & LGCs; Private	Medium term

	This will be achieved through the Tractor Service Provision System which is a flexible purchase and leasing programme designed to support farmers.			al & Development Banks; DPs;	sector	
<i>Goal 3: Expand dairy production and milk yield from the current less than 2000 kg to 5,000 kg per cow per lactation by 2015</i>						
Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
1) Develop strains of the local breeds of cattle for milk production through selection and crossing with world class breeds (e.g. Holstein-Friesian, Guernsey and Jersey).	a) Expand and improve the existing livestock improvement and breeding centres for the purpose of upgrading local breeds for dairy production	Universities; ARCN; NAPRI; States & LGCs	FMA & WR; FAO; ILRI; Private Sector	FGN; PPP; DPs; Commercial & Dev. Banks	NIAS; FLD; NSAP; NVMA	Medium term
	b) Promote dairy farms based on efficient and intensive mechanized systems - in selected suitable sites.	FLD; NFRA; States & LGCs; Private sector	FMA & WR; World Bank; Private Sector; DPs	PPP; CBN; Commercial & Dev Banks; DPs	FLD; NIAS; NVMA; NFRA	Long term
	c) Establish dairy processing plants in accessible locations with high peri-urban Cattle stock to serve dairy farms - through creation of financial incentives for large scale dairying and/or Public Private Partnership (PPP) and Commercial Agricultural Program (CAP) intervention	FMA & WR; Private Sector	FGN; World Bank; Private Sector; States & LGCs, NGOs; DPs	Private Sector; PPP; Commercial & Dev Banks; DPs	NIFST; NFRA; NIAS; FLD; NAFDAC	Long term
	d) Expand research for improved pasture species and development	FLD; FDA; Natl. Agric Seed Council; Universities; Relevant Res.	FMA & WR; ARCN; FAO; CGIAR, ILRI	Private sector; FGN; DPs	NIAS; ACN; NFRA; NGOs; Private sector	Medium term

		Institutes				
	e) Provide adequate incentives and continuing training for dairy farmers and processors	States & LGCs; Universities; Colleges; FLD; ADPs; ARMTI; NAERLS	FMAWR; FMEd; States; Private sector; DPs	PPP; DPs; Commercial & Dev Banks	FLD; NFRA; NIFST; NIAS	Medium term
2) Enhance production, processing and marketing of milk and other dairy products	a) Encourage private participation in milk production, facilitate the setting up of milk processing plants and assist in the formation of dairy cooperatives.	FGN, States	FMAWR, Private sector	FGN, PPP, States	FLD; NFRA; NIFST; NIAS	Medium term
<i>Goal 4: Achieve 20 percent farm-gate storage, 75percent commercial storage and 5percent strategic reserves by 2020</i>						
Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
1. Expansion of existing food storage capacity	a) Encourage construction of food storage facilities, silos and conditioning centers through PPP	FMA&WR; States, private sector; NCAM	NSPRI; NFRA; Private sector	FGN, State, Private sector; DPs	NIFST; NGOs; Private sector	6 Medium term
	b) Establish Community Warehousing Programme to ensure storage of minimum of 5% of farm produce as reserve for period of need	FMAWR; States, private sector;	NSPRI; NFRA; Private sector	FGN, State, Private sector; DPs	NIFST; NGOs; Private sector	6 Medium term
	c) Establish FGN 5% Food Reserve Silo Storage Programme	FMAWR; private sector;	NSPRI; NFRA; Private sector	FGN, State, Private sector; DPs	NIFST; NGOs; Private sector	6 Medium term

	d) Train farmers and warehouse keepers in harvesting and storage techniques in order to improve quality and shelf life of products	FGN, States, NISPRI, Research Institutes; FIIRO; PRODA	NFRA; FMA&WR; Private sector, DPs	FGN, States, private sector; DPs;	NIFST, NGOs, Private sector; NAERLS; ARMTI	Long term
	e) Ensure steady power supply to the storage facilities - through soft-loan funding for cleaner alternative sources of power in the 2009 ó 2011	FGN; States, LGCs, Commercial & Dev banks; MFBs;	ECN; PHCN; FMof Power; private sector	Private sector; FGN; States; DPs	NGOs, Private sector, NPC, NSPRI	Long term
	f) Provide appropriate fish preservation facilities near fish landing ports and sales outlets through PPP	NIFFR NIOMR, FMAWR (FDF)	FAO, IFAD, IARC, Communities, Private Sector	Private Sector, FG & States, Commercial and Devpt Banks	NPC; NGOs; Private sector; FISON;	Medium term

Objective 2: Enhanced Generation Of National And Social Wealth Through Greater Exports and Import Substitution

Goal 1: *To derive over 50 percent of the nation's foreign exchange earnings through agricultural exports by 2020*

Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
1) Significantly increase agricultural exports through enhancement of quality local value addition and creation of enabling environment	a) Expansion of export products handling, preservation and conditioning centres (including quality control laboratories) in strategic locations for hygienic packaging of processed products for export markets through PPP arrangement using Design, Build, Finance and operate (DBFO) delivery (turnkey) model.	FMA&WR; Fed. Min. of Commerce and Industry (FMCI); NEPZA	NAFDAC; SON; NEPC; Private sector	FGN; Commercial & Dev Banks; World Bank; NEXIM	NPC; Private sector; NGOs	Short term

	b) Develop export market information system to ensure that farmers are exposed to export market and benefit from international commodity prices.	NEPC; Commodities Boards	NEXIM; CBN; FMA&WR; Private sector	FGN; World Bank; Private sector	NPC; Private sector; NGOs	Short term
	c) Review trade related protocols signed by Nigeria (e.g. WTO, EPA, AGOA, NEPAD, ETLIS etc) to ensure that our national interest is served.	FMCI; FMA&WR; FMFA	NEPC; Agric. Commodities Boards; CBN	FGN; NEXIM	NPC; Private sector; NGOs	Short term
	d) Increase export incentives to enhance international competitiveness of Nigeria's agricultural export commodities.	FMCI; FMA&WR; NEPC	Agric. Commodities Boards; FMF; Private sector	FGN; CBN; NEXIM; USAID; FAO; AFREXIM	NPC; Private sector; NGOs	ó Short term
2) Expand domestic capacity to process agricultural produce into raw materials for industrial use	a) Encourage and provide incentive for small and medium scale enterprises to add value along the value chain	FMCI; FMA&WR; NEPC	FMF; CBN; SMEDAN; NASMI; Private sector; NACRDB; BOI; RMRDC; FIRO	FGN; States, LGCs; SMEDAN ; Private sector	NPC; Private sector; NGOs	Medium term
	b) Conduct training program on use of modern techniques and trends in processing agricultural products into raw materials with the active participation of the private sector	FMCI; Research Institutes; ARMTI	FMA&WR; FMEd; Private sector	FGN; States & LGCs; SMEDAN	NPC; Private sector; NGOs	Short term
3) Aggressively pursue import substitution to reduce import of raw	a) Review import levies and local subsidy on food and agricultural raw materials	FMF; CBN	FMA&WR; FMCI	FGN; CBN	NPC; CBN; NGOs	Medium term

