

**AGRICULTURAL TRANSFORMATION
AGENDA: WE WILL GROW NIGERIA'S
AGRICULTURAL SECTOR**

Federal Ministry of Agriculture and Rural Development

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EXECUTIVE SUMMARY

The agricultural transformation agenda of the Federal Ministry of Agriculture and Rural Development is directly building on the Mr. President's transformation agenda. Agriculture is an important sector of the economy with a high potentials for employment generation, food security and poverty reduction. However, these potentials has remained largely untapped which has led to the dwindling performance of the agricultural sector both domestically and in the international trade over years. As at 1961, Nigeria was the leading exporter of groundnut with a world's share of 42%. The country also had 27% of the world's palm oil export, 18% of cocoa and 1.4% of cotton as the major West African cotton exporter. This glory however declined over years hence Nigeria dominance in the export of groundnut was eclipsed by China, United States of America (USA) and Argentina as at 2008. Indonesia and Malaysia took over in palm oil, Cote d'voire and Ghana also become the leading exporter of cocoa while Mali and Bukina Faso led cotton exports. The competitors maintained their dominance due to strong marketing organizations that linked the farmers to markets and provided support in the form of improved planting material, fertilizer, credit and rural infrastructure.

Low productivity in Nigeria over years compared to leading countries like Malaysia, Thailand, Indonesia, and Brazil has been largely due low fertilizer and improved seed utilization and inadequate government expenditure and the inability to compete with others. Average fertilizer use in Nigeria is 13Kg/hectare compares to World average of 100Kg/hectare and 150Kg/hectare for Asia. Only 5% of the farmers could access the improved seeds and operates with only 10 tractors per 100 hectares compared to 241 tractors per 100hectares in Indonesia. Consequently it is estimated that Nigeria has lost a US\$10 Billion (1.6 Trillion Naira) annual export opportunity from groundnut, palm oil, cocoa and cotton alone due to continuous declines and stagnations in their exports. Thus food imports are growing at an unsustainable rate of 11% per annum. Nigeria was the world largest importer of United States hard red and white winter wheat with an annual import of 635 billions of Naira. It is also the second largest importer of rice (356 billions of Naira), sugar (217 billions of Naira) and fish (97 billions of Naira). The recent willingness of exporters to ban exports could jeopardize Nigeria's food security. Besides domestic food availability expected from Nigeria agriculture; the problem of increasing unemployment rate especially among the youths would also be solved if supported. This is based on the fact that the North Central region (breadbasket) of the country where agriculture is the primary occupation had the lowest employment rate in the country.

Agricultural transformation in China, Vietnam, Brazil and Thailand has led to a dramatic growth in their agricultural sectors over the last three decades with annual growth rates of 2.6, 2.0, 1.8 and 1.4 % respectively. In effect, a significant impact on poverty reduction was experienced. In Africa, Malawi became self-sufficient in food production within one year by focusing on an agricultural transformation. Maize production doubled in 2006 and tripled in 2007 through national input support program targeted at small holder farmers. Through private sector driven

marketing institutions, Kenya attained 1st position in global horticulture market where eight million jobs were created by this subsector. An annual growth rate of 1.4% in Thailand's agriculture through significant investment in agriculture led to an annual growth rate of 4.5% in the manufacturing sector. The unemployment rate therefore reduced drastically from 4.5 in 2000 to as low as 1.2 in 2011. Nigeria must learn from these experiences; hence there is a need for *“Value chain co-ordinator”, Infrastructure investments, Private sector leadership, Supportive fiscal policies and accessible Market information systems to the farmers.*

The vision in the transformation strategy is to achieve a hunger-free Nigeria through an agricultural sector that drives income growth, accelerates achievement of food and nutritional security, generates employment and transforms Nigeria into a leading player in global food markets to grow wealth for millions of farmers. In order to achieve this vision, the usual approach to agricultural sector would change. Fertilizer procurement and distribution, marketing institutions, financial value chains and agricultural investment framework would also be restructured. The fertilizer strategy is to stimulate a thriving private sector fertilizer industry sequel to inefficiency in the government distribution system and wastage of resources. The subsistence farmers would also be moved from their high poverty level through market oriented/market surplus facilitated by Nigerian Incentive-based Risk Sharing for Agricultural Lending (NIRSAL) into a commercialized system that would facilitate trade and competitiveness. This would be achieved through the Growth Enhancement Support (GES) investment that is targeted at 20 million farmers at an estimated cost per farmer per year of 5,000 naira.

The transformation of the sector would be executed through the Agricultural Transformation Implementation Council (ATIC) with President/Vice President is at the apex and FMARD at the centre stage for coordination. Included implementation groups are Agricultural Investment Transformation Implementation Group (AITEG), Agricultural Value Chain Transformation Implementation Group (AVCTEG), NIRSAL Implementation Group. Agricultural Industry Advisory Group however, determines and institutionalizes policy support to the agricultural transformation agenda. These different groups have various major roles and responsibilities towards the achievement of the goals of the transformation agenda.

Transformation action plan for some priority agricultural commodities will be focused in the six geopolitical zones of the country. The commodities are rice, cassava, sorghum, cocoa cotton, maize, dairy, beef, leather, poultry, oil palm, fisheries as well as agricultural extension. This would be carried out through the value chains of each of the commodities while recognizing roles the actors/stakeholders along the nodes of the chain, inputs requirements in achieving production targets, constraints faced and expected output. The main target is to grow the agricultural sector through the various commodities and also to generate employment opportunities. For instance, rice transformation plan would involve massive local production of milled rice which will be aimed at substituting parboiled (imported) rice. The expectation is that with the advent of high quality lower cost milled rice, a significant portion of demand in the domestic rice market will shift from parboiled rice to milled rice. A projected decline in demand for high quality parboiled

rice from 1.9M metric tons to 1.3M metric tons between 2011-2015 and a shift in demand for milled rice from 0M metric ton in 2011 to 1.1M in 2015 is expected. The crucial inputs are land, improved seeds and fertilizer e.g. the cultivable lowland rice farm will increase from about 50,000 hectares in 2011 to 1.2M hectares by 2014, while that of irrigated rice farm is estimated to be 300,000 hectares by 2015. Job creation in rice production is expected to be through primary production, plantation establishment and value chain with an estimated 1Million jobs to be created by 2015. Similarly, the transformation in cassava is expected to increase the yield of cassava tuber from 12.5 metric tons/hectare as at 2010 to 25 metric tons/hectare by 2015 with 1.2million jobs. The yield of sorghum would increase 0.75metric tons per hectare to 2.5 metric tons per hectare with 150,000 jobs. Expected 360,000 jobs is projected with increment in cocoa yield from 300Kg/ha to 500Kg/ha.

Towards achieving a successful agricultural transformation, policies regarding agriculture, financial services, industry, market development need review. For instance, in terms of fiscal policies; there should be zero tariffs (custom, excise and value added) for import of agricultural equipment and agro-processing equipment. Expected initial impact from the transformation include provision of over 3.5 million jobs within five value chain rice, cassava, sorghum, cocoa and cotton, over 300 billion Naira (US\$2 Billion) additional income in the hands of Nigerian farmers and food security by increasing production of key food staples by 20 Million metric tons.

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1.0 PREAMBLE

1. As part of the Federal Government of Nigeria's effort to revamp the agriculture sector, ensure food security, diversify the economy and enhance foreign exchange earnings, the FMARD embarked on a Transformation Agenda with a focus on the development of agricultural value chains, including the provision and availability of improved inputs (seeds and fertilizer), increased productivity and production, as well as the establishment of staple crop processing zones. It also addresses reduction in post-harvest losses, improving linkages with industry with respect to backward integration, as well as access to financial services and markets. The Transformation Agenda targets rural communities particularly women, youth and farmers associations as well as improving rural institution and infrastructure. His Excellency, President Goodluck E. Jonathan once submitted that 'Nigeria can no longer continue to be a sleeping giant; we have to wake up and if we wake up, we must begin to do things differently'. In the pursuit of this, the transformation agenda sets out to create over 3.5 million jobs from rice, cassava, sorghum and cotton value chains, with many more jobs to come from other value chains under implementation. The programme aims to provide over 300 Billion Naira (US\$ 2 billion) of additional income in the hands of Nigerian farmers. Over 60 Billion Naira (US\$ 380 million) is to be injected into the economy from the substitution of 20% of bread wheat flour with cassava flour. Nigeria would therefore be enabled to be food secure by increasing production of key staples.

2.0 OUR HISTORICAL DOMINANCE IN INTERNATIONAL AGRICULTURAL TRADE

2. An account of the performance of the sector in international trade over years depicts declines or stagnations. These are observed in the global trade of groundnut, palm oil, cocoa, cotton. These are presented in the next sections.

2.1 Nigeria's lost glory in the world trade of groundnuts

3. Nigeria was the leading exporter of groundnut as at 1961. The share of world's shelled groundnut exports in 1961 was 42 % (figure 1) with 502,000 metric tons. However, the growth rate in the groundnut export between 1961 and 2008 showed a negative annual growth rate of 16 percent (-16 %) (figure 2) which is a decline, hence Nigeria dominance in the export was eclipsed by United States of America (USA), China and Argentina. Figure 3 presents the global market-share trend of shelled groundnut among the key producers. Nigeria has been displaced from her earlier leading position because the competitors were able to have a strong marketing organization that linked the farmers to markets and hence were able to meet new strict sanitary and phytosanitary requirements, particularly for Aflatoxin, which a serious food toxin. The new technologies-Aflasafe- developed in Nigeria by International Institute of Tropical Agriculture in

order to meet the new strict sanitary and phytosanitary requirements could really restore the lost glory of Nigeria among other measures.

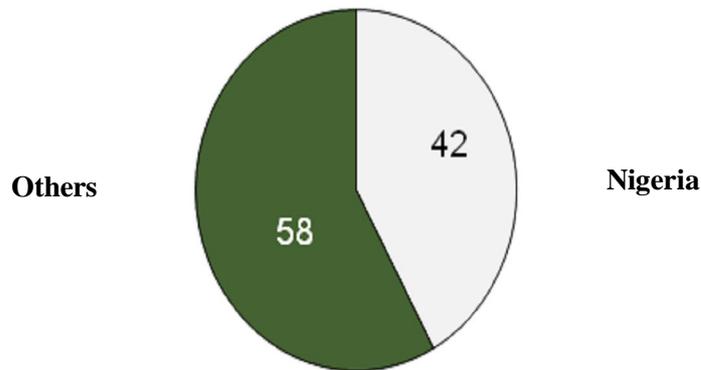


Figure 1: Share of world's shelled groundnut exports in 1961

Measure: % of world trade

Source: FAO

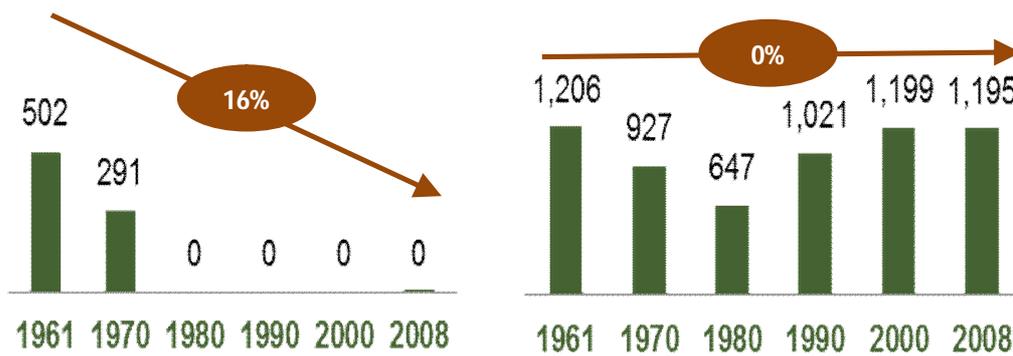


Figure 2: Nigeria's export volumes compared to global export volumes for shelled groundnut 1961 – 2008* Measure: Thousands of metric tons

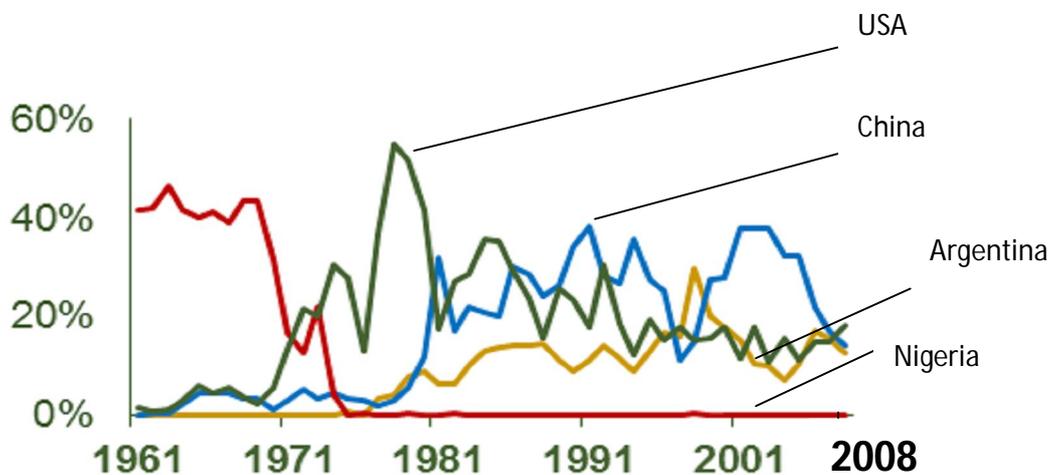


Figure 3: Global market-share trend of shelled groundnut among key producers

Measure: % of global trade of shelled Groundnut

Source: Doreo Analysis, FAO

2.2 Nigeria's lost glory in the world trade of palm oil

4. Nigeria also has a total share of 27 % of the world's palm oil exports as at 1961 (figure 4) with 167 metric tons.

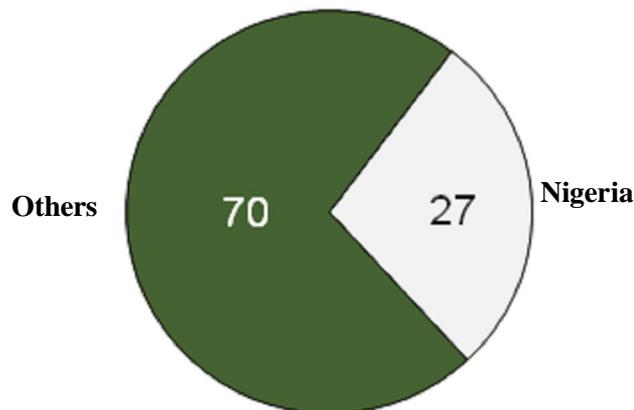


Figure 4: Share of world's palm oil exports in 1961

Measure: % of world trade

Source: FAO

Nigeria declined rapidly over years (between 1961 and 2008) at the rate of -4.0%; the palm oil exports declined from 167 metric tons in 1961 to 25 in 2008. However, the industry grew even faster by 9 % (world's estimate) from 0.629 million metric tons in 1961 to over 33 million metric tons in 2008 (Figure 5).

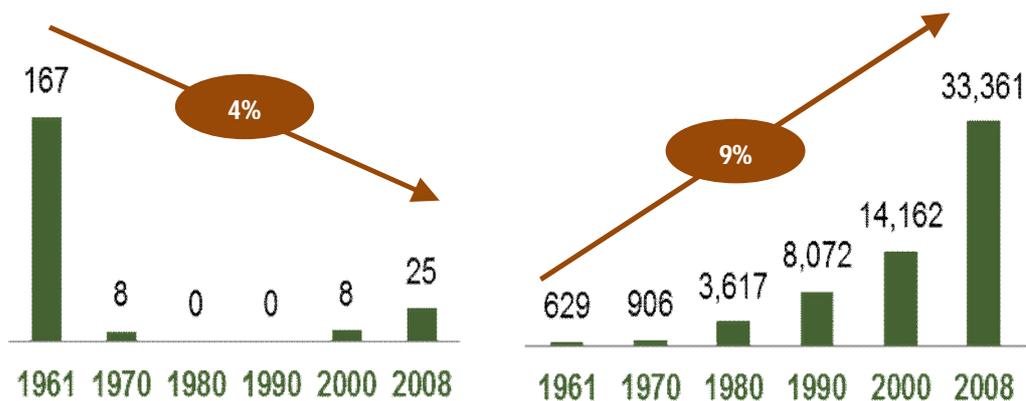


Figure 5: Nigeria's export volumes compared to global export volumes 1961 – 2008

Measure: Thousands of metric tons

Source: Doreo Analysis, FAO

5. The Nigeria's dominance was therefore eclipsed by Indonesia and Malaysia that exported between 40 and 60 % of the product (figure 6). Indonesia and Malaysia continued to invest in their agricultural sector, with a particular emphasis on R&D to develop higher yielding varieties and remain competitive. This investment translated into countries such as Malaysia today controlling 40% of the world trade of Oil Palm products valued at over US\$18 Billion while Nigeria becomes so insignificant among the exporting countries.

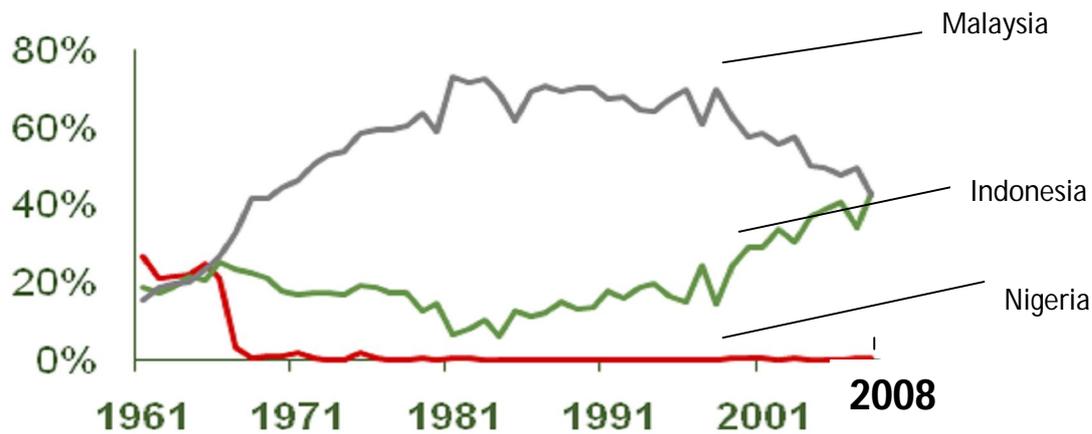


Figure 6: Global market-share trend of palm oil among key producers

Measure: % of global trade of palm oil

Source: Doroe Analysis, FAO

2.3 Nigeria's stagnation in the world trade of cocoa

6. Nigeria had a cocoa world's export share of 18% while others recorded 82% in 1961 (figure7a). Stagnation was hence experienced in the export of the product between 1961 and 2008. The export status was 187,000 Metric tons in 1961 and increased slightly to 227,000 Metric tons in 2008 with a growth rate of just -0.40 % (figure 7b). While Nigeria's production stagnated, the industry grew to over 2.7 Million MT

Others

Nigeria's exports

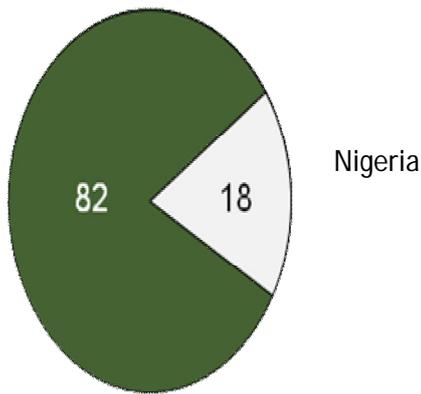


Figure 7a: Share of world's cocoa exports
Measure: % of world trade
Source: FAO

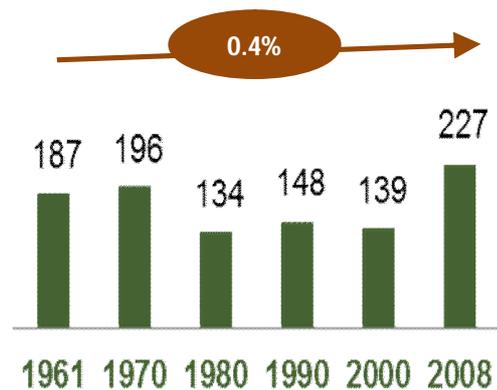


Figure 7b Nigeria's export volumes 1961 – 2008
Measure: Thousands of metric tons in 1961

7. As Nigeria experienced the stagnation, other key producers- Cote d'Ivoire, Ghana, Indonesia maintained their dominance due to strong marketing organizations that linked the farmers to markets and provided support in the form of improved planting material, fertilizer, credit and rural infrastructure. As a result, they were able to eclipse the dominance of Nigeria in cocoa exports (Figure 8). Our stagnation has meant we have been unable to benefit fully from rapidly rising global prices.

