



Report of the Vision 2020
National Technical Working Group
On

Agriculture & Food Security



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TABLE OF CONTENTS

LIST OF FIGURES.....	4
LIST OF TABLES	4
EXECUTIVE SUMMARY	5
1 INTRODUCTION.....	6
1.1 GLOBAL TRENDS IN AGRICULTURE AND FOOD SECURITY	8
1.2 IMPACT OF RECENT DEVELOPMENTS: CHALLENGES AND OPPORTUNITIES.....	9
1.3 NIGERIA’S AGRICULTURE SECTOR OVERVIEW	10
1.3.1 <i>Historical Context.....</i>	<i>10</i>
1.3.2 <i>Nigeria’s Agricultural Ecological Zones.....</i>	<i>11</i>
2 ASSESSMENT OF THE AGRICULTURAL SECTOR.....	14
2.1 SECTOR PERFORMANCE ASSESSMENT.....	14
2.1.1 <i>Economic and Social Contributions</i>	<i>14</i>
2.1.2 <i>Current Performance across Agricultural sub sectors</i>	<i>17</i>
2.2 COMPARATIVE BENCHMARKING ANALYSIS	22
2.2.1 <i>Comparator Set</i>	<i>22</i>
2.2.2 <i>Comparative Analysis and Key Learning Points.....</i>	<i>24</i>
2.3 CURRENT OPERATIONAL CONSIDERATIONS AND CONSTRAINTS.....	27
2.3.1 <i>Key Issues and Challenges.....</i>	<i>27</i>
3. AGRICULTURE AND FOOD SECURITY VISION 2020 & STRATEGIC PLAN.....	34
3.1. GROWTH PROJECTIONS FOR GLOBAL AGRICULTURE AND FOOD SECURITY	34
3.2. VISION FOR THE NIGERIAN AGRICULTURAL SECTOR.....	35
3.3. OBJECTIVE, GOALS/TARGETS, STRATEGIES AND INITIATIVES FOR THE NIGERIAN AGRICULTURAL SECTOR	35
3.4. KEY GROWTH DRIVERS/ ENABLERS	46
3.4.1 <i>Legal & Regulatory regime.....</i>	<i>46</i>
3.4.2 <i>Fiscal Regime.....</i>	<i>46</i>
3.4.3 <i>Institutional Framework.....</i>	<i>47</i>
3.4.4 <i>Human Capital & Infrastructure Requirements.....</i>	<i>48</i>
3.5. ENVIRONMENTAL IMPLICATIONS OF THE AGRICULTURAL VISION	49
3.6. KEY COMPETITIVE CHALLENGES.....	50
3.6.1 <i>Political will of the government</i>	<i>50</i>
3.6.2 <i>Perception of agriculture</i>	<i>50</i>
3.6.3 <i>Funding and investment.....</i>	<i>50</i>
3.6.4 <i>Biofuel versus food supply</i>	<i>50</i>
3.6.5 <i>Inter-sectoral competition.....</i>	<i>51</i>

3.6.6. *Energy*..... 51

4. IMPLEMENTATION ROADMAP AND MONITORING FRAMEWORK..... 52

4.1. **IMPLEMENTATION ROADMAP..... 53**

4.2. **PERFORMANCE MEASUREMENT & REPORTING FRAMEWORK FOR AGRICULTURE & FOOD SECURITY INITIATIVES..... 72**

REFERENCES:..... 111

APPENDIX..... 112

LIST OF FIGURES

Figure 1: Ecological Zones of Nigeria.....	13
Figure 2: Agriculture Share of GDP (1960-2005)	15
Figure 3: Value of Agricultural Exports (1980-2004)	16
Figure 4: World Cocoa Prices (1960-2005).....	19
Figure 5: Agriculture Value Chain.....	32
Figure 6: Implementation Roadmap	52

LIST OF TABLES

Table 1: Agriculture Benchmark Countries	23
Table 2: Objectives, Goals, Strategies and Initiatives for the Agriculture sector.....	36
Table 3: Implementation Roadmap of the Agriculture Initiatives.....	53
Table 4: Performance Measurement and Monitoring Framework.....	72
Table 5: Institutional memory of agricultural policies and program	112

EXECUTIVE SUMMARY

A major thrust of Nigeria's quest to position itself amongst the 20 leading economies of the world by the year 2020 is to set a solid foundation for sustained rapid socio-economic development. The envisioned accelerated development will depend upon synergies among the key sectors of the economy principally agriculture, energy, manufacturing, financial services and mining & steel development. The development of the enabling sectors including tourism, information & communication technology, education, health, housing, governance, business environment & competitiveness among others is also equally important. Agriculture is pivotal to the realization of Vision 20: 2020. It currently contributes about 42% of Gross Domestic Product as against 13% for Oil & Gas; and employs two thirds of the entire labour force. Rapid expansion of the oil sector has played a role in eroding the competitiveness of agriculture. The nation has grown to rely heavily on earnings from oil exports without making the investments needed to diversify the economy through sustained agricultural growth and development of other non-oil sectors.

Blessed with abundant land and water resources, Nigeria's agricultural sector has a high potential for increased growth, but this potential is not being realized. Failure to modernize agriculture on a large scale, outdated land tenure system, low adoption of research findings and technologies due to weakened extension services, high cost of farm inputs, poor access to credit, piracy in coastal waters, overemphasis on inefficient fertilizer procurement and distribution, inadequate irrigation and storage and poor access to markets have all combined to keep agricultural productivity low with high wastages, and below optimal contributions to export earnings

Consistent with the strategic importance of the agricultural sector in the development of the Nigerian economy, the National Technical Working Group (NTWG) on Agriculture & Food Security was set up under the NV20: 2020 to articulate a vision and strategy for the sector. The Agric NTWG developed the conceptual framework needed to implement a sustained national agricultural development strategy and identified the primary pivots for agricultural growth and development and the interventions needed to unlock the vast resources and the under-exploited potentials of the sector.

This report presents the findings and recommendations necessary for the transformation of the Nigerian agricultural sector, towards the realization of the overall National Vision 20: 2020 goal.

1 INTRODUCTION

Nigeria has set an ambitious target to become one of the top 20 economies in the world by the year 2020 otherwise known as “Nigeria Vision 20: 2020”. A major thrust of this goal is to accelerate the country’s economic growth and position it on a path of sustained and rapid socio-economic development. As part of the Vision 20:2020, Nigeria seeks to consolidate its leadership role in Africa and establish itself as a significant player in the global economic and political arena.

The envisioned accelerated development will depend on synergies among the key sectors of the economy including agriculture, energy, manufacturing, financial services and mining & steel development. The development of other sectors such as Tourism, Information & Communication Technology, Education, Health, Housing, Governance, Business Environment & Competitiveness are considered *sine qua non* to the realization of Vision 20: 2020 goal.

This report will be focusing on the role of the Agricultural Sector as a key driver to the realization of the national developmental goals. By year 2020, Nigeria aims at having a modern technologically enabled agricultural sector that fully exploits the vast agricultural resources of the country, ensures national food security and contributes significantly to foreign exchange earnings. Agriculture has always played a key role in the nation’s economy, currently contributing about 42% of Gross Domestic Product as against 13% for Oil & Gas; and employing two thirds of the entire labour force. However, growth in the sector has not kept pace with the needs and expectations of the nation. Over the past 20 years, value added per capita in agriculture has risen by less than 1 percent annually. Food production increase have not kept pace with population growth (except in recent times), resulting in rising food imports and declining levels of national food self-sufficiency. Several factors have accounted for this poor performance. Low mechanization, subsistence small scale holdings, outdated land tenure system, low adoption of research findings and technologies, high cost of farm inputs, poor access to credit, overemphasis on inefficient fertilizer procurement and distribution, inadequate irrigation and storage and poor access to markets have all combined to keep agricultural productivity low with high wastages and below optimum contributions to export earnings.

Crisis, it is said, sometimes opens the door of opportunities for the discerning. Without doubt, Nigeria has vast opportunities for agricultural development which can be exploited in line with global best practices to address and overcome the lingering global food crisis. Such identified potentials include arable land, a human population of about 140 million which guarantees food market; suitable agro climatic conditions for sustained year round agricultural production and availability of export market.

There is also diverse and rich vegetation capable of supporting a heavy population of livestock, 79 million ha of arable land, 267.7 billion m³ of water for irrigation, 14 million ha of surface water, 57.9 billion cubic meters of underground water and 3.14 million ha of irrigable land.

From the colonial period up to the 1970s, Nigeria was mainly an agricultural economy. It was among the world's leading producers of Cocoa, Palm oil, Groundnuts, Cotton, Rubber and Hides and Skin. The agricultural sector contributed over 60% to the GDP (supplying 70% of export and 95% of food needs). However, with the advent of commercial oil exploration in the early 1970s the fortunes of agriculture started to dwindle, with a resultant downward decline in productivity. Principally, domestic production of most food commodities had not kept pace with demand. Population growth, change of food preference, urbanization, inflation and demand from neighboring countries are among some of the factors that continue to affect food availability, its accessibility and affordability to most of the citizens of Nigeria. Over the years, several programs, initiatives and policy strategies were implemented to address these challenges in order to ensure agricultural development. These initiatives and interventions helped to ensure that the agricultural sector achieved some progress but left a lot to be accomplished in terms of national food security.

The performance of the agricultural sector has been uneven in the past. Its average annual growth rate ranged from about 3.3% in 1990s to an average of 6% between 2003 and 2007. Most of the current growth rate has been attributed more to expansion in cultivated land area rather than increase in productivity (kg/ha). Crop production in Nigeria is dominated by cereal, root and tuber crops. While the country has over the years made appreciable progress in meeting its domestic needs for sorghum, millet and to some extent maize and cowpea, it fell short in terms of rice and wheat which have continued to be imported. Also, production of root and tuber crops have met domestic need and are even exported. For example, Nigeria is the largest producer of cassava in the world and has a high potential to gain from exporting processed cassava. Productivity and incomes can be enhanced by improving quality of seeds and farm management practices such as land and irrigation management practices which vary substantially across agro-ecological zones. Furthermore, increasing the area under irrigation will expand output since crop yield under the irrigation system is much higher than under rain-fed system (with the exception of root and tuber crops).

The share of Agriculture in Federal Government's annual budget ranges between 1.3% and 7.4% from 2000 and 2007 and this has consistently fallen below the Maputo Declaration of 10% share of total country budget for agriculture, an indication of the low priority previous governments had placed on agriculture. However, state level agricultural expenditure share were observed to be relatively higher

compared to that of the Federal Government, while those of the local government councils were highly erratic. Overall, Nigerian agricultural expenditure was far below international standards even when accounting for its level of income. Despite the low budget allocation and fund release to agriculture, expenditure on fertilizer alone was usually over 50% of the agricultural budget.

It is believed that even though the Nigerian agricultural sector has made some impressive strides in the past decade, these gains will continue to be diluted if some of the following challenges are not addressed. These include: low public investment in the sector, concentrating emphasis on production rather than on the full value chain, focusing resources more on fertilizer and other input supplies at the expense and often neglect of research; extension services and infrastructural development. Attention also needs to be paid to planning, priority and target setting, reliable data generation and reporting systems, and monitoring and evaluation of agricultural sector projects. There is also need for clarity in the roles of the three tiers of government in agricultural policy implementation.

In order to address these challenges and set agriculture on a sustainable growth that ensures food security for the nation, six objectives were articulated to actualize an agricultural vision of “A technology driven agricultural sector that is profitable, sustainable and meets the socio-economic aspirations of the nation”. Goals were also set and strategies developed to ensure achievement of the set objectives.

1.1 Global Trends in Agriculture and Food Security

According to FAO in a publication titled “World Agriculture towards 2015/2030”, the world as a whole has been making progress towards improved food security and nutrition. This is clear from the substantial increases in per capita food supplies achieved globally and for large proportions of the population of the developing world. But, as the 1995 FAO study had warned, progress was slow and uneven. Indeed, many countries and population groups failed to make significant progress and some of them even suffered set-backs in their already fragile food security and nutrition situation. As noted in the 2001 issue of the State of Food Insecurity in the World, humanity is still faced with the stark reality of chronic undernourishment affecting over 800,000,000 people; 17% of the developing countries, as many as 34% in Sub-Saharan Africa and still more in some individual countries.

The World Food Summit target of halving the number of undernourished persons by 2015 is far from being reached, and may not be accomplished even by 2030. By the year 2015, per capita food supplies will have increased and the incidence of undernourishment will have been further reduced in most developing regions. Food insecurity has been a global phenomenon with varying degrees of severity by

International regions with Sub-Saharan Africa (SSA) being the worst hit. Over 31% of the population in SSA (203.5 million individuals) is classified as being undernourished.

Recently, however, key trends have emerged that are severely worsening the global food situation. These include the following:

- High population growth especially in Asia (primarily China and India) and the pressure this exerts on the world's food supply.
- Loss of agricultural land to residential and industrial development as well as to increasing desertification arising from global warming.
- The shifting balance between the use of food for human consumption and the generation of biofuel which is to cater for the ever-increasing global energy demands.

1.2 Impact of Recent Developments: Challenges and Opportunities

The changing global trends pose food security threats to countries that are food import dependent. For instance Nigeria spends over \$3 billion annually on the importation of staple food such as wheat, rice, sugar and fish. The Global Hunger Index published by the International Food Policy Research Institute (IFPRI) showed Nigeria at 20 in the range of 10-20 labeled as having a "serious" state of hunger among compared Sub-Saharan African countries. Furthermore, the Food and Agriculture Organization (FAO) in its State of Food Insecurity in the World, (2006) had indicated that Nigeria had about 12 million people reported as undernourished as at 2003. This undernourished proportion of the country's population depicted by percentage was shown to have reduced from about 13% from 1990-1992 to about 9% from 2001-2003. This seeming proportional decline may, in fact, be nullified by population growth.

Globally, agricultural systems have emerged with the efforts to optimise opportunities and use of resources. In doing this, veritable best practices have received global acclaim in driving excellence and innovation in the agricultural value chain. These include:

- Evidence-based technological innovations;
- Business orientation of agricultural activities;
- Ecological specialization and drive for comparative advantage;
- Participatory policy formulation;
- Ecosystem integrity and environmental sustainability (e.g. wetland reclamation, reforestation, polluted land remediation, erosion control);

- Soil and water conservation;
- Waste utilization (“waste to wealth” or zero-waste practices); and
- Truth in labelling practices

1.3 Nigeria’s Agriculture Sector Overview

1.3.1 Historical Context

The fundamental value of Agriculture in the development and growth of the Nigerian economy is indicated in its contribution as a source of food and raw materials for agro-industrial processing and the linkage effects with employment, national income, market opportunities for industrial output and reduction in poverty and health improvement.

In the 1960s, Nigeria was mainly an agricultural economy. It was among the world’s leading producers of Cocoa, Palm oil, Groundnuts, Cotton, Rubber and Hides and Skin. The agricultural sector contributed over 60% to the GDP (supplying 70% of export and 95% of food needs). There was also diverse and rich vegetation capable of supporting a heavy population of livestock, 79 million ha of arable land, 267.7 billion m³ of water for irrigation, 14 million ha surface water, 57.9 billion m³ of underground water and 3.14 million ha of irrigable land. However, with the advent of commercial oil exploration in the early 1970s, the fortunes of agriculture started to dwindle with a resultant downward decline in productivity. Over the years, previous administrations have tried, through various programs; initiatives and policies, to address the challenges that face agriculture and to ensure its development in Nigeria.

Some of the policies and programs of previous governments in support of agricultural development include:

- Establishment of Commodity Marketing Boards (1947-1986)
- Agricultural Research Institutes (1964-date)
- National Accelerated Food Production Project (1970s)
- National Agricultural Cooperative Bank (1973 to date)
- Agricultural Development Projects (1975 to date)
- Operation Feed the Nation (1976 to date)
- River Basin Development Authorities (1977 to date)
- Green Revolution (1979 to 1983)

- Directorate of Foods, Roads and Rural Infrastructures (1986-1993)
- National Agricultural Land Development Authority (1991 to 1999)
- Presidential Initiatives on selected commodities: Cassava, Rice, Cocoa, Vegetable oil, Livestock and Fisheries (1999 to 2007)

These initiatives and interventions (*See Table 2 in the Appendix for details on the initiatives*) have helped in ensuring that the agricultural sector achieved some progress but left a lot to be accomplished in terms of national food security. *Principally, domestic production of most food commodities had not kept pace with demand. Population growth, change of food preference, urbanization, inflation and demand from neighboring countries are among some of the factors that continued to affect food availability, its accessibility and affordability to most Nigerians.*

1.3.2 Nigeria's Agricultural Ecological Zones

The climate of Nigeria is largely tropical, characterized by high temperatures, high humidity and intense heat. In some areas in the north, the mild winter permits the growing of winter crops such as wheat, during the cool *harmattan* period between December to February. Rainfall patterns show a south-north gradation, declining from over 3550mm in the Niger Delta in the south to about 250mm in the Sahelian zone in the north.

Topographic effects create local rainfall patterns in high altitude areas of Jos Plateau, Mambilla Plateau, and the Adamawa Mountains where rainfall varies between 1016 and 2000 mm

On the basis of rainfall, the country is divided into four broad climatic regions, namely, very humid, humid, sub-humid and semi-arid. Within each region, however, substantial variation exists with respect to amount and pattern of rainfall, altitude, soil types and types of vegetation, which permit further division of these regions into sub-regions.

Very humid and humid regions cover about 14 million hectares (Oshinowo, 1992). These extend from the mangrove swamps of the coastal areas, passing through the lowland forest belt and terminating in the northern limits of the derived savanna vegetation belt. The rainfall ranges from 3500 to 2000 mm per annum. Most of the land in this region is cultivable. The region includes Lagos, Ogun, Oyo, Osun, Ondo, Ekiti, Edo, Delta, Imo, Abia, Anambra, Ebonyi, Enugu, Rivers, Bayelsa, Cross River and Akwa Ibom states. Erosion is a serious problem in the region and soils are highly weathered and infertile. The major tree crops of the region are cocoa, oil palm, rubber, kolanut, citrus, and plantain. Major arable

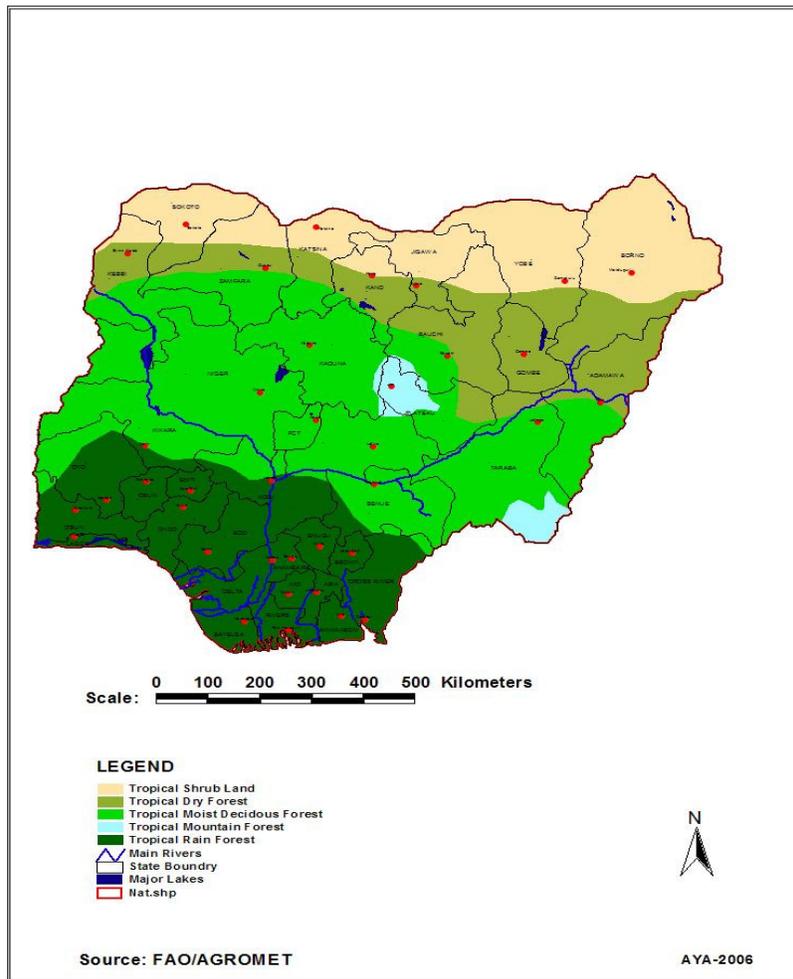
crops are roots and tubers (yam, cassava and cocoyam), cereals (maize and rice) and grain legumes or pulses (cowpea and pigeon pea). The region provides about 79% of the exploitable timber of Nigeria (FMANR, 1992).