materials and food through import tariffs and tax holidays for local industries to thrive	b) Partner with the private sector in the promotion of agro-industrial development and export	FMA&WR; Private sector	FMCI; MAN; SMEDAN; NASMI	FGN; CBN; Commercial & Dev Banks	NPC; Private sector; NGOs	Medium term
	c) Provide enabling infrastructure through PPP, ensure profitability of agriculture business and establish a clear exit point for government managerial involvement.	FMA&WR; Private sector	FMCI; MAN; SMEDAN; NASMI	FGN; CBN; Commercial & dev banks; Private sector; FAO, World Bank; IFAD	NPC; Private sector, NGOs	Medium term
	d) Develop a PPP-led agricultural loan scheme delivery specifically targeted at Agro-industries.	CBN; Private sector; World Bank	Commercial & Dev Banks; Private sector	FGN; CBN; Commercial & Dev Banks	NPC; Private sector; NGOs	Medium term
	e) Maintain zero tariffs on imported agro-processing machineries - in the short and medium terms.	FMF	CBN		NPC; Private sector; NGOs	Medium term
<i>Goal 2: To reduce the present level of food import (worth over \$ 3 billion per annum) by 50 percent in 2015 and by 90 percent in 2020.</i>						
Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
1) Foster domestic processing of locally produced agricultural products (e.g. chocolate, juice, rice etc)	a) Provide tax holidays, pioneer status and other incentives to create enabling environment for the establishment of agro-processing industries	FMF; FMCI	FMA&WR;		NPC; CBN; Private sector, NGOs	Medium term
	b) Encourage the institution and	FMA&WR;	NAFDAC;	FGN;	NPC; FIIRO;	

	adoption of international quality standard and industry best practice in the operation of the agro-processing industry	FMCI, FM Sci & Tech	SON	World Bank; NEPC	Private sector; NGOs	Short term
Objective 3: Enhance Capacity for Value Addition Leading To Industrialization And Employment Opportunities						
Goal 1: <i>To reduce the post harvest loss of agricultural produce by an average of 50 percent in 2015 and 90 percent in 2020</i>						
Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
1) Improve harvesting and processing techniques of agricultural produce	a) Sponsor enlightenment campaign on best practices in the handling of crops, livestock and fishery products	FMA & WR; States & LGCs; NAERLS	FAO; World Bank; AFAN; Private sector	DPs; CBN, Commercial & Dev Banks	Private sector; NGOs; NPC	Short term
	b) Promote establishment of cottage industries for value addition to agricultural produce	SMEDAN; States & LGCs; Private sector	FMA & WR; DPs; Private sector; NBS	FGN & States; Commercial and Development Banks; Private sector	NGOs, Private sector; NPC	Medium term
	c) Create entrepreneurial opportunities in food processing through capacity building and soft-loan provision	FMA & WR/PPP; Universities; Monotechnics & Polytechnics; Commercial & dev. Banks	Budget; private sector	Commercial & dev. Banks; FGN;	Government and civil society organisation	ó Medium term
2) Promote the establishment of agro-processing	a) Rehabilitate existing agro-processing centres and establish new ones through PPP in the	Private sector;	FMA & WR; FMC&I; DPs	Private sector	NPC; NGOs; Private sector	Medium term

parks(for crops (tomato, cotton, vegetables, rice, cocoa, cassava), livestock and fisheries) by the private sector in collaboration with the government in each agro-ecological zone	agro-ecological zones					
	b) Strengthen capacity building institutions to meet the skill requirements of the expanding small and medium scale agro-processing industries	FMA & WR; FMC&I;	Universities of Agric;	Budget; DPs	NGOs; Private sector, states & LGCs	Short term
	c) Strengthen and harmonize regulatory mechanism towards ensuring Good Manufacturing Practices (GMP) and quality control	SON; NAFDAC	NIFST; CPC	Commercial and Dev banks; DPs; PPP	MAN; NGO; private sector	Medium term
3) Strengthen agricultural commodity marketing through the creation of enabling marketing structures	a) Establish standards and operation procedure for crops, livestock and fisheries markets as well as ensure compliance	SON; FMC&I;	NIAS; ACN;	FGN, states & LGCs	NGOs, private sector; FMA & WR	Medium term
	b) Establish effective product distribution and marketing centers	FGN; States & LGCs; private sector; FMAWR, Commodity associations & marketing companies	Private sectors	States & LGCs, Private sector	NPC; NGOs; Private sector	short term
	c) Improve on the existing marketing system including market information system of agricultural produce at all tiers of government	FGN; States & LGCs; NBS; Commodity associations & marketing companies	NEPC; ASCE; Private sector; DPs	Commercial & Dev Banks; LGCs; Private sector	FMAWR; NGOs; Private sector	short term
	d) Promote strategic investments in the development and maintenance of market	FGN; States & LGCs; Commodity	Private sector; DPs	Commercial & Dev banks;	NGO; FMAWR; private sector	Long term

	infrastructure and related facilities through PPP	associations & marketing companies		private sector		
	e) Enhance meat and other livestock products quality and wholesomeness by rehabilitating existing abattoirs and establishing new ones under PPP arrangements	FGN; States & LGCs; marketing companies	Private sector; DPs	Commercial & Dev banks; private sector	NGO; FMAWR; private sector	Long term
	f) Promote trade in meat and other livestock products by providing standard infrastructural facilities under a PPP arrangement	FGN; States & LGCs; & marketing companies	Private sector; DPs	Commercial & Dev banks; private sector	NGO; FMAWR; private sector	Long term
	g) Ensure supply of wholesome fish products across the country by establishing at least one modern fish processing centre in each state of the federation	FGN; States & LGCs; & marketing companies	Private sector; DPs	Commercial & Dev banks; private sector	NGO; FMAWR; private sector	Long term
	h) Promote trade in fish and fishery products by establishing at least one modern fish market with standard infrastructural facilities under a PPP arrangement in each state of the federation	FGN; States & LGCs; marketing companies	Private sector; DPs	Commercial & Dev banks; private sector	NGO; FMAWR; private sector	Long term

Objective 4: Efficient Exploitation And Utilization of Available Agricultural Resources

Goal 1: Increase the size of irrigated land from current 1 percent of cultivable land to 10 percent of cultivable land by 2015 and to 25 percent by 2020

Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
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1) Shift from dependence on rain-fed crop production through significant utilization of irrigation	a) Intensify feasibility studies to identify and develop areas suitable for irrigation agriculture across the country	FGN, States & LGCs	Private sector, DPs; Financial institutions; Research Institutes	FGN; States & LGCs; DPs	Private sector; NGOs; communities	Medium term
	b) Provide incentives by way of loans and subsidies and infrastructural development for the development of community based and large scale irrigation projects and programs	FGN, State & LGCs; Private sector	DPs, private sector; Communities; Financial institutions; Research Institutes	FGN, states & LGCs; Financial Institutions	Private sector; NGOs	Long term
	c) Rehabilitate and complete existing irrigation projects across the nation	FGN, states; private sector (concession)	DPs, private sector; Communities; Financial institutions; Research Institutes	FGN, states & LGCs; Financial Institutions	Private sector; NGOs	Medium term
	d) Construct small earth dams, wash bores and boreholes for farm irrigation,	FGN, states; private sector	DPs, private sector;	FGN, states & LGCs;	Private sector; NGOs	Medium term
	e) Provide advocacy on use of improved water resources management systems	FGN	DPs, states LGCs	FGN, states & LGCs;	Private sector; NGOs	Medium term
	f) Carry out demonstration of drainage techniques for flood control	FGN	DPs, private sector; Research Institutes	FGN, states & LGCs;	Private sector; NGOs	Medium term
	g) Train extension staff who in turn will train farmers on water lifting and application techniques	FGN	DPs, Research Institutes	FGN, states & LGCs;	Private sector; NGOs	Medium term

<i>Goal 2: Review and further develop an agricultural land and water policy that will address the problems of soil fertility, water productivity, land and environmental degradation by 2010.</i>						
Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
1) Ensure Sustainable soil fertility and water management and productivity.	a) Review and update existing policies on soil and water conservation and productivity	FGN; States	Private sector; communities; public water utilities companies	FGN; States; DPs		Short term
	b) Promote, develop and standardize commercial organic farming as an integral part of good soil fertility management	FGN; States & LGCs; private sector	FMA & WR; producer based organization; communities; SON	FGN, States & LGCs; private sector	Private sector; communities; NGOs	Short term
	c) Develop and promote environment friendly utilization of inland and marine water resources	FGN; States; private sector	International Regulatory agencies	FGN, States; DPs	Private sector; communities; NGOs	Short term
2) Map and certificate land to facilitate collateral access to credit	(a) Actively participate in land cadastral mapping exercise	FGN; States, LGCs	Private sector	FGN, States; DPs	Private sector; communities; NGOs	Short term
3) Bring more cultivable land into production	(a) Facilitate land acquisition for large-scale commercial farming (b) Provide subsidy on mechanized bush clearing and land preparation	FGN; States, LGCs	Private sector	FGN, States; DPs	Private sector; communities; NGOs	Short term
<i>Goal 3: Increase area of land planted with diversified biomass including economic species in agro-forestry program from current 3 percent to 10 percent in 2015 and to 20 percent by 2020</i>						
Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
1) Aggressive pursuit of afforestation, re-afforestation and	a) Promote planting of fast growing, drought and disease resistant tree species adapted to different	FGN, States; LGCs; private sector	Communities	FGN, States; LGCs;	Private sector; communities; NGOs	Long term

erosion control programs	ecological zones			private sector; DPs		
	b) Enforcement of laws to protect forests and grazing reserves.	FGN, States; LGCs	Communities	FGN, States; LGCs	Private sector; communities; NGOs	Long term
	c) Complete the establishment of gazetted forest and grazing reserves by 2015	FGN, States; LGCs	Communities; NIAS; Commodity based organisations	FGN, States; LGCs	Private sector; communities; NGOs	Medium term
	d) Promote the use of alternative energy for cooking	FGN, States; LGCs; private sector, NGOs	Communities; FM of Sci & Tech.; NNPC; FMEnv.; NGOs; Research institutes; Universities, Monotechnics and polytechnics	FGN, States; LGCs; private sector	Private sector; communities; NGOs	Medium term
	e) Introduce and promote the use of energy efficient technologies for home use	FGN, States; LGCs; private sector, NGOs	Communities; FMST, NNPC; FMEnv.; NGOs; Research institutes; Universities, Monotechnics and polytechnics	FGN, States; LGCs; private sector	Private sector; communities; NGOs	Long term

2) Ensure permanent settlement of pastoralists and reduction of farmers-pastoralists clashes	a) Expansion of Grazing Reserves across the country and rehabilitation of stock routes and grazing corridors	FGN, States	DPs, Federal Agencies	FGN, States	Private sector; communities; NGOs	Long term
3) Development of pasture and supplementary feeds	a) Land acquisition and establishment of pasture feed reserves	FGN, States	DPs, Federal Agencies	FGN, States	Private sector; communities; NGOs	Long term
Objective 5: Enhance The Development And Dissemination Of Appropriate, Efficient Technologies For Rapid Adoption						
Goal 1: <i>Achieve an efficient agricultural extension delivery system which includes extension worker: farmer ratio of 1:500 by 2020</i>						
Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
1) Strengthening the agricultural extension system through adequate capacity building	a) Reform and diversify existing extension system with emphasis on livestock, fisheries, agro-forestry and home-economics	FGN; States ADPs; LGCs; Private sector	ARCN, FMA&WR, States; NAERLS; Research Institutes	States, LGCs, DPs; Private sector	ADPs, LGCs, FMA&WR, NGOs; private sector	Short term
	b) Articulate and coordinate the specific roles to be played by the Federal, States, Local Governments and private sector in extension delivery	Federal, States, LGCs & Private Sector	Federal, State, LGCs & Private Sector	Federal, State, LGCs & Private Sector	Federal, State, LGCs & Private Sector	Short term
	c) Train extension personnel in key competences - interpersonal and communication skills, knowledge, planning, entrepreneurial skills, M&E and ethical competences.	Federal Agencies and ADPs; private sector	DPs, NGOs	Federal, State, LGCs & Private sector	Federal Agencies, ADPs, NGOs, Private sector	Medium term
2) Expand and accelerate knowledge-driven farming systems	a) Emphasize research to serve agricultural practitioners and other stakeholders in the entire	NARIs, Universities, Private Sector	ARCN, DPs, NGOs; IARCs	Federal, State and Private	Federal, State Agencies; NGOs	Medium term

	value chain			Sector		
	b) Promote farmer-education and provide training incentives to encourage young people into agricultural production, processing and marketing	Federal agencies, ADPs, LGCs, NGOs, Universities of agric	DPs; Private sector	Federal, States, Dev, agencies	States ADPs, Federal agencies	Medium term
3) Extensive and adequate dissemination of improved technologies and best practices in farm systems	a) Enroll and conduct training for extension staff for service delivery in respect of crops, livestock and fisheries b) Recruitment of extension workers c) Establish Farm Support Centres in LGAs d) Facilitate establishment of private sector extension support services	FGN, States, Private sector	DPs, Specialized Federal Agencies	FGN, States	Federal Agencies, ADPs, NGOs, Private sector	Medium term
4) Achieve a high degree of public private partnership thrust in agricultural research and development by 2020	a) Establish forum for regular interaction of public and private sectors on agricultural research and development	NARIs, Universities, NGOs, Private sector	DPs, FMA&WR	Federal; State; private sector; commercial & dev banks	Federal and State agencies; NGOs	Long term
	b) Rehabilitate and further develop farm service centres in collaboration with the public and private sectors.	ADPs, LGCs, private sector, communities	FGN, states & LGCs, Private sector	Federal, State, LGCs, Private Sector	Federal, State, LGCs, NGOs, NPC	Long term
	c) Organize agricultural shows and exhibitions	NARIs, FMA&WR, ADPs, LGCs, private sector; NGOs	Federal and State agencies; private sector; NGOs	Federal and State agencies; NGOs; Private	Federal and State agencies	Long term