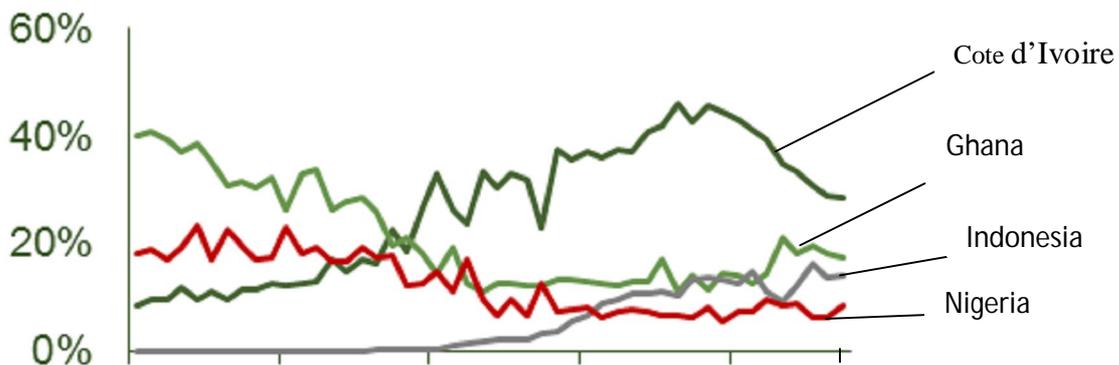
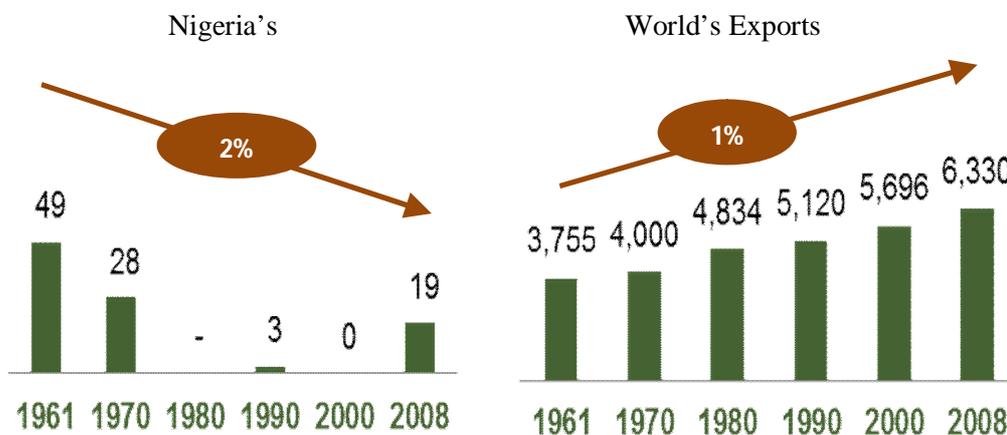


Figure 8: Global market-share trend of cocoa among key producers
Measure: Percent of global trade of cocoa
Source: Doreo Analysis, FAO

2.4 Nigeria's lost glory in the world trade of cotton

8. Even though Nigeria's share of the world's cotton exports in 1961 was as low as 1.4%; Nigeria was the major West African cotton exporter. It has also continuously experienced a decline within the year under review. The exports dropped from 49,000 metric tons in 1961 to

19,000 metric tons in 2008 with a growth rate of -2.0 % (Figure 9). The global export of cotton as at 2008 was over 6million metric tons with a growth rate of 1% between 1961 and 2008 (Figure 9).



9. **Figure 9: Nigeria's export volumes compared to global export volumes 1961 – 2008** Marketing
 Measure: Thousands of metric tons Improved
 Source: FAO
 Nigeria's dominance was eclipsed by Mali and Burkina Faso (figure 10).

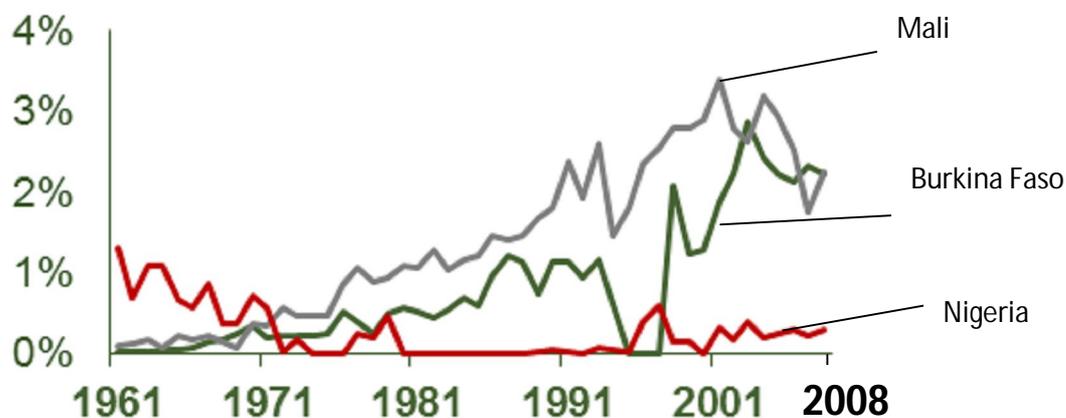


Figure 10: Global market-share trend of Cotton among key West African producers **
 Measure: Percent of global trade of Cotton
 Source: Doreo Analysis, FAO

2.5 Potential annual export revenue assuming Nigeria maintained its 1961 market share

10. Nigeria was estimated to have lost a US\$10 Billion (1.6 Trillion Naira) annual export opportunity from the four agricultural commodities alone due to continuous declines and stagnations in the exports of the four crops as described in the sections above. The analysis (as shown in Table 1) was based on the 'total sum' of the current export revenue of 540 million USD

and potential additional export revenues¹ of 8,195 millions USD from oil palm, 611 millions USD from cocoa, 555 millions USD from groundnut and 96 millions USD from cotton.

Table 1: Potential annual export revenue

ANNUAL EXPORT REVENUE	Millions of USD
Current Export Revenue	540
² Expected Revenue from Oilpalm	8,195
Expected Revenue from Cocoa	611
Expected Revenue from Groundnut	555
Expected Revenue from Cotton	96
Potential Export Revenue (Total)	9,997

3.0 A REVIEW OF NIGERIA'S AGRICULTURAL PRODUCTIVITY

11. Agricultural productivity can be defined as the index of the ratio of the value of total farm output to the value of the total inputs used in the farm production (Olayemi, 1980). According to Ajetomobi (2008), production efficiency means the attainment of production goals without waste. Efficiency is an important factor of productivity growth specifically in developing economies where resources are meager and opportunities for developing and adopting better technologies are limited. Farrell (1957) derived the three components of efficiency recognized in the economic literature. They include: (i) Allocative efficiency, and (ii) Economic efficiency. A firm is said to be technically efficient if it produces as much output as possible from a given set of inputs or if it uses the smallest possible amount of inputs for a given level of output and input mix (Atkinson and Cornwell, 1994). The allocative efficiency reflects the ability of a firm to use the inputs in optimal proportions, given their respective prices. The product of these two efficiencies is economic efficiency, which could be defined as the ability of the firm to produce a well-specified output at minimum cost.

12. At the national level, productivity growth raises living standards because more real income improves people's ability to purchase goods and services, enjoy leisure, improve housing and education and contribute to social and environmental programs. Productivity growth is important to the firm because it means that the firm can meet its (perhaps growing) obligations to customers, suppliers, workers, shareholders, and governments (taxes and regulation), and still remain competitive or even improve its competitiveness in the market place (Saari, 2006)

13. Hayami and Ruttan, (1970) also submitted that a consensus seems to have emerged to the effect that productivity growth in the agricultural sector is essential if agricultural output is to grow at a sufficient rapid rate to meet the demand for food and raw material that typically accompanied urbanization and industrialization. Failure to achieve rapid growth in agricultural productivity can result either in drain of foreign exchange or a shift in internal terms of trade against industry and thus seriously impede the growth of industrial production.

¹ Additional export revenues assuming 1961's market share applied to 2008's values for global trade of individual commodities.

² Expected Revenue implies Potential additional export revenue assuming 1961's market share in each of the commodity applied to 2008's value for global trade of individual commodities

14. Yield per hectare is the driver of agricultural competitiveness. Indices of yield per hectare across all crops in Nigeria over years were compared with those of other leading agricultural countries- Malaysia, Thailand, Indonesia, and Brazil (Figure 11). The analysis shows that the productivity increases was highest for Malaysia while Nigeria has the lowest productivity. Nigeria's yield per hectare is 20% to 50% of that obtained in similar developing countries. The figure also revealed that in 1961, Indonesia's yields were lower than that of Nigeria. In 20 years Indonesia increased its yield 3 times. Malaysia thus recorded highest growth rate of 3.0% while Nigeria had the lowest (1.2%).

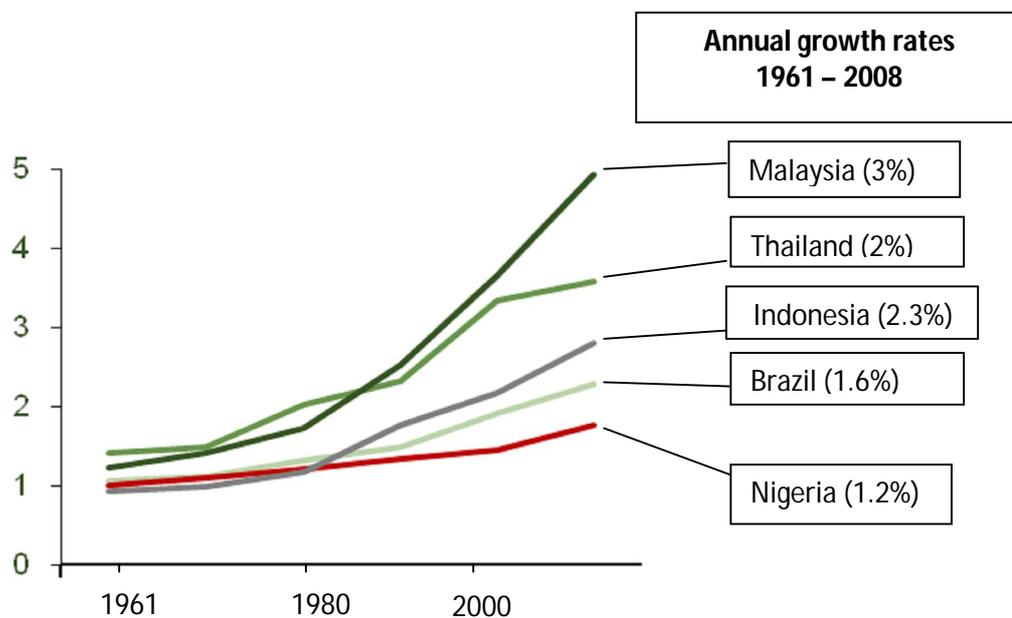


Figure 11: **Index of crop yields relative to Nigeria's yields in 1961**
 Measure: Relative growth in crop yields
 Source: Doreo's Analysis, FAO

15. Nigeria's low fertilizer and improve seed utilization and inadequate government expenditure were largely responsible for the low productivity and the inability to compete with others. For instance IFDC revealed that average fertilizer use in Nigeria is just 13kg/hectare compare to a World average of 100kg/hectare and 150kg/hectare for Asia. Percentage of farmers who had access to improved seed has also been recorded to be very low as only 5% of the farmers could access the seeds compared to 25% in East Africa and 60 % in Asia. In terms of agricultural mechanization intensity, Nigeria could only record 10 tractors per 100hectares compared to Indonesia with 241tractors per 100 hectare. Hence the farmers need to survive on less efficient

traditional tools. The irrigation system in the country could only cover 0.8% of the arable land compared with 28% obtainable in Thailand. Across the board, Nigeria ranks at the bottom on agricultural indices.

3.1 Government expenditure and agricultural growth – Asia versus Nigeria

16. Agricultural production per capita for Malaysia, Thailand and China experienced significant growth between 1961 and 2009. Annual growth rates per capita were 3.5%, 2.0% and 1.2 % for Malaysia, Thailand and China respectively. Conversely, Nigeria’s agricultural production per capita has stagnated and has been declining rapidly over the last decade with an annual growth rate of 0.2% within the years under review. It is worthy of note that as at 1961, Nigeria had the highest per capita agricultural growth in production (Doreo’s Analysis). It is however discovered that the driver of Asia’s growth was significant government investment (Figure 12). Asia invested up to 16% of their national budget in agriculture to lay the foundation for broader economic growth and industrialization. Nigeria's investment is exceptionally low averaging approximately 2% of government expenditure.

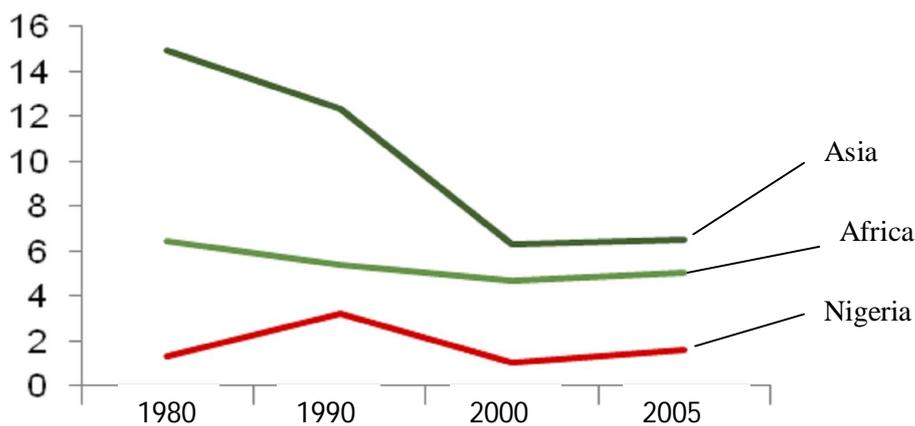


Figure 12: Agriculture budget as a percentage of total government expenditure by region
 Measure: % of total government expenditure
 Source: IFPRI

4.0 NIGERIA IMPORTATIONS AS RESULT OF FOOD SHORTAGE

17. Sequel to low productivity and food shortage in the country; Nigeria became a net importer of food and major importer of wheat, rice, sugar and fish. Importation of these four commodities consumes over one trillion naira in foreign exchange every year since 2005. The report of Central Bank of Nigeria (CBN) showed that Nigeria is the world largest importer of United States hard red and white winter wheat with an annual food import of 635billions of naira. It is also the second largest importer of rice (356billion of naira), sugar (217 billions of naira) and fish (97 billions of naira). Nigeria’s food imports are growing at an unsustainable rate of 11% per annum while relying on the import of expensive food on global markets fuels domestic inflation. Nigeria is importing what it can produce in abundance. And import dependency is hurting

Nigerian farmers, displacing local production and creating rising unemployment. Import dependency is neither acceptable, nor sustainable fiscally, economically or politically. The world food price index has always been on the increase since year 2000 and is at its highest point in 2011; hence surviving on food importation would only cripple the economy. Over years there has been increase in demand for food globally due to teaming population as the cumulative growth in world population is on the increase. Besides, increase in standard of living has also led to increased consumption; for instance the per capita meat consumption in china has steadily increased annually with a growth rate of 4.4% between 1965 and 2010. An increase in biofuel demand has also led to a 10% growth rate in the percentage of United States' corn production used for biofuels between 1985 and 2009.

4.1 Export Ban and the Implications: Lessons for Nigeria

18. Agricultural Export Ban: Agricultural Export ban is always featured under the Theory of Agricultural export restrictions that constitute defensive measures implemented by economies to protect consumers or producers. They may take a wide variety of forms: export bans (embargoes), export taxes (simple and differential), export quotas, and export restricting measures of state trading enterprises. Some rationales behind the behaviour are food security, low domestic purchasing power combined with high commodity prices, large gap between successive crops, political reasons, financing government expenditure among others (Mitra and Jostling, 2009). In essence, the motive behind export ban is to improve the overall welfare of the exporting country. The resultant effects of this policy among others are price increases at the international market, food scarcity among the exporting countries, increasing competition among the remaining supplies (Dollive, 2008; George Welton, 2010). In 2010/2011, Russian government implemented Grain Export Ban and it led to increase in grain price internationally. Rice export ban by India in 2007 also led to food insecurity and food riots in Bangladesh and Philippines (Chaube, 2008). This probably informs that food exporters have started demonstrating a willingness to ban exports to ensure their countries' food security as recorded in Thailand, Russia, India, Vietnam etc. This will jeopardize Nigeria's food security. Any shock in global markets will put Nigeria's national security at risk e.g. North African riots.

5.0 NIGERIA'S UNEMPLOYMENT CHALLENGE AND THE ROLE OF AGRICULTURE

18. Nigeria's unemployment rate is spiraling, driven by the wave of 4 Million young people entering the workforce every year with only a small fraction able to find formal employment. The general unemployment rate increased from 12.3% in 2006 to 20.6% in 2010 with an annual increase of 11% (Table 2a). Information from World Bank revealed that youth unemployment is thrice the general unemployment. The problem becomes so burdensome that His Excellency, President Goodluck Jonathan affirmed that "*Unemployment among our youth is one of our biggest challenges. The time has come to create jobs and lay a new foundation for Nigeria's economic growth*". The regional unemployment as shown in Table 2b shows that North Central (NC) region

has the lowest unemployment rate. This clearly shows that agriculture has demonstrated an ability to solve the challenge of unemployment, based on the fact that the breadbasket region i.e. “North Central” has the lowest unemployment rate (9%) in the country.

Table 2a: Spiraling general unemployment rate

Year	2006	2007	2008	2009	2010	Annual growth rate
General unemployment rate (%)	12.3	12.7	14.9	19.7	20.6	11

Source: Nigeria’s National Bureau of Statistics

Table 2b: Regional unemployment rates

Region	N/West	N/East	S/South	S/West	N/Central
Unemployment rate (%)	29.0	20.0	18.0	15.0	9.0

Source: Nigeria’s National Bureau of Statistics

6.0 AGRICULTURAL TRANSFORMATION ACROSS THE GLOBE - NIGERIA MUST LEARN FROM SUCCESSFUL EXPERIENCES

19. Agricultural transformation in some countries has been documented to have significant impact on poverty reduction. Such countries were China, Vietnam, Brazil and Thailand that experienced dramatic growth in their agricultural sectors over the last three decades with annual growth rates of 2.6, 2.0, 1.8 and 1.4 % respectively (Table 3a). A significant decline in their level of poverty was recorded. During this period, decrease in percentage of population under the poverty line (\$1.25) was steady. This resulted in bringing out 440 and 24 millions of people out of poverty in China and Vietnam respectively between 1995 and 2005. Brazil and Thailand were also able to bring out 14 and 8 millions of people out of poverty between 1985 and 1995. Precisely, China and Vietnam were able to take 40% of their population out of poverty due to aggressive investment and growth of their agricultural sector. The important lesson learned is that investing in the agricultural sector also developed the rural communities that in turn significantly reduced rural-urban migration. Countries like India and Thailand invested in agricultural sector and this led to rural community development and reduce rural urban migration

Table 3a: Annual growth rate in agricultural sector and relative impact on poverty reduction

Country	Period	Annual growth rate in agricultural sector (%)	Number of people lifted out of poverty in 10years (Millions of people)
China	1995-2005	2.6	440
Vietnam	1995-2005	2	24
Brazil	1985-1995	1.8	14
Thailand	1985-1995	1.4	8

Source: Doreo’s Analysis, World Bank

6.1 Agricultural Transformation and Development in the Economy

20. Agricultural transformation is not only about food production, it is also about the development of the economy. Economic development through agricultural transformation is achievable through the following four (4) phases:

Import substitution agricultural development

Agricultural development with a focus on self-sufficiency via import substitution, lowers the cost of food, increases real wages and drives down inflation.

Export-oriented agricultural sector

A rapid transition to an export-oriented agricultural economy, diversifies the economy thereby increasing foreign exchange reserves and stabilizing the exchange rate. This coupled with reduced inflation, drives macro-economic stability. Macro-economic stability will in turn significantly increase the level of foreign direct investment (FDI)

Grow value added agro-processing sector

Leverage the foreign direct investment (FDI) and the economies of scale derived from an export-oriented large/efficient agricultural sector to provide inexpensive raw materials to stimulate investment in the agro-processing Industry

Backward integrate into higher value added manufacturing

With growth in agro-processing industry, backward integrate into higher value added services and manufacturing of industrial equipment and products for the burgeoning industry.