The sub-humid region lies to the north of the humid zone covering eight states namely, Niger, Kwara, Kogi, Nassarawa, Plateau, Benue, Gombe and Taraba states. It occupies about 43 million ha. 75% of arable area is not cultivated due to low population density. The region thus offers the largest scope for expansion of cultivated areas in the future. The vegetation consists of open forest in the south and savanna grassland in the northernmost parts of the zone. Rainfall ranges between 2000 mm to 1000 mm. This region produces large quantities of yam, cassava, sweet potatoes, sorghum, maize and rice. Also, cowpea, soybean, groundnut and onion and sugar-cane are produced here.

The semi-arid region which also includes arid sub-regions occupies the northernmost parts of Nigeria, encompassing about 35million ha. It covers the states of Sokoto, Zamfara, Kebbi, Katsina, Kaduna, Kano, Yobe, Borno, Adamawa, Jigawa and Bauchi. The semi-arid region has Sudan and Sahel savanna types of vegetation, mainly consisting of grasses and woody plants. Desertification is one of the major problems. Average annual rainfall varies between 500mm to 1200mm per annum, and may be as low as 200mm in its northern limits. At least 90% of the land in this zone would require irrigation in order to achieve its full production capacity in vegetables, rice and wheat. Other important crops grown in the region are millet, sorghum, cowpea, groundnut and cotton. Also this region is the major producer of livestock and gum Arabic.

(Source: National Agric Research Strategy Plan 1996 – 2010 by Bukar Shaib, Adamu Aliyu and J.S. Bakshi)

Figure 1: Ecological Zones of Nigeria



2 ASSESSMENT OF THE AGRICULTURAL SECTOR

2.1 Sector Performance Assessment

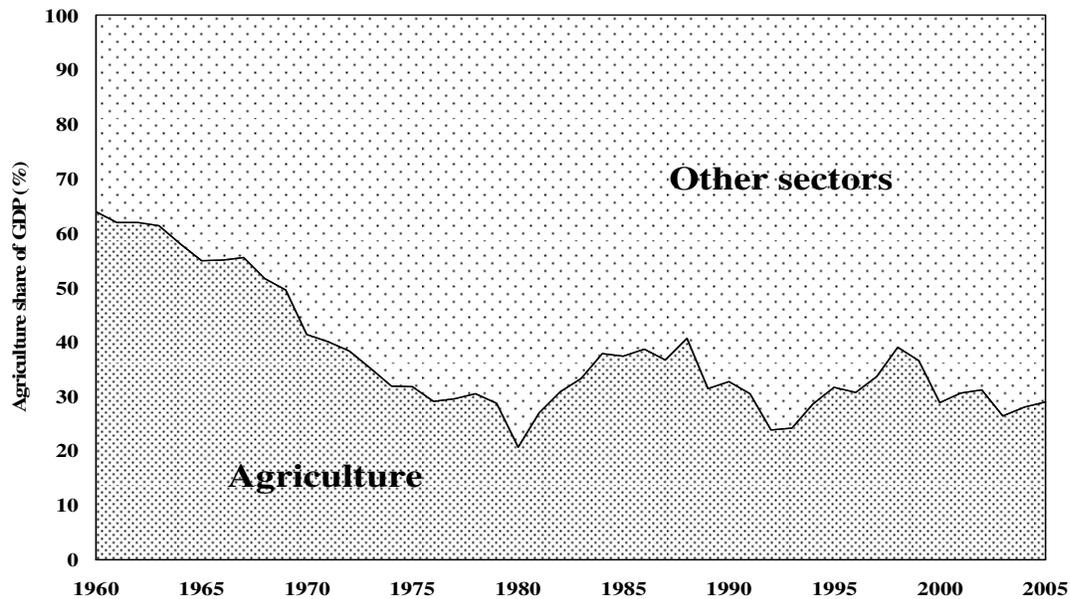
Although, the Nigerian agricultural sector has made some impressive strides in the past decade, these gains will continue to be diluted if some of the following obstacles to the development of the sector are not addressed. These include: low public investment in the sector, concentrating emphasis on production rather than on the whole value chain, focusing resources more on fertilizer and other input supplies at the expense and often neglect of research; extension; and infrastructural development. Attention also needs to be paid to planning, priority and target setting, reliable data generation and reporting systems, monitoring and evaluation of agricultural sector projects. There is also lack of clarity in the roles of the three tiers of government in agricultural spending and policy-making which results in policy inconsistency, pervading presence of ambiguities of roles within the framework of the governance structure of agricultural management, overlapping and duplication of functions. Consequently, various programs and policies enunciated over the years and supported by Donor/Development partners did not achieve their development objectives or desired impacts due to such policy inconsistencies, absence of thoroughness in planning, lack of coordination and poor policy formulation and implementation. Furthermore, agricultural developmental projects implemented in Nigeria promoted mono-cropping at the expense of mixed (integrated crop-livestock) farming systems. This to some extent contributed to the stagnation of the livestock sub-sector, encouraged farmers' encroachment to grazing lands and aggravated farmers/pastoralists conflicts.

Currently, It is acknowledged that the Federal Government is making concerted efforts to reverse the past trends. Plans and programs have been designed to grow the agricultural sector at the rate of 10% annually. Government is also investing heavily in several projects across the agricultural value chain, putting in place an enabling environment that is conducive for high agricultural growth, as well as promoting private sector involvement and investment in agriculture. In essence, the new push is to see agriculture at any level as a business and to practice it as such.

2.1.1 Economic and Social Contributions

Although, agriculture is the major driver of economic growth in Nigeria at the moment, its contributions to the GDP has fluctuated considerably over the years (see figure 2).

Figure 2: Agriculture Share of GDP (1960-2005)



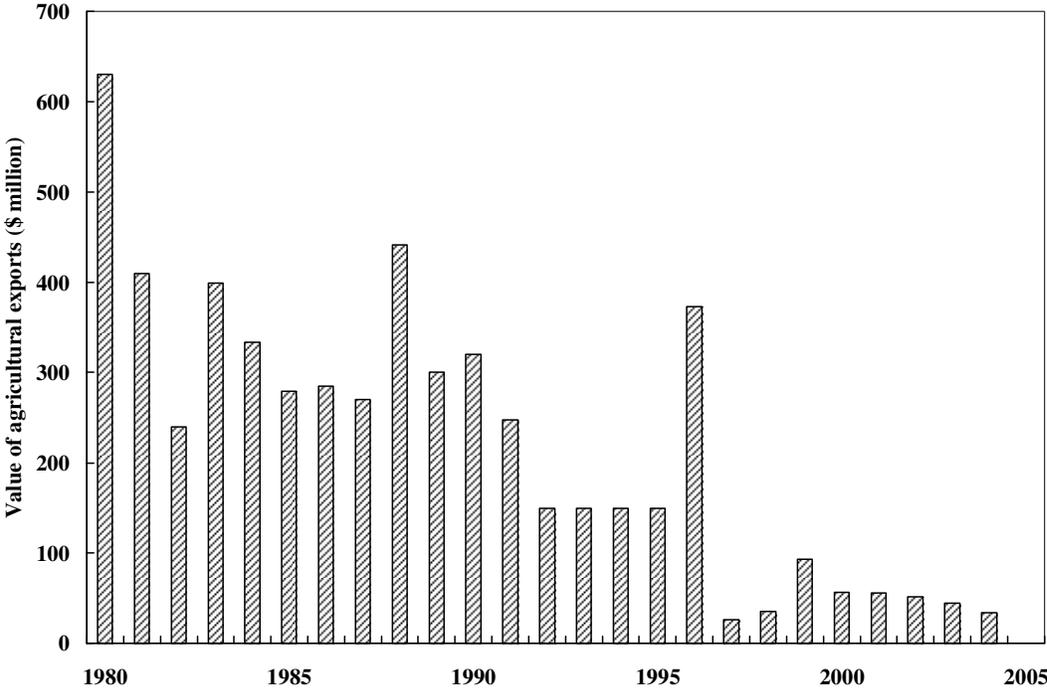
Source: IFS

Agriculture is a significant source of employment in Nigeria. In 2007, approximately 70 percent of the national labor force was employed in agriculture, up from 54 percent in 1980. In recent years the farming population has aged, reflecting the migration of youth to the perceived job opportunities in the urban areas. Smallholder or subsistence agriculture offers limited employment opportunities for degree holders, making it unattractive for graduates of secondary and tertiary institutions. The steady out-migration of younger workers to urban centers has deprived the agricultural sector of labor, creating the paradox of rural labor shortages in a labor-surplus economy. Agricultural wage rates are roughly the same as in the urban informal sector (the main source of employment after agriculture), but employment is more regular in urban areas. Wages in the agricultural sector and in the urban informal sector continue to lag far behind those in formal sectors, such as manufacturing and services (World Bank 2002). Employment opportunities in formal agro-industry are relatively scarce due to the capital intensity of the sector.

The agricultural sector is pivotal to the national food security by providing the largest proportion of the national total food consumption requirements. Between 1961 and 1998, more than 90 percent of the nation’s cereal consumption requirements were produced domestically (Earth Trends 2003). With the exception of animal products, milk, and fish. Nigeria was close to self-sufficiency in most other food categories. However, the level of self-sufficiency in cereals has been falling, resulting in rapid growth in the amounts of cereals imports, especially rice imports, which increased 130 percent in 2001 over the previous five year average (FAO 2001). Because Nigeria is able to meet the bulk of its food needs through local production, the country does not need to depend on food aid.

Before independence in 1960 and up to 1975, agricultural commodities were the main source of export earnings. Following the rise of the oil economy since the 80s, Agriculture’s share of export earnings has been on decline (see figure 3). Oil now accounts for over 95 percent of export earnings, about 76 percent of government revenues and about 33 percent of GDP (World Bank 2004). The low share of export earnings coming from non-oil exports, including agriculture, reflects the heavy reliance of the Nigerian economy on a single, non-renewable resource (petroleum) and explains the strong emphasis in the NEEDS for diversification.

Figure 3: Value of Agricultural Exports (1980-2004)



Source: CBN Statistics Bulletin, Vol. 12

Since agriculture accounts for a major share of the GDP and generates a large amount of employment, it is intuitive that Nigeria's strategy for stimulating non-oil growth should focus on agriculture. There can be no doubt that prior to 1986, strong appreciation of the naira eroded the competitiveness of Nigeria's agricultural exports and reduced the cost of food imports due to unfavourable macroeconomic policies. The result was a predictable sharp decline in the quantity and value of agricultural exports, accompanied by a surge in food imports, especially rice.

2.1.2 Current Performance across Agricultural sub sectors

Nigeria's agricultural sector comprises four sub-sectors: Crops, Livestock, Fisheries and Forestry. Crops contribute about 85% to agricultural GDP, livestock production about 10%, fisheries about 4%, and forestry about 1%. The crops and livestock sub-sectors have maintained their shares in recent years, while the fisheries has been expanding and the forestry shrinking. Given the large size of the crops sub-sector relative to the other three, growth performance in the crops sub-sector drives overall growth performance in agriculture.

2.1.2.1 Crop Production

Among Nigeria's food staples, cereals account for the largest share of cultivated areas while roots and tubers account for the largest share of production due to their much higher yields per unit land area. Millet and sorghum, which resist drought, are concentrated in the northern part of the country while maize and rice, which require more moisture, are concentrated in the middle belts. Yam and cassava are grown extensively in the humid southern part of the country. Since 1990, production of most major food crops has increased. Production increases in roots, tubers and oilseeds have been relatively rapid while production increases in cereals have been more modest. Significantly, these production increases occurred against a background of stagnant or falling yields. This means that for the past 15 years, food crop production growth in Nigeria has been driven entirely by expansion in area planted rather than by increase in productivity.

The availability of uncultivated crop land is becoming limited parts of the country, due to urbanization, road construction, schools, hospitals, and other development projects. According to satellite data, in 1995 (the most recent year for which reliable data are available) crop land occupied over two-thirds of total land area in nearly one-half of the states. Ten years later, the proportion of states is undoubtedly higher. In many parts of the South, further crop land expansion can only come at the expense of the last remaining dense forest areas (AIAE 2005). Throughout much of the North, crop production is in serious competition, sometimes to the point of open conflict with ranging livestock. This is aggravated by urbanization and growth of hitherto villages into towns and local government administrative

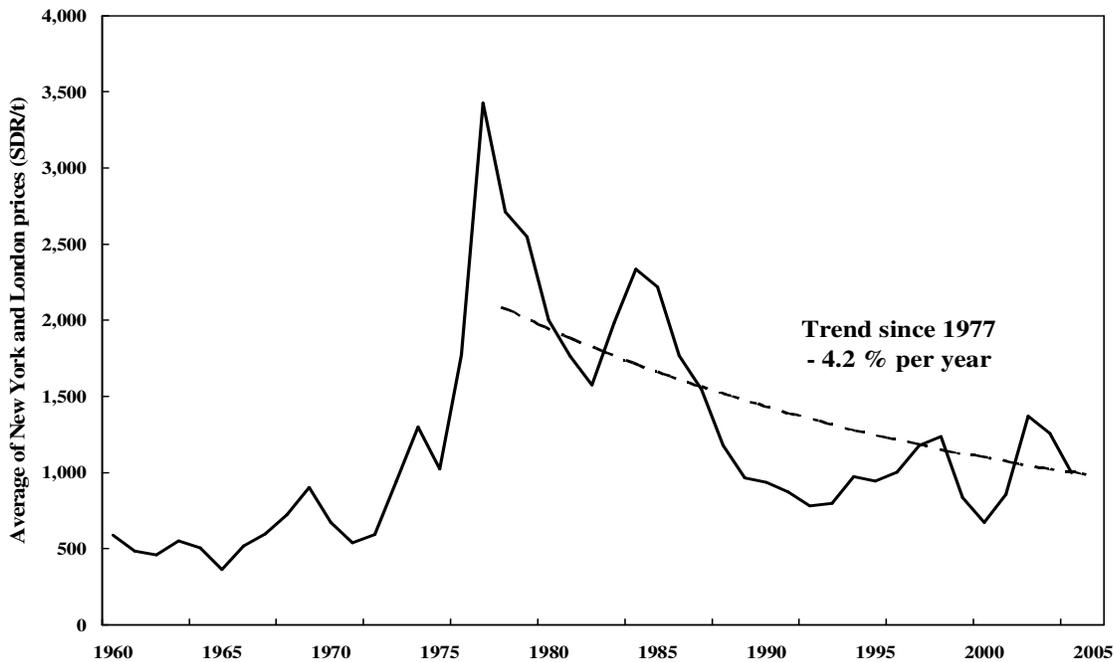
headquarters, construction of roads etc. Crop land expansion is increasingly taking place on marginal land where yields are lower. With the supply of unused crop land dwindling, the current agricultural growth strategy based on expanding area planted is clearly unsustainable over the longer term.

2.1.2.2 Tree crops

Tree crops occupy roughly 15 percent of total cultivated crop land in Nigeria. Cocoa is by far the leading tree crop, both in terms of area planted and in terms of economic value. Other economically important tree crops include oil palm, rubber, coffee, tea, and cashew. Surprisingly, tree crop production has been variable from year to year but in most instances, production increased slowly during the 1980s before leveling off or declining during the 1990s. Underlying the slow decline in production has been a pattern of stagnant or declining yields. Tree crops occupy a relatively small proportion of cultivated land but they account for a large share (in value terms) of total exports. Cocoa alone accounts for about 2% of export earnings and rubber accounts for an additional 1%.

Nigeria's cocoa sub-sector deserves a brief mention, since cocoa exports formerly dominated what was for many years an agricultural export-led economy. In the early part of the 20th century, Nigeria distinguished itself as one of the world's leading cocoa producers, a status that was maintained following independence even after many of the large cocoa estates established under colonial rule were broken up and distributed to smallholders. Beginning in the mid-1970s, however, two things happened that seriously affected the Nigerian cocoa industry. First, global overproduction coupled with the development of artificial chocolate substitutes precipitated a steep decline in world cocoa prices (see figure 4). Second, the dramatic surge in Nigerian oil exports led to a massive inflow of foreign exchange earnings and a subsequent sharp appreciation of the Naira. These two developments greatly undermined the profitability of cocoa production in Nigeria and led to the neglect or abandonment of many plantations. To compound this, several plantations became aged with declined yield. The needed replacement with improved, high yielding, disease resistant varieties did not begin until in the middle 1990s. Today, the value of the Nigerian cocoa crop is only a small fraction of what it was during the early 1970s.

Figure 4: World Cocoa Prices (1960-2005)



Source: International Cocoa Organization

2.1.2.3 Livestock

The livestock sub-sector in Nigeria currently accounts for about 10% percent of agricultural GDP. Recent data shows that Nigeria has about 16 million cattle, 52 million goats, 6.6 million pigs, 33 million sheep, and 166 million chickens. Growth in production of cattle, goats, and chickens has been low but pig and sheep production growth has exceeded human population growth. Summing across all animal species, the failure of production growth to keep pace with rapid human population growth in recent years has resulted in declining meat availability and consumption per capita. Local production is largely supplemented through live animal imports mainly from Niger, Chad and Cameroon. Nigeria also imports frozen poultry and canned meat in addition to powdered milk.

Livestock production systems in Nigeria vary by region and agro-ecological zones. Ruminant (cattle, sheep and goats) production is dominated by the transhumant *Fulani* nomads based in the northern parts of the country. Their large herds move from north to south and back with the onset and decline of the rains in search of forage. Mixed farming practices in the cereal producing arid and semi-arid zones of the north also incorporate livestock production for animal power, milk production, manure and income generation to supplement sales of crops. These are characteristically found in both the north and more humid middle and southern parts of Nigeria. Species differences have, over the years developed and

adapted to the climatic conditions in the different zones. In the early 1980s, a trend of relocation of the “national herd” into the middle sub-humid and southern humid zones started in response to limiting forage availability in the drier northern region, desert encroachment which now is understood to be the impact of climate change. These climatic factors have also combined with human population growth to influence the clearing of more areas of the hitherto tsetse infested lands in the humid zones making the area more conducive for livestock production. However, socio-economic factors especially ethnic rivalries and rejection of settlers have hindered the anticipated massive influx of the livestock into the zone. Consequently, even the grazing reserves that government gazetted to aid such relocation by settling the nomadic pastoralists remained largely unoccupied. Nevertheless, through private initiatives, some of the pastoralists have become sedentary agro pastoralists engaging in crop farming along with the seasonal livestock migration over a more limited area. Pig production is concentrated in the middle and southern parts of the country, where dietary restrictions on the consumption of pork are less prevalent. The pigs are raised almost exclusively in small-scale backyard piggeries. . Poultry, primarily chickens, are raised mainly in small household flocks, with between 20 and 25 percent of all poultry production occurring in commercial operations, usually located near urban centers. Commercial poultry is high in the southern part of Nigeria although the vast majority of poultry is raised in small household flocks. Urbanization and recent growth of fast food restaurants in most Nigerian cities and towns have provided a boost to the poultry industry.