				sector; DPs		
<i>Goal 2: Achieve the adoption of improved varieties/ species of seed and brood stock by 50 percent of the farmers by 2015 and 75 percent by 2020</i>						
Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
1) Promote the adoption of high yielding seed varieties and brood stock	a) Develop mechanism to involve stakeholders in determining the priorities for research and extension.	ARCN, NARIs, Universities, Monotechnics and Polytechnics; private sector	ADPs, LGCs, NGOs	Federal, State, LGCs, private sector	Federal agencies, NGOs, DPs	Long term
	b) Strengthen producers, processors, marketers and consumers associations	ADPs, LGCs, NGOs, private sector	Federal agencies, NGOs	FGN, States, LGCs, P/Sector	Federal agencies, NGOs	Long term
	c) Strengthen and expand programs that are gender and youth sensitive.	ADPs, LGCs, NGOs,	Federal agencies, DPs; FMWomen Affairs; FMYouth Dev; NAPEP	FGN; State, LGCs, DPs, private sector	Federal agencies, NGOs, communities	Long term

ANNEX I

The Evolution of Agricultural Policies in Nigeria

1970 – 1984 Phase		
Policy Type	Year	Policy Instruments
NAFPP, 3 ADPs	1972, 1973	The National Accelerated Food Production Programme to serve as demonstration Farms and the 3 Enclave ADPs to extend innovations to farmers.
Budgetary	1975 - 1983	High rate of expansion in both capital and recurrent expenditures.
Monetary	1973	Concessionary interest rates on agricultural loans:
	1973	<ul style="list-style-type: none"> • Establishment of the Nigerian Agricultural and Cooperative Bank (NACB) • CBN enactment of minimum share of 6 percent of commercial/merchant banks' loans for agriculture.
	1975	Launching of rural banking scheme
	1977	Launching of Agricultural Credit Guarantee scheme fund (ACGSF)
Trade	1973 - 1975	<ul style="list-style-type: none"> • Abolition of export trade on scheduled crops • Import liberalization for agricultural food, inputs (raw materials, machinery and equipment) • Direct importation of grains, vegetable oils, livestock product
Agriculture Support Service Policies: 1) Agricultural Commodity Marketing and Pricing	1977	Establishment of six national commodity boards for cocoa, groundnut, palm produce, cotton, rubber and food grains.
	1972	Establishment of National Seed Service
	1973	The launching of National Accelerated Food Production Project (NAFPP).
	1975	<ul style="list-style-type: none"> • Centralization of fertilizer procurement and distribution • The creation of National Network of Agro-service Centres • Establishment of NAFCON (a fertilizer producing plant) • Centralization of agricultural input subsidy

3) Land use	1978	<ul style="list-style-type: none"> • Land Use Decree • Creation of National Soil and fertility Testing Service • The launching of soil conservation, soil erosion control and desert encroachment control programmes.
4.)Agricultural Research	1973 1977	<ul style="list-style-type: none"> • The Nigerian agricultural research institute network was reconstituted into 14 institutes in 1975 and later to 19. • The National Science and Technology Department agency was established to coordinate research institutes and in the same year this department became a Federal Ministry and the activities of the research institutes were moved to this new ministry. By 1984, Nigeria had 20 research institutes that are related to agriculture.
5) Agricultural Extension	1975	Adoption of World Bank assisted Agricultural Development Programme.
6) Agricultural Cooperative	1979	The creation of Department of Agricultural Cooperatives within the Federal Ministry of Agriculture.
7.) Water Resources and Irrigation	1977	The establishment of eleven River Basin Development Authorities.
8.) Food Production programmes	1976 - 1979 1980 ó 1983 1984	Operation Feed the Nation Green Revolution Back to the land programme and school to land programme
1985 – 1999 Phase		
Fiscal	1987	<ul style="list-style-type: none"> • A decree giving a five year tax-free period for profits earned by companies engaged in agricultural production and agro processing. • Liberalization of terms for agricultural loan such that small scale farmers could obtain loan up to N5, 000 without any tangible collateral. • Deregulation of interest rates that increased banks' lending rate to 15 percent and for agricultural loans, 10 ó 11 percent.
Monetary	1988	<ul style="list-style-type: none"> • Extension of repayment period from 4 to 7 years of commercial banks' loans for investors in long long-gestation cash crops and for mechanized large scale farming. • The minimum of the total deposit of the rural bank that should be devoted for agricultural loans was raised from 40 to 45 percent.
	1989	Establishment of Peoples' Bank of Nigeria

	1990	Establishment of Community Banks
Trade	1987	<ul style="list-style-type: none"> • Trade liberalization and abolition of commodity boards, abolition of many import levies and reduction of some excise and export duties. • Export promotion of non-oil goods, including agricultural commodities. • Import substitution measures used to place ban on some food and industrial raw materials.
Agric. Support Service Policies: 1. Water resources and irrigation	1986 1993	<ul style="list-style-type: none"> • Reorganization of River Basins and later change of name to River Basin and Rural Development Authorities • Establishment of FADAMA I
2. Employment 3. Insurance	1986 1987	Establishment of National Directorate of Employment (NDE) Establishment of National Agricultural Insurance Company
4. Land Development	1991	Establishment of a National Agricultural Land Development Authority (NALDA)
5. Agricultural Research	1992	<ul style="list-style-type: none"> • The Nigerian Agricultural Research Institute network was transferred to the Ministry of Agriculture and Rural development.
5. Agricultural Extension	1985- 1995	Continuation of the World Bank assisted Agricultural Development Programme in all the States and eventual withdrawal of the World Bank loan
6. Training and manpower development	1988	Establishment of Universities of Agriculture.
Rural Development	1986	Establishment of Directorate for Food Roads and Infrastructure (DFRRI)
Agriculture Policy document	1988	<ul style="list-style-type: none"> • Launching of the Nigeria Agricultural Policy Document. This document was to serve as the basis for planning agricultural development initiatives up to year 2000. The policy document comprised: <ul style="list-style-type: none"> ○ Macro policies-pricing, trade, exchange rate and agricultural land policies ○ Sector policies-food crops, livestock, fish, industrial raw materials, agricultural by-products and forests and wildlife. ○ Policy on support services ó agricultural extension, technology development and transfer, agricultural credit, agricultural insurance, produce marketing, commodity storage an