6.2 Rapid Agricultural Transformation in Africa: Malawi

21. Malawi became self-sufficient in food production within one year by focusing on an agricultural transformation. This was a breakthrough after almost a decade between 1994 and 2004 that the country had been experiencing very low yield in their maize production. The country however had its worst harvest in 2004. In 2005, the government implemented one of the most ambitious and successful assaults on hunger in African history in response to the worst harvest experienced. The transformation was led by the Malawian President, Bingu wa Mutharika who made a decisive statement “*Enough is enough, I am not going to go on my knees to beg for food. Let us grow the food ourselves*”. The country launched a national input support program targeted at small holder farmers. Maize production doubled in 2006 and tripled in 2007 thus enabling Malawi to export 400,000 metric tons of maize to Zimbabwe and 10,000 metric tons of food aid.

6.3 Rapid Agricultural Transformation in Africa: Kenya

22. Agricultural transformation through private sector was a reality in Kenya where the private sector driven marketing institutions drove Kenya to the 1st position in the global horticulture market all within 9 years. Horticulture value growth and floriculture export growth of 16% per annum and 7% per annum respectively were recorded between year 2000 and 2008 in Kenya.

This successfully led to a sea of jobs where eight million jobs were created by the Kenyan Horticulture sector, a single sub sector of agriculture (Figure 13).



Figure 13: Image from recent field trip to Kenyan Green Bean processing plant by the Honourable Minister of Agriculture and Rural Development – Aug 2011

6.4 Agricultural Development and Low Employment Rate

23. As at 2011, Thailand was one of the countries with lowest unemployment rate through its significant investment in the development of the agricultural sector that catalyzed unprecedented growth in the manufacturing sector. Between 1981 and 2008, an annual growth rate of 1.4% in Thailand's agriculture led to an annual growth rate of 4.5% in the manufacturing sector. The unemployment rate therefore reduced drastically from 4.5 in 2000 to as low as 1.2 in 2011 (Table 3b). This economic growth has enabled Thailand to have one of the lowest unemployment rates in the world today at 1.2%

Table 3b: Thailand Exceptionally low unemployment rate

Year	Unemployment Rate
2000	4.5
2005	1.5
2010	1.5
2011	1.2

Source: Thai Government

6.5 Lessons for Nigeria

- *Need for "Value chain co-ordinator"*
 - There is a need for horticulture development authority (HCDA) that would be tasked with setting and enforcing grades and standards for the national production
- *Infrastructure investments*
 - Supported development of roads and irrigation; new flights to target export zones are also crucial for the effective transformation
- *Private sector leadership*
 - Key value chain participants need to assume ownership of articulating and executing growth agenda for agriculture
 - Sector controlled by private sector should be well maintained with no government interference except in regulation and certification
- *Supportive fiscal policies*
 - Lower taxes on inputs, equipment etc are to be paid
 - Lower duties should also be charged
- *Market information systems should also be made available for farmers in order to have adequate planning and circumvent risks and uncertainties.*

7.0 NIGERIA'S TRANSFORMATION STRATEGY: GROWING THE NIGERIAN AGRICULTURAL SECTOR

24. The Vision in the transformation strategy is to achieve a hunger-free Nigeria through an agricultural sector that drives income growth, accelerates achievement of food and nutritional security, generates employment and transforms Nigeria into a leading player in global food markets to grow wealth for millions of farmers". The following measures will however be taken towards attaining success:

- ❖ There shall end the era of treating agriculture as a development project
- ❖ There shall no more allow any isolated projects without a strategic focus to drive agricultural growth and food security in a clear and measurable way.
- ❖ There shall be an end to 'big government' crowding out the private sector.
- ❖ The agricultural transformation agenda will be executed to support Mr. President's Transformation Agenda
- ❖ Agriculture will focus on as a business
- ❖ the transformation of the agricultural sector will be utilized to create jobs, create wealth and ensure food security
- ❖ Value chains will be focused where Nigeria has comparative advantage
- ❖ Strategic partnerships will be developed to stimulate investments to drive a market-led agricultural transformation through state and local governments, inter-ministerial collaboration, private sector and farmer groups and civil society
- ❖ There shall also be sharp focus on youth and women

7.1 Transformation policies

25. The transformation policies would involve a change in our approach to agricultural sector. Specifically, the following shall be restructured: fertilizer procurement and distribution, marketing institutions, financial value chains and agricultural investment framework.

7.1.1 Fertilizer strategy

26. Our fertilizer strategy is to stimulate a thriving private sector fertilizer industry, with government getting out of fertilizer procurement and distribution, supporting farmers through smart subsidies. The involvement of private sector becomes necessary sequel to inefficiency in the government distribution system and wastage of resources. A structure of government distribution system compared with private sector voucher distribution system is as given in the Table 4a below;

Table 4a: Comparative Analysis of Government and Private Sector Fertilizer Distribution System

Government Distributed	Private Sector Distributed
Government distributed fertilizer support program	Private sector distributed fertilizer support system, utilizing Input Vouchers
Manufacturer/Supplier gets order from FG	Private sector sells fertilizer to farmers at market price “minus” the fertilizer voucher discount provided by government.
FG has manufacturer deliver to states per indent from state at 25% subsidy.	94% of actual farmers receive the subsidized fertilizer under the voucher program.
State “distributes” fertilizer to farmers occasionally adding their own subsidy.	States and FG coordinate to distribute fertilizer vouchers to targeted farmers.

27. In the government distributed fertilizer support program, private sector manufactures and supplies based on order received from the government. The federal government thus delivers the fertilizers to states per indent from state at 25% subsidy. State thereafter distributes fertilizer to farmers occasionally with additional subsidy. However, only 11% of fertilizer reaches the intended farmers. In essence some other unknown or unintended beneficiaries were also having the gains of the subsidy program. In the private sector distributed fertilizer support system, utilizing input vouchers; fertilizers are sold directly to farmers at market price ‘minus’ the fertilizer voucher discount provided by the government. In effect, 94% of the targeted farmers received the subsidized fertilizer under the voucher program. It should be pointed out that the private sector’s procedure towards distributing fertilizer vouchers to targeted farmers is being coordinated by federal and state government. This fact is based on the Taraba state’s experience where voucher program reaches 94% of farmers, while existing government system reaches an estimated 11% of farmers. Due to cost sharing with private sector, program costs less than 50% to run. In addition, in the voucher system farmers receive fertilizer 10% cheaper due to more efficient private sector distribution systems. More so as opposed to the government distribution system that crowds out the private sector, the voucher program encourages the development of a strong private sector with number of dealers increasing by 41 in Taraba state. In order to effectively achieve the fertilizer strategy, the various roles of the key actors involved are as spelt out in the Table 4b below:

Table 4b: Roles and responsibilities of key Actors

No	STAKEHOLDER	ROLE & RESPONSIBILITIES
1	Federal Ministry of Agriculture (Fertilizer Department, National fertilizer Technical committee and NPAFS)	<ul style="list-style-type: none"> i. facilitate and catalyze the Procurement and distribution of fertilizer including identifying the suppliers. ii. Regulate quality and quantity (futuristically to be migrated to barcode tracking and scanning) iii. Facilitates and stimulates local production of fertilizer vi. Ensures adequate budget allocation v. Ensure that national food security objectives are realized vi. Provide technical support regarding quantity and types of fertilizer suitable to the agro-ecological zone of the company
2	State Governments	<ul style="list-style-type: none"> i. Provide counterpart funding ii. Provide extension services iii. Provide support to IFDC in identifying farmers iv. Making available fertilizer storage facilities in the LGAs and village levels to participating Fertilizer Companies at concessionary rental rates
3	Cellulant	<ul style="list-style-type: none"> i. Designs and builds ecosystem ii. Integrates all other stakeholders into the ecosystem iii. Provide the tools, reports required by every participant in the ecosystem iv. Facilitates private sector entry and participation
4	IFDC	<ul style="list-style-type: none"> i. Provides sector expertise ii. Coordinates Timelines, timeframes and activity monitoring iii. Builds capacity of programme actors to participate iv. Monitors and evaluates accuracy of subsidy distribution and reach
5	Mobile Network Operators (MNO's)	<ul style="list-style-type: none"> i. Provides channels and tariffs ii. Ensure that allocated bandwidth and network capacity is adequate
6	Financial Institutions	<ul style="list-style-type: none"> i. provides financial service extension to the grassroots through mobile and agency banking initiatives and support ii. Provides credit to participants in the ecosystem
7	Suppliers	<ul style="list-style-type: none"> i. Supply fertilizer, ii. Build channels and networks down to farmer level iii. Develop and use tracking system (bar-coded stock)
8	Distributors/Agro dealers/Retailers	<ul style="list-style-type: none"> i. Keeps stock to farmers level
9	Farmers and farmers/ community associations	<ul style="list-style-type: none"> i. Register into the ecosystem and provide bio-data ii. Provide groups along various lines (crops, ward, village, co-op, thrift etc) iii. Have access to SIM/cell phone

10	Federal Ministry of Communication and Technology	i. Provide access to national SIM database ii. Facilitates and ensure that MNO's open up their networks, that MNO allocates adequate bandwidth and the require channels/tariffs are made available to all the nooks of Nigeria.
11	CBN/NIRSAL (Nigeria Incentive based Risk Sharing System for Agricultural Lending)	i. Provides lending window to fertilizer companies, dealers, farmers etc ii. Catalyze investment in the sector through access to credit iii. Single digit interest rates
12	Independent National Electoral Commission (INEC)	i. Provides access to voter's database nationwide for validation purposes
13	National Population Commission (NPC)	i. Provides access to population database for validation purposes
14	Fertilizer Department (FFD) in collaboration with Agency for Food Drug Administration & Control (NAFDAC)/Nigeria Standard Organization (SON).	i. Setting of fertilizer standards ii. Regulate quality of fertilizers (points of imports, production plants, warehouses, dealer and retailer shops and open markets. iii. Inspection and sampling iv. Issue of import permits v. Imposition of sanctions, penalties and prosecution
15	Donors that are already supporting voucher schemes (USAID ,AGRA)	Consider possibilities for scaling existing resources Provide independent critique & assessment of the program impact.

The following lessons are therefore learned:

28. Government distribution system is not only inefficient, it also wastes government resources due to abuse by the stakeholders involved. These are recorded in the persistence late supplies, high transaction costs, non-agricultural use of fertilizer, inadequate supplies and artificial scarcities through hoarding and smuggling activities. The continuous presence of these features will always keep the benefits of the fertilizer subsidy policy away from the farmers who are the intended beneficiaries while unrecognized middlemen, transporters and other unintended beneficiaries have the gains. The government must therefore get out of fertilizer distribution while all import and distribution should be done by the private sector in order to record the desired success in the programme as experienced through private sector intervention in Taraba state and to guarantee sustainability.

7.2 Moving farmers from subsistence farming to commercial systems: the role of targeted Growth Enhancement Support (GES)

29. The Growth Enhancement Support (GES) is designed to move subsistence farmers from their high poverty level through market oriented/market surplus facilitated by Nigerian Incentive-

based Risk Sharing for Agricultural Lending (NIRSAL) into a commercialized system that would facilitate trade and competitiveness.

30. Growth Enhancement Support investment that commences by 2012 will be targeted at twenty Million farmers by 2020 where a group of farmers would be supported for four years. Investment will generate five times to ten times returns in increased production. The twenty Million farmers would be in four groups and the program would also be four phases. Table 4c spells out the process of implementation. The estimated cost per farmer per year is 5,000 naira (US\$30) and the total cost of the program is approximately 400billion naira (US\$2.5billion). The expected benefit of the program is up to 80,000 naira per farmer (US\$500) while the total benefit of the program is 6,800billion naira (US\$40billion). The program is worthwhile as the Benefit/Cost ratio is 16:1. Other benefit of the growth enhancement support (GES) is leverage of mobile technology to achieve scale.

Table 4c: Growth Enhancement Support Investment

Farmers Group	Phase	Period
Group 1 5 Million Target Farmers	1	2012-2015
Group 2 5 Million Target Farmers	2	2013-2016
Group 3 5 Million Target. Farmers	3	2014-2017
Group 4 5 Million Target. Farmers	4	2015-2018

7.3 Improving investment frameworks for agriculture

31. In order to further provide an enabling environment for the private sectors, improving investment frameworks for agriculture is also conceived so as attract them to invest in the agricultural sector. This would be achieved through the development of Staple Crop Processing Zones (SCPZ)³. The SCPZ would focus on attracting private sector agribusinesses to set up processing plants in zones of high food production, to process commodities into food products. The government will enable this by putting in place appropriate fiscal, investment and infrastructure policies for staple crop processing zones. Such policies include tax breaks on import of agricultural processing equipment, tax holidays for food processors that locate in these zones and supportive infrastructure, especially complimentary investment by the government in roads, logistics, storage facilities and power. Infrastructure would focus on power, irrigation, flood control, roads, rail, air etc. SCPZ will also link farmers in clusters to food manufacturing plants. Agricultural Investment Code would also be developed, in partnership with Ministry of Finance and Ministry of Trade and Investment and Central Bank of Nigeria (CBN). The location of SCPZ will be dependent on a combination of state government support and an analysis of the comparative advantage of the region to produce the identified commodity.

³ Establishment of Agro processing Plant

7.4 Strengthen the markets through marketing corporations

32. The scrapping of marketing boards during structural adjustment, without any institutions to replace them or play their functions, has left millions of farmers in a precarious situation. Lack of market access, price uncertainties and volatility are great challenges which leave them at the mercy of middle men. There is no developed country with such institutional abandonment of farmers. We will revamp the functions performed by the marketing boards, but be careful to ensure that we do not build non-viable or over-bureaucratic institutions that tax farmers like the old marketing boards. We now have leading global examples of marketing corporations with remarkable contribution to the performance of private sector in agricultural transformation and economic development; Horticulture development authority (HCDA), Kenya and Ghana Cocoa Board are important examples. There is therefore a need to support the development of private sector driven marketing organizations to grow the agricultural sector. The institutions must be owned by agricultural value chains, run as private sector led (but government enabled) institutions and empower farmers and the value chain actors and generate value. These new institutions will be called marketing corporations and will coordinate the production and/or export of target commodities. In addition, they will encourage investment into the sector from R&D to infrastructure and processing. Finally, they will stimulate the development of tailored financial services to grow the sector.

7.5 Agricultural finance strategy- Introducing Nigerian Incentive-based Risk Sharing for Agricultural Lending (NIRSAL)

33. Transformation of Nigeria's agriculture would also be achieved through integration of agriculture value chains with agricultural lending. This would be facilitated by Nigerian Incentive-based Risk Sharing for Agricultural Lending (NIRSAL). NIRSAL is a new, dynamic, holistic approach that tackles together both the agricultural value chains and the agricultural financing value chain. The agriculture value chains and the agricultural financing value chain are inter-dependent. In moving agricultural financing forward in Nigeria, fixing the financing value chain without addressing the agricultural value chains would be a futile exercise. NIRSAL therefore breaks with tradition by doing two things at once:

- a) Fixes the agricultural value chains, so that banks can lend with confidence into cohesive and complete value chains; and
- b) Encourages banks to lend into the agricultural value chains by offering them strong incentives and technical assistance.

NIRSAL is however based on five pillars that aim to "de-risk" agricultural lending and lower the cost of lending for banks. USD 500 million is divided across the five pillars.

a) Risk-sharing facility (USD 300 million): This is to break down banks' perception that agriculture is a high-risk sector. In this risk-sharing facility; NIRSAL will share their losses on agricultural loans.

b) Insurance Facility (USD 30 million): The facility's primary goal is to expand insurance products for agricultural lending from the current coverage to help reduce credit risks and increase lending across the entire value chain. Both will be by expanding the coverage of existing products provided by the Nigerian Agricultural Insurance Corporation (NAIC), and piloting and scaling new products, such as weather index insurance, new variants of pest and disease insurance etc.

c) Technical Assistance Facility (USD 60 million): NIRSAL will equip banks to lend sustainably to agriculture. At the same time, it will equip producers to borrow and use loans more effectively, and produce more and better quality goods for the market.

d) Holistic Bank Rating Mechanism (USD 10 million). This mechanism rates banks based on two factors: the effectiveness of their agricultural lending and its social impact.

e) Bank Incentives Mechanism (USD 100 million). This is designed to complement NIRSAL's first three pillars; this mechanism offers banks additional incentives to build their long-term capabilities to lend to agriculture.

34. All the major stakeholders along the nodes of agricultural value chain (as would be coordinated by the Ministry of Agriculture and Rural Development) such as input producers, farmers, agro-dealers, agro-processors, industrial manufacturers, exporters among others shall be integrated in to CBN agricultural financing value chain incentives such as loan product development, distribution, loan origination, credit assessment, managing and pricing for risk and loan disbursements. Despite agricultural financing strategy is in partnership with CBN; enabling environment such as infrastructure, credit bureau, useful policies, agricultural extension services and price guarantee boards shall also be provided.

7.6 Stimulating co-investments with states governments

35. The mode of operation shall be working with state governments while stimulating co-investment with them. Specifically, the engagement with the state would involve the following:

- ❖ Developing investment framework with states
- ❖ Incentivize states to invest in agricultural development with co-investments from federal government.
- ❖ Partnership will be operated under four key principles:
 1. *Subsidiarity*: Working from the State level up
 2. *Partnership*: Working with states, private sector and civil society.
 3. *Investment*: Utilize investment methodology and framework.
 4. *Accountability*: There will be full transparency and accountability within the system.

8.0 THE AGRICULTURAL TRANSFORMATION IMPLEMENTATION COUNCIL (ATIC)

36. The transformation agenda has a working Organogram as shown in figure 14. The President/Vice President is at the apex while the ministry of agriculture led by the honorable

Minister of Agriculture, coordinates the Agricultural Transformation. Agricultural Industry Advisory Group (AIAG) plays an important role in the transformation of the sector and has a notable link with the Minister and Minister of state. The group represents the voice of the private sector. They are the leading minds in the Nigerian agricultural industry which includes farmers, agricultural input suppliers and manufacturers, agricultural service providers, financial service sector, agricultural processing and trading organizations. The figure also displays the three major implementation group in the transformation implementation council. One of them is Agricultural Investment Transformation Implementation Group (AITEG) where Heads of key MDA's work together to create a conducive environment to grow private sector and public sector investment along strategic value chains. Examples of key MAD's include Finance, Power, Trade and Investment, Water, Works etc. Thus the existence private sector is strengthened through this group. The second group is Agricultural Value Chain Transformation Implementation Group (AVCTEG) with primary function of increasing agricultural productivity and Links to Markets. The third group is the NIRSAL Implementation Group (NIRSALEG) that execute partnership between CBN and Ministry of Agriculture to unlock \$3 Billion in Agricultural Financing. However, Ministry of Agriculture recognized the need to have a group that determine and institutionalize policy support to the agricultural transformation agenda. The group that executes this sensitive role is referred to as Agricultural Industry Advisory Group (AIAG). The various major roles and responsibilities of the implementation groups are as shown on Tables 5a to 5d;

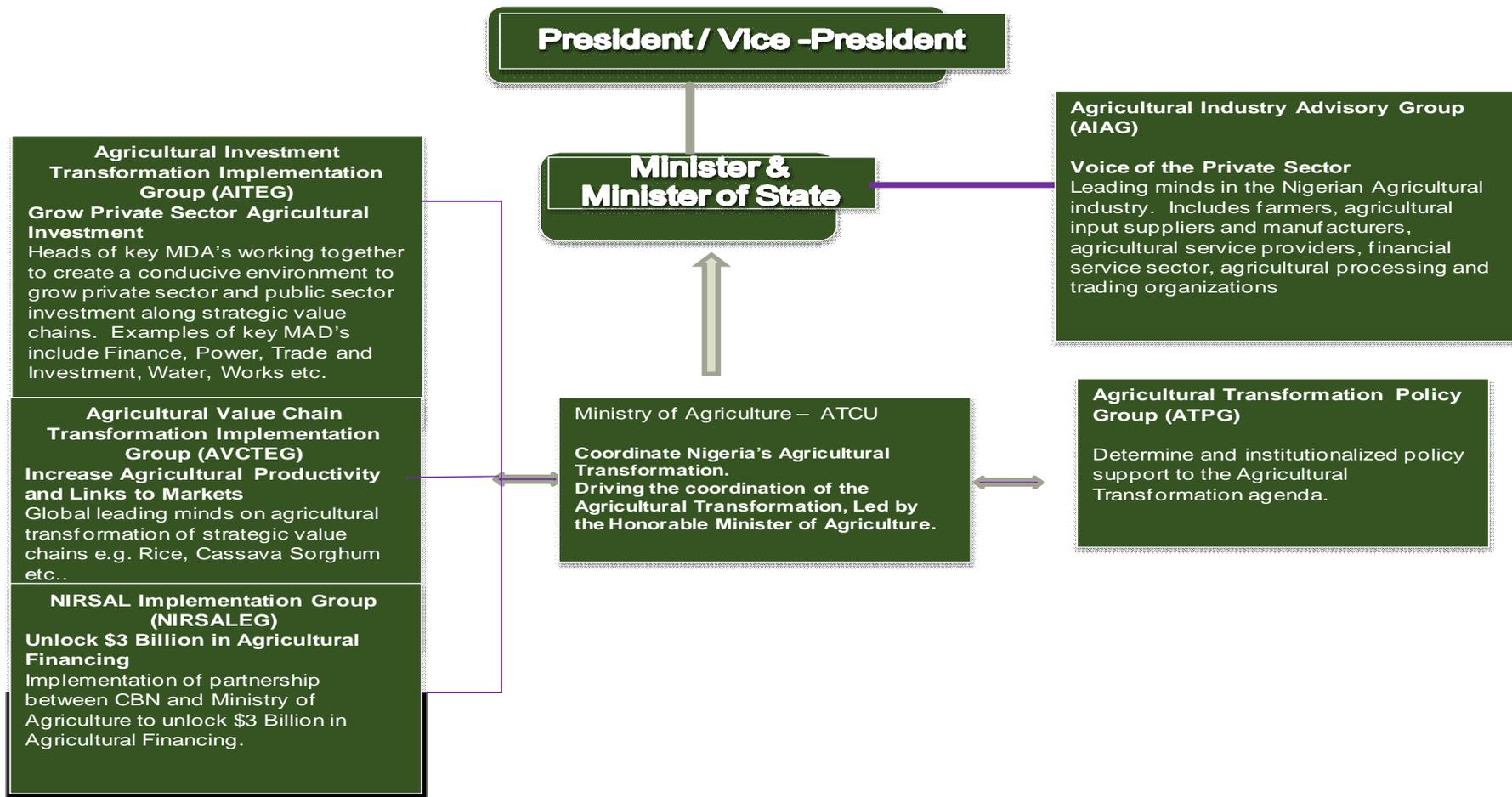


Figure 14: Organogram of Agricultural Transformation Implementation Council (ATIC)