Except for the poultry, the livestock production system has not achieved any level of transformation. Modern scientific breeding programmes have made few inroads and traditional breeds continue to dominate. Production methods for cattle, sheep and goats are still based on traditional extensive grazing practices, with commercial ranching uncommon and intensive feeding non-existent. Specialized and intensive dairy husbandry is very minimal but extensive. Fulani cattle rearers obtain small amounts of milk from their poor milk-yielding breeds. The milk is mainly retailed in local markets as sour milk or processed into butter and local cheese. There is appreciable amount of waste during the rainy season when the volume drastically increases beyond the capacity of the local markets. A peri-urban effort at milk collection and processing from the Fulanis around Kaduna has had mixed fortunes. Nigeria’s livestock producers have been slow to embrace technical change due to lack of coherence in Nigeria’s agricultural policy as it relates to the sub-sectors from 1970 to date. When the policy paid attention to improve grains production through the Agricultural Development Projects (ADPs), livestock was not a component of the design. An extension system was therefore developed that virtually neglected the need of the livestock sub-sector. Nigeria’s livestock producers have

therefore not been aware of and became slow to embrace technical change. Government intervention to address the problem through the National Livestock Development Projects emphasized resettlement as a pre-requisite to production improvements. It was at the much later stages that within-herd innovations to improve productivity were introduced, but by then, resources needed to support the transformation have dwindled to make the desired impact.

2.1.2.4 Fisheries

The fisheries sub-sector in Nigeria is made up of a number of distinct fisheries—offshore, onshore, brackish-water, inland capture and aquaculture (FAO 2000). The fisheries sub-sector is economically important: in 2007, it accounted for about 2 percent of GDP and employed a similar proportion of the national labor force. Summing across the various fisheries, total annual production of fish is about 700,000 metric tons. This amount falls far short of the demand of 2.66 million mt; with the result that Nigeria presently imports about 700,000 tons of fish per year, equivalent to 60 percent of total consumption requirements (Federal Department of Fisheries, 2007). Even with this high level of fish imports, there still remains a significant shortfall.

Fishery sub-sector plays an important role in the Nigerian economy, it contributes 4.5% of agriculture's 42% contribution to national GDP i.e. fisheries contribute 1.8% of total GDP. By 2007, fish trade increased to 739,666 tons valued at USD 594 million as fish import, while export was at 4,136 tons valued at USD 38 million..

In a bid to reduce the need for costly imports, efforts to increase fish supply are focused on increasing production. Domestic production potential is estimated at 3.2 million tons so, there is considerable room for further expansion. With the offshore marine fishery already under pressure from piracy, and with pollution in estuaries and brackish waters reducing their productivity, future production increases will almost certainly have to be achieved through aquaculture and enhancement of inland fisheries. The potential to expand Nigeria's freshwater fisheries is vast, and indeed 1.7 million ha have been deemed suitable for aquaculture. To date, this potential has not been exploited although the number of commercial fish farms is growing rapidly, report from USAID (2007) estimates 23 – 35% growth per annum.

2.1.2.5 Forestry

The forestry sub-sector in Nigeria has decreased in importance following years of overexploitation. Despite widespread use of unsustainable timber harvesting practices, Nigeria is still moderately forested with nearly 15% of the country covered by forest or savannah woodland. This figure seems destined to fall. However, efforts to control unauthorized cutting have proven largely ineffective and

forest cover decreased from 4 million ha in 1978 to 3.1 million ha in 1995 with no sign of abatement since then in the trend (World Bank 2005b)

Due to the significant plantation forest estate sector, Nigeria still ranks as one of Africa's largest wood producers, with an annual harvest of about 100 million m³, most of which is burned as fuel. The industrial forestry sector is relatively large and produces sawn timber as well as particle board. While most forest products are used for local consumption, small quantities of sawn timber are exported. In 2002, forest product exports generated revenues of US\$18.5 million, compared to forest product imports valued at US\$123 million made up of mainly paper and paperboard (FAOSTAT). Exports of unprocessed wood products have been prohibited since 1998.

2.2 Comparative Benchmarking Analysis

2.2.1 Comparator Set

A detailed comparative analysis was conducted to benchmark the performance of Nigerian Agricultural sector with that of leading countries globally, especially countries with whom Nigeria shares similar demographics, climatic conditions, agronomic characteristics, natural endowment and economic history. The result of the analysis clearly highlights the major constraints to agricultural growth in Nigeria and equally establish the developmental imperatives if Nigeria is to attain its ambitious goal of becoming one of the leading agriculture countries by the year 2020.

The three leading agriculture countries in each continent, in terms of agricultural production per capita were selected as comparator countries and were benchmarked against Nigeria based on pre-defined key parameters to gauge its agricultural development. Some of the countries selected include USA, Brazil, Malaysia and Thailand who are global leaders in agricultural development, food security, agricultural technologies and management as well as in research & development of new technologies.

Table 1: Agriculture Benchmark Countries

S/ N	Parameter	1	2	3	4	5	6
		%Arable land	Agricultural land (% of land area)	Agricultural raw material contribution to Exports (% of merchandise export)	% of Labour Force engaged in Agriculture	Irrigated Land (% of cropland)	Agricultural Machineries (tractors/100 hectares of arable land)
	Canada	4.57	7.42 (b)	4.73 (b)	2	1.51 (b)	160.45 (b)
	USA	18	45.27 (b)	2.31 (b)	0.6	12.48 (b)	269.43 (b)
	Belize	3.05	6.66 (b)	1.14 (b)	19.5	2.94 (b)	164.29 (b)
	Iceland	0.07	22.75 (b)	0.85 (b)	3	Not available	15412.86 (b)
	Denmark	52.6	61.02 (b)	2.54 (b)	2.9	19.73 (b)	542.81 (b)
	Ireland	0.07	61.36 (b)	0.45 (b)	3	Not available	1311.34 (b)
	Argentina	10.1	47.04 (b)	1.37 (b)	7 (a)	5.36 (b)	107.39 (b)
	Paraguay	7.47	62.51 (b)	11.79 (b)	31	2.14 (b)	54.28 (b)
	Uruguay	7.77	85.45 (b)	7.45 (b)	9	14.87 (b)	240.88 (b)
	Brazil	6.93	31.16 (b)	3.9 (b)	20	4.38 (b)	136.61 (b)
	New Zealand	5.54	64.31 (b)	10.2 (b)	7	8.45 (b)	506.67 (b)
	Australia	6.15	57.94 (b)	3.46 (b)	3.6	5.35 (b)	66.68 (b)
	Vanuatu	1.64	12.06 (b)	14.85 (b)	65	Not available	37.5 (b)
	Kazakhstan	8.28	76.9 (b)	1.02 (b)	31.5	15.67 (b)	22.17 (b)
	Turkmenistan	4.51	70.15 (b)	9.9 (b)	48.2	79.44 (b)	227.27 (b)
	Thailand	27.6	36.19 (b)	4.5 (b)	42.6	28.19 (b)	155.66 (b)
	Malaysia	5.46	23.95 (b)	2.53 (b)	13	4.81 (b)	240.56 (b)
	Indonesia	11	26.39 (b)	5.04 (b)	42.1	12.36 (b)	41.12 (b)
	Seychelles	2.17	15.22 (b)	0.01 (b)	3	Not available	400 (b)
	Nigeria	33	79.71 (b)	0.01 (b)	70	0.84	9.84 (b)

Source: FAOSTAT, WorldBank Report, CIA World factbook

2.2.2 Comparative Analysis and Key Learning Points

2.2.2.1 Mechanization

Mechanized farming is predominantly adopted in all the leading agricultural countries studied. The farming systems in these countries are mainly medium to large scale commercial plantations with cultivations and harvesting done using tractors. The level and quality of technology enhances the agricultural productivity recorded in these countries and sustains their agricultural exports' competitiveness in the international market, especially in those crops where they have comparative advantage.

In Nigeria, the level of agricultural mechanization is still very low when compared with some of the leading countries such as Indonesia and Malaysia whose agricultural history and outputs were similar to that of Nigeria in the late 1950s to early 1960s.

As shown in Table 1 above, tractor usage per 100 hectare is as high as 41, 241, 156 and 137 in Indonesia, Malaysia, Thailand and Brazil respectively while Nigeria has only 10 tractors per 100 ha.

- ***Development Imperatives***

Currently in Nigeria, agricultural activities are predominantly labour intensive, at a subsistence level and characterized by traditional practices such as the use of machetes, hoes and other crude implements resulting in very high man-hour utilization, poor crop yield and high post-harvest losses.

Nigeria needs to accelerate the modernization of its agricultural practice to enhance productivity and optimize the use of resources towards achieving food security in the medium term and boosting export competitiveness in the long term. Investment through Public-Private Partnership (PPP) in mechanizing farm operations is critical to the transformation of the Nigerian agricultural sector

2.2.2.2 Irrigation

All leading agricultural countries depend on irrigation systems for their farming activities to enhance productivity and sustain a year-round farming. However, crop production in Nigeria has remained largely rain-fed dependent with minimal irrigation practices.

For instance, less than 1% of Nigeria's arable land is irrigated. This is almost insignificant when compared with countries like Indonesia, Malaysia, Thailand and Brazil that have irrigated arable land of 12.36%, 4.81%, 28.19% and 4.38% respectively.

- **Development Imperatives**

Currently, smallholders and traditional farmers who use rudimentary production techniques cultivate over 90% of the arable land, less than 1% of which is irrigated.

To steer Nigeria towards achieving self sufficiency in food supply in the medium term and increasing agricultural exports in the long run, the concept of year-round farming through irrigation must be a priority in future agricultural development programs - in both private and government farms. To achieve this, government should drive the massive expansion of irrigation infrastructure and provide incentives to shared usage of irrigation facilities among farmers in order to spread the cost burden.

2.2.2.3 Government Spending/ Agricultural Budget

In 2003, African leaders including that of Nigeria met in Maputo, Mozambique where they all jointly agreed that at least 10% of the total government spending should be targeted at the agricultural sector towards attaining food security. While some African countries such as Ghana, Uganda and Malawi have stabilized their budget expenditures on agriculture around 10%, Nigeria, up to 2007, consistently spent less than 3% of its annual budget on agriculture. However, a slight increase to 5% per annum has been recorded in the last two years due to the new government's drive to achieve part of its 7-point agenda for National Development. Malaysia, on the other hand, has achieved accelerated agricultural development through sustained annual expenditure of between 20-25% of its budget on agriculture in the last three decades.

- **Development Imperatives**

Improved investments in Research and Development, mechanization and irrigation of agriculture, manpower development and infrastructural development are all required to accelerate and sustain the development of the Nigerian agricultural sector.

Consequently, government investment in agriculture must increase very significantly to

over 10% (Maputo Agreement) in the next 10 years to strengthen the core drivers of agricultural development.

2.2.2.4 Biotechnology

One of the key problems of Nigerian agriculture is the low yield of its seed and seed stock. The seeds of most crops and breeds of livestock and fish in Nigeria produce yields that are far below world averages. In this circumstance therefore, seed and breeding stock quality improvement is a *sine qua non* to increased yield and increased domestic production.

Some of the leading countries including the USA and Ireland have maximally exploited conventional breeding and applied genetic engineering to boost their agricultural productivity. Genetically modified crops are typically disease resistant, high yielding and early maturing. For example, the USA specifically utilizes genetically modified crops for the production of bio fuels to mitigate the impact of fuel requirements on the food chain. Advanced livestock breeding system which include Artificial Insemination, Marker Assisted Selection and Embryo Transplant are being used for faster breed upgrading and selection for herd replacement and basis for culling.

- **Development Imperatives**

Currently, low level application of conventional breeding techniques has stifled Nigeria's agricultural technological development. In addition, lack of Biotechnology (Biosafety) enabling law and funding has hindered research as well as adoption and use of bioengineering techniques such as genetically modified seedlings and livestock breeding techniques in Nigeria.

Increased agricultural production and conservation of land can both be achieved through the adoption of biotechnology. Adopting the use of genetically modified seedlings and livestock improvement techniques will significantly increase Nigeria's agricultural productivity, enhance food security and improve the quality of its agricultural exports to meet international standards. In doing this however, due consideration must be given to the ethics of the Biotechnology practice.

2.2.2.5 Farming Techniques

Mono culture, organic farming, green house farming, selective breeding, dry land farming and use of remote sensing to aid agricultural activities are some of the improved farming techniques that are leveraged by some of the leading agricultural producing countries to enhance their agricultural development. All these techniques have significant positive impacts on agricultural productivity.

- **Development Imperatives**

Currently, limitations in the level of mechanization and technology may hinder the immediate adoption of some of these modern farming techniques in Nigeria. For instance, mono culture is typically practised on many large scale farms and is dependent on mechanization. The support of Nigerian agricultural research institutes is required in developing or adapting some of these techniques to suit local conditions. Public-Private Partnership funding is equally crucial in ensuring long term sustained support for the required R&D activities.

2.3 Current Operational Considerations and Constraints

2.3.1 Key Issues and Challenges

In spite of consistent growth in the agricultural sector in recent years, it is not yet performing to its optimum in terms of productivity, wealth creation, foreign exchange generation and food security. The agricultural sector has been constrained by various challenges that have impeded the development of the sector. These challenges need to be addressed in order to sustain and even surpass the current agricultural growth rate.

A review of National Economic Empowerment and Development Strategy (NEEDS) programs implementation highlighted the challenges to include inadequate funding which limits the scope of intervention, absence of institutional mechanisms in the area of input production and distribution particularly in the case of seeds, fertilizer and credit, poor infrastructure and low or inappropriate technologies which have also limited the growth of the sector. Others include gender inequality and the scourge of HIV/AIDS in agricultural production communities in the country.

The overall consequences relate to food insecurity, intensification of poverty and inadequate wealth creation. In order to properly tackle these challenges and position

Nigeria in the path of attaining the ambitious target of becoming one of the leading 20 economies by year 2020, the following key issues must be addressed:

2.3.1.1 Agriculture – Industry Linkage

The linkage between agriculture and industry in Nigeria is still very weak. A good synergy between agriculture and industry will involve the existence of processing firms for perishable and marginal products for the purpose of value addition in order to reduce losses (currently estimated at about 15–40%), enhance food security, stimulate production and increase employment generation.

More so, agriculture still employs over 70% of the labour force in Nigeria. This is mainly at the primary production level because of low mechanization and small holding. To promote national development, agriculture must release labour to other sectors of the economy. It is envisaged that as agricultural mechanization improves and the food processing capacities of Nigeria expands, agriculture will need less people to till the soil, harvest the crops and handle raw yield. The concomitant effect will be reduced human labour and increased industrialization. However, such “released” labour need to be trained with new skills to fit into the merging industrial economy.

2.3.1.2 Inconsistent Agricultural policies

Agricultural policies in Nigeria have not only been inconsistent but they have often been poorly coordinated as well. Against a background of short political cycles, agricultural policies tended to change frequently with changes in political leadership, and often the political will to implement the policies had also varied as well. The history of Nigerian agriculture is littered with abandoned policies, programs, and initiatives. The fragmented approach to policy-making has constrained agricultural growth because it has prevented a sustained commitment to a coherent, integrated strategy for agricultural development. Such a sustained commitment is needed to achieve good results in a sector that not only requires longer time spans to yield desired outcomes, but also relies on other sectors for its development.

2.3.1.3 Finance

Nigerian financial policies have been designed to ensure the stability of the financial system and, thereby, guarantee the flow of credit to all the economic sectors including

agriculture. Although several reforms have been designed to redress the abuses inherent in credit rationing, the issue of inadequate access to credit by farmers has persisted. The high interest rate constrains demand for credit by farmers whose returns have remained low. When concessionary and agricultural credit support schemes were introduced, their administration have often been bedeviled with abuses and lack of access by those that need the support most. Hence, there is need to provide a structure to ensure that the rural resource-limited farmers have unfettered access to credit.

2.3.1.4 Land Reform

Incentives to invest in agriculture are also undermined by policies regarding land ownership and land tenure. The Land Use Act (LUA), introduced in 1978, invested proprietary rights to land in the state. User rights are granted to individuals through administrative systems rather than a market allocation system. While uniformity and equity in land allocation are major areas of emphasis in the LUA, various tenure systems are in practice around the country that fall outside the provisions of the LUA. While cosmopolitan and enlightened land owners can obtain deeds and use their land as collateral, it has not been easy for rural based small holder farmers. Hence their access to credit continued to be limited to the level not requiring collateral.

2.3.1.5 Improved Seeds & Chemical Inputs

One reason why agricultural productivity has remains low in Nigeria is that adoption of improved varieties and improved breeds is extremely low. Improved varieties of most leading food crops are available through many Agricultural Development Programs (ADPs), but the area planted with the improved varieties has remained modest. Most farmers still plant traditional varieties using seed and planting materials saved from their own harvest or obtained from local sources, including relatives, neighbors, or local traders (Cromwell et al. 1992, Jaffee and Srivastava 1994, Louwaars and Marrewijk 1999).

Rapid and sustainable growth in Nigeria's agricultural sector has further been constrained by low adoption of chemical inputs. In the crops sub-sector, the use of fertilizer and pesticides is very low. For example, in 2000 the amount of fertilizer applied to field crops represented only about 3 percent of the total agronomic requirements (FMARD 2004).

2.3.1.6 Appropriate Technologies

There is the need for the identification of appropriate technologies for the downstream agricultural activities. The significance of effective linkages between agriculture and industries to achieve maximum value-addition and processing for exports cannot be overemphasized. The appropriate technologies and institutions for the achievement of this objective must promote desired linkage effects. Deployed technologies must support farm and community level processing to reduce high post-harvest losses and must also be sensitive to the diversity in soil structure and chemistry across the country.

2.3.1.7 Irrigation

The area under irrigation will need to expand at unprecedented rates if irrigation is to make a significant contribution to agricultural growth. Estimates of Nigeria's irrigation potential ranges from 1.6 million ha (FAO 1991) to 2.5 million ha (FAO 2000). Currently, only 0.7 percent of the nation's cultivated land is under irrigation, or roughly 220,000 ha. Constraints to continued development of irrigation in Nigeria include: (i) high cost of constructing irrigation infrastructure (ii) poor public management of water resources; and (iii) weak management capacity

2.3.1.8 Infrastructural deficiencies

Private investment in agriculture is discouraged by infrastructural deficiencies: a national road network that is limited in its coverage and poorly maintained ports and customs facilities that are undersized and overtaxed, an electricity grid that suffers from frequent disruptions, water supply systems of spotty coverage and uncertain reliability, and communication systems that fail to reach many in the population. (Manyong et al. 2004). These deficiencies contribute to high production costs of agricultural outputs and further undermine the profitability of agriculture and discourage export initiatives.

2.3.1.9 Research and Training

The government has long recognized that technology development is vital to the development of the agriculture sector, yet the national research system has enjoyed only limited success in generating new technologies—at least new technologies that have been adopted by farmers. The disappointing impact of the research system can be attributed to three main factors: (i) public research organizations are poorly funded and financially unsustainable; (ii) coordination within the Nigerian agricultural research

community is weak, resulting in unnecessary duplication of effort; and (iii) research tends to be supply-driven, with little accountability to end-users. Also, a close collaboration between the academic institutions and the agricultural ministry/institutes in training agricultural professionals is required to enhance manpower development for the sector. The recent establishment of the Agricultural Research Council of Nigeria should enhance coordination and provide focus for the research institutes, agricultural faculties and universities, and the Federal Agricultural Colleges

2.3.1.10 Agricultural Extension

Agricultural extension in Nigeria suffers from lack of coordination and duplication of efforts, financial unsustainability and poor accountability to farmers and processors (World Bank 2004). Key challenges, therefore, include improving coordination and reducing duplication of effort in the Agricultural Development Programs (ADPs), improving the financial sustainability of extension services, increasing the accountability of extension agents to farmers and agribusiness firms. The national extension strategy also needs to be diversified from its focus on crops to provide services that meet a broader range of needs of farmers and agribusiness firms.