		processing, research, cooperatives, land resources, pest control, mechanization, water resources development, rural infrastructure, manpower development and training and agricultural investment and management advisory services
Post 1999 Phase		
Agricultural Growth Policies	1999	<ul style="list-style-type: none"> • Special Programme on Food Security • Root and Tuber Expansion Programme (RTEP)
	2000	Integrated Rural Development strategy
	2001	Presidential Initiatives on special crops-rice, vegetable oil and cassava
	2003	<ul style="list-style-type: none"> • FADAMA II programme • Cocoa Rebirth Programme
	2004	National Economic Empowerment Development Strategy (NEEDS)
	2001	<p>New agricultural policy document. The document in addition to the support services contains policy statements on:</p> <ul style="list-style-type: none"> • Agricultural biotechnology, • Agricultural development fund, • Animal vaccine production, • veterinary drug manufacture, • Agro-chemical manufacture, • Water management, and • Adaptive technology.
National Fertilizer Policy For Nigeria	2006	<p>To facilitate farmers' timely access to adequate quantity and quality of fertilizers at competitive but affordable prices through, among others the:</p> <ol style="list-style-type: none"> a) promotion of research and extension activities, b) facilitation of balanced application of fertilizer consistent with the agronomic requirements of the different cropping systems in the various agro-ecological zones of the country, based on soil testing; and c) facilitation of adequate financing for fertilizer production, marketing and use.
7-Point Agenda	2007	Emphasis was laid on agriculture and its development to achieve food security and the Millennium Development Goals objectives.

ANNEX II

LIST OF INDICATORS FOR AGRICULTURAL DEVELOPMENT CURRENTLY BEING COMPILED IN NIGERIA

	<i>Indicators</i>	<i>class of indicator</i>	<i>Agency Responsible</i>	<i>Frequency of dissemination</i>
1	Prevalence of Underweight Children Under Five Years of Age [%]	Early results	NBS/FMH	irregular
2	Annual growth of food production [%]	Early results	NBS	annual
3	Annual growth of income from the agricultural sector (%)	Longer term outcomes	NBS	annual
4	Annual growth of income from rural non-agricultural activities [sector] (%)	Longer term outcomes	NBS	annual
5	Ratio of Forested land area to total land area [%]	Longer term outcomes	FME	irregular
6	Value added in the agricultural sector per agricultural worker	Longer term outcomes	CBN	annual
7	% change in production/sales of animal products	Longer term outcomes	CBN	annual
8	% change in area under all major crops	Longer term outcomes	FMA&RD, NBS,	annual
9	% change in livestock numbers or annual growth in Livestock population	Longer term outcomes	FMA&RD, NBS, FDL, NFRA	annual
10	% change in livestock values	Longer term outcomes	FMA&RD,	annual
11	% change in value of agricultural exports	Longer term outcomes	FMA&RD, CBN, NBS	quarterly
12	% change in value of agricultural imports	Longer term outcomes	FMA&RD, CBN, NBS	quarterly
13	% of targeted entrepreneurs with access to market information	Output	NFRA	quarterly

14	Percent of farmers who applied (minimum package of inputs) last season	Early results	NFRA	annual
15	Well functioning food safety surveillance, risk analysis, inspection and testing system	Longer term outcomes	NAFDAC	monthly
16	Percent of beneficiaries selling products in local markets, regional markets, private sector distributors exporters [?] or exporting internationally	Early results	NFRA	annual
17	Percent change in number of local job opportunities over a set period	Longer term outcomes	NBS, Min. of Labour	annual
18	Annual growth or percent change in the availability of fish/production per capita	Longer term outcomes (Outcome)	FDF/NAPE P	annual
19	Annual growth or percent change in Area under sustainable management (certified forest area in hectares)	Longer term outcomes	NFRA	annual
20	Percent change in area of country forested	Longer term outcomes	FME	irregular
21	Percent of target farmers/herders (by gender) aware of improved breeds, feed, veterinary services and range management techniques	Early results (FDL/ NFRA /NBS	annual
22	livestock birth rate, by specie by area	Longer term outcomes	FDL/ NFRA/NBS	annual
23	Percent of target farmers using land registration offices	Early results	Land Registry	irregular
24	Percent change in formal land transactions	Longer term outcomes	Land Registry	irregular
25	Percent change in collected[?] revenues from natural resource use	Longer term outcomes	FMA&WR	annual
26	Ratio [proportion] of arable land area to total land area [%]	Longer term outcomes	FMA&WR	irregular
27	Percent change in number of smallholders (by gender) who use (apply, adopt) technology advice introduced by the extension system	Early results	NFRA	quarterly

28	Proportion of producer organizations capable of meeting the production and marketing needs of their members	Early results	NFRA	annual
29	Proportion of target farmers (by gender) providing input to agricultural research system	Early results	NFRA	annual
30	Proportion of target farmers aware of sustainable crop production practices, technologies and inputs	Early results	NFRA	annual
31	Percent change in yields resulting from use of improved practices	Longer term outcomes	NFRA	annual
32	Percent change in number rural population accessing financial products for economic investments	Early results	NFRA/CBN	annual
33	% of rural inhabitants using financial services	Early results	NFRA	annual
34	% Change in access to formal credit	Longer term outcomes	NACRDB/ NFRA /CBN	annual
35	% Change in access to formal credit for women and minority groups	Longer term outcomes	NACRDB	annual
36	Percent change in crop yield	Longer term outcomes	NFRA	annual
37	Percent change in number or proportion of target farmers (by gender, tenure, head and tail enders) with access to functioning (reliable, adequate) irrigation and drainage network.	Early results	NFRA/FM A&WR	annual
38	Proportion of food production to total agricultural production	Early results	FMA&RD, NFRA	annual
39	Proportion of food expenditure to total household expenditure	Early results	NBS	irregular
40	Ratio of growth of cereals, meat, fish, vegetable production to population growth	Early results	NBS	irregular
41	Dietary energy & protein supply per capita per day as % of RDA	Early results	NBS	irregular
42	% households below food threshold	Long term outcome	NBS, NAPEP	irregular
43	Level of country self sufficiency	long term outcome	NFRA	Irregular/Base line and end terms

44	Proportion of mal nourished or under-nourished people	long term outcome	NFRA/NBS	Irregular/Baseline and end terms
45	Proportion of people living in poverty	long term outcome	NFRA/NBS	Irregular/Baseline and end terms
46	Production of major crops	Early results	NFRA	Annual
47	Farmer income structure and level	long term outcome	NFRA	baseline, mid and end terms
48	Proportion of households that are food secured or unsecured	long term outcome	NFRA	baseline, mid and end terms
49	Proportion of households with improved dietary diversity	long term outcome	NFRA	baseline, mid and end terms
50	Number of farmers with increased access to extension and marketing services	Early results	NFRA	Annual
51	Number of socio economic infrastructures available for communities of project site	long term outcome	NFRA	baseline, mid and end terms
52	Area cultivated under irrigation (ha) by type of crop	early results/outcome	NFRA	Annual
53	Perception of farmers on their environment in relation to agro forestry	early results/outcome	NFRA	Annual
54	Number of beneficiaries practicing agro-forestry activities	long term outcome	NFRA	baseline, mid and end terms
55	Livestock productivity by type	early results/outcome	NFRA	Annual
56	No of farmers having access to improved basic animal health services	early results/outcome	NFRA	Annual
57	Incremental fish production at project site	early results/outcome	NFRA	Annual
58	No of fisherfolk implementing fisheries activities at project site	early results/outcome	NFRA	Quarterly
59	No of farmers at project site practicing improved post harvest technologies introduced	long term outcome	NFRA	baseline, mid and end terms
60	Level of income generated by agro processing activity at household level	early results/	NFRA	Annual