Table 5a: Roles and Responsibilities of Agricultural Industry Advisory Group

<p>Stakeholders in the Agricultural Industry Advisory Group</p>	<p>Group Roles and Responsibilities: Provide policy guidance, review and provide feedback on annual work plans, provide third party independent assessment of performance.</p> <p>The Specific Roles and Responsibilities are:</p>
<p>Farmers</p>	<p>Voice of the Farmers: Representatives from key farmer organizations. Commodities selected should represent a cross section of regions in Nigeria i.e. South, Central and Northern regions. Representatives are from leading commercial farmers in the country.</p>
<p>Agricultural Input Supplier and Manufacturers</p>	<p>Voice of the Agricultural Input Industry:</p> <p>Representatives of the key input sectors.</p> <p>Seeds: Representative of the leading seed and vegetative propagation companies in Nigeria.</p> <p>Fertilizer: Representative of the leading fertilizer company in Nigeria.</p> <p>Crop Protection Products: Representative of the leading crop protection company in Nigeria.</p>
<p>Agricultural Services Providers i.e. Financial Services, Insurance, Logistics etc</p>	<p>Voice of the Agricultural Service Industry: Financial Service: Representative of the leading commercial bank active in the Nigerian agriculture sector.</p> <p>Insurance: Representative of the leading agricultural insurance company.</p> <p>Logistics: Representative of the leading agricultural transporter.</p> <p>Mechanization: Representative of the leading agricultural mechanization service provider</p> <p>Irrigation: Representative of the leading agricultural irrigation service provider</p>
<p>Agro Processors and Traders</p>	<p>Voice of the Agricultural Processing and Trade Industry</p> <p>Marketing Corporations: Representative of the leading marketing corporations.</p> <p>Commodity Exchanges: Representative of the leading commodity exchanges..</p> <p>Exporters: Representative of the leading agricultural exporter.</p> <p>Processors: Representatives of the leading agricultural processors.</p>

Table 5b: Roles and Responsibilities of Agricultural Investment Transformation Implementation Council [AITIC]

Agricultural Investment Transformation Implementation Council [AITIC]	Groups Roles and Responsibilities: Stimulate private sector investment in the agriculture sector through the development of a comprehensive agricultural investment framework, fiscal incentives; improve export competitiveness and promotion of investment opportunities. The specific Roles and Responsibilities are:
Ministry of Agriculture, Ministry of Finance and Ministry of Trade and Investment	Agricultural Investment Framework Drive the development of an agricultural investment framework to transform the Nigerian agricultural sector.
<ul style="list-style-type: none"> • Ministry of Transport • Ministry of Aviation • Federal Aviation Authority • Nigerian Port Authority • Nigerian Customs • NAFDAC • NEPC 	Export Market Development Sub Group to Focus on export market development activities/
<ul style="list-style-type: none"> • NIPC 	Private Sector Investment Promotion Sub Group to Focus on promoting agricultural investment opportunities

Table 5c: Roles and Responsibilities of Agricultural Infrastructure Transformation Implementation Council [AITIC]

Agricultural Infrastructure Transformation Implementation Council [AITIC]	Groups Roles and Responsibilities: Support the development of private sector investment in the agriculture sector by stimulating infrastructure investments within key commodities and target regions. The specific roles are:
<ul style="list-style-type: none"> • Ministry of Power • Ministry of Water • Ministry of Works • Ministry of Transport • Ministry of Aviation 	Public Sector Infrastructure Investment Focus on development and execution of complementary plans for public sector infrastructure investment in line with key commodity and regional strategies.

Table 5d: Roles and Responsibilities of Agricultural Value Chain Transformation Implementation Council [AVCTIC]

Agricultural Value Chain Transformation Implementation Council [AVCTIC]	Groups Roles and Responsibilities: Develop and implement the strategies to grow Nigerian agriculture along targeted agricultural commodity value chains. The specific roles are:
Value Chain Chair	Lead value chain and responsible for day to day operational responsibility
Development Partners	Provide general guidance and oversight to align activities to general strategy of development organization
Senior Technical Advisers (Value Chains)	Advisors with specific expertise to support activity of groups.
Senior Technical Adviser (Operations)	With ATCU team coordinate activities of value chain Provide general guidance and oversight to align activities to general strategy of ministry

9.0 TARGET COMMODITY VALUE CHAIN BY GEOPOLITICAL ZONES

37. This section x-rayed the commodities of primary focus by geopolitical zones

- North-East: Cotton, Onion and Tomato, Cassava, Rice and Sorghum, Livestock and Fisheries
- North-West: Cotton, Onion and Tomato, Cassava, Rice and Sorghum Livestock and Fisheries
- North-Central: Maize, Rice and Soybean, Livestock and Fisheries
- South-south: Oil palm and Cocoa, Cassava, Rice, Livestock and Fisheries.
- South-east: Oil palm and Cocoa, Cassava, Rice, Livestock and Fisheries
- South-west: Oil palm and Cocoa, Rice and Cassava, Livestock and Fisheries

38. During the first phase of agricultural transformation plan, the priority agricultural commodities that will be focused in the six geopolitical zones are: rice, cassava, sorghum, cocoa and cotton.

9.1 Rice Transformation Plan

39. The aim is to make Nigeria a self-sufficient nation in rice in a manner that grows the agricultural sector and also generates employment. Figure 15 reveals the growing demand for rice in Nigeria. Rice consumption was 5 MT in 2010 and is expected to reach 36 MT by 2050 with 5.1% annual growth. Currently, Nigeria is the world number 2 importer of rice, importing 2 Million metric tons of rice. The high importation is however linked to the increasing population being witnessed in Nigeria and also increasing share of rice in Nigerians diet. As shown in figure 16 and 17, Nigerian population will increase to 300 Million by 2035 from 150 Million in 2010, with annual growth of 2.8%. Also, the share of rice in Nigerians diet as depicted in figure 17, increased from 1% in 1960, to 7% in 1980 and finally 15% in 2000. In summary, increasing population and share of rice in Nigerians' diet are the drivers of high demand for rice. However, due to high demand-supply gap being witnessed and volatility of rice prices in the world market, there is the need to increase rice production and yield in Nigeria. Globally, major producers of rice are Thailand, Vietnam, India and China with Thailand and China having excess production of 10M and 2M metric tons respectively, as shown in figure 18. High global demand for rice and thin trading volume being witnessed, are the major causes of rice price volatility in the global market, with the price moving from US\$400/metric ton in 1981 to over US\$1000/metric ton in 2010 (Figure 19). This trend however makes rice importation in Nigeria unsustainable. Demand-supply gap in rice can only be filled through promoting vigorous rice production across all the six geopolitical zones for Nigeria to be self-sufficient. In order to achieve this, there must be a compromise between the demand and supply side of rice (i.e. production and consumption).

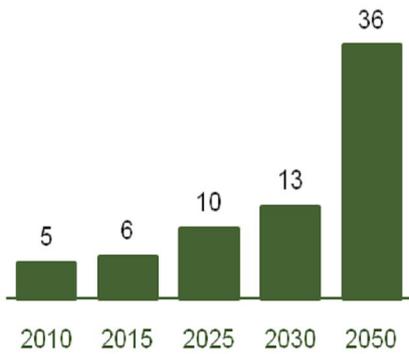


Figure15: Projected consumption of Rice (Millions of metric tons)

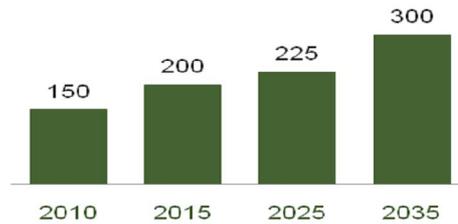


Figure16: Nigeria's population*: (Millions of people)

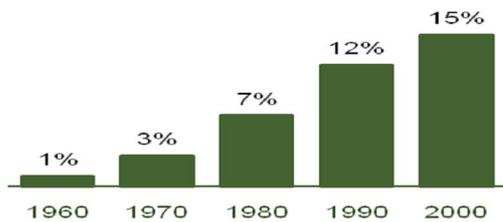


Figure 17: Rice as a percent of a Nigerian's diet

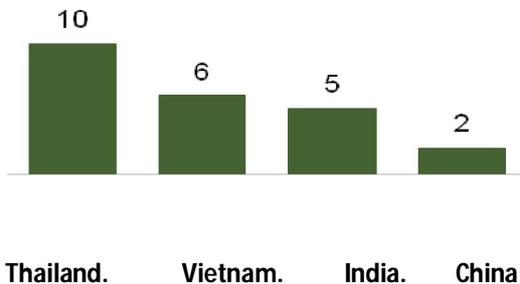


Figure18: Excess production of major producers (Millions of metric tons)

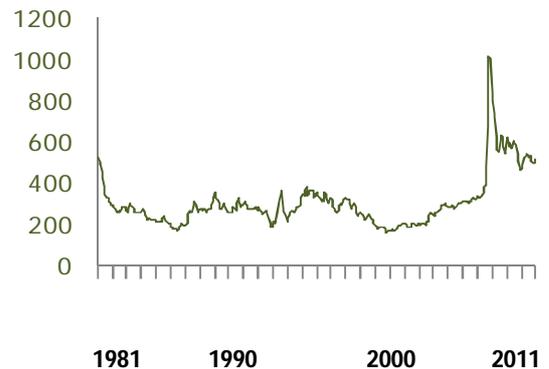


Figure 19: Highly volatile rice prices due to thin trading volumes(US\$ per metric ton)

Demand side targets

40. This will involve massive local production of milled rice which will be aimed at substituting parboiled (imported) rice. The expectation is that with the advent of high quality lower cost milled rice, a significant portion of demand in the domestic rice market will shift from parboiled rice to milled rice.

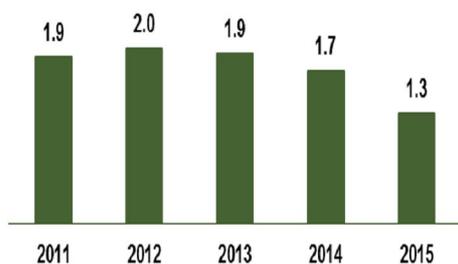


Figure 20: Annual Projected Demand for High Quality Parboiled High Rice in Nigeria. (Millions Metric Tons)

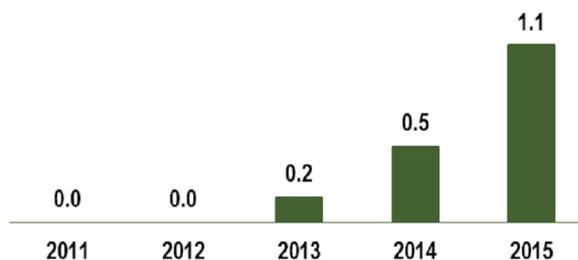


Figure 21: Annual Projected Demand for Quality Milled Rice in Nigeria (Millions Metric Tons)

41 As shown in figures 20 and 21, there will be a projected decline in demand for high quality parboiled rice from 1.9M metric tons to 1.3M metric tons between 2011-2015, with a corresponding projected increase in demand for milled rice from 0M metric ton in 2011 to 1.1M metric tons by 2015. This can only be achieved by enabling milled rice production to thrive in well organized irrigated clusters. The high level of organization will thus increase the quality and reduce the production costs thereby enabling the new product to have cost and quality advantage over parboiled rice. The advantage can also be enhanced by promoting Nigerian rice at state functions and also in media. The cost and quality advantage will enable the product to rapidly gain market share in the domestic market.

Supply side targets

Import Substitution of Parboiled For (PB) Brown Rice for Local Processors

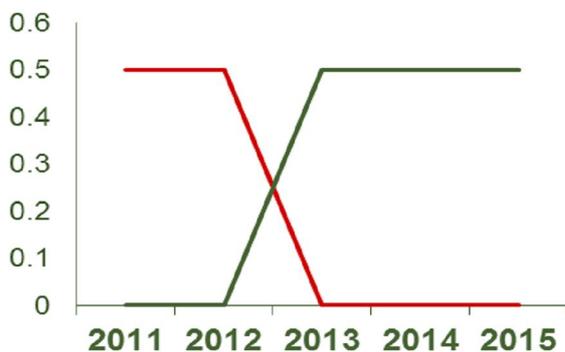


Figure 22: Annual Brown Rice Supply Options. Import versus Domestic supply (Millions Metric Tons)
 Imported PB brown rice (-----)
 Domestically produced PB brown rice (-----)

Import Substitution of Parboiled (PB) Finished Rice with Local Production Facilities

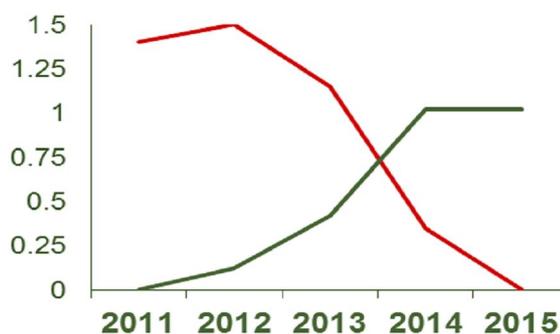


Figure 23: Annual Finished Rice Supply Option. Imports versus Domestic Supply (Metric tons)

42. The target is to gradually substitute imported parboiled rice for locally produced parboiled rice, reaching 100% by 2015. Achieving this target will be through aggregation of supply from less organized small holder farmers. As shown in figure 22, imported brown rice which was put at 0.5M metric ton will gradually be replaced with locally produced brown rice by 2013, Nigeria will totally be self sufficient with zero importation of brown rice. To achieve this, government has to incentivize the private sector to invest in large parboiling and de-husking facilities in regions of high current production e.g. Niger State, Cross River State etc. Also, high import levy should be placed on imported brown rice to discourage importation.

43. As depicted in figure 23, imported finished rice put at 1.5M metric tons in 2011 will also be substituted for domestically produced brown rice with the expected supply of 1M metric ton by the year 2015. Projected total substitution of imported finished rice can however be achieved by stimulating private sector to invest in rice processing facilities in areas of current high production, with target location within lowland rice growing regions. Also, in order to discourage importation and protect domestic production, there must be drastic increase in levy of imported finished rice.

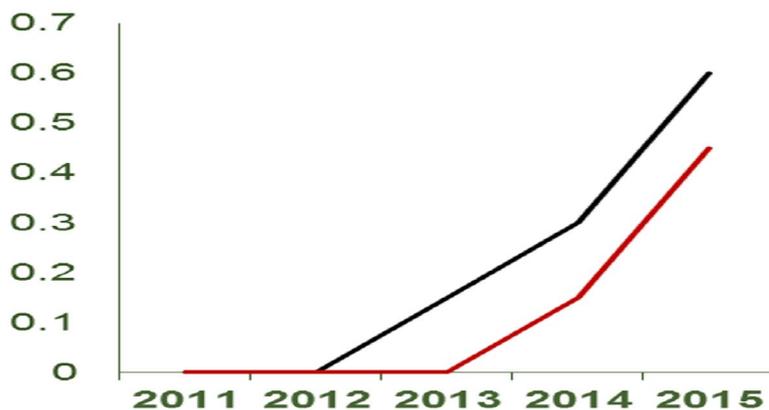


Figure 24: Annual Milled Rice Supply Options. Large Clusters vs Medium Nucleus Farms (Million Metric Tons)
 (Large nucleus farms: 10,000 to 20,000 irrigated farm clusters (-----))
 (Medium nucleus farms: 1,000 to 2,000 irrigated farm clusters (-----))

44. Import substitution of imported parboiled rice for locally milled rice will also be through target aggregation of supply from well organized small holder farmers with in Nucleus Farm model (Figure 24). That is, increasing supply of domestically produced milled rice of Medium nucleus and large nucleus farms to about 0.45M metric tons and 0.6M metric tons respectively by 2015. However, for this to be achieved, the following steps have to be taken:

- *Rehabilitation of Target Irrigation Programs*

45. This will be in form of utilizing labour intensive methods to rehabilitate target irrigation schemes that have existing reservoir systems and require only irrigation canals and drainage canals to be developed.

- *Incentivizing Investors to Invest in Nucleus Farms*

46. This will include leveraging investment in rehabilitating irrigation schemes and incentivizing investors to develop nucleus farm estates. Also, high level team has been sent to Kenya and Ghana to scout for potential investors and identifying best practices for unlocking Nigeria’s rice potential. Some investors have already expressed significant interest in replicating \$40 Million USD rice and aquaculture investment in Taraba state.

- *Replication of Nucleus Farm Model on Medium Scale*

47. There will also be replication of farm nucleus model to rapidly target community level production and processing.

Input Requirements in Achieving Rice Production Targets

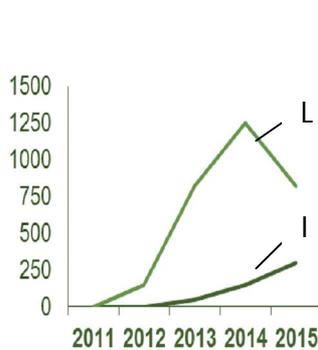


Fig 25: Annual Land Cultivated (hectares)
Lowland (L), Irrigated (I)

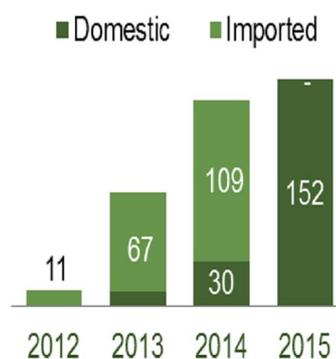


Fig 26: Annual Required Volume of Improved Seeds ('000 MT)

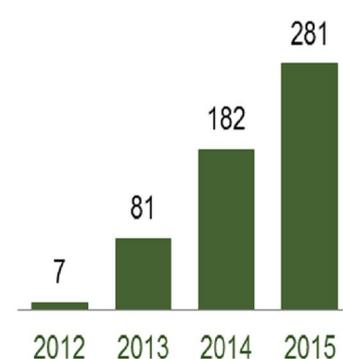


Fig 27: Annual Required ('000 Volume of Fertilizer ('000MT)

48. For Nigeria to achieve the rice production targets by 2015 focus must be on three crucial inputs namely; land, improved seeds and fertilizer.

Land

49. Cultivable lowland rice farm will increase from about 50,000 hectares in 2011 to 1.2M hectares by 2014, while that of irrigated rice farm is estimated to be 300, 000 hectares by 2015 (figure 25). Milled rice production will however be focused on well organized nucleus (large and medium) farms with small holder out grower farmers in irrigated areas. Also, parboiled rice production will be focused on aggregating supply from small holder out grower farmers producing in lowland areas.

Seed

50. Annual required volume of imported improved seeds will increased from 11,000MT by 2012 to 109,000MT by 2014 (figure 26), with domestically produced improved seeds increasing

to 30,000MT this same year. By the year 2015, required improved seeds in Nigeria will be domestically produced to the tune of 152,000MT. This feat will be through:

- Leveraging the ECOWAS seed treaty that enables private sector seed companies to import seed from the West African region.
- Importation will be preferentially provided to companies that are demonstrating significant investments in local production of improved seed varieties.