2.3.1.11 Conflict Resolution Strategies

Incessant conflicts exist between crop and livestock farmers, pastoralists (mainly Fulani nomads) and arable crop farmers, fadama users and non-fadama users, female farmers (especially female-household heads/widows) and their male relatives and neighbours. There is also the sustaining threat to security in some regions. Such conflicts disrupt production and discourage private sector investment. There is need therefore, to set up conflict resolution mechanisms to handle farm-level conflicts between individuals and communities. There should be effective development of the grazing reserves and stock routes to ensure availability of forage and opportunities to transform pastoralists to livestock ranchers. This should greatly reduce the pastoralist – crop farmer conflicts.

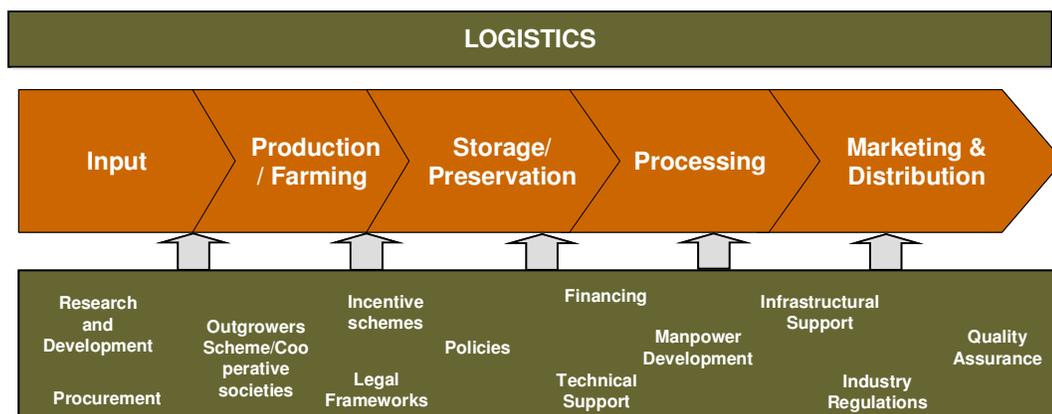
2.3.1.12 Value Re-orientation

There is need to re-orient the values of the populace, especially youths, on work ethics and value for money. The old idea of farmers and farming being associated with old and poor, uneducated and unkempt members of the society needs to be reversed. The benefits of agriculture as a vibrant and enterprising sector with demonstrable indicators should be portrayed.

Opportunities for Sector Performance Improvement and Growth

In order to fully identify, assess and evaluate the various growth opportunities in the agricultural sector, a 'value chain' approach (see Figure 5) has been adopted. This approach will enhance a comprehensive assessment of all the possible opportunities across the value chain i.e. from the upstream to the downstream segments of the sector and applying same to each sub sector.

Figure 5: Agriculture Value Chain



Legend

	Primary Activities
	Supporting Activities

A number of high impact opportunities have been identified across the agricultural value chain including; Research & Development initiatives, accelerated mechanization and irrigation programs, improved farming techniques and extension programs to increase productivity, self sustenance through import substitution initiatives; reduction of post-harvest losses through expansion of storage facilities and creation of strategic storage infrastructure towards food security; increased export earnings through food processing and acceleration of agro-industrial linkages to diversify the economy and boost development of other sectors; creation of strategic marketing boards and launch of sustained capacity development programs.

Detailed description of the opportunities, recommended initiatives, implementation strategies and action plans are contained in the subsequent chapters of this report.

3. AGRICULTURE AND FOOD SECURITY VISION 2020 & STRATEGIC PLAN

3.1. Growth projections for Global Agriculture and Food Security

According to FAO (2002), the world agricultural production can grow in line with demand, provided that the necessary national and international policies to promote agriculture are put in place. Global progress in food security and nutrition is expected to continue, in parallel with a reduction in poverty as projected by the World Bank. The incidence of undernourishment is expected to fall from 17% of the population of developing countries at present to 11% in 2015 and 6% in 2030. Yield growth will continue to be the dominant factor underlying increases in crop production in the future. In developing countries, it will account for 70% of growth in crop production up to 2030. Overall, it is estimated that some 80% of future increases in crop production in developing countries will come from agricultural intensification.

In the livestock sector, productivity improvements are likely to be a major source of growth. Milk yields should improve while breeding and improved management will increase average carcass weights and off take rates. This will allow increased production with lower growth in animal numbers and a corresponding slow down in the growth of environmental damage from grazing or wastes.

The central challenges for the forestry sector are to find ways of managing natural and cultivated tree resources so as to increase production, improve the food security and energy supply of the poor, and safeguard the environmental services and biodiversity provided by forests.

Current world average intake of fish, crustaceans and mollusks is about 16.3kg per person. By 2030, annual fish consumption is likely to rise to between 19 and 20kg per person. Aquaculture is expected to grow rapidly at rates of 5 to 7% a year up to 2015. In all sectors of fisheries, it will be essential to pursue forms of management conducive to sustainable exploitation, especially for resources under common ownership or no ownership.

3.2. Vision for the Nigerian Agricultural Sector

Nigeria aims at becoming one of the largest 20 economies in the world by 2020. In view of the fact that agriculture is a major driver of growth of the Nigerian economy, it must play a crucial role in achieving this vision. Accordingly, the vision for the agricultural sector shall be:

“A Technology Driven Agricultural Sector that Is Profitable, Sustainable and Meets the Socio-Economic Aspirations Of The Nation”

3.3. Objective, Goals/Targets, Strategies and Initiatives for the Nigerian Agricultural Sector

In a bid to ensure that the laudable vision for the agricultural sector is achieved, a critical analysis of the entire agricultural value chain was conducted. Below are the objectives, goals/ targets, strategies and initiatives that were developed based on the analysis.

Table 2: Objectives, Goals, Strategies and Initiatives for the Agriculture sector

Objectives	Goals/ Targets	Strategies	Initiatives
Secure The Food And Feed Needs Of The Nation	<ul style="list-style-type: none"> ▪ <i>To achieve a 3-fold increase in domestic agricultural productivity by 2015 and 6-fold increase by 2020</i> 	<ul style="list-style-type: none"> ▪ Promote greater use of highly productive and disease-resistant crops, livestock, poultry and fish strains, breeds and species. 	<ul style="list-style-type: none"> ▪ Launch program for the increased production and 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 ▪ Accelerate the formation of and strengthen the existing agricultural producers associations, organizations and cooperatives to ensure more efficient access to inputs and other agricultural services
		<ul style="list-style-type: none"> ▪ Significantly increase the yield of crops, livestock and fisheries through the use of hybrid seedlings and seedstock 	<ul style="list-style-type: none"> ▪ Breed and distribute high yielding varieties/cultivars of economic important crop, livestock and fish species ▪ Produce high yielding, disease resistant, fast growing varieties of cultivars of crops, along with improved breeds of livestock and fish to constitute 50% of stock by 2020 ▪ Provide incentives for commercial seed and breeding companies to mass produce improved crops, livestock and fish seeds and stocks for planting/rearing
		<ul style="list-style-type: none"> ▪ Explore and exploit the genetic potentials of the local and exotic breeds of crops, livestock and fish through enhanced Research and 	<ul style="list-style-type: none"> ▪ Promote the development and selection of elite foundation stock of crops, fisheries 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 ▪ Establish national livestock genetic exploration technology

Objectives	Goals/ Targets	Strategies	Initiatives
		development	agency (LiveGETA) together with livestock breeding & multiplication centres (6 Nos.) under the ARCN <ul style="list-style-type: none"> ▪ Create additional livestock research institutes to intensify and diversify the mandate of NAPRI
		<ul style="list-style-type: none"> ▪ Professionalize agriculture and promote educational and professional training incentives to encourage young people embrace agricultural production, processing, extension and marketing. 	<ul style="list-style-type: none"> ▪ Ensure charter of all agricultural sub sectors to register and certify all professional practitioners to enhance better service provision in the industry. ▪ Establish modern farm villages across the nation to serve as model villages/communities for Research and Development. ▪ Facilitate acquisition of farmlands and title holdings towards agricultural production through Public-Private Partnership (PPP) initiative. ▪ Expand and strengthen Food Technology Departments in tertiary institutions to train the manpower required in the food processing industry
		<ul style="list-style-type: none"> ▪ Introduce production incentive to specific crops that will target import substitution and export promotion 	<ul style="list-style-type: none"> ▪ Provide special infrastructure incentives to communities that are identified as high production centres ▪ Provide post production incentives in various forms, through farmer and community-based organizations to titled land areas.

Objectives	Goals/ Targets	Strategies	Initiatives
	<ul style="list-style-type: none"> ▪ <i>To transform the Nigerian agricultural production system to a substantially mechanized system by 2020</i> 	<ul style="list-style-type: none"> ▪ Promote modernization of the production systems for crops, livestock, poultry and fisheries including processing, transportation storage, preservation, packaging and marketing. 	<ul style="list-style-type: none"> ▪ Promote appropriate mechanization at all levels of the value chain ▪ Develop local capacity to fabricate, manufacture and maintain appropriate machineries across the value chain
	<ul style="list-style-type: none"> ▪ <i>Expand dairy production and milk yield from the current less than 2000 kg to 5,000 kg per cow per lactation by 2015</i> 	<ul style="list-style-type: none"> ▪ Develop high yielding strains of local cattle and goat breeds for milk production through selection and crossing with world class dairy breeds (e.g. Holstein-Friesian, Guernsey and Jersey). 	<ul style="list-style-type: none"> ▪ Expand and strengthen the existing livestock improvement and breeding centres for the purpose of upgrading local breeds for dairy production ▪ Promote establishment of dairy farms – based on efficient and intensive mechanized systems - in selected suitable sites through the provision of financial incentives for large scale dairying and/or Public Private Partnership (PPP) and Commercial Agricultural Program (CAP) intervention ▪ Establish, through PPP, medium scale dairy processing plants in suitable locations with high peri-urban cattle populations and ensure effective milk collection systems from the cattle farmers. ▪ Expand research and development for improved rangeland and pasture species ▪ Provide adequate incentives and continuing training for dairy

Objectives	Goals/ Targets	Strategies	Initiatives
	<ul style="list-style-type: none"> ▪ <i>Achieve 20% farm-gate storage, 75% commercial storage and 5% strategic reserves by 2020</i> 	<ul style="list-style-type: none"> ▪ Expansion of existing food storage capacity 	<p>farmers and processors</p> <ul style="list-style-type: none"> ▪ Construct additional food storage facilities, silos and conditioning centres through PPP ▪ Train farmers, meat handlers and warehouse keepers in proper harvesting, slaughter and storage techniques, respectively in order to improve quality and shelf life of produce ▪ Expansion of the strategic food reserves of the nation ▪ Ensure steady power supply to facilitate effective storage ▪ Provide appropriate meat and fish preservation facilities in appropriate locations as well as near fish landing ports and sales outlets through PPP
	<ul style="list-style-type: none"> ▪ <i>To achieve a fully digital, green and bio technology driven agriculture by the year 2020</i> 	<ul style="list-style-type: none"> ▪ <i>Significantly enhance agricultural practices and production through the use of space technology</i> 	<ul style="list-style-type: none"> ▪ Develop and/or adopt GIS and wireless technology to enhance effective land mapping and classification for efficient allocation to crops, livestock and fish production ▪ Intensive use of satellite imagery and to predict weather and/or climatic changes that affect agricultural production
		<ul style="list-style-type: none"> ▪ <i>Promote the greater use of biotechnology tools in selection and breeding of crops, livestock, fisheries and forestry</i> 	<ul style="list-style-type: none"> ▪ Embark on a genome project to unravel the genetic architecture of indigenous species of crops, livestock and fish ▪ Develop genetic techniques to introduce desired traits ▪ Development of biofortification in foods for nutritional and medicinal purposes

Objectives	Goals/ Targets	Strategies	Initiatives
		<ul style="list-style-type: none"> ▪ <i>Promote the use of green technology to ensure sustainable agricultural production, safe and clean environment</i> 	<ul style="list-style-type: none"> ▪ Establish a policy that encourages the use of non-food items for bio fuels ▪ Adopt the use of natural river and/or stream flow, solar and wind to generate electricity to power agricultural equipment such as irrigation pumps etc ▪ Promote the use of organic farming for sustainable soil fertility and productivity for higher income and safe environment
Enhanced Generation Of National And Social Wealth Through Greater Exports, and Import Substitution	<ul style="list-style-type: none"> ▪ <i>To derive over 50 % of the nation's foreign exchange earnings through agro-industrial exports by 2020</i> 	<ul style="list-style-type: none"> ▪ <i>Significantly increase agro-industrial exports through enhancement of quality, local value addition and creation of enabling environment</i> 	<ul style="list-style-type: none"> ▪ Expand export products handling, preservation and conditioning centres to meet international standards ▪ Develop export market information system to ensure that farmers are exposed to and benefit from international commodity market ▪ Review trade related protocols signed by Nigeria to ensure that the national interest is primarily served ▪ Increase export incentives to enhance international competitiveness of Nigeria's agricultural export commodities

Objectives	Goals/ Targets	Strategies	Initiatives
		<ul style="list-style-type: none"> ▪ <i>Expand domestic capacity to process agricultural produce into raw materials for industrial use</i> 	<ul style="list-style-type: none"> ▪ Encourage and provide incentives to existing and new small and medium scale enterprises to add value along the value chain ▪ Develop modern technologies and facilities for primary storage and processing of agricultural produce ▪ Conduct training programs on the use of modern techniques and trends in processing agricultural products into raw materials with the active participation of the private sector
		<ul style="list-style-type: none"> ▪ <i>Aggressively pursue import substitution to reduce import of raw materials and food through import tariffs and tax holidays for local industries to thrive</i> 	<ul style="list-style-type: none"> ▪ Review import levies and local subsidy on food and agricultural raw materials ▪ Partner with the private sector in the promotion of agro-industrial development and export ▪ Provide enabling infrastructure through PPP and ensure profitability of agriculture business and establish a clear exit strategy for government involvement. ▪ Develop a PPP agricultural loan delivery scheme specifically targeted at Agro-industries. ▪ Maintain zero tariffs on imported agro-processing machineries - in the short and medium terms
	<ul style="list-style-type: none"> ▪ <i>To reduce the present level of food import (worth over \$ 3 billion per annum) by 50 % in</i> 	<ul style="list-style-type: none"> ▪ <i>Foster domestic processing of locally produced agricultural products (e.g. chocolate,</i> 	<ul style="list-style-type: none"> ▪ Provide tax holidays, pioneer status and other incentives to create enabling environment for the establishment of agro-processing industries ▪ Institute and ensure adoption of international quality

Objectives	Goals/ Targets	Strategies	Initiatives
	<i>2015 and by 90 % in 2020</i>	<i>juice, rice, egg, powdered milk, etc)</i>	standard and industry best practices in the operation of the agro-processing industry
Enhance Capacity for Value Addition Leading To Industrialization And Employment Opportunities	<ul style="list-style-type: none"> ▪ <i>To reduce the post harvest loss of agricultural produce by an average of 50% in 2015 and 90% in 2020</i> 	<ul style="list-style-type: none"> ▪ <i>Improve harvesting and processing techniques of agricultural produce</i> 	<ul style="list-style-type: none"> ▪ Sponsor enlightenment campaign on best practices in the harvesting/slaughter and handling of crops, livestock and fishery products ▪ Promote establishment of cottage industries for value addition to agricultural produce ▪ Create entrepreneurial opportunities in food processing through capacity building and soft-loan provision
		<ul style="list-style-type: none"> ▪ <i>Promote the establishment of agro-processing parks through PPP arrangement in each agro-ecological zone</i> 	<ul style="list-style-type: none"> ▪ Rehabilitate existing agro-processing centres and establish new ones through PPP in all agro-ecological zones ▪ Strengthen capacity building institutions to meet the skill requirements of the expanding small and medium scale agro-processing industries ▪ Strengthen and harmonize regulatory mechanism towards ensuring Good Manufacturing Practices (GMP) and quality control
		<ul style="list-style-type: none"> ▪ <i>Strengthen agricultural commodity marketing through the creation of enabling marketing structures</i> 	<ul style="list-style-type: none"> ▪ Establish standards and operation procedure for crops, livestock and fisheries markets as well as ensure compliance ▪ Strengthen and establish effective domestic markets and export promotion centres ▪ Improve on the existing marketing system including market

Objectives	Goals/ Targets	Strategies	Initiatives
			<p>information system of agricultural produce at all tiers of government</p> <ul style="list-style-type: none"> ▪ Promote strategic investments in the development and maintenance of market infrastructure and related facilities through PPP
Efficient Exploitation And Utilization Of Available Agricultural Resources	<ul style="list-style-type: none"> ▪ <i>Increase the size of irrigated land from current 1% of cultivable land to 10% of cultivable land by 2015 and to 25% by 2020</i> 	<ul style="list-style-type: none"> ▪ <i>Shift from dependence on rain-fed crop production through significant utilization of irrigation</i> 	<ul style="list-style-type: none"> ▪ Intensify feasibility studies to identify and develop areas suitable for irrigation agriculture across the country ▪ Provide incentives by way of loans and subsidies and infrastructural development for the development of community based and large scale irrigation projects and programs ▪ Rehabilitate and complete existing irrigation projects across the nation
	<ul style="list-style-type: none"> ▪ <i>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> 	<ul style="list-style-type: none"> ▪ <i>Ensure Sustainable soil fertility, water management and productivity</i> 	<ul style="list-style-type: none"> ▪ Review and update existing policies on soil and water conservation and productivity and institute soil remediation practices (including liming) as required ▪ Promote and develop commercial organic farming as an integral part of good soil fertility management ▪ Develop and promote environment friendly utilization of inland and marine water resources
	<ul style="list-style-type: none"> ▪ <i>Increase area of land planted with diversified</i> 	<ul style="list-style-type: none"> ▪ <i>Aggressive pursuit of afforestation, re-</i> 	<ul style="list-style-type: none"> ▪ Promote planting of fast growing, drought and disease resistant tree species adapted to different ecological zones

Objectives	Goals/ Targets	Strategies	Initiatives
	<p><i>biomass including economic species in agro-forestry program from current 3% to 10% in 2015 and to 20% by 2020</i></p>	<p><i>afforestation and erosion control programs</i></p>	<ul style="list-style-type: none"> ▪ Enforcement of laws to protect forests and grazing reserves. ▪ Complete the establishment of gazetted forest and grazing reserves by 2015 ▪ Promote the use of alternative energy for cooking ▪ Introduce and promote the use of energy efficient technologies for home use
<p>Enhance The Development And Dissemination Of Appropriate and Efficient Technologies For Rapid Adoption</p>	<ul style="list-style-type: none"> ▪ <i>Achieve an efficient agricultural extension delivery system which includes extension worker: farmer ratio of 1:500 by 2020</i> 	<ul style="list-style-type: none"> ▪ <i>Strengthening the agricultural extension system through adequate capacity building</i> 	<ul style="list-style-type: none"> ▪ Reform and diversify existing extension system with emphasis on livestock, fisheries, agro-forestry and home-economics ▪ Articulate and coordinate the specific roles to be played by the Federal, States, Local Governments and private sector in extension delivery ▪ Train extension personnel in key competences - interpersonal and communication skills, knowledge, planning, entrepreneurial skills, M&E and ethical competences.
		<ul style="list-style-type: none"> ▪ <i>Expand and accelerate knowledge-driven farming systems</i> 	<ul style="list-style-type: none"> ▪ Emphasize research to serve agricultural practitioners and other stakeholders in the entire value chain ▪ Promote farmer-education and provide training incentives to encourage young people into agricultural production, processing and marketing ▪ Establish farmer information call service (weather forecast/report etc) using the GSM and wireless technology

Objectives	Goals/ Targets	Strategies	Initiatives
	<ul style="list-style-type: none"> ▪ <i>Achieve the adoption of improved varieties/ species of seed and brood stock by 50% of the farmers by 2015 and 75% by 2020</i> 	<ul style="list-style-type: none"> ▪ <i>Achieve a high degree of public private partnership thrust in agricultural research and development by 2020</i> ▪ <i>Accelerate the adoption of high yielding seed varieties and brood stock (produced under O1.G1.S2.Ib)</i> 	<ul style="list-style-type: none"> ▪ Establish forum for regular interaction of public and private sectors on agricultural research and development ▪ Rehabilitate and further develop new farm service centres in collaboration with the private sector ▪ Organize agricultural shows and exhibitions to demonstrate new innovation and link farmers to market and industry ▪ Develop mechanism to involve stakeholders in determining the priorities for research in varietal/ breed improvement and extension ▪ Strengthen producers, processors, marketers and consumer associations to access and distribute improved varieties and brood stock for greater productivity and profitability ▪ Promote adoption of improved varieties and brood stock to strengthen and expand programs for women and youth development.