		outcome		
61	Level of farmers access to agricultural inputs	long term outcome	NFRA	baseline, mid and end terms
62	Level of agricultural products sale by households	long term outcome	NFRA	baseline, mid and end terms
63	No of farmers linked to marketing agency	early results/ outcome	NFRA	Annual
64	Income incremental at household level due to access to credit	long term outcome	NFRA	baseline, mid and end terms
65	Number of new technologies adopted	early results/ outcome	NFRA	annual
66	Perception of farmers on the research and extension system	early results/ outcome	NFRA	Annual
67	Prevalence of diarrhea and fever among children	long term outcome	NFRA	Baseline, mid and end terms
68	Prevalence of chronic energy deficiency in women	long term outcome	NFRA	Baseline, mid and end terms
69	No of households producing vegetables for consumption & sale	long term outcome	NFRA	Baseline, mid and end terms
70	Level of participation of beneficiaries in the project activities	long term outcome	NFRA	baseline, mid and end terms
71	Number of farmers groups supported in farm income generated activity	early results	NFRA	Annual
72	No of communities/villages with increased access to rural infrastructures (road, market, wells and dams)	long term outcome	NFRA	baseline, mid and end terms
73	Level of off farm income	long term outcome	NFRA	baseline, mid and end terms
74	No of farmers trained able to calculate & document their profit at the end of the harvesting season	Early results/outcome	NFRA	Annual
75	Improved policy formulated and applied		NFRA	
76	No of publications on project achievements	Early results/outcome	NFRA	Annual
77	% of completion of project targets	Early results/outcome	NFRA	Annual

ANNEX III

Monitoring Indicators

TOPIC	INDICATOR
1. WATER RESOURCES	Indicator 1: Municipal discharges into fresh water: SS(Suspended solids), BOD (biological oxygen demand) and phosphorus
	Indicator 2: conflict over water use.
	Indicator 3: daily river flows to key points (maximum, average, lower water level)
	Indicator 4: Nitrate and phosphorus content of water or organic matter content and changes in physio-chemical parameters (conductivity, pH, turbidity, chlorophyll, nitrogen, phosphorus and pesticides).
	Indicator 5: piezometric level of deep ground water and aquifers, and chemical quality of water.
	Indicator 6: wastewater processing rate (R).
2. PLANT AND WILDLIFE RESOURCES	Indicator 1: Number of engendered and extinct species.
	Indicator 2: Rate of alteration of natural habitats.
	Indicator 3: Areas of land colonized by invading species, and invaded stretches of banks.
	Indicator 4: diversity of wild Species
	Indicator 5: Area covered by protected areas.
3. HALEIUTIC RESOURCES	Indicator 1: Fishing production
	Indicator 2: productivity
	Indicator 3: Genetic diversity of halieutic resources
	Indicator 4: Contaminant concentration in fish.
4. PROTECTED AREAS AND FORESTRY	Indicator 1: Intensity of forest exploitation (total withdrawals / natural annual growth and reforestation).
	Indicator 2: Land area covered by forest in the Niger basin zone.
	Indicator 3: Existence and level of management of forest development units.
	Indicator 4: Existence and level of management of protected areas (botanical gardens, sanctuaries, ecological/ wildlife preserves, national parks, etc)
	Indicator 5: Degree of control of land conversion trends.
	Indicator 6: Existence of plant communities and / or reforested surface areas (natural and artificial reforestation).
5. PEDOLOGY AND LAND DEGRADATION	Indicator 1: Soil pollution
	Indicator 2: Number of hectares of soil subjected to salinization and alkalization.
	Indicator 3: proportion of arable land and permanent cultivations.
	Indicator 4: Changes in land use.

6. POLLUTION	Indicator 1: Degree of reduction of the mass of organic and nutritive debris in stagnant water.
	Indicator 2: Level of operations and capacity of wastewater and household waste dumps and purification and / or treatment plants in major urban areas.
	Indicator 3: proportion Degree of reduction of the use of contaminants and POPs.
	Indicator 4: Existence of dissuasive mechanisms and level of effectiveness of these mechanisms in reducing the use and / or improper handling of contaminants.
7. CLIMATOLOGY	Indicator 1: Area of land affected by bush fires annually.
	Indicator 2: Evolution of precipitation, in time and space (droughts).
	Indicator 3: Agro-demographic index
	Indicator 4: Agro-climatic zones.
	Indicator 5: Vulnerability of populations to climate changes.
	Indicator 6: Extent of flooded areas.
8. GEO- MORPHOLOGY	Indicator 1: Rate of water erosion (Universal Soil Loss Equation)
	Indicator 2: Rate of wind erosion.
	Indicator 3: Degree of silting of the River Niger.
	Indicator 2: Rate of bank erosion.
9. DESER- TIFICATION	Indicator 1: Arable land lost to wind and water erosion.
	Indicator 2: Proportion of land silted / affected by desertification.
	Indicator 3: Areas of Land recovered and restored by anti-erosion work.
10. AGRICULTURE AND LAND DEVELOPMENT	Indicator 1: Spreading of agricultural pesticides over cultivated land.
	Indicator 2: proportion of soil degraded by irrigation
	Indicator 3: Intensity of use of water resources (water withdrawn/ available resources).
	Indicator 4: Quantity of chemical fertilizer used.
	Indicator 5: Agricultural habitats subjected to intensive farming.
	Indicator 6: Degree of development of irrigable land, and surface area of irrigated zones.
	Indicator 7: Phosphate content of water in agricultural zones.
	Indicator 8: Level of nitrogen in the water
	Indicator 9: Level of pesticides in the water (2, 4 óD, atrazine and lindane).
	Indicator 10: Unexploited natural habitats.
	Indicator 11: Level of crop yields and productivity.
11. LIVESTOCK FARMING AND HEALTH	Indicator 1: Number of Livestock (livestock Units) and water consumption.
	Indicator 2: Productivity of pastoral resources.
	Indicator 2: Rate of occupation of urban areas by agricultural

	activities
	Indicator 3: rate of access to drinking water
	Indicator 4: Rate of servicing / population supplied with treated water
	Indicator 5: Rate of population drinking water need met.
	Indicator 6: Population with access to sanitation
12. HYDRO- AGRICULTURAL USES	Indicator 1: Number of hydro- agricultural works completed.
	Indicator 2: Capacity for preventing and managing food insecurity.