Fertilizer

51. Annual required volume of fertilizer was put at 7,000MT in 2012, with projected increase to 281,000MT by 2015. The projected volume will be ensured that:

- For each of the targeted regions for rice production, analysis will be conducted and tailored fertilizer blends for the identified rice varieties will be developed. Nigeria currently has enough installed capacity to produce the required volume of fertilizer for the investment.

Rice Job Creation Targets

52. Job creation in rice production is expected to be through primary production, plantation establishment and value chain with an estimated 1Million jobs to be created by 2015.

Primary Production

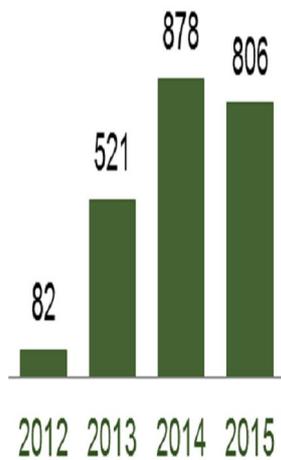


Figure 28: Annual Job Targets ('000 jobs)

Irrigated Land Preparation

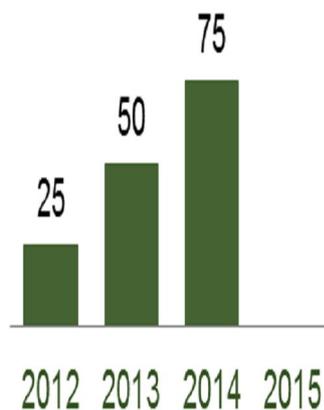


Fig 29 Annual Job Targets ('000 jobs)

Value Chain

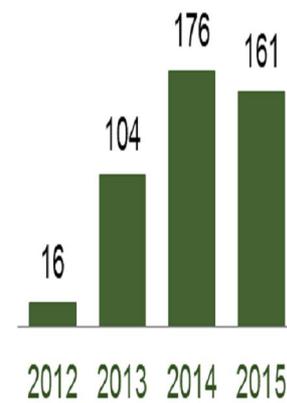


Figure 30: Annual Jobs Target ('000 Jobs)

53. Figures 28-30 show that jobs creation in rice primary production will increase from 82 thousand in 2012 to almost 10 times that of 2012 by 2015, while that of irrigated land preparation will be 3 times more than that of 2012 by 2015. However across rice value chain, employment generation will increase from 16,000 jobs in 2012 to an estimated value of 161,000 jobs by 2015.

54. Generation of estimated 806, 000 jobs through primary production of rice by 2015 is however feasible due to high labour requirement in rice production estimated at 200 man days per hectare. Also, Irrigated land areas are cropped twice per year thereby increasing the labour requirement.

55. Furthermore, 75,000 estimated employments to be generated by 2015 will be achieved due to the significant amount of labour requirement during irrigated land preparation, which include land clearing, irrigation canal and drainage development. Also, this approach will integrate effective labour intensive methodologies to stimulate employment with an estimate of 150 man days per hectare.

56. Lastly, due to the relatively high labour requirement in rice value chain - input supply, service delivery, aggregation of output and processing; an estimated value of 161,000 jobs will be created by 2015 representing 20% of that of primary production.

57. The detailed rice action plan is contained in annexure 1 of this document.

9.2 Cassava Transformation Plan

58. *Cassava Value Chains*

- High Quality Cassava Flour (HQCF)
 - Principal market –replacement of up to 35% wheat flour in bread with cassava flour; others are food industry, adhesive industry and dextrin.
- Native and modified starches
 - There are two functional starch mills in Nigeria with a combined capacity of 20,000 tons (although they currently operate below capacity).
 - Demand for starch is currently met by corn starch imports.
- Dried Chips
 - Principal market has been established to meet internal and external demand of cassava for industrial use. China’s demand is expected to exceed 12 million tons by 2015/16 due to their large ethanol production.
- Sweeteners - High Fructose Cassava Syrup (HFCS)
 - The total sugar requirement for soft drink bottlers and juice manufacturers in Nigeria is estimated at 200,000 tons of sugar per annum. A replacement of half of this by HFCS from cassava would create a 100,000 ton demand.
- Fuel Ethanol (E10)
 - Nigeria has adopted the policy of blending gasoline with 10% ethanol, the E-10 policy. This represents a potential one billion litres per year market of fuel ethanol

and, assuming 50% of feedstock comes from cassava, a raw material requirement of 1.7million tons of dried chips is required.

Demand and Supply Side Targets for High Quality Cassava Flour

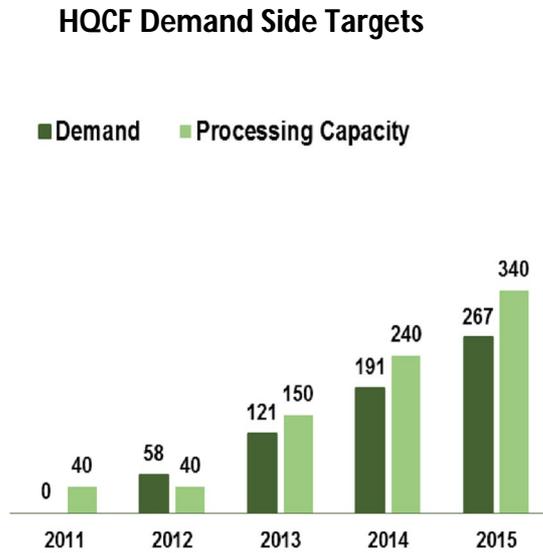


Figure 31: Annual Projected Demand of Tubers for HQCF ('000 Metric tons)

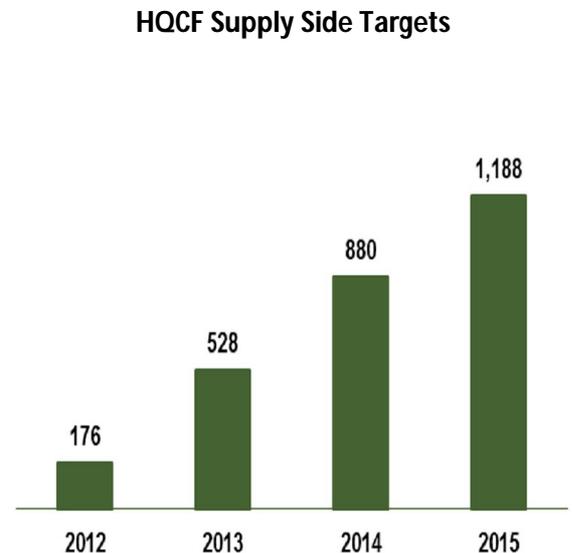


Figure 32: Annual Projected Supply of Tubers for HQCF ('000 Metric tons)

59. Figure 31 x-rayed the projected trend of demand for high quality cassava flour (HQCF). By the end of 2012, the demand for HQCF will be 58,000MT, though the processing capacity of the mills will be around 40,000MT which is below optimal. However by 2015, the demand for HQCF would have been to the tune of 267,000MT with optimum processing capacity of 340,000MT. Also, by the end of 2012, the supply of HQCF would have been 3 times that of demand (figure 32), with the volume of supply reaching 3.5 times that of demand by 2015.

60. It is expected that demand for HQCF will be driven by a combination of increased demand for bread wheat flour, currently at 1.1 Million MT and a gradual increase in the amount of cassava flour blended in with wheat flour, moving from 5% in 2012 to 20% in 2015. However, due to high water content of cassava tuber, the conversion rate is approximately 25%; this however would necessitate the requirement of high volume of cassava tubers as input for HQCF production.

Demand and Supply Side Targets for Starch

Demand Side Targets

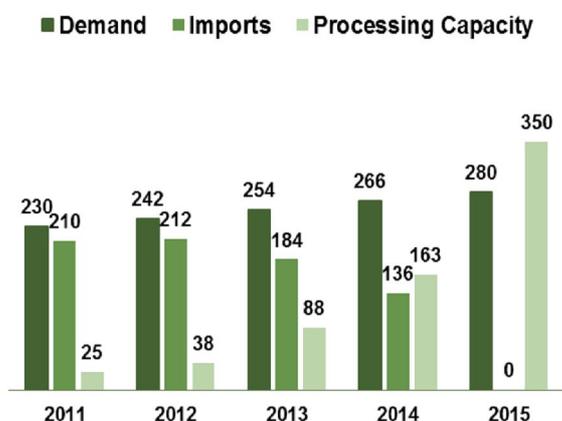


Figure 34: Annual Projected Demand for Starch ('000 Metric Tons)

Supply Side Targets

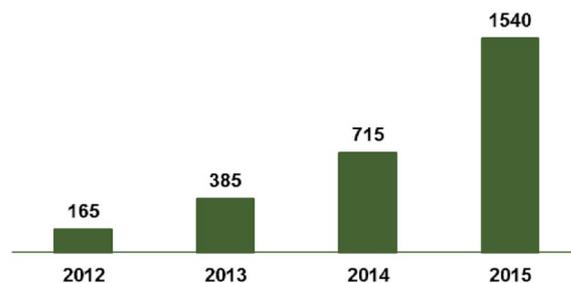


Figure 35: Annual Projected Supply for Starch ('000 Metric Tons)

61. The projected demand for starch as shown in figure 34 is put at 242,000 MT by end of 2012; however bulk of this volume will be imported due to sub-optimal local processing capacity of starch, which is put at 38,000MT. The reason, being that Nigeria has very strong demand for starch, which is being met primarily through importation of corn starch. By 2015, it is projected that local processing capacity of starch would be at optimal with zero importation surpassing demand in excess of 70,000MT. By the same year, supply of starch would also be 4.4 times the demand for starch, thus starch self-sufficiency would have been achieved. However, the conversion rate of cassava to starch is 20% (5% lower than that of cassava flour) due its high water content, necessitating high volume requirement for cassava.

Demand and Supply Side Targets for Cassava Chips

Demand Side Targets

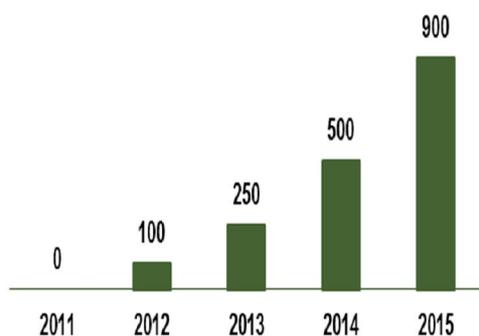


Figure 36: Annual Projected Exports of Chips ('000 Metric Tons)

Supply Side Targets

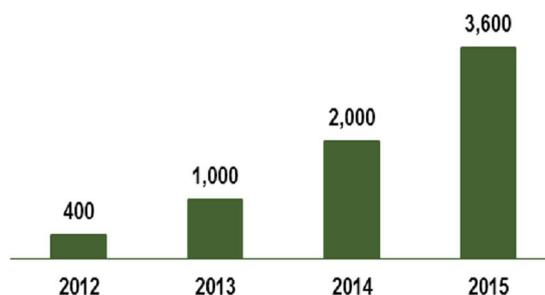


Figure 37: Annual Projected Supply of tubers for Chips ('000 Metric Tons)

62. As shown in figures 36 and 37, projected supply of cassava tubers by end of 2012 would be 400,000MT, with 100,000MT of chips being exported. By the end of 2015, supply of cassava for chips would have reached 3.6MillionMT, with 25% of this volume being made available for export. The need for the projected increase in cassava supply and export is due to the growing demand of cassava chips at 20% per annum in the world market. Most especially China, whose high demand for cassava chips is due to the growing demand of ethanol in the country. Nigeria expects to tap into this growing demand while simultaneously developing local production capabilities to feed our own projected ethanol production. Conversion rate of cassava to chips is also put at 25%, necessitating high volume of cassava requirement as input.

Demand and Supply Side Targets for High Fructose Cassava Syrup (HFCS)

HFCS Demand Side Targets

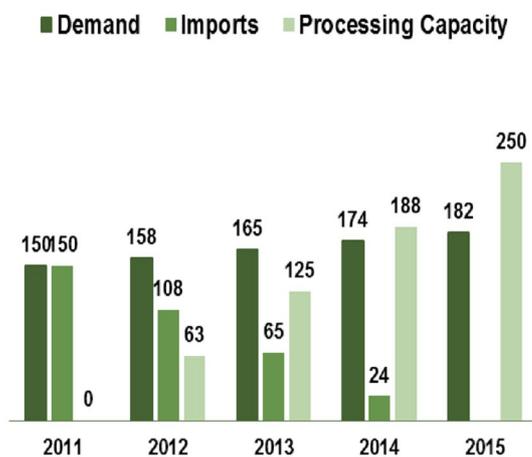


Figure 38: Annual Projected Demand for HFCS
Measure: ('000 Metric Tons)

HFCS Supply Side Targets

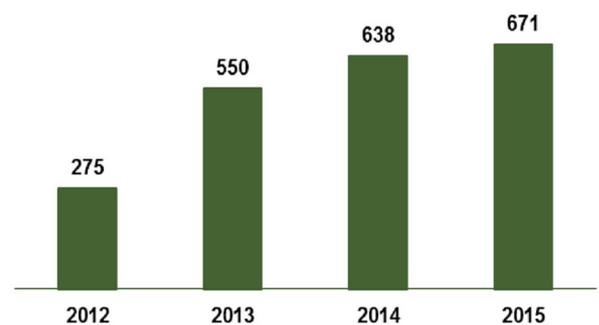


Figure 39: Annual Projected Supply of Tubers for HFCS
Measure: ('000 Metric Tons)

63. Due to the growing demand for soft drink and juice markets in Nigeria, there is the need to increase processing capacity and supply of HFCS. Figures 38 and 39, the HFCS demand is currently at 158,000MT, with about 108,000MT being imported into the country. Nigeria however would have reached self sufficiency level by 2015, where the processing capacity would be around 1.58 times the volume of import in 2012 and importation volume would fall to zero. Also, projected supply of HFCS would increase from 275,000MT in 2012 to 671,000MT by 2015. There is the need for increased supply of HFCS due to the assumed 50% substitution of current sweeteners in the soft drinks and juice markets. The expectation is to be able to meet 100% of projected demand by 2015. The approximate conversion rate of cassava to HFCS is 20%.

Demand and Supply Side Targets – Ethanol

Ethanol Demand Side Targets

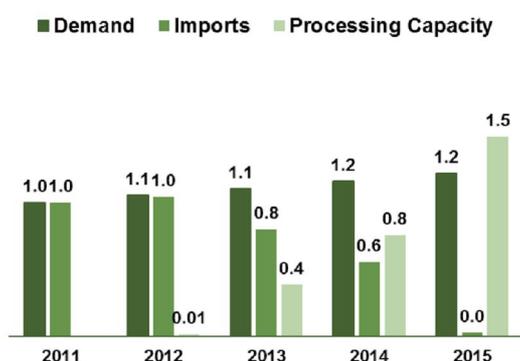


Figure 40: Annual Projected Demand for Ethanol (Billions of Litres)

Ethanol Supply Side Targets

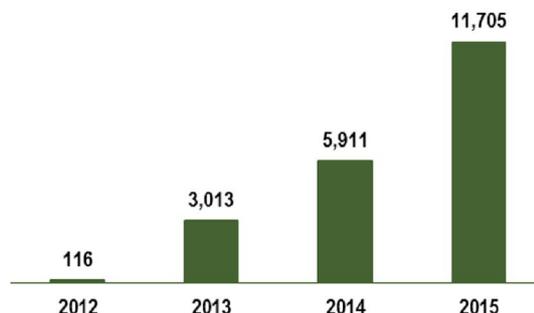


Figure 41: Annual Projected Supply of Tubers for Ethanol ('000 Metric Tons)

64. As shown in figures 40 and 41, total ethanol requirement in Nigeria is being met through importation in 2011 (1 billion litres). However 1.2B litres of ethanol are the projected demand by 2015, with processing capacity of 1.5 billion litres. At the same period, supply of cassava tubers would have increased from 116MT in 2012 to 11.705MT by 2015. For market potential of ethanol to be harnessed, Nigeria will need to implement and enforce strong legislation coupled with the stimulation of local blending capabilities. There is also the need to stimulate production capabilities domestically with the expectation of being self sufficient in ethanol production by 2015. The conversion rate of cassava is put at 590 litres of ethanol/MT of cassava, thus necessitating high volume of cassava required as input.

Cassava Job Creation Targets (primary production and value chain)

Primary Production Jobs

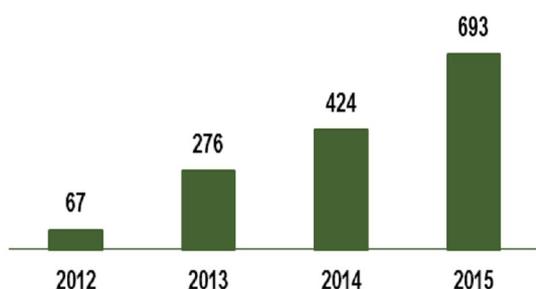


Figure 42: Annual Projected Number of Jobs in Primary Production ('000 Jobs)

Value Chain Jobs

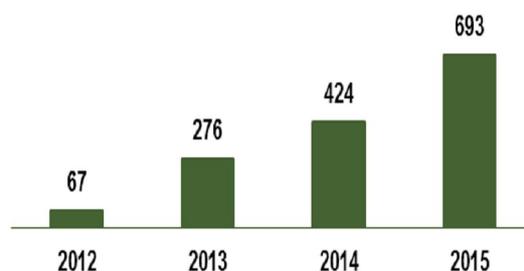


Figure 43: Annual Projected Number of Jobs in the Value Chain ('000 Jobs)

65. A target of 1.2M jobs is to be met by 2015 via primary production and cassava value chain. 67,000 jobs are to be provided by the end of 2012, with an estimated value of 693, 000 jobs to be provided by 2015 each from primary production and value chain sources (Figures 42 and 43) The projected job requirement is high due to relatively high cassava labour content requirement of over 300 man days per Ha. This high requirement translates into almost 0.25 million jobs in primary production alone. Cassava value chain, which includes, input supply, service delivery, aggregation of output and processing is also labour intensive, with an estimation of 1 job creation within the value for every job created in primary production.

66. The detailed cassava action plan is contained in annexure 2 of this document.

9.3 Sorghum Transformation Plan

67. *Value Chains*

- **Fortified Foods**

Sorghum can be utilized to produce nutritious fortified foods, typically blended with soybeans. Key markets for these fortified foods are Home Grown School Feeding programs (HGSF) and the World Food Program (WFP) food aid to neighbouring countries like Chad, Niger, Mali etc.

- **Malt**

Sorghum can also be used in producing malt for use in the beverage industry to produce (with the exception of beer) Maltina, Ovaltine, Milo and so on.

Demand Side Targets for Fortified Foods

Home Grown School Feeding Program (HGSF)

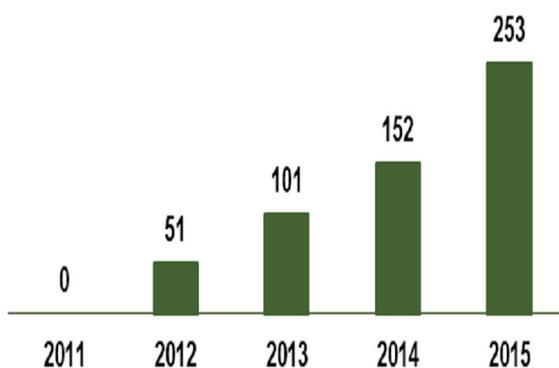


Fig 44: Annual Projected Demand for Sorghum Component of Fortified Foods for HGSF Program (000MT)

World Food Program (WFP) Demand Side

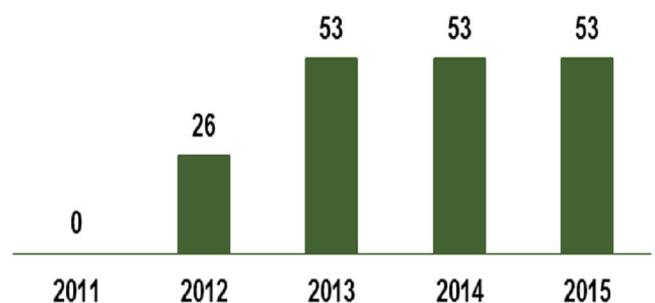


Figure 45: Annual Projected Demand for Sorghum Component of Fortified Food for WFP (000MT)

68. Sorghum is very important in human diet. It is becoming one of the most important cereals used in World Food Program such as Food aid and school feeding program. It is projected that by

the end of 2012, sorghum requirement for fortified food for Home Grown School Feeding (HGSF) Program would be to the tune of 51,000MT (figure 44). This figure would however increase by 500% by 2015. Sorghum demand for HGSF program targets about 50% of Nigerian children, roughly 12.5 million in public school by 2015 (figure 45) with the program running for 9 months of the year. Each child will eat approximately 150g of processed fortified foods daily of which sorghum constitutes approximately 75% of the total content.