3.4. Key Growth Drivers/ Enablers

For agriculture to make more significant contribution to the growth of the Nigerian economy, major key drivers which include the following must be addressed:

3.4.1. Legal & Regulatory regime

As modernization of agriculture is expected to become increasingly private-sector led, government should take active role in providing legal and regulatory framework for accelerated development of the sector. Agricultural policies relating to the enhancement of agricultural competitiveness (biosafety, SPS, Sanitary etc), provision of necessary agricultural support, establishment of vital agencies and so on should be accorded high priority.

One way of enhancing the competitiveness of agricultural export commodities is for the government to review the existing legislation on export incentives and to introduce production incentives to ensure that not only the exporters but also the farmers derive some benefits. The incentives have to be commodity specific and should be realistically determined through correct and reliable data on the number of producers, processors and exporters, area under cultivation, quantity produced and exported, production costs, domestic prices and other information relevant to the value chain of each commodity. Financial resources from the Agricultural Development Fund and other sources could be earmarked to provide necessary incentives. With regard to the international dimensions of the legal framework, a participatory approach involving the three arms of government, civil societies, farmers' organizations should be adopted, especially in handling issues relating to EPA, NEPAD/CAADP, WTO etc,

3.4.2. Fiscal Regime

Nigerian agriculture is under-capitalized and therefore, it has not been possible to transform and diversify opportunities in the sector. Also, Nigeria falls far behind in agricultural expenditure by international standards, especially on account of its level of income as an oil exporting country. Private investment in agriculture, both in primary production as well as processing, is still very low which is primarily attributed to the sector's low profitability. Other factors contributing to the low level of investment include:

- i. an unfavourable business climate
- ii. infrastructural deficiencies
- iii. limited access to medium and long-term credit

- iv. financial, policy and natural risks associated with agricultural investments

In addition, the low level and dwindling investment in agriculture is not unconnected with the lack of political influence by the smallholders. The small scale farmers are largely unorganized and therefore, unable to garner the necessary political pressure to attract greater public investment into the sector. Thus, in spite of the rising consciousness among policy makers to balance the food equation, the political variables are not within the control of the farmers. Without political influence, the small scale farmers are easily left out of the priority list of public investment.

In the light of the foregoing, fiscal policies should be aligned with the goals and objectives of the Vision to promote macroeconomic stability and food security from time to time. It is expected that government will continue with the policy of duty-free importation of agricultural equipment and machinery. Moreover, important agricultural inputs are to be exempted from VAT. The budget process should be carefully managed to ensure that the agricultural sector does not suffer unduly from fiscal imbalances.

Specifically, to enhance productivity and stimulate agricultural growth, fiscal policies aimed at the formulation of agricultural financing strategies that will identify alternative sources of funding agriculture, maintain a minimum of 10% budgetary allocation to agriculture in line with the Maputo declaration should be enforced. Other catalysts include adequate funding of the Nigeria Agricultural Cooperative and Rural Development Bank (NACRDB), NAIC and micro-finance institutions at community levels, and the adoption of appropriate interest rate policy that promotes agricultural development.

3.4.3. Institutional Framework

The existing institutional arrangement for agricultural development in Nigeria is complex. It involves numerous ministries, agencies, public corporations and companies operating at different levels of governments, sometimes with overlapping responsibilities. Although the system has achieved some success, over the years it has resulted in duplication of efforts, inefficient use of scarce human and financial resources, conflicting interests, misunderstanding of roles. These erode trusts among various institutions, making collaboration and coordination difficult. This complicates project planning, implementation and evaluation and impedes sustainable rural and agricultural development.

In order to overcome these bottlenecks, the approach should be towards focusing more attention on some critical institutional framework issues such as: reducing the overbearing influence of the Federal Government on States and the Local Governments with regard to control over the sector. There should be delineation of roles among the stakeholders in the agricultural sector; i.e. Federal, States and Local Governments and the private sector and allowing the Federal Ministry of Agriculture and Water Resources to focus primarily on sectoral policies regulatory mechanisms and enforcement of standards in collaboration with relevant Ministries, Departments and Agencies (MDAs). Other issues include the reformulation of the nation's fertilizer policy to ensure effectiveness and efficiency through private sector participation, the creation of an agricultural information system that will enhance the flow of agricultural information at a low cost, revitalization of Farmers' Associations to enhance their bargaining power and establishment of Community Driven Development (CDD) approach in policy formulation, research and extension and monitoring and evaluation of government implementation of projects.

Agricultural policy attention should focus on:

- (i) reforming existing legislation and introduction of new laws especially on land ownership/tenure, water rights and farmer organizations;
- (ii) provision of favourable policy environment to enhance private sector investment in research for agriculture and food security e.g. tax holiday, favourable tariff regime on agricultural implements and other inputs;
- (iii) enabling legislation to guarantee and protect private sector investment in agriculture,
- (iv) strengthening and streamlining of mandates of agricultural research institutes towards demand driven research and extension, and
- (v) involvement of private sector, NGOs and communities in the formulation, implementation and M&E of government agricultural projects.

3.4.4. Human Capital & Infrastructure Requirements

Skills and entrepreneurship improvement in agriculture are crucial for the attainment of the goals of Vision 20-2020. It is therefore, important to strengthen the employment capacity of the active population through education and skills acquisition. Skills development involving the provision of assistance in the form of training, access to credit and/or equipment. Provision of a broad range of business support services to facilitate

the setting up agri-businesses by interested individuals is critical especially at the grassroots level for income-generation and poverty reduction. Universities, Mono- and Polytechnics curricula should be reviewed to meet the need of the sector to the attainment of Vision 20:2020 goal.

Agriculture human capital development should involve activities such as investment plans, food safety, grading and quality control & standards, exhibitions, production techniques and marketing strategies along the value chain as well as maintenance of machines and equipment. Furthermore, the skills of extension agents must be upgraded to enable them to cope with modern trends in agricultural technology dissemination. Their number should be increase to reach the acceptable ratio of extension to farmers (1:500), and better contracting arrangements should be put in place to retain the extension agents, e.g. putting the extension staff on pensionable appointment, etc. The capacity of the farmers must be strengthened to ensure wider adoption of modern techniques and ability to acquire the tools to mechanize their operations. Gender mainstreaming and social impacts should also be given adequate attention. Measures should also be taken to improve women's contribution to and participation in the agricultural sector, including better access to land, credit, processing and marketing facilities.

3.5. Environmental Implications of the Agricultural Vision

It has been projected that over the next 30 years, many of the environmental problems associated with agriculture will remain serious. Loss of biodiversity caused by the expansion and intensification of production is likely to continue. Given the proposed interventions in Nigeria Vision 20: 2020, the following will likely emerge as areas of concern that will need priority attention:

- a) Nitrogenous fertilizers and eutrophication could be major sources of water and air pollution.
- b) Global warming, although not expected to depress food availability at the global level, may at the regional and local levels have significant impacts.
- c) The burning of biomass in deforestation – savannah fires, disposal of crop residues and cooking with firewood, is a major source of atmospheric carbon

- dioxide, while fertilizers and animal wastes create large emissions of nitrous oxide, ammonia and methane (greenhouse gases).
- d) Increase in flooding and erosion due to land and forest clearing.
 - e) Drought and associated desertification in the northern extremes of Nigeria, leading to drastic reductions in the availability of agricultural water, and reduction in production of crop and livestock.
 - f) Massive salinization and drying of wet lands.

3.6. Key Competitive Challenges

3.6.1. Political will of the government

The achievement of objectives and goals/ targets of the agricultural vision will depend, to a large extent, on the willingness of government power during the intervening and successive years, to implement them. The instability in government and policy reversals often place constraints on the implementation of policies, no matter how good.

3.6.2. Perception of agriculture

Nigerians perceive agriculture as a means of subsistence and/or hobby rather than a business. Therefore, a great deal of re-orientation will be required to achieve a paradigm shift.

3.6.3. Funding and investment

Inadequate and untimely funding of agriculture by the public sector, coupled with inefficient and/or ineffective application of such funds (budgetary or otherwise) constitute bottlenecks to agricultural project implementation. The success in the realization of the vision, objectives and goals, will be ensured if the present and future administrations will allocate at least 15% of annual budgets to agriculture. Reluctance of commercial banks to finance agricultural enterprises is also a major hindrance to agricultural growth.

3.6.4. Biofuel versus food supply

Biofuels are natural liquid fuels made from renewable agricultural resource. Recently, biofuels have gained more popularity globally as a result of concerns over the environment and rising oil prices. However, biofuels are becoming increasingly controversial due to concerns over food shortages. This competition can be averted if emphasis is placed on other raw materials such as Jatropha plant and waste from sweet sorghum, sugar cane and other non-food sources which do not impact negatively on the food chain.

3.6.5. Inter-sectoral competition

Due to resource limitation, there is intense competition for funds among the different sectors of the economy. Unless agriculture is accorded the priority it deserves in resource allocation, for the duration of its revival, growth and sustained growth, the implementation of the agricultural vision may suffer serious drawbacks. Equally important is the need for equitable distribution of resources within the agricultural sector itself. Furthermore, there is need for a major improvement in the inter-sectoral collaboration to ensure effective and comprehensive planning, implementation and monitoring.

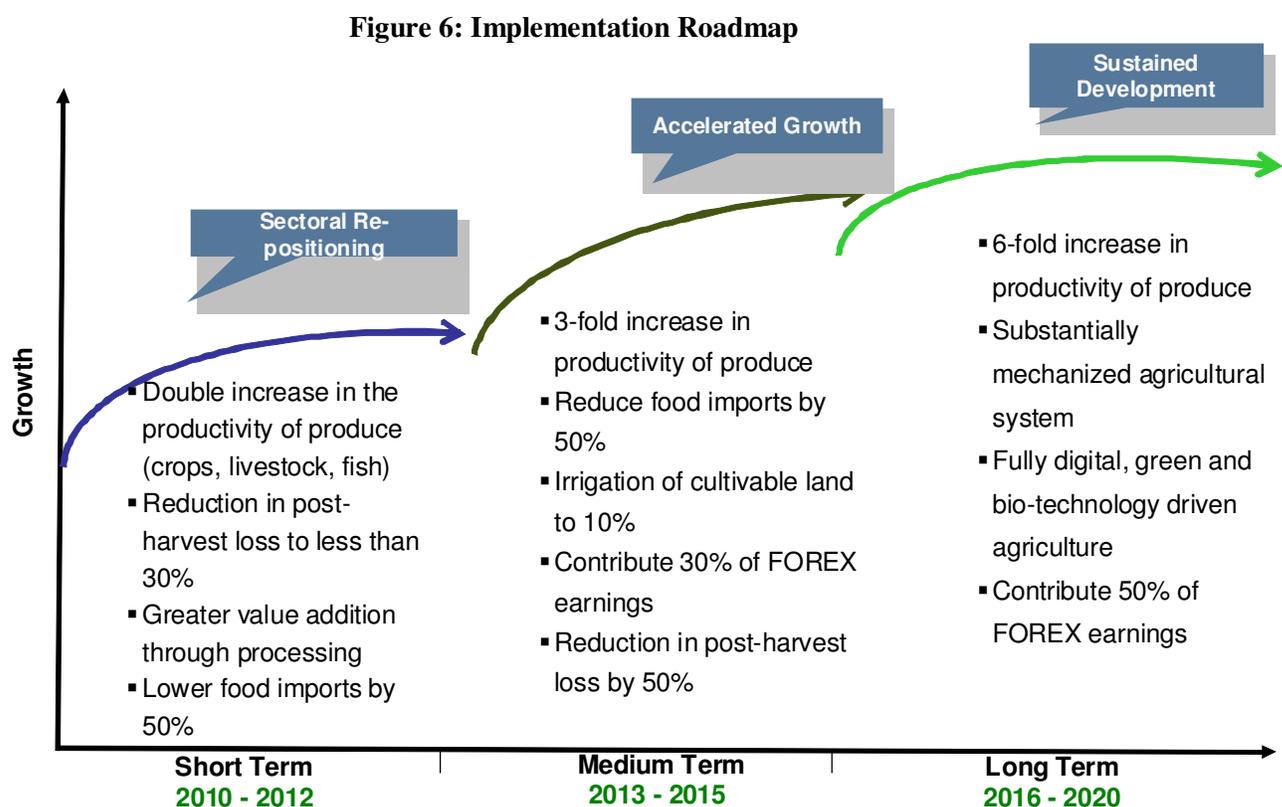
3.6.6. Energy

The need for adequate and constant energy supply, harnessed through different sources (solar, wind, coal, nuclear etc) for value addition, is critical to agricultural development.

4. IMPLEMENTATION ROADMAP AND MONITORING FRAMEWORK

To realize the vision for Nigeria’s Agriculture by the year 2020, a set of objectives with goals, strategies and initiatives were developed. Implementing agencies, collaborating agencies, sources of funding, key performance indicators (KPIs), monitoring and evaluating agencies, and timelines to implement the strategies and achieve the goals were also set (Tables 5 and 6).

Implementation of the initiatives is expected to span over a period of 11 years (2009 – 2020). The period has been categorized into three phases namely; short term (2009 – 2011); medium term (2012 – 2015); and long term (2016 – 2020). The outcomes and achievements during these phases should result into significant cumulative improvement on the agricultural sector as a whole. In the context of the V20:2020, the short term can be regarded as a take-off (growth) stage, the medium term as the consolidation stage while the long term stage would represent the sustenance of the set goals and achievement of the objectives. (see Fig.6).



4.1. Implementation Roadmap

Table 3: Implementation Roadmap of the Agriculture Initiatives

VISION: A TECHNOLOGY DRIVEN AGRICULTURAL SECTOR THAT IS PROFITABLE, SUSTAINABLE AND MEETS THE SOCIO-ECONOMIC ASPIRATIONS OF THE NATION						
Objective 1: Secure The Food And Feed Needs Of The Nation						
Goal 1: To achieve a 3-fold increase in domestic agricultural productivity by 2015 and 6-fold increase by 2020						
Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Time-line
1) Promote greater use of highly productive and disease-resistant crops, livestock, poultry and fish strains, breeds and species.	a) Launch program for the increased production and 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	FGN; FMA&WR; NIAS, NAERLS; NAPRI,	FAO; World Bank; IITA; NRCRI; FGN; Private Sector; State MA's &NR	PPP; CBN; NACRDB; Intl. Donor Agencies (IDA's)	NFRA, ARCIN, NACGRAB, NCA	2009-2011
	b) Accelerate the formation of and strengthen the existing agricultural producers associations, organizations and cooperatives to ensure more efficient access to inputs and other agricultural services	NFRA; States; LGA's; ADP's RBDA's; NAERLS, NGOs	World Bank; IFPRI; DPs; State MA's; LG Agric. Depts.	CBN; World Bank; DPs; NACRDB; MFB's; Private Sector	NAERLS; State Coop. Divisions; NFRA	2009-2011
2) Significantly increase the yield of crops, livestock and fisheries through the use of hybrid seedlings and	a) Breed and distribute high yielding varieties/cultivars of economic important crop, livestock and fish species.	ARCIN; LiveGETA; Agric Res. Institutes; Faculties &	FAO; World Bank; FMA & WR; Private Sector Community,	PPP-driven Funds; CBN; DPs	ARCIN; NIAS; ACN; NVMA; NSAP; FLD; NGOs	2010-2020

seedstock.		Univs.of Agric ; LBMC's; ADP's; RBDA's; States; LGA's.	NBS			
	b) Produce high yielding, disease resistant, fast growing varieties of cultivars of crops, along with improved breeds of livestock and fish to constitute 50% of stock by 2020	LiveGETA; NAPRI; Research Institutes; Universities; NACGRAB	ARCN, NEARLS; IARCs; NABDA; Private sector	FGN; States Private sector; DPs	NGOs; NIAS; ACN; ARCN; FISON; NVCN	2009 – 2020
	c) Provide incentives for commercial seed and breeding companies to mass produce improved crops, livestock and fish seeds and stocks for planting/rearing	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	2009 - 2011
3) 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 development and selection of elite foundation stock of crops, fisheries 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., ARCN-coordinated.	FAO (DAD-WAnGR); FLD/FDA; CGIAR; ILRI, ICRISAT, IRRI	PPP; CBN; World Bank; IFAD; DPs	ARCN; NIAS; NSAP; FISON; ACN, States, NGOs	2010 - 2020
	b) Establish national livestock genetic exploration technology agency (LiveGETA) together with livestock breeding & multiplication centres (6 Nos.) under the ARCN	ARCN; FAO (DAD-WAnGR); Universities. NAPRI	FMA & WR; World Bank, ILRI	CBN; PPP; DPs	ARCN; NIAS; Universities; FLD; NGOs	2009 - 2011
	c) Create additional livestock research institutes to intensify and diversify the mandate of NAPRI	FMA&WR; FGN; ARCN;	FAO; IARCs; Private sector;	FGN; DPs; Private sector;	NPC; NGOs; private sector	2009 - 2015

				commercial & dev banks		
4) 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 to register and certify all professional practitioners to enhance better service provision in the industry.	ARCN; NIAS; ACN; All Farmers Apex Organization; Agro-Professional Assocs. (APA's)	FMA & WR; Private Sector Community; World Bank; NBS	Budget; CBN; Private Sector; DPs	NFRA; FLD; FDA; APAs; NGOs; NPC	2009-2015
	b) Establish modern farm villages across the nation to serve as model villages/communities for Research and Development.	FMA & WR; States; ADP's; RBDA's; LGA's MDG Office	FMA & WR; State MA's; ADB; DPs; Private Sector; NGOs; NPC	FGN; PPP; DPs; States & LGCs, CBN; NACRDB;	NAERLS; ARMTI; NFRA; Private sectors & NGOs; States; LGA's	2009-2015
	c) Facilitate acquisition of farmlands and title holdings towards agricultural production through Public-Private Partnership (PPP) initiative.	FGN; States; LGCs; Communities	World Bank; FAO; IFAD; FMA & WR; State MA's; Private sector; NDE; NAPEP;	PPP; CBN; NACRDB; MFB's; Credit Schemes	NFRA; FDA; FLD; NGOs; Private sector	2009 - 2020
	d) Expand and strengthen Food Technology Departments in tertiary institutions to train the manpower required in the food processing industry	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	2009 - 2015

5) Introduce production incentive to specific crops that will target import substitution and export promotion	a) Provide special infrastructure incentives to communities that are identified as high production centres.	FGN, States, LGCs,	NGOs, traditional institutions, faith-based institutions, Private sector, cooperatives	FGN (Natural Resource Fund); States; DPs	NPC; NGOs; Communities; Private sector	2009 – 2015
	b) Provide post production incentives in various forms, through farmer and community-based organizations to titled land areas.	FGN, States, LGCs,	NGOs, traditional institutions, faith-based institutions; Private sector, cooperatives	FGN (Natural Resource Fund); States; DPs	NPC; NGOs; Communities; Private sector	2015 - 2020

Goal 2: To transform Nigerian agricultural production into a substantially mechanized system by 2020