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Stakeholder Participants to the Updating Process

1. Stakeholder Forum on Sustainable Agricultural Development Strategy and Food Crisis Response Programme February 24 -25, 2009

M.Uwom, River State Government; S.Negedu, Federal Ministry of Agriculture and Water Resources (FMAWR);M.Yisa, Ministry of Agriculture and Natural Resources(MANR -Kwara); M.G Gambomi, Ministry of Agriculture Yobe; A.Adamu, National Food Reserve Agency-Commercial Agriculture Development Program (NFRA óCADP);S.Kaluwau, IPPRI; A.Abdullahi; B.Obamiro, All Farmers Association of Nigeria AFAN; G.Nwaneri, ADSG; P.Hartmann,International Institute for Tropical Agriculture (IITA); A.Aletan, NIWEMC; E.Atoji, Successor Farm; S.Tseen, Successor Farm;J.Olowookere, Youth Farmers Development Initiative YFDI ; S.Chinyere, YFDI; K.P Kukwi, Nigerian Agricultural Quarantine Services (NAQS); S.E. Uhiene, New Partnership for Africa Development (NEPAD); I.E.Ilevbuoje, National Food Reserve Agency (NFRA);I. Mohammed, (NFRA); P.A.Chris, C.A.Foundation;B.Esiwulo, (NFRA); N. Adewale,Soil Fertility Management/ National Food Reserve Agency, (SFM/NFRA) ; K. Tajudeen , Proedge Limited; S.Eyong ,Niaachraville; P.Usman,Westerner; B.Omu, Fresh Fact ; J.Aiyede , Oboso Press; C.I. Mokezie, AIMS-Abuja; E.O. Kolawole , (AFAN); A.A.Alao , Ministry of Agriculture and Water Resources Osun (MANR); E.T.Anyaduba , Federal Ministry of Agriculture and Water Resources (FMAWR) ; J.Osita , The Herald ; I.Abubakar , Voice of Nigeria (VON) ; A.Tunde, (AFAN óKogi) ; Ernest Ihedigbo , First Bank of Nigeria ; I.A. Nnachi, FADAMA; A.M. Babandi , NFRA; T.A. Kayode , NFRA ; C.Odiba ,INICLUB; S.Adah , Tell Magazzine ; I. Amanzueh , AFAN; H.Shehu NFRA; A. Nwadike , MANR-Owerri; B. J .Olorunfemi , NFRA; J. Marshall , GreenWorld Agribusiness Limited ; A.Soje , Kogi State ; A.S.Dusse , AFAN; A.Ibidapo , FMAWR /Federal Department of Agriculture ; A.Maliki ; B.A. Amanifor , NFRA ; B.L. Lawal ,Federal Ministry of Commerce (FMC) ; E.E..Kalu, FMC; J.E. Etong , Federal Ministry of Commerce and Industry (FMC&I) ; C. C Molokwu , NFRA; R.A.Y Adeoye , NFRA ; I.Kagara; S.Okiwe , Ministry of Agriculture and Rural Development (MA&RD-Awka) ; B.Olaiya, University of Agriculture Abeokuta (UNAAB); S.N. Meski , Ministry of Agriculture (MOA); A.Sani, Nigerian Institute of Social and Economic Research (NISER); D.O Fadahunsi, NFRA; R.S Egba, Agriculture Development Programme (ADP Enugu) ; J.C.Umeh, University of Agriculture Makurdi ; M.O. Yusuf , Union Bank of Nigeria ;A. Abifarin , Progreen ; J.Ochonogo, MiANR ; A.M Kolo , NFRA; A.G Abubakar, NEPAD; H.Lawal , B.A.Baura , MOA- Gusau ; S.G.B Zakari , Golden Fertilizer ;G.Lombin, International Fund for Agriculture Development, (IFAD) ; A.Jeremiah , National Planning Commission (NPC) ; A. Adamu , NAFN; Dr. A, M ; C.I .Ugwuohah, NFRA ; C.Chieffemi , AFAN; A.Umar , Adamawa State Government (ADSG) ; R.Mani , Food and Agriculture Organization (FAO); M.S.Shanow , Kano ; C.Edo, News Star ; D.S Eguawje ; I. Ojonogwa ,NIGCASSARA ; Y.Saidu , NFRA ; J.N. Okpara , Nigerian Meteorological Agency (NIMET); G.O. Ajaezi , NIMET ; A.V.Amire , FMAWR; A.O. Olunnuga , FMAWR ; E.Okporie, Ebonyi, State University ; R.Oroh , Nigeria Economics Summit Group Rice Network (NESG); O.Basorun , ADP; D.Adejobi , Obafemi Awolowo University Ile- ife (OAU); A.B.Aromolaran , University of Agriculture Abeokuta (UNAAB) ; U. Hassan , NAFN; A.C.Nasidi , Jigawa ; M.S.Andullahi , Kaduna ; A.A. Onabanjo , Ministry of Agriculture Abeokuta ; E. O.Oyedipe , University of Agriculture , Makurdi ; R.

Greenberg , USAID ; B.Akanji ,NISER; C.T. Sarr , FAO/National Programme on Food Security ; B. Brandenburg ,WorldBank ; A. Adesoji , AFD ; S.Croner , USAID ; Abraham , Press ; O.O.Ojuola , FDA ; S.H.Sagagi , ENSARD ; J. G. Danwake , Niger state ; S. Garba , Commercial Agriculture Development Programme (CADP) ; A. Oladehinde , Eki- News ; M.Badaw , WARDA ; A.U. Kasarawa , MOA- Sokoto ; G.Obiekwunye , Channels ; G.Ogunkomoya , Channnels ; A.A.Voh (jr) National Animal Production Research Institute ; E. P. Odachi , NPC ; U.C. Amalu , University of Calabar ; T. Isijiola ; S.G. Satatima , Union Bank of Nigeria ;B.S. Aliyu, Kebbi State ; I.Jimoh , National Food Reserve Agency (NFRA) ; K. Amtsn , Japense International Development Cooperation (JICA) ; D. G. Kakwi , NFRA; O.O.Oyaide , NFRA ; A.A. Onajola, MOA- Ogun State ; E.C. Okorji , University of Nigeria Nsukka ; P.Udoh , Union Bank of Nigeria ; Y. Tahiru , USAID/FEWSNET ; A.N.Aliyu , Ministry of Agriculture , Niger ; S.O.Folarin , National Agricultural Seeds Council (NASC) ; K.Shelsby , Markets ; J.Noel ; A.S.Olomola , NISER; M.Olurunfemi , World Bank ; Z.Lawal ,CADP ; B. Yahoza , FMAWR ; S. A .O guntimehin , FDA-FMAWR ; A.M. Ajala , NFRA ; T. Akande , NISER ; D.M .Albahi , Gombe State Government ; R.A.K. Jimoh , NIWRMC ; A.Ali , University of Agriculture Makurdi ; O.Obiozor , Tell Magazine ; I. Mariga , FMAWR; T. Lakoju, Edo State ; M.Magaji , NAQS; M.A. Adewuyi , NFRA ; N.Malife , WorldBank ; E.N.Ekele , MANR; O.I.Agoro ,Lagos State Agriculture ; U.A. Akpan , Federal Ministry of Finance (FMOF) Abuja ; M.I.S. Oba ,AFAN ; R.K.Attahiru , FMC; S.Egweli, FMC ; F. Akilapa , FDA ; A.Akintola , CDF ; F.J Olonilua ,NASC ; O. Olusegun ; G.B.Ayoola , University of Agriculture Makurdi / Farm Infrastructure Foundation (UAM/FIF) ; C.Akujobi , NISER ; T.O.Ezulika , National Root Crop Research Institute ; G.V. Dembatta, VON ; Tim Prewitt , USAID Markets ; V.Chude , National Programme for Food Security (NPFS); C.Eze , NFRA; A.A. Adepoju , Ministry of Agriculture Lagos State ; G. Afr ,NFRA; M.A.Adeyemi , Centrel Bank of Nigeria (CBN) ; B.O. Ogunlaja , Central Bank of Nigeria (CBN) ; S.Ehui , Worldbank ; I. Tiamiyn , SMEDAN; J . Dangwaran , NFRA ; K.Amegbeto , JICA ; J.A.Babalolla NFRA) ; V.A .Adeyeye ,NISER ; A.Musa , Bank PHB ; M.Olaniyi , USAID Reforms; S.T.Mbap , Abubakar Tafawa Balewa , Bauchi (ATBU) ; I.Kolo , MOA ; E .Elhiegu , MANR -Ebonyi ; G.Osai , NAFN; G.Ononiwu , USAID Markets ; N.A Yakubu , Ministry of Agriculture and Natural Resources(MANR) ; A.Bamunde , National Food Reserve Agency ; K.I. Ogungbade , NACRD Bank ; A.Aliyu , Federal Ministry of Agriculture and Mineral Resources (FMAMR) ; H. Mvitia , FAO ; M.Oyigbenu ,FMAWR.