69. Furthermore, the Projected Demand for Sorghum Component of Fortified Foods for World Food Program (WFP) is put at 26,000 MT by the end of 2012, with more than 100% increase by 2015. The World Food Program has historically provided significant volumes of food aid to our neighbours, over 140,000 metric tons of food aid to Niger alone in 2010. World Food Program provides fortified foods that include a soya and maize blend in which the maize could be substituted for sorghum.

Supply Side Targets of Fortified Foods

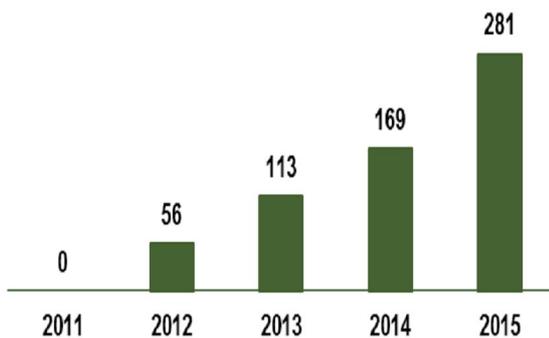


Figure 46: Home Grown School Feeding Program (HGSF) Supply Side Targets ('000MT)

World Food Program (WFP) Supply Side Targets

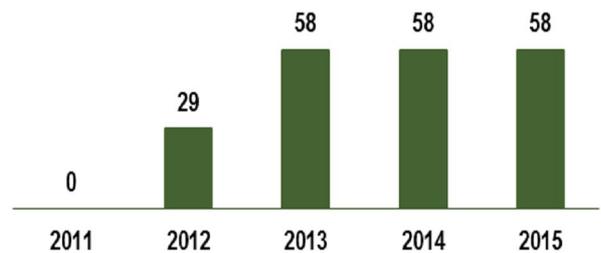


Figure 47: Annual Projected Supply for Sorghum Component of Fortified Foods for WFP ('000 MT)

70. Supply target for Sorghum Component of Fortified Foods for HGSF Program as depicted in figure 46 is estimated at 56,000MT by end of 2012, with 500% increase in the volume by 2015. Similarly, projected supply of Sorghum Component of Fortified Foods for WFP would increase from 29,000MT by end of 2012 to 58,000MT by 2015 (figure 47).

71. The demand for sorghum for both HGSF and WFP will however be met by ramping up production and processing capacity in the North East and North West, ensuring minimal (5-10%) loss of grain during processing.

Demand and Supply Side Targets for Malt

Demand Side Targets

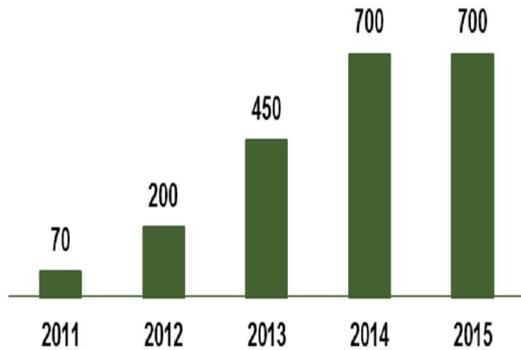


Fig 48: Annual Projected Demand for Sorghum for Malt Plants ('000MT)

Supply Side Target

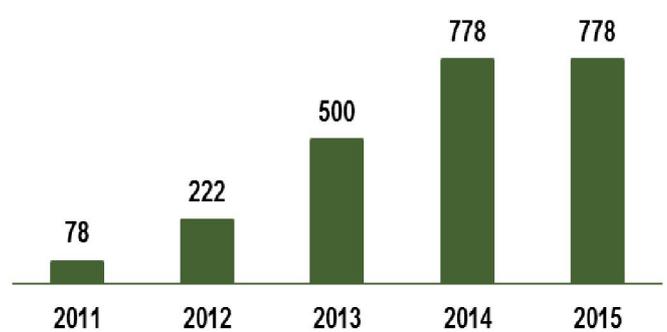


Fig 49: Annual Projected Supply of Sorghum for Malt Plants ('000MT)

72. In Nigeria at present, there is approximately 200,000 metric tons of processing capacity for malt, however only approximately 70,000 metric tons is utilized, which is equivalent to the actual malt demand in 2011. The strategy in the short term is to ensure that excess capacity is appropriately utilized by developing output markets for malt and linking processors to areas of production. The team will work with potential investors to bring on stream in 2013, 2014 and 2015 additional capacity for malt production. However, the projection is that by 2015, demand for malt would be to the tune of 700,000MT (Figure 48). The estimated demand will be met by ramping up production and processing capacity in the North East and North West, with the supply target of 778,000MT by 2015 (figure 49).

Sorghum Job Creation Targets

Primary Production Jobs

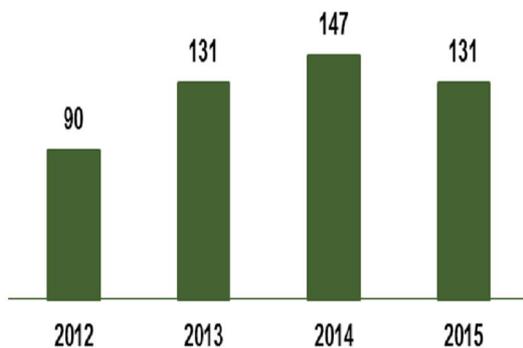


Fig 50: Annual Projected Number of Jobs in Primary Production ('000 jobs)

Value Chain Jobs

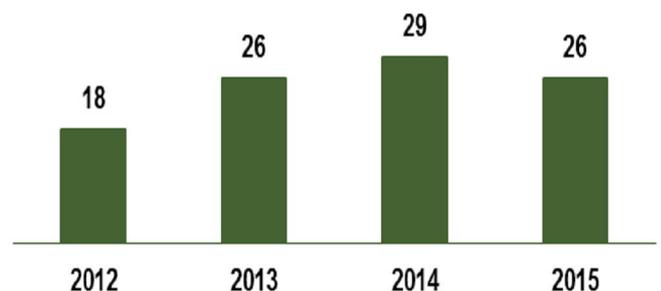


Fig 51: Annual Projected Number of Jobs in the value chain ('000 jobs)

73. As at now, 90,000 jobs are being created in primary production of sorghum and 18,000 across the value chain (figures 50 and 51). By 2015, despite the relatively low labour requirements of sorghum of 88 man days per Ha, it is expected that an estimated 131,000 employment opportunities would be generated in primary production. Sorghum value chain being relatively labour intensive, it is projected that 20% of the jobs created in primary production would be generated across sorghum value chain by 2015. The value chain includes, input supply, service delivery, aggregation of output and processing.

74. The detailed sorghum action plan is contained in annexure 3 of this document.

9.4 Cocoa Transformation Plan

Supply Side Targets for Cocoa

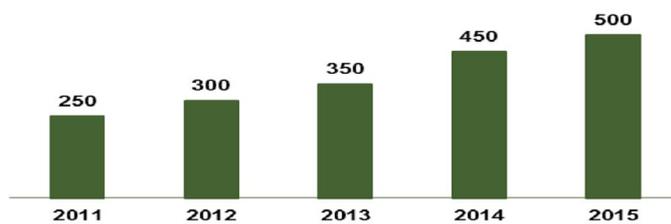


Figure 52: Annual Projected Increase of Supply of Cocoa Beans ('000MT)

75. Globally there is strong and growing demand for Cocoa, most especially in Eastern Europe and Latin America. The strategy is to rapidly grow Nigeria's production of cocoa beans through a combined strategy of increased productivity and planting new area. As revealed in figure 36, 250,000MT of cocoa beans was produced in 2011. The projection however is to double cocoa beans production by 2015 through increased productivity and expansion of cocoa farm.

Inputs required to achieve cocoa production targets

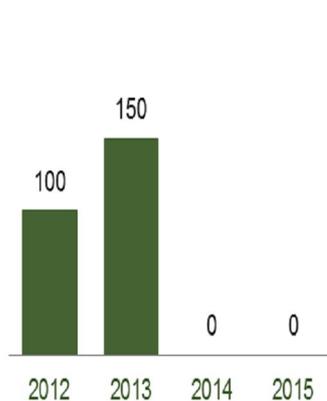


Figure 53: Annual New Plantation

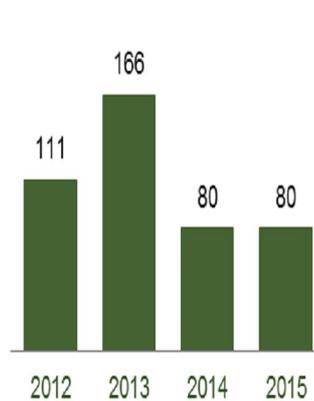


Figure 54: Annual Required Volume of Improved Seedlings (Millions of Seedlings)

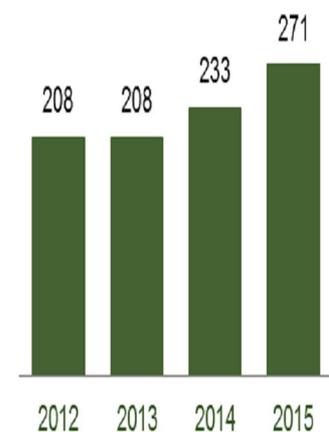


Fig 55: Annual Required Volume of Fertilizer ('000MT)

76. The three major inputs required to meet Cocoa production targets are land, seedlings and fertilizer.

Land

77. The projection is to open 100,000ha and 150,000ha of new cocoa plantations in the Southern divide by 2012 and 2013 respectively. This expansion would increase the existing 800,000 ha of Cocoa plantations by approximately 30% to over 1 Million Ha. The increased plantation would be financed through Cocoa Development Fund, with the ultimate target of generating significant employment through land clearing and plantation establishment.

Seedlings

78. There would be rigorous multiplication of cocoa seedlings to the tune of 111M and 116M seedlings by 2012 and 2013 respectively in order to provide the planting materials for establishment of new plantations. However, by 2015 cocoa seedlings requirement would have dropped to 80M. Seedling production and multiplication would be avenue for significant employment generation especially for the youths and women.

Fertilizer

79. Fertilizer requirement for cocoa production by end of 2012 would be to the tune of 208,000MT. The volume is expected to increase by 63,000MT by 2015. Development of tailored cocoa fertilizer blends will be required to form the foundation of rapid yield improvements from 300kg per Ha to 600kg per ha.

Cocoa Job Creation Targets

Primary Production

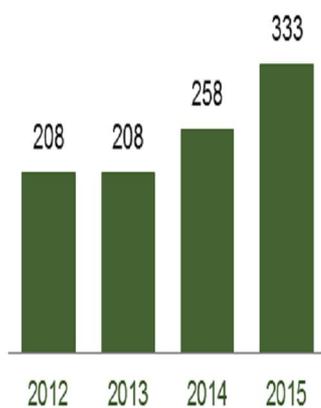


Figure 56: Annual job target ('000 of jobs)

Plantation Establishment

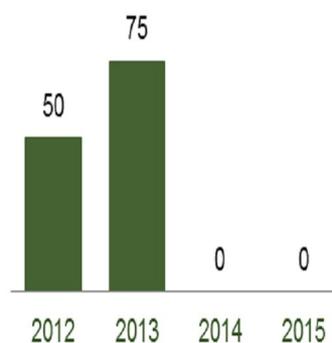


Figure 57: Annual job target ('000 of jobs)

Value Chain

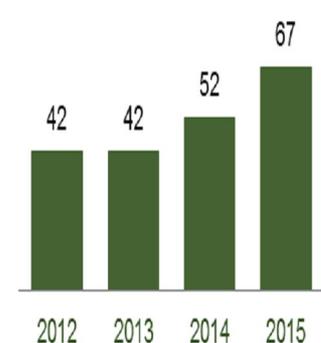


Figure 58: Annual job target ('000 of jobs)

80. Cocoa is one of the most labour intensive plantation crops with an estimation of 150 man days per hectare per year. It is expected that 390,000 jobs will be generated in primary production, plantation establishment and across the value chain of cocoa by 2015. One of the more labour intensive aspects of Cocoa is in the harvesting process. As shown in figure 56, targeted employment in cocoa primary production is expected to increase from 208,000 in 2012 to 333,000 by 2015. The expectation is that with increased yields, a dramatic increase in labour will be greatly required for existing plantations.

81. Plantation establishment is a very labour intensive process that includes seedling development, land clearing, cover crop establishment and planting. It is projected that about 50,000 jobs will be required for the establishment of cocoa plantation by end of 2012, with 50% increase in the volume by 2015 (figure 57). The estimation is for every 2 ha of land prepared, a job is created.

82. As shown in figure 58, 42,000 jobs will be generated across cocoa value chain (input supply, service delivery, aggregation of output and processing) by end of 2012. The employment volume of 2012 is expected to increase by 60% by 2015. The estimation is that for every 5 jobs created in primary production 1 job will be created within cocoa value chain.

83. The detailed cocoa action plan is contained in annexure 4 of this document.

9.5 Cotton Transformation Plan

Cotton Supply Side Targets

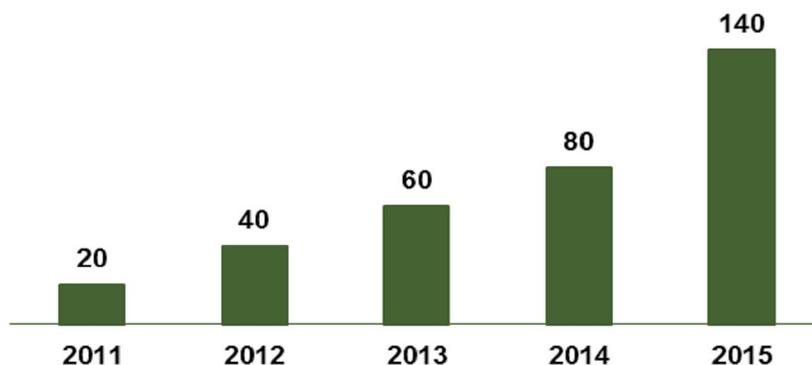


Figure 59: Annual Projected Increase of Supply of Cotton Lint ('000Metric Tons)

84. Cotton sector in the past employed over 600,000 people with 175 mills in operation. Today there are less than 24 mills left and the sector employs less than 28,000 people. This dwindling performance is however some key challenges facing cotton sector in Nigeria, which includes:

- Varietal mix
- Use of Polypropylene bags versus jute bags
- Quality challenges

- Absence of institutional support
- Absence of BT cotton varieties

85. The main aim now is to regain Nigeria's position as the number one producer of cotton in West Africa, with supply projection of 40,000MT of cotton by end of 2012, projection of 140,000MT by 2015 (figure 59). This expected growth will however form the foundation for a thriving domestic textile industry.

Inputs requirement in achieving cotton production targets

Land

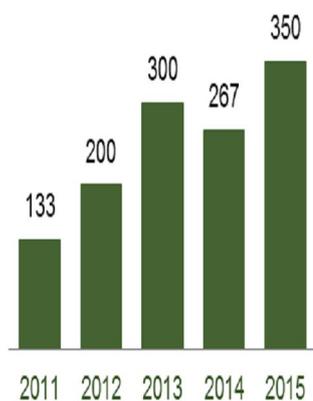


Figure 60: Annual Land cultivated ('000Ha)

Improved Seeds

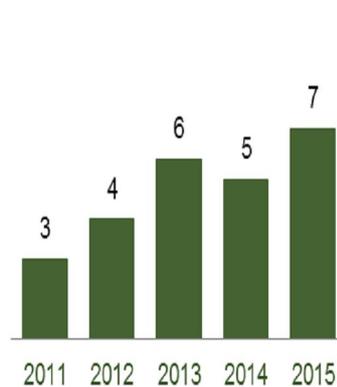


Figure 61: Annual Required volume of improved seeds ('000MT)

Fertilizer

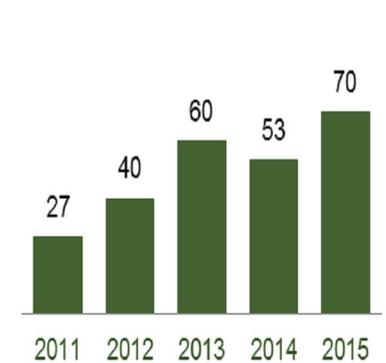


Fig 62: Annual Required Volume of fertilizer ('000MT)

86. Due to cotton's relatively low yields, 300kg to 500kg per Ha, there is that need to bring significant quantum of land into cotton production. The North-western and North-eastern part of the country being most suitable for cotton production will be the regions of focus. The projection is to increase cotton from 113,000MT in 2011 to 350,000MT by 2015 (figure 60), then improvement in productivity and access to improved cotton varieties and practices can be a better substitute for land expansion.

87. At present, Nigeria is yet to release a BT Cotton (improved) variety that has revolutionized cotton production across the globe. These cotton varieties are however critical to attaining rapid productivity growth in the cotton sector. The current goal is to fast track the release of BT Cotton in Nigeria enabling farmers to double or triple their yields in a short period of time, as shown in figure 61 where cotton yield is expected to increase from 3,000MMT in 2011 to 7,000MT by 2015.

88. For cotton production to thrive in Nigeria, a specific blend of fertilizer is required, which unfortunately is not available locally. Thus, importation of this blend of fertilizer becomes

inevitable. It is estimated that 27,000MT of fertilizer needed in 2011 would increase to 70,000MT by 2015 to meet the targeted area of 350,000ha (figure 62).

Cotton job creation targets

Primary Production Jobs

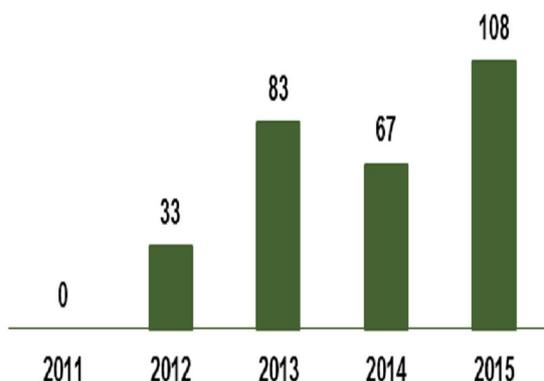


Figure 63: Annual Projected Number of Jobs in Primary Production ('000 of Jobs)

Value Chain Jobs

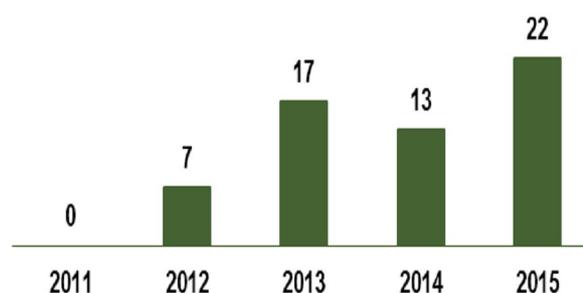


Figure 64: Annual projected number of jobs in the value chain ('000 of jobs)

89. Cotton is one of the more labour intensive crops in Nigeria with an estimate of 150 man days per hectare per year and an estimated 125,000 jobs to be created by 2015. Employment generation via primary production is expected to incline from 33, 000 jobs by end of 2012 to 108,000 by 2015 (figure 63).

90. The cotton value chain (i.e. input supply, service delivery, aggregation of output and processing) is relatively labour intensive due to the bulky nature of the product and intermediate processing requirements. It is estimated that 7,000 employment generated across cotton value chain will incline to 22,000 by 2015 (figure 64). The implication of this is that for every 5 jobs created in primary production, 1 job will be created across the value chain. The detailed rice action plan is contained in annexure 1 of this document.

91. One of the more labour intensive aspects of Cotton is in the harvesting process; hence the expectation is that with increased yields there will be a dramatic increase in labour requirement not only for new farms but existing farms as well.

92. The detailed cotton action plan is contained in annexure 5 of this document.

9.6 Maize Transformation Plan

93. Maize has grown from what used to be a back yard crop in the forest zone to a largely commercial crop grown now mostly in the savannas of Nigeria. The release of TZB and TZPB that combine high yield with resistance to lowland rust and blight developed at IITA, spearheaded the first maize revolution in Nigeria in the 1980's. Maize production figures show that the area

planted to maize in Nigeria has increased from 438,000 ha in 1981 to 3,335,860 ha in 2009 with associated increase in production from 720,000 tons to 7,338,840 tons during the same period. Grain yield has also increased from 1.6 t/ha in 1981 to 2.0 t/ha in 2009. However, the slow turnover of maize varieties and hybrids on farm coupled with limited availability of good quality improved seed, fertilizer and other inputs have minimized the potential yield gains recorded on farm in Nigeria.