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; FMInd	FMSci & Tech; FMA & WR; NPC; Private Sector; States; NGOs	PPP; CBN; Commercial & Development Banks; DPs;	FDA; FLD; ADP's; States & LGCs; SON; Private sector	2009-2015
	b) Develop local capacity to fabricate, manufacture and maintain appropriate machineries across the value chain	Research Institutes; NOTAP; Universities, Monotechnics	FMSci & Tech; FMA & WR; NPC; Private Sector; States; NGOs	PPP; CBN; Commercial & Development	FDA; FLD; ADP's; States & LGCs; SON; Private sector	2009-2015

		& Polytechnics; NCAM; NASENI; FMA & WR; FMInd		ent Banks; DPs;		
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						
Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
1) Develop high yielding strains of local cattle and goat breeds for milk production through selection and crossing with world class dairy breeds (e.g. Holstein-Friesian, Guernsey and Jersey).	a) Expand and strengthen 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	2009 - 2015
	b) Promote establishment of dairy farms – based on efficient and intensive mechanized systems - in selected suitable sites through the provision of financial incentives for large scale dairying and/or Public Private Partnership (PPP) and Commercial Agricultural Program (CAP) intervention.	FLD; NFRA; States & LGCs; Private sector	FMA & WR; World Bank; Private Sector; DPs	PPP; CBN; Commercial & Dev Banks; DPs	FLD; NIAS; NVMA; NFRA	2010-2020
	c) Establish, through PPP, medium scale dairy processing plants in suitable locations with high peri-urban cattle populations and ensure effective milk collection systems from the cattle farmers.	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	2011 - 2020
	d) Expand research and development for improved rangeland and pasture species	FLD; FDA; Natl. Agric Seed Council;	FMA & WR; ARCN; FAO; CGIAR, ILRI	Private sector; FGN; DPs	NIAS; ACN; NFRA; NGOs; Private sector	2009 - 2015

		Universities; Relevant Res. Institutes				
	e) Provide adequate incentives and continuing training for dairy farmers and processors	States & LGCs; Universities; Colleges; FLD; ADPs; ARMTI; NAERLS	FMA & WR; FMEd; States; Private sector; DPs	PPP; DPs; Commercial & Dev Banks	FLD; NFRA; NIFST; NIAS	2009 - 2015
Goal 4: Achieve 20% farm-gate storage, 75% commercial storage and 5% strategic reserves by 2020						
Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
1. Expansion of existing food storage capacity	a) Construct additional food storage facilities, silos and conditioning centres through PPP	FMA&WR; States, private sector; NCAM	NSPRI; NFRA; Private sector	FGN, State, Private sector; DPs	NIFST; NGOs; Private sector	2009 - 2015
	b) Train farmers, meat handlers and warehouse keepers in proper harvesting, slaughter and storage techniques, respectively in order to improve quality and shelf life of produce	FGN, States, NISPRI, Research Institutes; FIIRO; PRODA	NFRA; FMA&WR; Private sector, DPs	FGN, States, private sector; DPs;	NIFST, NGOs, Private sector; NAERLS; ARMTI	2010 - 2020
	c) Expansion of the strategic food reserves of the nation	NFRA, FMA&WR	DPs, Private sector	FGN, States, LGCs, private sector,	NGOs, privates sector, FAO	2010 - 2020
	d) Ensure steady power supply to facilitate effective storage	FGN; States, LGCs,	ECN; PHCN; FMof Power;	Private sector;	NGOs, Private	2010 - 2020

		Commercial & Dev banks; MFBs;	private sector	FGN; States; DPs	sector, NPC, NSPRI	
	e) Provide appropriate meat and fish preservation facilities in appropriate locations as well as 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;	2009 - 2015

Goal 5: To achieve a fully digital, green and bio technology driven agriculture by the year 2020

Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
1) Significantly enhance agricultural practices and production through the use of space technology	a) Develop and/or adopt GIS and wireless technology to enhance effective land mapping and classification for efficient allocation to crops, livestock and fish production	FMA&WR,	RECTAS, NASRDA, Universities, private sector, FMST	FGN, DPs	NPC, private sector	2009 – 2020
	b) Intensive use of satellite imagery and to predict weather and/or climatic changes that affect agricultural production	FMA&WR	RECTAS, NASRDA, NIMET, Universities, private sector, FMST	FGN, DPs	NPC, private sector, NGOs	2009 - 2020
2) Promote the greater use of biotechnology tools in selection and breeding of crops,	a) Embark on a genome project to unravel the genetic architecture of indigenous	ARCN, NACGRAB, NABDA, Universities,	DPs, FMST	FGN, private sector	NPC, private sector, NGOs, NIAS, ACN	2009 - 2020

livestock, fisheries and forestry	species of crops, livestock and fish					
	b) Develop genetic techniques to introduce desired traits	ARCN, NACGRAB, NABDA, Universities,	DPs, FMST	FGN, private sector	NPC, private sector, NGOs, NIAS, ACN	2009 - 2020
	c) Development of biofortification in foods for nutritional and medicinal purposes	ARCN, NACGRAB, NABDA, Universities,	DPs, FMST	FGN, private sector	NPC, private sector, NGOs, NIAS, ACN	2009 - 2020
3) Promote the use of green technology to ensure sustainable agricultural production, safe and clean environment	a) Establish a policy that encourages the use of non-food items for bio fuels	FMA&WR, States & LGCs	FMST, FMEnv., NNPC, Universities, Research Institutes	FGN, States, private sector, DP, Commercial & Dev. banks	NGOs, private sector, NPC	2009 - 2011
	b) Adopt the use of natural river and/or stream flow, solar and wind to generate electricity to power agricultural equipment such as irrigation pumps etc	FMA&WR, States & LGCs, private sector	FMST, FMEnv., ECN, private sector,	FGN, States, private sector, DP, Commercial & Dev. banks	NGOs, private sector, NPC	2009 – 2020

	c) Promote the use of organic farming for sustainable soil fertility and productivity for higher income and safe environment	FMA&WR, States & LGCs	Private sector, ARCN	FGN, States, DPs, private sector, Commercial & Dev. Banks	NGOs, private sector, NPC	2009 - 2020
Objective 2: Enhanced Generation Of National And Social Wealth Through Greater Exports, and Import Substitution						
Goal 1: To derive over 50 % of the nation's foreign exchange earnings through agro-industrial exports by 2020						
Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
1) Significantly increase agro-industrial exports through enhancement of quality, local value addition and creation of enabling environment	a) Expand export products handling, preservation and conditioning centres to meet international standards	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	2009 - 2011
	b) Develop export market information system to ensure that farmers are exposed to and benefit from international commodity market.	NEPC; Commodities Boards	NEXIM; CBN; FMA&WR; Private sector	FGN; World Bank; Private sector	NPC; Private sector; NGOs	2009 - 2012
	c) Review trade related protocols signed by Nigeria to ensure that the national interest is primarily served	FMCI; FMA&WR; FMFA	NEPC; Agric. Commodities Boards; CBN	FGN; NEXIM	NPC; Private sector; NGOs	2009 - 2011
	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;	NPC; Private sector; NGOs	2009 - 2011

				FAO; AFREXIM		
2) Expand domestic capacity to process agricultural produce into raw materials for industrial use	a) Encourage and provide incentives to existing and new 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; FIIRO	FGN; States, LGCs; SMEDAN; Private sector	NPC; Private sector; NGOs	2009 - 2015
	b) Develop modern technologies and facilities for primary storage and processing of agricultural produce	FMA&WR; States; LGCs; Research Institutes; private sector	DPs; private sector; NGOs	FGN, States; LGCs; Private sector	NPC; NGOs; Private sector	2009 - 2020
	c) Conduct training programs on the 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	2009 - 2011
3) Aggressively pursue import substitution to reduce import of raw materials and food through import tariffs and tax holidays for local industries to thrive	a) Review import levies and local subsidy on food and agricultural raw materials	FMF; CBN	FMA&WR; FMCI	FGN; CBN	NPC; CBN; NGOs	2009 - 2015
	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	2009 - 2015
	c) Provide enabling infrastructure through PPP and ensure profitability of agriculture business and establish a clear exit strategy for government involvement.	FMA&WR; Private sector	FMCI; MAN; SMEDAN; NASMI	FGN; CBN; Commercial & dev banks;	NPC; Private sector, NGOs	2009 - 2015

				Private sector; FAO, World Bank; IFAD		
	d) Develop a PPP agricultural loan delivery scheme specifically targeted at Agro-industries.	CBN; Private sector; World Bank	Commercial & Dev Banks; Private sector	FGN; CBN; Commercial & Dev Banks	NPC; Private sector; NGOs	2009 - 2015
	e) Maintain zero tariffs on imported agro-processing machineries - in the short and medium terms.	FMF	CBN		NPC; Private sector; NGOs	2009 - 2015
Goal 2: To reduce the present level of food import (worth over \$ 3 billion per annum) by 50 % in 2015 and by 90 % in 2020.						
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, egg, powdered milk, 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	2009 - 2015
	b) Institute and ensure adoption of international quality standard and industry best practices in the operation of the agro-processing industry	FMA&WR; FMCI, FM Sci & Tech	NAFDAC; SON	FGN; World Bank; NEPC	NPC; FIIRO; Private sector; NGOs	2009 - 2011

Objective 3: Enhance Capacity for Value Addition Leading To Industrialization And Employment Opportunities						
Goal 1: To reduce the post harvest loss of agricultural produce by an average of 50% in 2015 and 90% in 2020						
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 harvesting/slaughter and 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	2009 - 2010
	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	2010 - 2015
	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	2010 - 2015
2) Promote the establishment of agro-processing parks through PPP arrangement in each agro-ecological zone	a) Rehabilitate existing agro-processing centres and establish new ones through PPP in all agro-ecological zones	Private sector;	FMA & WR; FMC&I; DPs	Private sector	NPC; NGOs; Private sector	2009 - 2015
	b) Strengthen capacity building institutions to meet the skill requirements of the expanding	FMA & WR; FMC&I;	Universities of Agric;	Budget; DPs	NGOs; Private sector, states	2009 - 2011

	small and medium scale agro-processing industries				& LGCs	
	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	2009 - 2015
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	2009 - 2015
	b) Strengthen and establish effective domestic markets and export promotion centres	FGN; States & LGCs; private sector; FMA & WR, Commodity associations & marketing companies	Private sectors	States & LGCs, Private sector	NPC; NGOs; Private sector	2009 - 2015
	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	FMA & WR; NGOs; Private sector	2009 - 2011
	d) Promote strategic investments in the development and maintenance of market infrastructure and related facilities through PPP	FGN; States & LGCs; Commodity associations & marketing companies	Private sector; DPs	Commercial & Dev banks; private sector	NGO; FMA & WR; private sector	2009 - 2020

Objective 4: Efficient Exploitation And Utilization Of Available Agricultural Resources						
Goal 1: Increase the size of irrigated land from current 1% of cultivable land to 10% of cultivable land by 2015 and to 25% by 2020						
Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
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	2009 - 2015
	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	2009 - 2020
	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	2009 - 2015
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.						
Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
1) Ensure Sustainable soil fertility, water management and productivity.	a) Review and update existing policies on soil and water conservation and productivity and institute soil remediation practices (including liming) as required	FGN; States	Private sector; communities; public water utilities companies	FGN; States; DPs		2009 - 2010

	b) Promote and develop 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	2009 - 2010
	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	2009 - 2010
Goal 3: Increase area of land planted with diversified biomass including economic species in agro-forestry program from current 3% to 10% in 2015 and to 20% by 2020						
Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
1) Aggressive pursuit of afforestation, re-afforestation and erosion control programs	a) Promote planting of fast growing, drought and disease resistant tree species adapted to different ecological zones	FGN, States; LGCs; private sector	Communities	FGN, States; LGCs; private sector; DPs	Private sector; communities; NGOs	2009 - 2020
	b) Enforcement of laws to protect forests and grazing reserves.	FGN, States; LGCs	Communities	FGN, States; LGCs	Private sector; communities; NGOs	2009 - 2020
	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	2009 - 2015
	d) Promote the use of alternative energy for cooking	FGN, States; LGCs; private sector, NGOs	Communities; FM of Sci & Tech.; NNPC; FMEEnv.;	FGN, States; LGCs; private	Private sector; communities; NGOs	2009 - 2020

			NGOs; Research institutes; Universities, Monotechnics and polytechnics	sector		
	e) Introduce and promote the use of energy efficient technologies for home use	FGN, States; LGCs; private sector, NGOs	Communities; FM of Sci & Tech.; NNPC; FMEEnv.; NGOs; Research institutes; Universities, Monotechnics and polytechnics	FGN, States; LGCs; private sector	Private sector; communities; NGOs	2009 - 2020

Objective 5: Enhance The Development And Dissemination Of Appropriate and Efficient Technologies For Rapid Adoption

Goal 1: Achieve an efficient agricultural extension delivery system which includes extension worker: farmer ratio of 1:500 by 2020

Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
1) Strengthening the agricultural extension system through adequate capacity	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;	States, LGCs, DPs; Private	ADPs, LGCs, FMA&WR, NGOs; private sector	2009 - 2011

building			Research Institutes	sector		
	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	2009 - 2011
	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' DP, Private sector	Federal Agencies, ADPs, NGOs, Private sector	2009 - 2015
2) Expand and accelerate knowledge-driven farming systems	a) Emphasize research to serve agricultural practitioners and other stakeholders in the entire value chain	NARIs, Universities, Private Sector	ARCN, DPs, NGOs; IARCs	Federal, State and Private Sector	Federal, State Agencies; NGOs	2009 - 2015
	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	2009 - 2015
	c) Establish farmer information call service (weather forecast/report etc) using the GSM and wireless technology	NAERLS	FMA&WR, Universities, Research Institutes, GSM service providers, FAO Agromet, NIMET	FGN, States, private sector, DPs	NPC, private sector, NGOs, farmer groups	2009 - 2020

3) 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	ARCN, NARIs, Universities, NGOs, Private sector	IARCs, DPs, FMA&WR	Federal; State; private sector; commercial & dev banks	Federal and State agencies; NGOs	2009 - 2020
	b) Rehabilitate and further develop new farm service centres in collaboration with the private sector	ADPs, LGCs, private sector, communities	FGN, states & LGCs, Private sector	Federal, State, LGCs, Private Sector	Federal, State, LGCs, NGOs, NPC	2009 - 2020
	c) Organize agricultural shows and exhibitions to demonstrate new innovation and link farmers to market and industry	NARIs, FMA&WR, ADPs, LGCs, private sector; NGOs	Federal and State agencies; private sector; NGOs	Federal and State agencies; NGOs; Private sector; DPs	Federal and State agencies, AFAN, Nat Agric Show Foundation	2009 - 2020

Goal 2: Achieve the adoption of improved varieties/ species of seed and brood stock by 50% of the farmers by 2015 and 75% by 202

Strategies	Initiatives	Implementing Agencies	Collaborating Agencies	Source of Funding	Monitoring & Evaluation	Timeline
1) Accelerate the adoption of high yielding seed varieties and brood stock (<i>produced under O1.G1.S2.Ib</i>)	a) Develop mechanism to involve stakeholders in determining the priorities for research in varietal/ breed improvement and extension.	ARCN, NARIs, Universities, Monotechnics and Polytechnics; private sector	ADPs, LGCs, NGOs	Federal, State, LGCs, private sector	Federal agencies, NGOs, DPs	2009 - 2020
	b) Strengthen producers, processors, marketers and consumer associations to access and distribute improved varieties and	ADPs, LGCs, NGOs, private sector	Federal agencies, NGOs	FGN, States, LGCs, private	Federal agencies, NGOs	2009 - 2020

	brood stock for greater productivity and profitability			sector		
	c) Promote adoption of improved varieties and brood stock to strengthen and expand programs for women and youth development.	ADPs, LGCs, NGOs,	Federal agencies, DPs; FMWomen Affairs; FMYouth Dev; NAPEP	FGN; State, LGCs, DPs, private sector	Federal agencies, NGOs, communities	2009 – 2020

4.2. Performance Measurement & Reporting Framework for Agriculture & Food Security Initiatives

Table 4: Performance Measurement and Monitoring Framework

Objective 1: Secure The Food And Feed Needs Of The Nation								
Goal 1: To achieve a 3-fold increase in domestic agricultural productivity by 2015 and 6-fold increase by 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
1) Promote greater use of highly productive and disease-resistant crops, livestock, poultry and fish strains, breeds and species.	a) Launch program for the increased production and 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.	<ul style="list-style-type: none"> ▪ Quantity of certified seeds, cultivars produced ▪ Quantity of certified seeds, cultivars used by end-users ▪ Yields achieved from the use of certified seeds and cultivars 	FGN; FMA&WR; NIAS, NAERLS; NAPRI	Annually (November)				
	b) Accelerate the formation of and strengthen the existing agricultural producers	<ul style="list-style-type: none"> ▪ Number of registered and trained cooperatives ▪ No of cooperatives and 	NAERLS; State Coop. Divisions; NFRA	Bi-annual				

Objective 1: Secure The Food And Feed Needs Of The Nation								
Goal 1: To achieve a 3-fold increase in domestic agricultural productivity by 2015 and 6-fold increase by 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
	associations, organizations and cooperatives to ensure more efficient access to inputs and other agricultural services	producer associations that have access to inputs and other agricultural services						
2) Significantly increase the yield of crops, livestock and fisheries	a) Breed and distribute high yielding varieties/cultivars of important economic crops, livestock and fish species.	<ul style="list-style-type: none"> ▪ No. of new high-yielding varieties and strains developed ▪ No. of new varieties and cultivars/strains that are used ▪ No. of new cultivars/strains and breeds of crops, livestock and fish that are successfully cultivated/reared and harvested 	ARCN; NIAS; ACN; NVMA; NSAP; FLD; NGOs	Annually				
	b) Produce high yielding, disease resistant, fast growing	<ul style="list-style-type: none"> ▪ Volume produced by 2011, 2015 and 2020 						

Objective 1: Secure The Food And Feed Needs Of The Nation								
Goal 1: To achieve a 3-fold increase in domestic agricultural productivity by 2015 and 6-fold increase by 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
	varieties/cultivars of crops, along with improved breeds of livestock and fishes to constitute 50% of stock by 2020							
	c) Provide incentives for commercial seed and breeding companies to mass produce improved crops, livestock and fish seeds and stocks for planting/rearing	<ul style="list-style-type: none"> ▪ No. of commercial seed and breeding companies involved ▪ Quantities of crops, livestock and fish seeds produced by seed and breeding companies involved 	ARCN; NIAS; ACN; FLD; FDA; NFRA, NGOs	Annually				
3) Explore and exploit the genetic potentials of the local and exotic breeds of	a) Promote the development and selection of elite foundation stock of crops, fisheries and livestock	<ul style="list-style-type: none"> ▪ Number of Foundation stocks created for species and/or breeds/varieties ▪ List of traits 	ARCN; NIAS; NSAP; FISON; ACN, States, NGOs	Annually				

Objective 1: Secure The Food And Feed Needs Of The Nation								
Goal 1: To achieve a 3-fold increase in domestic agricultural productivity by 2015 and 6-fold increase by 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
crops, livestock and fish through enhanced Research and development	species; and subject all indigenous livestock, poultry and fish breeds/species to trait-group evaluation to facilitate selective breeding of desired traits of economic importance	<ul style="list-style-type: none"> selected for or against within species and/or breeds/varieties ▪ Number of national selection and breeding programmes implemented 						
	b) Establish national livestock genetic exploration technology agency (LiveGETA) together with livestock breeding & multiplication centres (6 Nos.) under the ARCN	<ul style="list-style-type: none"> ▪ LiveGETA established ▪ No of breeding and multiplication centres established 	ARCN; NIAS; Universities; FLD; NGOs	Annually				
	c) Create	▪ No of additional	NPC;	Annually				