2. USAID GLOBAL FOOD SECURITY RESPONSE PROJECT

Developing Effective Strategies: A review of Past and Present Government Agricultural Intervention ; July 15 – 16 , 2009 @ Maizube Farms , Minna , Niger State

Olatokun A.O , National Agricultural Seeds Council (NASC); S.E . Abimiku , National Agricultural NASC ; S.A Oguntimehin , Federal Department of Agriculture (FDA); Adewuyi M.A.A , National Food Reserve Agency (NFRA); Wategire Bright, Livestock Department; Sabiu Auwal , NFRA; Malomo, Gabriel A , Agriculture Research Council of Nigeria (ARCN); Jibril Abubakar , NFRA ; Adenuga Olubunmi Olunuga , Federal Department of Fisheries; Akudinobi Love Chinyere , Agriculture Production Input Services (APIS); Osho A.O , APIS ; Abioye Aderemi O. , Fisheries Department; M olokwu C.C , NFRA; Okunnu O.K , NFRA; Awopetu J.A , FDA ; Nyager J, Department of Livestock; Afowowe A.O , Agro Processing & Marketing; Ajala A.M ,

NFRA ; Salako A , Department of Cooperative NFRA; Abimbola Adubi , Worldbank; Adamu Dahiru , ARCN;

3. Validation Workshop on Agriculture Development Domains in Nigeria at IITA Ibadan September 3, 2009

Agbaje K.A, National Food Reserve Agency , Ibadan (NFRA); Akanji Abiodun , NFRA; Aikpokpodion Peter , Cocoa Research Institute of Nigeria (CRIN); Akinwale Gbenga , International Institute for Tropical Agriculture (IITA); Alabi Tunrayo , IITA; Auwal B.M , Bayero University of Kano; Babatunde Fikayo , Abubakar Tafawa Balewa University , Bauchi; Chiezey Uche , Ahmadu Bello University, ABU-Zaria; Denton F.T , NFRA-Ibadan; Dianjuin Jia , NFRA- Ibadan; Gringe Elaine , (IITA/ILRI); Gungula D.T , Federal University of Technology, Yola; Huang Wenqing , NFRA-Ibadan; Ilona Paul, IITA; Izge A.U , University of Maiduguri; Kolo Musa , Federal University of Technology, Minna; Mukthar Muhammad , ABU- Zaria; Okonkwo C.C , IITA; Olusi M.A , NFRA Ibadan ; Omagbemi A , NFRA ; Orowale Lara , IITA ; Peter Kukalow , IITA; Kai Sonder , IITA; Yakubu A.I , Kebbi State University;

4. Agriculture Strategy Drafting Retreat at NFRA, Mabushi, Abuja 5-6 November, 2009

Bernard Aigbokhan , Ambrose Alli University Ekpoma; Anthony Ikpi, University of Ibadan (UI); Daramola Adebisi , Federal University of Technology Akure; Bola Okuneye , University of Agriculture Abeokuta (UNAAB); Aromolaran Adebayo , University of Agriculture Abeokuta; Godson Ononiwu, USAID Markets; Goddy Onwugahlu , Federal Ministry of Agriculture and Water Resources (FMAWR) ; Sabiu Auwal , National Food Reserve Agency (NFRA) ; Odudare M. O ,Federal Ministry of Agriculture and Water Resources (FMAWR);Ogunbela O.F,FMAWR ;Sunday Uhiene, FMAWR; Adewuyi M.A.A, NFRA ; Aderigbe Olomola, Nigerian Institute of Social and Economic Research (NISER);P lacid Njoku, Nigerian Institute of Animal Science; Kai Sonder, International Institute for Tropical Agriculture (IITA);Akin Omotayo, UNAAB

5. Private Sector Stakeholders Meeting at Gracious Hotel, Abuja 15 April, 2010

Elite Steve, Croplife Nigeria; Abdullahi Ibrahim, Maslaha Seeds Limited; Yakubyu Atar Stephen; Ogunlade Dele. A, Matna Foods Company; Agamah Solomon , Farm Management Synergies Limited; Benjamin Yohanna, Arewa Cassava Farmers Association ; Godson Ononiwu, USAID Markets; Kassim Sadiq, CHI Limited; Olafare Richard, Savannah Seeds;Verma Anil, West African Cotton Company Limited; Omuaye J.Shola, Fertilizer Association of Nigeria (FEPSAN);Kole James Pius,Cybernetics Nigeria Limited; Nwuneli Mezu, Africaace Food (AACE); Sunday Uhiene , Federal Ministry Agriculture and Water Resources (FMAWR); Ugwuh C.C , Ebony Agro; Azih Innocent , Nigeria Economic Summit Group (NESG); Gideon Negedu , TAK Continental ; Sangobiyi Adebayo , Shonga Farms Holdings; Akonjom Akonjom, Cassava Exporters.

6.IFPRI Staff

James Sackey, International Food Policy Research Institute (IFPRI-Abuja) ; Valerie Rhoe, IFPRI -Abuja; Suresh Babu, IFPRI -Washington DC ; Shashi Kolavalli, IFPRI-Ghana ; Hiroyuki Takeshima, IFPRI óAbuja; Sheu Salau, IFPRIóAbuja; Theodora Adene, IFPRI- Abuja;

Charles Gamde, IFPRI- Abuja, Kamiljon Akramov,IFPRI -Washington DC, Xinshen Diao,
IFPRI -Washington DC, Ephraim Nkonya, IFPRI -Washington DC,