94. Maize plays a predominant role in the farming systems and diets of millions of Nigerians. It is a very versatile crop since it is used for domestic consumption in addition to its industrial use by flour mills, breweries, confectioneries and animal feed manufacturers. Consequently, increasing maize yields and its cultivation particularly in high production potential areas of the county can jumpstart a second maize green revolution in the country.

95. Some of the factors that make maize an ideal target crop for intensification in high production potential areas of the county include the following:

- Its high yield potential
- Diversified uses,
- Ease of transportation, processing and marketing
- The availability of dependable research products

Since the consumption of wheat and rice - both of which are largely imported, is rising in urban centres, maize can play a major role in import substitution and sub-regional trade. It follows therefore, that a second maize green revolution in Nigeria will increase GDP and enhance regional trade for Nigeria. It will also result in employment generation and wealth creation, and reduce our foreign exchange expenditure.

96. A key goal of a second maize green revolution will be to increase maize production to 20 million metric tons in Nigeria. This second maize green revolution will focus on the:

1. Commercialization and deployment of high yielding, stress tolerant and nutrient efficient maize hybrids and varieties.
2. Promotion of optimal fertilizer usage along with appropriate crop and resource management practices targeted to maintain the soil base and enhance agricultural productivity
3. Modification of policies which impede the growth of private sector input companies including, seeds, fertilizer and other inputs, as well as the marketing of maize grain both in-country and for export.
4. Identification and development of new uses for maize in order to drive demand for the crop and create additional market.

97. A key point of note is that system productivity using the maize-soybean rotation is essential to maintaining the natural resource base of the maize production environment. Soybean, especially those high-yielding varieties that can cause suicidal germination to *Striga* seeds in the soil will be grown in rotation with maize. Although soybean production has increase from 160000

m tons in 1995 to 550,000 mm tons in 2010, there is still a national demand gap of 200, 000 m tons being met through importation. Thus a programmed maize–soybean rotation system will assist in meeting national demand for soybean. The second maize green revolution will build on the experience, results and released maize varieties and hybrids attained under the Presidential Initiative on Doubling Maize Production (PIDOM) in Nigeria, as well as the recent advances made in the development of productive and stress tolerant maize hybrids and varieties at IITA. This however demonstrated that average yield of 4.2 t/ha can be attained on farm using good quality seeds of improved varieties along with adequate application of fertilizer, appropriate density and weed control.

Proposed Strategies for Achieving the Second Maize Green Revolution

98. The second maize green revolution will pursue short, medium and long term strategies in collaboration with local research and development partners, the private sector, farming communities, as well as policy makers. These strategies will:

Short-Term (3 years)

1. Promote the production and marketing of recently released hybrids and productive varieties under the PIDOM project through the private sector.
2. Provide support to private seed companies to produce and market good quality hybrid maize and soybean seeds
3. Conduct extensive demonstrations of improved seed with fertilizer and other management practices
4. Conduct extensive testing of new high yielding, stress tolerant and nutrient efficient maize hybrids and promiscuously nodulating soybeans in multi-location and on-farm trials
5. Support establishment of private service providers to overcome labour shortages at the time of planting, weeding and harvesting to generate employment for urban and rural youth.
6. Develop market linkages with food and feed industries and other market channels to promote maize-soybean value-chain.

Medium Term (4-6 years)

1. Accelerate the release and commercialization of new hybrids and varieties identified from the short term strategy with active involvement of seed companies, the national variety release committee, National Seed Council, and the national agricultural research systems
2. Conduct extensive demonstrations of new maize hybrids and soybean varieties along with optimal application of fertilizer and other resource management practices
3. Conduct extensive testing of new generations of high yielding hybrids with enhanced stress tolerance, resistance to *Striga*, improved nutritional quality and reduced toxic substances in multi-location and on-farm trials

4. Develop and test crop and resource management practices that enhance build up of organic matter in the soil and efficiency in fertilizer use.
5. Work with the NASC, variety release committee and other policy makers to remove policies that restrict the development of good quality improved seed supply chains including shortening the time for variety release to speed up access of new products by farming communities.
6. Use strategic grain reserve policies and establishment of warehouses in major maize production zones to minimize the risk associated with high level of price fluctuations for maize due to excess grain produced resulting from adoption of yield enhancing technologies.
7. Support the development of new uses for maize and its derivative products and in particular, explore the possibility of engaging processors involved in the production and marketing of vegetable oil to produce maize oil for local consumption and export.

Long term (7 to 10 years)

1. Engage the private sector and other national partners to release the new generation of high yielding hybrids with enhanced stress tolerance, resistance to *Striga*, improved nutritional quality and reduced toxic substances as well as new soybean varieties identified from the medium term strategy
2. Conduct extensive testing of more new generation of high yielding maize hybrids with combined resistance to different stresses, higher level of nutrient content and resistance to mycotoxin contamination in multi-location and on-farm trials
3. Conduct extensive demonstrations of new maize hybrids along with optimal application of fertilizer and soybean cultivars together with other resource management practices that promote build up of organic matter in the soil and efficient use of fertilizer.
4. Work with relevant policy makers to promote policies that encourage sustained maize production and marketing
5. Consolidate establishment of private service providers of mechanized operations to overcome labor consultants for maize farmers.
6. Encourage the use of established warehouses to store excess grain by farmer groups for bulk trading and export to neighboring countries at reasonable prices.

Expected Output

Short term

- More than 500,000 farmers receiving support and producing 4.5 million metric tons of maize grain to help attain 9.5 million metric tons of maize in Nigeria.
- A minimum of six seed companies have been strengthened to produce and supply the required quantity of seeds of hybrids and improved maize varieties and marketed

- Additional 300,000 new jobs created for various aspects of maize production alone (planting, fertilizer application, weeding and harvesting), and a similar number of new jobs created through off-farm maize handling activities to give a total of 600,000 new jobs.

Medium term

- At least 1 million maize farmers received support and produced 9 million metric tons of maize grain thus boosting the national maize production to 13 million metric tons.
- Additional 600,000 new jobs created for various aspects of maize production alone (planting, fertilizer application, weeding and harvesting)
- At least 600,000 additional new jobs created through off-farm activities including loading, transportation, processing marketing etc.

Long term

- More than 20 million metric tons of maize grain produced with active involvement of more than 2 million farmers in Nigeria.
- Additional 1.2 million new jobs created for various aspects of maize production alone (planting, fertilizer application, weeding and harvesting), while a similar amount is created through off-farm handling of maize and maize products to give a total of 2.4 million new jobs.

Initiative beneficiaries, benefits and job creation

- Number of direct beneficiaries will increase from 500000 in the short term to 2m in the long term with an associated input cost of 149 to 647 billion Naira, respectively
- New on-farm job creation will be range 300000 in the short term to 1.2m in the long term
- An additional 30000 to 1.2m off-farm jobs will be created to give a total of 600000 to 2.4 million new jobs within 3 to 10 years.
- Other indirect farmer beneficiaries alone can range from 2.0 to 8m for the short and long term phases

Target Project Implementation Area

99. The initiative will be targeted at the major maize producing states of the federation having high and medium production potential, which include: Kaduna, Niger, Adamawa, Plateau, FCT, Bauchi, Gombe, Bornu, Nasarawa, Kwara and Oyo States.

Favourable Support Policies

1. Total ban of maize importation
2. Policies formulated for the Growth Enhancement Support should be consistent for a minimum of five years to allow for maturity and adequate time to assess the impact.
3. Commitment of Government to buy back the surplus grain
4. Stable and consistent support for the programme

5. Firm commitment of participating States through significant financial and other contribution to the programme.

100. The detailed cotton action plan is contained in annexure 6 of this document.

9.7 Beef Transformation Plan

Overview of the Livestock Industry

101. The livestock sub-sector is an important and integral component of Nigeria's agriculture and is a major source of household wealth and food security. Cattle are the single most important livestock species in terms of output and capital value. While sheep, goats and poultry are raised throughout the country, cattle are largely concentrated in the dry savannah parts of the country including areas that are not considered free of tsetse fly. The livestock sub-sector contributed about 19% of the agricultural GDP in 2007 (FGN, Commercial Agriculture Development Project, 2008).

102. Nigeria is one of the four leading livestock producers in Sub-Saharan Africa. In 2007, Nigeria's national livestock population was estimated to consist of ca. 16 million cattle, 52.5 million goats, 33 million sheep, 6.6 million pigs, 19,000 camels and 166 million chickens (FAO, 2009). The national cattle herd has grown at an average of 1.4% annually between 1997 and 2007 (Table 6).

Table 6: Nigeria's livestock populations

Animal species	Year					
	1997	1999	2001	2003	2005	2007
Camel	18,000	18,000	18,000	18,000	18,200	18,800
Cattle	15,073,000	15,103,200	15,133,400	15,163,700	15,875,266	16,152,700
Goats	35,000,000	40,000,000	45,260,400	47,551,700	49,959,000	52,488,000
Pigs	4,487,326	4,853,487	5,249,540	5,677,900	6,141,220	6,642,340
Sheep	19,500,000	24,000,000	28,692,600	30,086,400	31,457,900	33,080,400
Chickens	126,000,000	126,000,000	124,620,000	157,680,100	150,700,000	166,127,000

Source: FAOSTAT, 2009

103. The low national herd growth rate is supplemented by the import of live cattle from the neighbouring countries through transhumance and trade.

104. There has been an increasing demand for beef and milk, the main sources of domestic animal protein in Nigeria. This has resulted in a domestic supply gap due to the challenges of low livestock productivity of the indigenous production systems. The current economic situation in Nigeria indicates that domestic supply of animal protein is growing at 1.8% per annum while the

overall demand is estimated to be rising at 5.1% annually. In spite of its importance and the existence of an unsatisfied internal demand for livestock products, the livestock sub sector has suffered from inadequate investment by both the public and the private sectors. Although there is limited formal importation of beef into Nigeria, the national supply gap is mainly filled in by the live animals coming in from the neighbouring countries.

105. The main goal of Beef Transformation Agenda is however to provide adequate supply of quality meat in the domestic market and develop the potential towards export. Also the objectives of the transformation agenda include:

- Increase the amount of beef into the national meat market by 650,000 metric tonnes annually by 2015.
- Raise the national average slaughter weight of cattle from 250kg to 350kg
- Increase the national herd growth rate from 1.4 to 3.3%
- Provide commercially viable partnership between livestock producers and markets along the value chain.
- Improve the production system along commercial and business operations
- Establish a National Livestock Breeding Policy that promotes technology adoption for faster growth of the industry.
- Establish a National Meat Development and Marketing Corporation for the long term sustenance and growth of the industry.

The expected outputs are:

- 44 Commercial livestock breeding centres to produce required animals for herd growth and fattening
- 8 Artificial Insemination outfits
- 35,000 smallholder fattening operators to produce well fed animals for slaughter.
- Number 140 commercial feedlot operators
- 76 standard abattoirs linked to 76 number cold stores.
- Estimated 700,000 jobs in direct employment and spinoff
- Livestock Breeding Policy
- National Meat Development and Marketing Corporation

Primary Beef Value Chain Products

Fresh Meat

106. Raw fresh meat is by far the most patronized beef product in Nigeria. The value chain operates almost entirely by the private sector. The public sector used to contribute in the provision and management of abattoirs and livestock markets as well as meat inspection. However, with recent reflection of the dynamics of market and urbanization, a niche market for beef has emerged with the growth of hotels, restaurants and other outlets (private universities, hospitals, event management outfits etc) engaged in bulk and regular purchases of beef. These outlets have rekindled the demand for quality beef and stimulated the supply side. The Transformation Agenda is using this development as a major window of opportunity of intervention for the beef industry.

Nigerian Shish Kebab (*Suya*) and Barbecued (*Balangu*)

107. Suya and Balangu are the second most popular form of beef product consumed all over Nigeria in both rural and urban centres. Over the years it has carved a niche in the food chain and plays a very important role contributing to the nutritional well being of the citizens. This is an entirely private sector operation with a well defined chain from the live animal sourcing right to the consumer patronage most commonly conveniently located by the road sides or close to shops, convenient stores, nightclubs etc. These businesses have demonstrated their importance within the processing and marketing points of the beef commodity value chain. The Transformation Agenda Team will therefore work with and empower them for expansion in quantum and reach to further enhance the growth of the beef industry.

Dried Meat (*Kilishi*)

108. Kilishi is sun dried beef product enriched with spices and condiments widely marketed in Nigeria and exported. It is a very popular snack and on occasions served as full meal in the house, office and social gatherings. The drying enhances the keeping and shelf life of the product. The Kilishi enterprises are predominantly located in the northern states because of the sunny climate most suitable for the drying. But, the skills have since spread to other parts of the country with hubs springing up in other major cities in the central and especially south west of Nigeria. There are retail outlets in all major cities in the north and at every airport in the northern states. Like the Suya and Balangu, Kilishi is an important product of the beef value chain that the transformation agenda will use in the development and expansion of the beef industry. The Transformation Team has plan to engage Bauchi Meat Company (supplying 600 cartons of Kilishi to soldiers in various peacekeeping missions abroad) and other outfits to strengthen their links with key stakeholders to build partnerships that will lead to growth of their businesses, market expansion and overall growth of the beef industry.

Shredded (*Dambu nama*)

109. Dambu nama is another product now popular and regularly available in most food joints and supermarkets. It is also a snack or full meal with both domestic and potential export market that will be taken along with Kilishi.

Meat Pies and Pastries

110. Gala (made by UAC Foods) is probably the only home product readily available even in motor parks. However, unbranded meat pies, meat rolls etc are popular snacks readily available in all eateries and shops. Companies like UAC have over the years been challenged with sourcing regular supply of standard quality beef for sustained production. The informal and street market and employment opportunities from these products are huge. As the outputs of the small holder fattening and feedlots become available, the requirements of companies like UAC will be assured.

111. This is an area the Beef Transformation Agenda will emphasize with particular focus to women empowerment since their small scale (home-based) enterprises are the major source of the meat pies and rolls. The Team will partner with Women Empowerment Programmes in various

states on how to support them for expansion and encourage upstarts. These products also have great potential for export.

Corned Beef

112. Imported Corned beef brands are readily available in Nigerian local and super markets. This demonstrates the market availability for the product which needs to be fully exploited for both domestic and export. The Bauchi Meat Company which used to market the Blue Ribbon of corned beef in the 1970's is being reactivated into production of corned beef to complement its Kilishi export to its contractual clientele and other market outlets. The Team will partner with the Company to pioneer the re-introduction of home brand of corned beef into the domestic and export markets.

Global Supply and Demand of Beef Outlook

113. Nigeria is not a major player in the global beef industry in both import and export markets. Table 7. Summarizes Nigeria's position in livestock trade and production as reflected in the FAO (2009) Report on the State of Food and Agriculture (livestock in the balance)

Table 7: Nigeria's Livestock Production and Trade

Production (1000Mt)	Meat		Beef	
	1995	2007	1995	2007
World	206853	285700	54191	61881
Dev. Countries	99572	110250	30774	29398
Nigeria	847	1108	267	287
Nigeria as % of world	0.41	0.39	0.49	0.46
Nigeria as % of Dev. Countries	0.85	1.00	0.87	0.98
Trade in Livestock Products (million US\$)				
	Livestock Imports		Livestock Exports	
	1995	2006	1995	2006
World	73972.5	117599.4	74264.9	120258.7
Dev. Countries	58780.6	90760.6	65181.8	98939.1
Nigeria	277.2	323	0.1	0
Nigeria as % of world	0.37	0.27	0.00	0.00
Nigeria as % of Dev. Countries	0.47	0.36	0.00	0.00
Meat Consumption kg/person/year				
	1995	2005		
World	35.7	41.2		
Dev. Countries	77.3	82.1		
Nigeria	7.8	7.5		

The Nigerian Outlook

114. There is a large gap between demand and supply of meat and meat products. In 1988, for instance, beef supply stood at 260,000 tons while goat meat was 209,000 tons in the same year (EIU, 1990). This is a far cry from the effective demand for meat and meat products. The share of animal protein in total protein intake has therefore remained far short of officially estimated minimum requirements of about 75 grams of total protein and 40 grams of animal protein per person per day. In 1985, for example, only 7.0 grams of the total 45.0 grams of protein consumed by Nigerians was of animal origin. The situation today is no better. Indications are that the situation is worsening as population growth is not matched by a corresponding rise in animal per caput production. This suggests that the contribution of animal products to protein consumption is less than 16 per cent. The country has, therefore, a serious deficiency of daily per capita protein intake necessitating the importation of livestock and livestock products.

Transformation Strategy

Key Constraints and Interventions along the Beef Value Chain

115. The Beef Transformation Agenda Team identified five primary key constraints that need to be addressed within the transformation period (2011-2015). These are summarized in Table 8 along with the value chain points and the effects of the constraints of the value chain

Table 8: Key primary constraints affecting the value chain points and their effect.

Value Chain Point	Identified Constraints	Effect Of Constraints
Primary production, household and primary market	Low input of technology in beef production	i. Lack of selection for breed improvement ii. Poor application of husbandry technology to increase production iii. Sub-optimal herd structure of herd off take yielding low returns over a long investment period
Small scale primary production and secondary market	Poor integration of commercial livestock with crops production.	i. Poor crop-livestock production linkage using surplus grains for livestock feeding. ii. Undeveloped pastures and concentrates feed industry. iii. Low Capacity in modern beef production system
Processing, and value addition	Low investment in market infrastructure	i. Lack of well developed market infrastructure (abattoirs, cold chains, retail outlets, hygienic transportation etc) for beef value chain markets
Marketing and Investment support	Weak linkage along the value chain system.	i. Inadequate market communication and dissemination ii. Poor linkage between the high level markets and production iii. Lack of credit support along the value chain

Large scale, industrial, tertiary and export market	i. Lack of standardization and regulatory mechanism	i.Low quality beef produced for the market ii. Lack of enforcement of public health regulations and standards (e.g. traceability and certification) limits export.
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Implementation Plan Strategies

116. The strategy of implementation of the action plan is summarized as follows:

Supply-Demand Linkage

117. Under the Transformation Agenda, an area of primary focus is linking the supply to the demand side of the value chain. With Master Meat and other such meat trading companies linked to the consumers' market, the Agenda will link them to the suppliers of quality animals and functional abattoirs to process their meat. This will relieve them the burden of the backward integration some of them have embarked upon. In turn, more wholesome beef will be available at a more affordable price.

Inputs Supply

118. Agro-input supply for the livestock sub-sector has over the years suffered least support from the public sector. Therefore, under the Transformation Agenda, support will be provided to assist entrepreneurs to engage in pasture and concentrates feeds production, as well as other related input supply services. This support would be most beneficial to young entrepreneurs who would have the drive for self employment. The scheme would be developed in partnership with identified major suppliers for tutelage and capacity building.

Primary Cow-Calf Production

119. The starting point of the beef value chain is the young animal that will be reared, fattened and eventually slaughtered. The average age of fattened slaughter bulls now is 5 years at an average weight of 400kg. The bulk of regular cattle are slaughtered at an age of up to 6-7 years at a weight ranging from 200 to 300kg. At this slaughter age of both groups, their meat has lost its tenderness and for the latter aged group, the meat has greatly toughened. Therefore, under the Transformation Agenda, herds will be registered and classified to serve as contract source for animals that will go into an improved management system to produce animal for slaughter at a younger age and heavier weight. This scheme will be linked up to the development of local dairy herds who need not keep their calves beyond weaning. Current merchants and new entrepreneurs will also be enhanced to identify such animals from livestock markets and transhumant herds while in transit for purchase and fattening.

Growers, Herd Replacement and Growth

120. Managing growing animals for slaughter and selection of replacement heifers needs appropriate husbandry and feeding. There is an emerging demand for in-calf heifers for growing and upstart dairy farms. As cow-calf operators for beef production grow, the demand for such

replacement heifers will grow. From registered herds, interested owners will be empowered to grow into this supply group.

Fattening and Finishing

121. For the production of quality beef, the fattening and finishing stages of the slaughter animals are very important. Under the Transformation Agenda, incentives will be provided for the growth of small holder fattening and growth of feedlot operations that will provide quality slaughter animals to standard abattoirs for hygienic processing of the meat.

Transformation of Marketing and Investment Support

122. Information gathering and sharing will be enhanced under the Transformation Agenda to provide the FDL with a functional website with appropriate links with relevant institutions to provide vital information. Dialogue, advocacy and partnership will be intensified to bring producers, marketers, processors, retailers and financial support service providers closer for mutually beneficial business partnership.

Processing and Value Addition

123. There is limited industrial processing and value addition for beef in Nigeria. With improvement in production of quality beef, companies like UAC will expand its production of its products such as *Gala*. The support targeted towards “Women in Beef” enterprises will expand the overall national output and availability of the products. The emergence of supermarkets and grocery stores in most cities is providing market outlets and opportunities needed for business expansion.