Objective 1: Secure The Food And Feed Needs Of The Nation								
Goal 1: To achieve a 3-fold increase in domestic agricultural productivity by 2015 and 6-fold increase by 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
	additional livestock research institutes to intensify and diversify the mandate of NAPRI	livestock research institutes established	NGOs; private sector					
4) 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 to register and certify all professional practitioners to enhance better service provision in the industry.	<ul style="list-style-type: none"> ▪ Number of Registers effectively maintained ▪ Level of Compliance with Charter standards by management and members 	NFRA; FLD; FDA; APAs; NGOs; NPC	Annually				
	b) Establish modern farm villages across the nation to serve as model villages/communities for Research and Development.	<ul style="list-style-type: none"> ▪ Number of model villages established ▪ The R&D interventions implemented in the villages ▪ Impact of the R&D on agric production, 	NAERLS; ARMTI; NFRA; Private sectors & NGOs; States; LGA's	Bi-annual				

Objective 1: Secure The Food And Feed Needs Of The Nation								
Goal 1: To achieve a 3-fold increase in domestic agricultural productivity by 2015 and 6-fold increase by 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
		processing and marketing						
	c) Facilitate acquisition of farmlands and title holdings towards agricultural production through Public-Private Partnership (PPP) initiative.	<ul style="list-style-type: none"> ▪ Number of agriculture graduates that establish successful farms ▪ Number of farms with title holdings ▪ Extent of public and private sector partnership achieved 	NFRA; FDA; FLD; NGOs; Private sector	Annual				
	d) Expand and strengthen Food Technology Departments in tertiary institutions to train the manpower required in the food processing industry	<ul style="list-style-type: none"> ▪ No. of Food Technology Departments involved ▪ No. of manpower trained 	NUC; NBTE; NIFST; NFRA; DPs; Private sector; NGOs	Annual				
5) Introduce production incentive to	a) Provide special infrastructure incentives to	<ul style="list-style-type: none"> ▪ No of communities identified as high 	NPC; NGOs; Communiti	Bi-annual				

Objective 1: Secure The Food And Feed Needs Of The Nation

Goal 1: To achieve a 3-fold increase in domestic agricultural productivity by 2015 and 6-fold increase by 2020

Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
specific crops that will target import substitution and export promotion	communities that are identified as high production centres	<ul style="list-style-type: none"> production centres ▪ No and types of infrastructure provided as incentives for such communities 	es; Private sector					
	b) Provide post production incentives in various forms, through farmer and community-based organizations to titled land areas	<ul style="list-style-type: none"> ▪ No of farmers identified as qualified for such incentives ▪ Types and quantity of incentives provided. ▪ No of cooperatives and associations that are involved in the incentives provision 	NPC; NGOs; Communities; Private sector	Annual				

Objective 1: Secure The Food And Feed Needs Of The Nation

Goal 2: To transform the Nigerian agricultural production into a a substantially mechanized system by 2020

Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
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.	<ul style="list-style-type: none"> ▪ Number of mechanization tools available ▪ No of mechanization tools adopted 	FDA; FLD; ADP's; States & LGCs; SON; Private sector	Annual				
	b) Develop local capacity to fabricate, manufacture and maintain appropriate machineries across the value chain	<ul style="list-style-type: none"> ▪ No of fabricators trained across the value chain ▪ Quantity, types and standard of fabricated machineries ▪ No and location of factories and entrepreneurs involved in fabrication and maintenance of factories nationally 	FDA; FLD; ADP's; States & LGCs; SON; Private sector	Annually				

Objective 1: Secure The Food And Feed Needs Of The Nation

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

Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
1. Develop high yielding strains of local cattle and goat breeds for cattle for milk production through selection and crossing with world class dairy breeds (e.g. Holstein-Friesian, Guernsey and Jersey).	a) Expand and strengthen the existing livestock improvement and breeding centres for the purpose of upgrading local breeds for dairy production	<ul style="list-style-type: none"> ▪ No. of additional LIBCs established across the country ▪ No. of local breeds upgraded 	NIAS; FLD; NSAP; NVMA	Annually				
	b) Promote establishment of dairy farms – based on efficient and intensive mechanized systems - in selected suitable sites through the provision of financial incentives for large scale dairying and/or Public Private Partnership	<ul style="list-style-type: none"> ▪ No. of dairy farms established ▪ No. of dairy farmers involved ▪ Size of dairy farms ▪ Amount of loan disbursed ▪ Quantity of dairy products ▪ Milk output per lactation 	FLD; NIAS; NVMA; NFRA	Biannual				

	(PPP) and Commercial Agricultural Program (CAP) intervention							
	c) Establish, through PPP, medium scale dairy processing plants in suitable locations with high peri-urban cattle populations and ensure effective milk collection systems from the cattle farmers.	<ul style="list-style-type: none"> ▪ No. of dairy processing plants established ▪ Quantity of milk collected ▪ No. of farmers involved 	NIFST; NFRA; NIAS; FLD; NAFDAC	Biannual				
	d) Expand research and development for improved rangeland and pasture species	<ul style="list-style-type: none"> ▪ Hectarage of additional rangeland and pasture established/ improved ▪ No. of rangeland and pasture species developed 	NIAS; ACN; NFRA; NGOs; Private sector	Annual				
	e) Provide adequate incentives and continuing	<ul style="list-style-type: none"> ▪ No and types of incentives provided ▪ No of farmers 	FLD; NFRA; NIFST; NIAS	Biannual				

	training for dairy farmers and processors	and processors that are beneficiaries of the incentives <ul style="list-style-type: none"> ▪ No. of dairy farmers trained ▪ No. of processors trained 						
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Objective 1: Secure The Food And Feed Needs Of The Nation								
Goal 4: Achieve 20% farm-gate storage, 75% commercial storage and 5% strategic reserves by 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
2. Expansion of existing food storage capacity	a) Construct additional food storage facilities, silos and conditioning centres through PPP	<ul style="list-style-type: none"> ▪ Types and Nos of food storage facilities constructed ▪ Capacity of food storage facilities constructed by type ▪ No. of users involved 	NIFST; NGOs; Private sector	Biannual				

Objective 1: Secure The Food And Feed Needs Of The Nation								
Goal 4: Achieve 20% farm-gate storage, 75% commercial storage and 5% strategic reserves by 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
	b) Expansion of the strategic food reserves of the nation	<ul style="list-style-type: none"> ▪ No and types of strategic storage facilities ▪ Types and quantities of foods in strategic storage 						
	c) Train farmers, meat handlers and warehouse keepers in proper harvesting, slaughter and storage techniques, respectively in order to improve quality and shelf life of produce	<ul style="list-style-type: none"> ▪ No. and types of farmers, meat handlers and warehouse keepers trained ▪ No of processing facilities, including slaughter houses, established 	NIFST, NGOs, Private sector; NAERLS; ARMTI	Biannual				
	d) Ensure steady power supply to facilitate effective storage	<ul style="list-style-type: none"> ▪ No and types of power sources developed ▪ Megawatt of power generated through 	NGOs, Private sector, NPC, NSPRI	Quarterly				

Objective 1: Secure The Food And Feed Needs Of The Nation								
Goal 4: Achieve 20% farm-gate storage, 75% commercial storage and 5% strategic reserves by 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
		alternative renewable sources						
	e) Provide appropriate meat and fish preservation facilities in appropriate locations such as near fish landing ports and sales outlets through PPP	<ul style="list-style-type: none"> ▪ Type of facilities provided ▪ No. of facilities provided ▪ No. of fishermen and fish/meat handlers serviced 	NPC; NGOs; Private sector; FISON	Quarterly				

Objective 1: Secure The Food And Feed Needs Of The Nation

Goal 5: To achieve a fully digital, green and bio technology driven agriculture by the year 2020

Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
1) Significantly enhance agricultural practices and production through the use of space technology	a) Develop and/or adopt GIS and wireless technology to enhance effective land mapping and classification for efficient allocation to crops, livestock and fish production	<ul style="list-style-type: none"> ▪ Area of land mapped and classified 	NPC, private sector	Annually				
	b) Intensive use of satellite imagery and to predict weather and/or climatic changes that affect agricultural production	<ul style="list-style-type: none"> ▪ Weather conditions correctly predicted ▪ Frequency of reporting 	NPC, private sector, NGOs	Annually				
2) Promote the greater use of	a) Embark on a genome project to	<ul style="list-style-type: none"> ▪ No of institutions and personnel engaged in the 	NPC, private sector,	Annually				

Objective 1: Secure The Food And Feed Needs Of The Nation								
Goal 5: To achieve a fully digital, green and bio technology driven agriculture by the year 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
biotechnology tools in selection and breeding of crops, livestock, fisheries and forestry	unravel the genetic architecture of indigenous species of crops, livestock and fish	project ▪ No. of indigenous species of crops, livestock and fish covered	NGOs, NIAS, ACN					
	b) Develop genetic techniques to introduce desired traits	▪ No. of desired traits introduced	NPC, private sector, NGOs, NIAS, ACN	Annually				
	c) Development of biofortification in foods for nutritional and medicinal purposes	▪ No. of fortified crops, livestock and fish products	NPC, private sector, NGOs, NIAS, ACN	Annually				
3) Promote the use of green technology to ensure sustainable agricultural	a) Encourage the use of non-food items for bio fuels	▪ No. of non-food plants/ materials utilized for bio fuel production	NGOs, private sector, NPC	Annually				
	b) Adopt the use	▪ No of generating	NGOs,	Biannual				

Objective 1: Secure The Food And Feed Needs Of The Nation

Goal 5: To achieve a fully digital, green and bio technology driven agriculture by the year 2020

Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
production, safe and clean environment	of natural river and/or stream flow, solar and wind to generate electricity to power agricultural equipment such as irrigation pumps etc	<ul style="list-style-type: none"> plants established ▪ Megawatt of electricity generated ▪ Area of irrigated agriculture powered 	private sector, NPC					
	c) Promote the use of organic farming for sustainable soil fertility and productivity for higher income and safe environment	<ul style="list-style-type: none"> ▪ Area of land under organic farming ▪ No. of farmers practicing organic farming ▪ Quantity of organic fertilizer used. 	NGOs, private sector, NPC	Annually				

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

Goal 1: To derive over 50 % of the nation's foreign exchange earnings through agro-industrial exports by 2020

Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
1) Significantly increase agro-industrial exports through enhancement of quality, local value addition and creation of enabling environment	a) Expand export products handling, preservation and conditioning centres to meet international standards	<ul style="list-style-type: none"> ▪ No. of centres established. ▪ Volume of products handled 	NPC; Private sector; NGOs	Quarterly				
	b) Develop export market information system to ensure that farmers are exposed to and benefit from international commodity market	<ul style="list-style-type: none"> ▪ Types and frequency of information available to farmers ▪ Percentage of farmers having access to export market information 	NPC; Private sector; NGOs	Monthly				
	c) Review trade related protocols signed by Nigeria to ensure that the national interest is primarily served.	<ul style="list-style-type: none"> ▪ No. of Trade protocols reviewed 	NPC; Private sector; NGOs	Annually				

Objective 2: Enhanced Generation Of National And Social Wealth Through Greater Exports, and Import Substitution								
Goal 1: To derive over 50 % of the nation's foreign exchange earnings through agro-industrial exports by 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
	d) Increase export incentives to enhance international competitiveness of Nigeria's agricultural export commodities	<ul style="list-style-type: none"> ▪ No and types of commodities that benefits from incentives ▪ No. of incentives implemented ▪ No. of exporters benefiting from incentives ▪ Percentage increase in volume of export ▪ Value of exports generated as a result of the incentives 	NPC; Private sector; NGOs	Annually				
2) Expand domestic capacity to process agricultural produce into raw materials for industrial use	a) Encourage and provide incentives to existing and new small and medium scale enterprises to add value along the value chain	<ul style="list-style-type: none"> ▪ No. of incentives implemented ▪ No. of SMEs benefiting from incentives ▪ Percentage increase in volume of commodities processed 	NPC; Private sector; NGOs	Annually				
	b) Develop	<ul style="list-style-type: none"> ▪ No. of 	NPC;	Quarterly				

Objective 2: Enhanced Generation Of National And Social Wealth Through Greater Exports, and Import Substitution								
Goal 1: To derive over 50 % of the nation's foreign exchange earnings through agro-industrial exports by 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
	modern technologies and facilities for primary storage and processing of agricultural produce	<ul style="list-style-type: none"> technologies developed ▪ No of facilities developed ▪ No of technologies used in these facilities 	NGOs; Private sector					
	c) Conduct training programs on the use of modern techniques and trends in processing agricultural products into raw materials with the active participation of the private sector	<ul style="list-style-type: none"> ▪ No. & types of training programmes conducted ▪ No. of private sector entities participating in training 	NPC; Private sector; NGOs	Quarterly				
3) Aggressively pursue import substitution to reduce import of	a) Review import levies and local subsidy on food and agricultural raw materials	<ul style="list-style-type: none"> ▪ No. of levies & subsidies reviewed ▪ Percentage reduction on imported raw 	NPC; CBN; NGOs	Annually				

Objective 2: Enhanced Generation Of National And Social Wealth Through Greater Exports, and Import Substitution								
Goal 1: To derive over 50 % of the nation's foreign exchange earnings through agro-industrial exports by 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
raw materials and food through import tariffs and tax holidays for local industries to thrive		materials <ul style="list-style-type: none"> ▪ Percentage increase in local raw materials processed 						
	b) Partner with the private sector in the promotion of agro-industrial development and export	<ul style="list-style-type: none"> ▪ No. of PPP-based agro-industries established ▪ Percentage change in volume of export 	NPC; CBN; NGOs	Quarterly				
	c) Provide enabling infrastructure through PPP and ensure profitability of agriculture business and establish a clear exit strategy for government involvement.	<ul style="list-style-type: none"> ▪ No. & types of infrastructure provided ▪ Percentage change in income of agro-business ▪ Percentage reduction in direct government equity in the PPPs 	NPC; Private sector, NGOs	Annually				
	d) Develop a PPP agricultural loan delivery scheme	<ul style="list-style-type: none"> ▪ Total amount disbursed ▪ No of Agro- 	NPC; Private sector;	Annually				

Objective 2: Enhanced Generation Of National And Social Wealth Through Greater Exports, and Import Substitution								
Goal 1: To derive over 50 % of the nation's foreign exchange earnings through agro-industrial exports by 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
	specifically targeted at Agro-industries	industries that benefitted	NGOs					
	e) Maintain zero tariffs on imported agro-processing machineries - in the short and medium terms.	<ul style="list-style-type: none"> ▪ No. and types of agro-processing machineries imported ▪ Consistency of the policy during the periods specified 	NPC; Private sector; NGOs	Annually				

Objective 2: Enhanced Generation Of National And Social Wealth Through Greater Exports, and Import Substitution								
Goal 2: To reduce the present level of food import (worth over \$ 3 billion per annum) by 50 % in 2015 and by 90 % in 2020.								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
1) Foster domestic processing of locally produced agricultural products (e.g. chocolate, juice, rice,	a) Provide tax holidays, pioneer status and other incentives to create enabling environment for the establishment of agro-processing industries	<ul style="list-style-type: none"> ▪ No. and location of agro processors benefiting from the scheme ▪ No. of industries established under the scheme ▪ No and range of 	NPC; CBN; Private sector, NGOs	Annually				

Objective 2: Enhanced Generation Of National And Social Wealth Through Greater Exports, and Import Substitution								
Goal 2: To reduce the present level of food import (worth over \$ 3 billion per annum) by 50 % in 2015 and by 90 % in 2020.								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
egg, powdered milk, etc)		products produced under the scheme						
	b) Institute and ensure adoption of international quality standard and industry best practices in the operation of the agro-processing industry	<ul style="list-style-type: none"> ▪ No. of products that meet international quality standards ▪ No. of industries that adopt international best practice 	NPC; FIIRO; Private sector; NGOs	Annually				

Objective 3: Enhance Capacity for Value Addition Leading To Industrialization And Employment Opportunities								
Goal 1: To reduce the post harvest loss of agricultural produce by an average of 50% in 2015 and 90% in 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
1) Improve harvesting and processing techniques of	a) Sponsor enlightenment campaign on best practices in the harvesting/slaug	<ul style="list-style-type: none"> ▪ Intensity of campaigns organized and carried out. ▪ Level of funding 	Private sector; NGOs; NPC	Continuous				

Objective 3: Enhance Capacity for Value Addition Leading To Industrialization And Employment Opportunities								
Goal 1: To reduce the post harvest loss of agricultural produce by an average of 50% in 2015 and 90% in 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
agricultural produce	Storage and handling of crops, livestock and fishery products							
	b) Promote establishment of cottage industries for value addition to agricultural produce	<ul style="list-style-type: none"> ▪ No of cottage industries established ▪ Variety and quantity of produce utilized by the cottage industry ▪ Employment opportunities created 	NGOs, Private sector; NPC	Continuous				
	c) Create entrepreneurial opportunities in food processing through capacity building and soft-loan provision	<ul style="list-style-type: none"> ▪ No of trained entrepreneurs ▪ No of institutions running entrepreneurial courses ▪ No of financial institutions supporting entrepreneurial programs 	Government and civil society organisation	Quarterly				

Objective 3: Enhance Capacity for Value Addition Leading To Industrialization And Employment Opportunities								
Goal 1: To reduce the post harvest loss of agricultural produce by an average of 50% in 2015 and 90% in 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
2) Promote the establishment of agro-processing parks through PPP arrangements in each agro-ecological zone	a) Rehabilitate existing agro-processing centres and establish new ones through PPP in all agro-ecological zones	<ul style="list-style-type: none"> a. No of rehabilitated centres and newly developed ones ▪ No of new products and/or emerging products 	NPC; NGOs; Private sector	Continuous				
	b) Strengthen capacity building institutions to meet the skill requirements of the expanding small and medium scale agro-processing industries	<ul style="list-style-type: none"> ▪ No of graduates trained ▪ Level of supporting funds ▪ No of available skilled manpower 	NGOs; Private sector, states & LGCs	Continuous				
	c) Strengthen and harmonize regulatory mechanism towards ensuring Good Manufacturing	<ul style="list-style-type: none"> ▪ Inventory of existing regulatory agencies ▪ Degree of overlaps identified 	MAN; NGO; private sector	Continuous				

Objective 3: Enhance Capacity for Value Addition Leading To Industrialization And Employment Opportunities								
Goal 1: To reduce the post harvest loss of agricultural produce by an average of 50% in 2015 and 90% in 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
	Practices (GMP) and quality control	<ul style="list-style-type: none"> between regulatory agencies ▪ Action taken to reduce duplication ▪ Funds allocated to and utilized by regulatory agencies ▪ No of workshops on monitoring and quality control ▪ No of agro-based firms that obtained quality certification 						
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	<ul style="list-style-type: none"> ▪ No of available skilled manpower that monitor standards ▪ No of agro-based firms with documented processes that meets minimum international 	NGOs, private sector; FMA & WR	Continuous				

Objective 3: Enhance Capacity for Value Addition Leading To Industrialization And Employment Opportunities

Goal 1: To reduce the post harvest loss of agricultural produce by an average of 50% in 2015 and 90% in 2020

Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
		quality standards ▪ No of agricultural products that are branded and packaged						
	b) Strengthen and establish effective domestic markets and export promotion centres	▪ No of established distribution centres of select agricultural produce ▪ No of marketing cooperatives established ▪ No of companies involved in distribution and marketing of agricultural produce ▪ No of modernized produce markets developed at the state and local level	NPC; NGOs; Private sector	Continuous				
	c) Improve on the existing marketing	▪ No of information centres established at	FMA & WR; NGOs; Private	Biennial				

Objective 3: Enhance Capacity for Value Addition Leading To Industrialization And Employment Opportunities								
Goal 1: To reduce the post harvest loss of agricultural produce by an average of 50% in 2015 and 90% in 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
	system including market information system of agricultural produce at all tiers of government	<ul style="list-style-type: none"> ▪ various levels ▪ No of agencies that provide information to agricultural sector 	sector					
	d) Promote strategic investments in the development and maintenance of market infrastructure and related facilities through PPP	<ul style="list-style-type: none"> ▪ No of market infrastructure developed in all agro-ecological zones ▪ No of participating private organizations in providing infrastructure 	NGO; FMA & WR; private sector	Biannual				

Objective 4: Efficient Exploitation And Utilization Of Available Agricultural Resources								
Goal 1: Increase the size of irrigated land from current 1% of cultivable land to 10% of cultivable land by 2015 and to 25% by 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
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	<ul style="list-style-type: none"> ▪ Total Area Identified ▪ Total area Developed for irrigation 	Private sector; NGOs; communities	Biennial				
	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	<ul style="list-style-type: none"> ▪ Total and categories of loans disbursed ▪ Irrigation infrastructures provided. ▪ Numbers of irrigation projects/programmes developed. ▪ Hectares brought under irrigation 	Private sector; NGOs	Annually				
	c) Rehabilitate and complete existing irrigation projects across the nation	<ul style="list-style-type: none"> ▪ No of irrigation projects rehabilitated and completed 	Private sector; NGOs	Continuous				

Objective 4: Efficient Exploitation And Utilization Of Available Agricultural Resources								
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								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
1) Ensure Sustainable soil fertility, water management and productivity	a) Review and update existing policies on soil and water conservation and productivity and institute soil remediation practices (including liming) as required.	<ul style="list-style-type: none"> ▪ Policies on soil and water management reviewed ▪ Conservation, rehabilitation and reclamation activities carried out ▪ Soil tests conducted ▪ Hectares of land remediated 						
	b) Promote and develop commercial organic farming as an integral part of good soil fertility management	<ul style="list-style-type: none"> ▪ Quantum of organic fertilizers used by farmers ▪ Quality of organic fertilizers ▪ No of farm families using organic fertilizers ▪ Hectares under organic farming ▪ Appropriate crop husbandry techniques and 	Private sector; communities; NGOs	Annually				

Objective 4: Efficient Exploitation And Utilization Of Available Agricultural Resources								
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								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
		practices <ul style="list-style-type: none"> ▪ Yield of crops under organic farming 						
	c) Develop and promote environment friendly utilization of inland and marine water resources	<ul style="list-style-type: none"> ▪ No of environmental friendly inland and marine water resources developed ▪ No of environmental friendly inland and marine water resources utilized ▪ Area of inland water bodies created for aquaculture ▪ No of natural water bodies utilized for the purpose of fish production ▪ Measures taken to conserve and promote the 	Private sector; communities; NGOs	Quarterly				

Objective 4: Efficient Exploitation And Utilization Of Available Agricultural Resources								
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								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
		efficient utilization of marine water resources						

Objective 4: Efficient Exploitation And Utilization Of Available Agricultural Resources								
Goal 3: Increase area of land planted with diversified biomass including economic species in agro-forestry program from current 3% to 10% in 2015 and to 20% by 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
1) Aggressive pursuit of afforestation , re-afforestation and erosion control programs	a) Promote planting of fast growing, drought and disease resistant tree species adapted to different ecological zones	<ul style="list-style-type: none"> ▪ Hectares of land planted to various tree species in different ecological zones ▪ No of existing forest plantations rehabilitated 	Private sector; communities; NGOs	Continuous				

Objective 4: Efficient Exploitation And Utilization Of Available Agricultural Resources

Goal 3: Increase area of land planted with diversified biomass including economic species in agro-forestry program from current 3% to 10% in 2015 and to 20% by 2020

Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
	b) Enforcement of laws to protect forests and grazing reserves.	<ul style="list-style-type: none"> ▪ No of forest guards employed and strengthened. ▪ Degree of enforcement of bye-laws that restrict bush burning and controlled grazing 	Private sector; communities; NGOs	Continuous				
	c) Complete the establishment of gazetted forest and grazing reserves by 2015	<ul style="list-style-type: none"> ▪ Pursue the establishment of the proposed Forest and Grazing Reserves Commission 	Private sector; communities; NGOs	Continuous				
	d) Promote the use of alternative energy for cooking	<ul style="list-style-type: none"> ▪ Development of coal, solar, gas, wind, bio fuel and kerosene for domestic use ▪ Large scale adoption of improved stoves for cooking 	Private sector; communities; NGOs	Biannually				

Objective 4: Efficient Exploitation And Utilization Of Available Agricultural Resources

Goal 3: Increase area of land planted with diversified biomass including economic species in agro-forestry program from current 3% to 10% in 2015 and to 20% by 2020

Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
	e) Introduce and promote the use of energy efficient technologies for home use	<ul style="list-style-type: none"> ▪ Development of coal, solar, gas, wind, bio fuel and kerosene for domestic use ▪ Large scale adoption and use of improved stoves for domestic use 	Private sector; communities; NGOs	Biannually				

Objective 5: Enhance The Development And Dissemination Of Appropriate and Efficient Technologies For Rapid Adoption

Goal 1: Achieve an efficient agricultural extension delivery system which includes extension worker: farmer ratio of 1:500 by 2020

Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
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-	<ul style="list-style-type: none"> ▪ No of extension officers per sub-sector i.e. livestock, fisheries etc ▪ No of farmers and/or hectares of farmland covered by extension 	ADPs, LGCs, FMA&WR, NGOs; private sector	Quarterly				

Objective 5: Enhance The Development And Dissemination Of Appropriate and Efficient Technologies For Rapid Adoption

Goal 1: Achieve an efficient agricultural extension delivery system which includes extension worker: farmer ratio of 1:500 by 2020

Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
	economics	workers						
	b) Articulate and coordinate the specific roles to be played by the Federal, States, Local Governments and private sector in extension delivery	<ul style="list-style-type: none"> ▪ Roles of different tiers of Government ▪ Roles of private sector identified 	Federal, State, LGCs & Private Sector	Quarterly				
	c) Train extension personnel in key competences - interpersonal and communication skills, Knowledge, planning, entrepreneurial skills, M&E and ethical competences.	<ul style="list-style-type: none"> ▪ No of trained extension officers that are actually engaged on the field ▪ Amount of funds allocated and utilized for extension services 	Federal Agencies, ADPs, NGOs, Private sector	Quarterly				
2) Expand and accelerate	a) Emphasize research to	<ul style="list-style-type: none"> ▪ Amount of funds allocated and 	Federal, State	Annually				

Objective 5: Enhance The Development And Dissemination Of Appropriate and Efficient Technologies For Rapid Adoption

Goal 1: Achieve an efficient agricultural extension delivery system which includes extension worker: farmer ratio of 1:500 by 2020

Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
knowledge-driven farming systems	serve agricultural practitioners and other stakeholders in the entire value chain	utilized on agricultural research & extension <ul style="list-style-type: none"> ▪ No of available research personnel ▪ No of on-going research in agriculture ▪ No of breakthroughs recorded in agricultural research ▪ No of utilized research findings 	Agencies; NGOs					
	b) Promote farmer-education and provide training incentives to encourage young people into agricultural production, processing and marketing	<ul style="list-style-type: none"> ▪ No of demonstration/ awareness programs organized for farmers ▪ Funds allocated and utilized for organizing farmer demonstration/ 	States ADPs, Federal agencies	Quarterly				

Objective 5: Enhance The Development And Dissemination Of Appropriate and Efficient Technologies For Rapid Adoption								
Goal 1: Achieve an efficient agricultural extension delivery system which includes extension worker: farmer ratio of 1:500 by 2020								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
		awareness <ul style="list-style-type: none"> ▪ Incentives/ Funds allocated for providing incentives ▪ No of beneficiaries (youth) of incentive 						
	c) Establish farmer information call service (weather forecast/report etc) using the GSM and wireless technology	<ul style="list-style-type: none"> ▪ No of enquiries made using the medium 	NPC, private sector, NGOs, farmer groups	Monthly				
3) Achieve a high degree of public private partnership thrust in agricultural research and developmen	a) Establish forum for regular interaction of public and private sectors on agricultural research and development	<ul style="list-style-type: none"> ▪ No of interactive forums organized ▪ No of research breakthroughs disseminated and/or distributed through forums ▪ Amount of funds allocated and utilized for 	Federal and State agencies; NGOs	Quarterly				

Objective 5: Enhance The Development And Dissemination Of Appropriate and Efficient Technologies For Rapid Adoption

Goal 1: Achieve an efficient agricultural extension delivery system which includes extension worker: farmer ratio of 1:500 by 2020

Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
t by 2020		organizing interactive forum						
	b) Rehabilitate and further develop new farm service centres in collaboration with the private sector	<ul style="list-style-type: none"> ▪ No of developed and/or rehabilitated farm service centres ▪ No of farmers serviced by centres ▪ Funds allocated and utilized for developing and/or rehabilitating farm service centres 	Federal, State, LGCs, NGOs, NPC	Bi-annually				
	c) Organize agricultural shows and exhibitions to demonstrate new innovation and link farmers to market and industry	<ul style="list-style-type: none"> ▪ No of agricultural shows and exhibitions that is organized ▪ No and value of deals sealed in each show ▪ No of new innovations and products displayed 	Federal and State agencies AFAN, Nat. Agric Show Foundation	Quarterly				

Objective 5: Enhance The Development And Dissemination Of Appropriate, Efficient Technologies For Rapid Adoption

Goal 2: Achieve the adoption of improved varieties/ species of seed and brood stock by 50% of the farmers by 2015 and 75% by 2020

Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
1) Accelerate the adoption of high yielding seed varieties and brood stock (produced under O1.G1.S2.1 b)	a) Develop mechanism to involve stakeholders in determining the priorities for research in varietal and breed improvement and extension	<ul style="list-style-type: none"> ▪ No of agricultural researches initiated by each category of stakeholder (i.e. government, local farmers, large scale farmers and processors etc) 	Federal agencies, NGOs, DPs	Annually				
	b) Strengthen producers, processors, marketers and consumer associations to access and distribute improved varieties and brood stock for greater productivity and profitability	<ul style="list-style-type: none"> ▪ No of agro-based associations formed ▪ Funds, incentives and/or grants allocated and released to agro-based organizations 	Federal agencies, NGOs	Biannually				
	c) Promote adoption of improved	<ul style="list-style-type: none"> ▪ Funds allocated and utilized on programs/ 	Federal agencies, NGOs,	Quarterly				

Objective 5: Enhance The Development And Dissemination Of Appropriate, Efficient Technologies For Rapid Adoption								
Goal 2: <i>Achieve the adoption of improved varieties/ species of seed and brood stock by 50% of the farmers by 2015 and 75% by 2020</i>								
Strategies	Initiatives	Key Performance Indicators	Monitoring Agency	Monitoring Frequency	Status	Issues Arising	Risks & Challenges	Mitigation
	varieties and brood stock to strengthen and expand programs for women and youth development	adverts/ jingles etc targeted at women and youths <ul style="list-style-type: none"> ▪ No of programs organized for promoting women and youth involvement in agriculture ▪ No of women and youth involved 	communities					

Status Key

	Implementation is behind schedule. Issue resolution needed
	Implementation is at risk of becoming behind schedule
	Implementation is on-schedule
	Not yet commenced

References:

1. *World Agriculture- towards 2015/2030 FAO (2002).*
2. *National Economic Empowerment and Development Strategy (NEEDS)*
3. *Getting Agriculture Going in Nigeria: Framework For A National Growth Strategy (A worldbank Report)*
4. *National Food Security Program*
5. Table 1:
FAOSTAT
CIA World Factbook
(a)Ministerio de Economía y Producción - República Argentina
(b)<http://www.nationmaster.com/countries>

APPENDIX

Table 5: Institutional memory of agricultural policies and program

Period	Projects/Program	Description	Weaknesses
Colonial period (1900-1960)	Cooperatives (1935 to Date)	The Nigerian Cooperatives Ordinance was promulgated in 1935 to regulate Cooperative activities in the country. In 1974 a law was enacted which established the Department of Cooperatives in 1974.	Policy inconsistency and administrative dislocations of the Federal Department in charge of Cooperatives.
	Commodity Boards (1947 to 1986)	Commodity Marketing Boards started during the colonial era with the establishment of first generation marketing Boards as follows: Cocoa Marketing Board in 1947, Palm Produce, Groundnut and Cotton Marketing Boards 1949. The second generation established in 1954 were the regional marketing boards. They served as buyers of last resort, at fixed prices and held strategic or buffer stock.	Inability to pay farmers the subsisting market price then. Scrapped in 1986 under Structural Adjustment Programme.
First Republic period (no Federal Ministry for agriculture) (1960-1966)	Agricultural Research Institutes (1964 to Date)	Four research institutes namely: Cocoa, Oil Palm, Rubber and Trypanosomiasis were established by Nigerian Research Institute Act in 1964. In 1975 the Agricultural Research Institute Decree came into effect where additional Research Institutes were established to conduct research in various crop, livestock and fisheries.	Instability of the Research Institutes as a result of constant movement of the agricultural research institutes from one Ministry to another. There was also a major problem with funding of these Institutes.
First intervening period of military regime (1966-1979)	National Accelerated Food Production Project (NAFPP) (1970s)	Objectives were to increase the yields of seed varieties and enhanced fertilizers use and promoted extension and credit services as well as adaptive research and staff training. A number of national crop centres were established at different locations e.g. Ibadan for rice and maize Zaria for sorghum, millet and wheat and Umudike for Cassava.	Started very well but the wheat programme was affected by a basic withdrawal of political support and lifting of the ban on wheat import.

Period	Projects/Program	Description	Weaknesses
	<p>Nigerian Agricultural Cooperative Bank, NACB</p> <p>(1973 to Date)</p>	<ul style="list-style-type: none"> ▪ The main specialised institution for agricultural credit delivery in the country. 	<ul style="list-style-type: none"> ▪ Directed to provide subsidized credit at single digit interest rate without the corresponding subsidy provided by government. Needs to be reformed for greater efficiency and effectiveness in resource mobilization and credit delivery.
	<p>Agricultural Development Projects (ADPs)</p> <p>(1975 to Date)</p>	<ul style="list-style-type: none"> • World Bank funded at inception • ADP revolution started in 1974 with the establishment of Gombe, Funtua and Gusau ADPs. • There are presently 37 ADPs in all States and the FCT. • Set up to provide extension services, technical input support and rural infrastructure services • ADPs were set up in response to the fall in agric production, and hence a concern to sustain domestic food supplies, as labour had moved out of agriculture into more remunerative activities that were benefiting from the oil boom. • Though they were set up to perform a temporary role in providing advisory services, the ADPs have literally assumed a permanent status. They are now recognized as the major agricultural development institutions in the States. 	<ul style="list-style-type: none"> • Delays: The decline in oil prices that started in 1982 had a substantial fiscal effect in Nigeria and led to shortages of counterpart funds for these projects. • Farming Systems: The emphasis on modern technology in the ADPs led their agricultural research and extension services to focus on relatively high input technology for sole cropping systems. These systems were not used by the majority of smallholders who used mixed/relay cropping systems as a rational strategy to reduce risks • Extension Methods: The change from the training and demonstration system to the T&V system was slow resulting in top down rather than responsive recommendations to farmers and continued technical emphasis without attention to socioeconomics as well as inadequate attention to demonstration plots. • Input Supplies: Programs for multiplication of improved seeds generally fell short of goals. Supplies of fertilizers were erratic largely due to centralized government control of international procurement and a very heavy subsidy program. • Institutional Aspects and Sustainability: At project closure, most ADPs had a weak and uncertain funding structure and were providing poorer services than should be expected of such semi autonomous development institutions.

Period	Projects/Program	Description	Weaknesses
	Operation Feed the Nation (1976 to 1979)	This was a mass mobilization and mass awareness program created in 1976 through 1979 in reaction to the first real food crises in the country. The programme ended with the advent of the civilian regime in 1979.	The lack of continuity and shift in approach by successive governments were the reasons for the failure of the poverty alleviation programmes.
	River Basin Development Authorities (RBDAs) (1977 to Date)	<ul style="list-style-type: none"> The major instrument of the water resources and irrigation policy was the establishment of 11 RBDAs in 1977 to develop and take advantage of available water bodies in the country for agriculture, fishing and other purposes. Were the main instruments of government's direct agricultural production through large scale mechanized farming. Had the mandate for land preparation, development of irrigation facilities and construction of dams, boreholes and roads. Were also involved in the distribution of farming and fishing inputs. 	<ul style="list-style-type: none"> The failure of the RBRDAS was due to unnecessary political interference and managerial problems resulting from socioeconomic cleavages which permeated the nations socio-political, economic and cultural Institutions. Lack of qualified manpower to provide effective leadership at the departmental levels. Inconsistence government policy resulting to increase in the number to 18 in 1984. Although the increase was aimed at decentralizing the authorities and bringing her functions and activities closer to the rural populace, the number was returned back to the former 11 with the coming of another regime.
Second Republic period (1979-1983)	Green Revolution (1979 to 1983)	Launched between 1979 and 1983, the program focused on food production, input supply and subsidy, special commodity development, review of agricultural credit guarantee scheme and increased resource allocation to RBDAs	The lack of continuity and shift in approach by successive governments were the reasons for the failure of the poverty alleviation programmes. Poverty reduction programmes became more 'regime specific' because there was hardly any continuity with those initiated by previous governments.
Second intervening period of military regime (1984-1999)	Directorate of Foods and Roads and Rural Infrastructure (DFFRI) (1986 -1993)	<ul style="list-style-type: none"> DFFRI was established in late 1986 to accelerate the rate of infrastructure development in the rural areas. It was originally designed as supra-ministerial body for channeling the proceeds of the liberalized foreign exchange market for rural development. It is involved in the provision of rural roads, water supply, electricity and community development services. The core of the Directorate's programme is the promotion of Productive activities. Besides, the directorate recognized the provision of rural infrastructure such as feeder roads, water, 	<ul style="list-style-type: none"> The lack of funds and commitment limited the extent of infrastructural provision in the rural areas. the government rural infrastructural programmes were embarked upon with limited programme of action and appropriate institutional arrangements for their execution. For instance, government established DFFRI at the Federal Level and only uses the states and the local govts for the disbursements of funds for the implementation of its programmes. the lack of spatial focus in rural development planning handicapped the rural infrastructural programmes. Usually most villages in the country

Period	Projects/Program	Description	Weaknesses
		<p>electricity and housing as essential for the enhancement of the quality of life in the rural areas.</p> <p>For the purpose of the programme implementation, the directorate uses as its main agents, the states and the local governments, to execute its programme. The funds for the programme of the Directorate are made available directly to each state government who then sees to the disbursement of such fund to the local governments.</p> <p>The local governments in the federation are constituted into rural development committees.</p>	<p>are scattered. This raises the problem of threshold population for sustaining the infrastructural provision. For instance, villages where infrastructures like schools and hospitals have been provided before have witnessed the closure of these facilities due to lack of threshold population.</p>
	<p>National Agricultural Land Development Authority (NALDA) (1991 to 1999)</p>	<p>The objectives include providing strategic public support for land development, promoting and supporting optimum utilization of Nigeria's rural land resources, providing gainful employment opportunities for rural people as well as raising incomes and improving general living standards in rural areas.</p>	<p>The NALDA approach increased rather than reduce the direct public provision of goods and services which could have been provided by the private sector instead. Many of NALDA's services were duplications, albeit on a more intensive basis of services provided by ADPs.</p>
<p>Third Republic period (1999-2007)</p>	<p>Presidential Initiatives on select commodities: Cassava, Rice, Vegetable oil, Cocoa, Livestock, Fisheries</p>	<p>A series of initiative of the President targeted at particular commodities to increase food production in line with Vision 2020; with a view to attracting the attention of the highest political authority for special intervention in the commodity sector.</p>	<p>Inadequate funding and lack of institutional arrangements for implementation. The initiatives generated interest and production increased but there were no concurrent provisions for storage and processing resulting in large post-harvest losses and apathy on the side of the farmers.</p>