Cross-cutting Issues

124. The Beef Transformation Agenda has been articulated with gender consideration and appropriate opportunities identification for youth and women empowerment. As programme areas are agreed upon experts’ inputs will be incorporated in areas of sustainable natural resources management and adaptation of climate change.

125. The detailed cotton action plan is contained in annexure 7 of this document.

9.8 Dairy Transformation Plan

126. Dairy is the branch of agriculture concerned with the production and use of milk and milk products. The dairy industry is a dynamic industry because there is an ever-increasing consumer demand for milk and milk products. Milk is nature’s most universal and perfect food. Management of a dairy operation is challenging. Goals must be defined and resources allocated to achieve those goals. In Nigeria as in most countries of the world, livestock has traditionally been the main source of affordable high quality protein of animal origin (meat and milk). Therefore, the need for rapid improvement in the productivity of livestock is a justifiable venture. The low level of production of our indigenous cattle has provoked the desire to raise the production potentials. Artificial Insemination (A.I.) and Multiple Ovulation and Embryo Transfer

(MOET) are powerful biotechnological tools that allow maximization of the use of sires and dams of proven genetic merit within the shortest possible time. Thus semen from genetically superior genetic bulls like Friesian Holstein can be used to crossbreed our indigenous cattle. The resulting offspring will produce more milk and meat than local contemporaries and will be more resistant to local diseases and harsh environment than the exotic parents. Milk production in Nigeria is based on indigenous breeds, exotic and their crosses. However, indigenous cattle maintained under agro-pastoral system constitute the main source of milk supply in Nigeria. Genetic improvement through crossbreeding of our indigenous cattle is justifiable as a long term, cost effective approach to attaining self-sufficiency in milk supply.

However, the goals under the dairy transformation agenda are:

- (a) increase national dairy production from 469,000mt to 1.1 million mt by 2015, by attaining an average milk yield per lactating cow from under 500 litres to 2,000 litres per lactation by 2015 and
- (b) Raise income of dairy producers' households by at least US\$ 285 million (30% import substitution in 2013). Achieving these goals will create wealth for more than 12 million pastoralists with attendant job creation.

Also, objectives of the Transformation Agenda are to:

- Achieve increase in dairy production from the current 469,000 mt to about 1.1 million mt over the period of 4 years.
- Generally raise productivity levels of the national cattle herd through the demonstration and adoption of improved production technologies. Clusters of Agro-pastoralists and Peri-urban producers would be linked up with processors, inputs and service providers in feeds, genetically improved animals, animal health care and other extension services.
- Organize milk producers in an initial 17 States into Village Milk Producers' Cooperative Associations with a minimum of 10 producers per Association – all the village milk associations in a state would fuse into an apex cooperative Federation.
- Encourage private sector-led milk collection, processing, and marketing. In addition to the current private milk collection, several farms amongst indentified clusters of Peri-urban farms and commercial dairy farms will be supported to emerge as milk collection and processing hubs.
- Support advocacy in promotion of consumption of locally produced fresh milk through school feeding programme and campaign on the health benefits of milk consumption.
- Place systematic restrictions on powdered milk importation to increase local sourcing and encourage importers to get involved in local milk production.

- Link demand for milk-based products in the industrial and traditional food sectors to reliable supply by introduction of a package of improved production, supply chain management, favourable policies, and advocacy with end-users.
- Establish a National Dairy Development and Marketing Commission (NDDMC) to oversee the overall development of the dairy subsector. This commission will then later become a Corporation.

Expected Outputs

127. Strong value added chains of locally produced fresh milk

- Increase the productivity level of the national herd (indigenous cows) from the current under 0.5 litres of milk/cow/day to 2 litres and above by 2014.
- Strong market institutions/linkages established for long term sustainability and development of the Dairy industry and livestock sub-sector.
- Appropriate and profitable processing technology is developed and promoted.
- Supply lines for premium quality fresh milk are developed.
- Households economically empowered by commercial activities at the milk collection centres.

128. The farmers collectively generate an income of US\$ 285 million in the first year from the cost sales of fresh milk at each of the milk collection centres per annum at an estimated guaranteed price of N80.00 per liter. It is estimated that the collection centres will operate for 300 days per annum

National Supply and Demand of Milk

129. Nigeria relies heavily on imported milk powder to satisfy the consumer demand for milk and milk products. The FGN dairy sub-sector transformation agenda aims at developing more intensive and sustainable farming systems in order to partly achieve self-sufficiency in milk production sector. Estimated total market volumes (Presidential Committee on dairy development – 2004) revealed that current annual demand and estimated annual production of milk are put at 1,100,000,000 liters and 400,000,000 liters with annual demand/supply gap of 700,000,000 litres. The demand/supply gap is covered with imported milk powder. The demand/supply gap has thus further increased.

Transformation Strategy

Key Constraints

- Unorganized fresh milk collection, processing and marketing:
- Poor productivity status of indigenous cattle breeds due to poor genetic make-up
- Poor nutrition of lactating cows

- Massive importation of cheap powdered milk:
- Lack of national capacity and skills in dairy farm management:
- Policy – Lack of a clearly defined dairy development policy

130. Nigeria however has good potential to increase its dairy production, provide employment and generate wealth based on favourable human, climatic and agro-ecological factors.

Strategies for Dairy Sub-Sector Development

131. Taking into account the above mentioned potentials and constraints, dairy development potential will be centred on establishment of full-service milk collection centers, combining milk collection and quality control with input supply, farmer training, extension and veterinary services as well as Artificial Insemination (AI), near a mini-dairy/ commercial processing plants.

132. These processors will provide opportunities to smallholder farmers, allowing them to increase their volume of fresh milk while at the same time providing livelihoods to small scale producers. In addition to milk collection stated above the following interventions will form part of the start-up programs of the transformation agenda:

- Breeding and upgrading of the national herd
- Peri-urban and smallholder operations:
- Building alliances among producers, processors, and milk products marketers:
- Restriction of cheap powdered milk and other milk substitutes:

The above approach will contribute to:

- strengthening fresh dairy products markets to stimulate milk production
- strengthening milk processors to improve quality and value-addition
- improving dairy farm business management from subsistence to commercial level
- Increasing number of households owning improved dairy cattle in areas of comparative advantage.
- increasing the quality of milk at dairy farms and factories
- increasing the use of locally produced milk in milk processing factories in Nigeria

133. The proposed dairy transformation agenda hinged on improved milk collection as against the un-structured informal hawking by Fulani women is a new opportunity for many Nigerian small- holder cattle farmers and an engine of economic growth. The establishment of milk collection centers at targeted areas in the North East, North West and North Central States will provide opportunity for the farmers to increase incomes. The overall goal of the transformation agenda on dairy is to contribute to sustainable improvements in the welfare and livelihoods of farmers, processors in the dairy sub-sector, raising incomes of farmers, processors and local marketers in selected states, and thereby also increasing food security. The current situation of the dairy sub-sector can be changed with the establishment of milk collection centers and linking these milk collection centers with organized processors to utilize the produce from the farmers within the territory.

134. The situation suggests the importance of identifying commercial processors that will be willing to provide a guaranteed daily off-take of the milk at the centers from the pastoralists. Friesland Campina (WAMCO) Nigeria Plc for example has indicated willingness to collect a minimum of 150,000 liters of milk per day from pastoral farmers.

135. The detailed cotton action plan is contained in annexure 8 of this document.

9.9 Leather Transformation Plan

136. 'Leather' is a durable and flexible material created via the tanning of putrescible animal raw hide and skin, primarily cattle hide, and sheep and goat skins. It can be produced through different manufacturing processes, ranging from cottage to large industry. The global market for skin-based leather (a major Nigerian export product) was estimated at USD29billion in 2008. According to Trademap data, China dominates the world market with a third of the world export share in 2008. Other leading world producers include Italy, Brazil, India, Pakistan, Hong Kong, France and Germany. Nigeria exports about USD680 million worth of leather, representing about 3% (see Figure 65 below) of the world trade in 2008. However, ComTrade put the Nigerian trade figure in 2010 to USD3billion which undoubtedly make leather the leading foreign exchange earner for Nigeria among the non-oil commodities

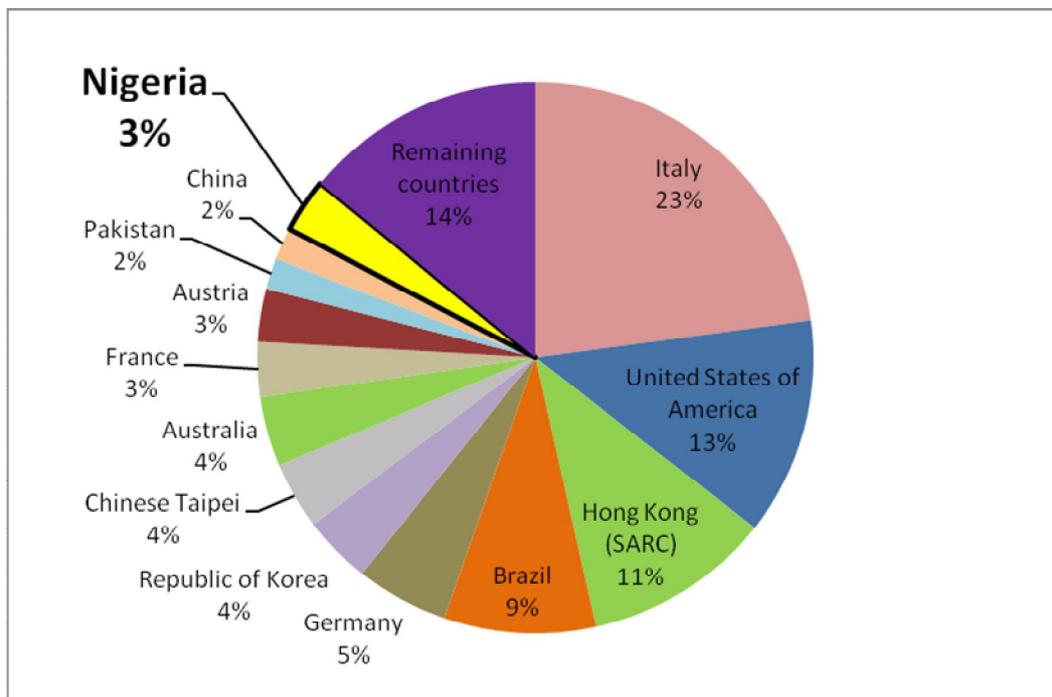


Figure 65: Global market share for Hides and Skin; 2008

137. Currently over 35 tanneries exist in Nigeria, over 30 of them are located in Kano. About 6 of these tanneries account for more than 80% of the Nigerian Leather export value. The remaining are either operating below capacity or laying dormant. Nigerian leather is considered one of the

best in the fashion world. Note should be made however, that Nigerian leather is all skin-based. Nigeria does not export hide due to the fact that using hide as *Ponmo* (processed large ruminants hide, principally cattle and camel for human consumption as delicacy and a times substitute to beef) provides premium for hide producers and traders more than when supplied to the industry for tanning. Actually, hide are imported into Nigeria from the neighboring countries (Mali, Cameroon, Senegal and other) for use as *Ponmo*. Tanners also import some quantity for use in their processing activities. This explains why the Finished Leather Goods (FLGs) industries import substantial finished hide-leather for its manufacturing processes. Below is the list of the countries that Nigerian Leather is exported to. Though in Table 9, Europe seems to dominate, currently China is becoming more significant in Nigerian leather trade.

Table 9: Export Destination of Nigerian Leather

Nigeria's leather: countries of destination % of total processed exports, 2008

Italy	58%
Spain	17%
China	8%
United Kingdom	5.5%

Constraints to Leather Industry in Nigeria

138. Despite its economic importance, the leather industry in Nigeria is constrained by the following:

- Effects of ecto-parasites, lacerations, flaying damages and inadequate salting resulting in large amount of rejects.
- Low level investment in the trading and transportation sector which slows growth of the sector
- Lack of locally manufactured tanning materials, thereby leading to importation of huge amount of chemicals (often times substandard) into the country causing environmental degradation and pollution.
- Underdeveloped effluent management system leading to pollution of the streams, waterways, air and farm lands.
- Poor administration and excessive documentation required to access the Export Expansion Grant (EEG), preventing the Small and Medium Enterprises (SMEs) to access the incentive meant to grow export
- Low price of hides for industrial use as compared to Ponmo which leads to the importation of hides for use by the local Finished Leather Goods producers. And
- Slow growth of the Finished Leather Goods sub-sector due to lack of incentives from the Government

Opportunities to Increase Leather Supply

139. Opportunity to increase the supply of leather into the tanneries became eminent with the increased install capacity of bigger and more modern tanneries in Kano. Currently an average of about 96,000 skins is available for the tanners per day from Nigerian slaughters (both from festival and daily slaughter). But the combined installed capacity of the functional tanneries is over 250,000 skins per day. However, about 54,000 skins are imported to raise the average to 150,000 daily. This means that the tanneries can handle more. Meanwhile the demand for finished leather is increasing world over in the international markers and also in the Nigeria FLGs industry.

Leather value Chain Description and Map

140. The value chain involved in leather is captured in the Figure 66 below. This comprise of five bundle of activities summarized as primary production, trading, grading, tanning and marketing. However, support services required from butchers associations, Federal Ministry of Agriculture-Raw Material Research and Development Council, hides and skin traders association, Nigerian Tanners’ council, College of Leather Technology and manufacturers association of Nigeria.

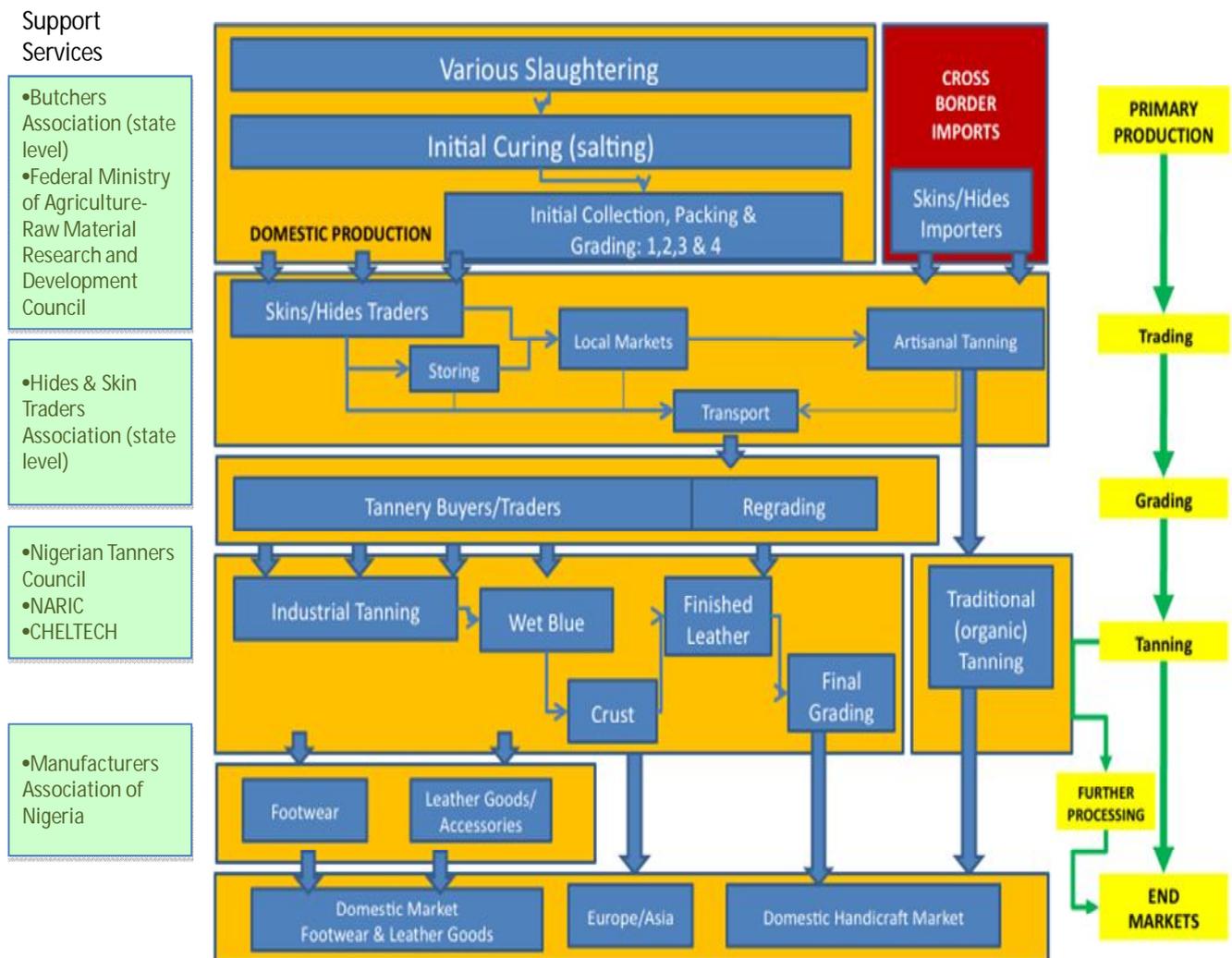


Figure 66: Leather value Chain Description and Map

7.2 Leather Transformational Targets and output

141. The setting of target is based on estimated current capacities of stakeholders that will be the recipients of the planned interventions. Consideration is also given to the conditions and nature of the proposed collaborating and implementing partners. Greater consideration is however based on the available resources, principally human, to the transformation team. These include Capacity Building, Infrastructure, Incentives and Policy. For the purpose of description, key intervention outputs are described below:

1. Skin Wastage: reduce skin damages at the primary production level by 1 million pieces of skin per year through cap city building of herdsman, butchers, flayers and skin traders – training of 10,000 producers in improved animal health and skin management practices.
2. Finance: provision of loans to 2000 leather producers, processors, marketers, small scale skin traders, and FLG producers
3. Infrastructure:
 - a. Establishment of 1000 SCCs, 7500 ha of acacia plantation and 2 tanning extraction companies nationwide
 - b. 8 tanneries establish effluent management plants
4. Policy:
 - a. Reviewed administration and access procedures of EEG – 500 small tanneries and FLG exporters access the EEG
 - b. Reduce importation of FLGs by 10% through tariff review and import substitution measures
5. Marketing: supported the development of 20 Nigerian brand of FLGs and establishment of 3 shoe manufacturing clusters in Kano, Kaduna, Abuja, Nassarawa, rehabilitation of 2 cluster Aba, Onitsha and relocation of Lagos under-bridge shoe cluster

With this, Leather Transformation plan will create:

- over 17,000 entrepreneur and professional jobs and over 120,000 unskilled jobs,
- generate wealth in excess of NGN 324billion,
- reduce import of FLGs by 10% and 4) enable the private sector to invest more in the sector.

142. The detailed cotton action plan is contained in annexure 9 of this document.

9.10 Agricultural Extension Transformation Plan

Goal of the Extension Transformation Agenda

143. The goal is to put in place a legislated, multi-plural, responsive, and market-oriented extension system with: an assured and regular sources of funding, a well-trained and motivated staff, effectively catering for a variety of actors along targeted value chains of interest to the government.

Specific Objectives:

- i) Make a case for the establishment of the Federal Department of Agricultural Extension (FDAE) to oversee, monitor and provide the leadership needed for an efficient and effective agricultural extension and advisory service delivery in Nigeria.
- ii) To review the agricultural extension policies within the subsisting agricultural policies and recommend appropriate policies that will ensure the effective participation of all stakeholders in a stable policy environment and adequate funding for the delivery efficient and effective agricultural extension and advisory services.
- iii) To recommend appropriate Institutional structures and arrangements for the delivery of effective and efficient multi-plural agricultural extension and advisory services in Nigeria.
- iv) To recommend demand-responsive extension systems/approaches and tools that will ensure the delivery of efficient and effective agricultural extension and advisory services for all the multi-actors in the targeted commodity value chains of interest to government.

The Value chain Approach and Extension Delivery

144. Adopting the value chain approach to economic development and poverty reduction in Nigeria's agricultural transformation agenda is a step in the right direction at the most opportune time. Previous strategies employed, which mainly focused on improved production yielded unsatisfactory result. The value chain approach involves not only addressing major constraints and opportunities faced by farmers or producers, but also those of processors, traders and other businesses at multiple levels and points along a given value chain. The process also include facilitating a wide range of activities such as: access to inputs, strengthening the delivery of business and financial services, enabling the flow of information, facilitating improved linkages between actors and to higher-value markets. All these activities are potential sources of income generation and employment creation for both skilled and unskilled labor (Figure 67). That is what makes the value chain approach different from other approaches and enhances its attractive to development practitioners.

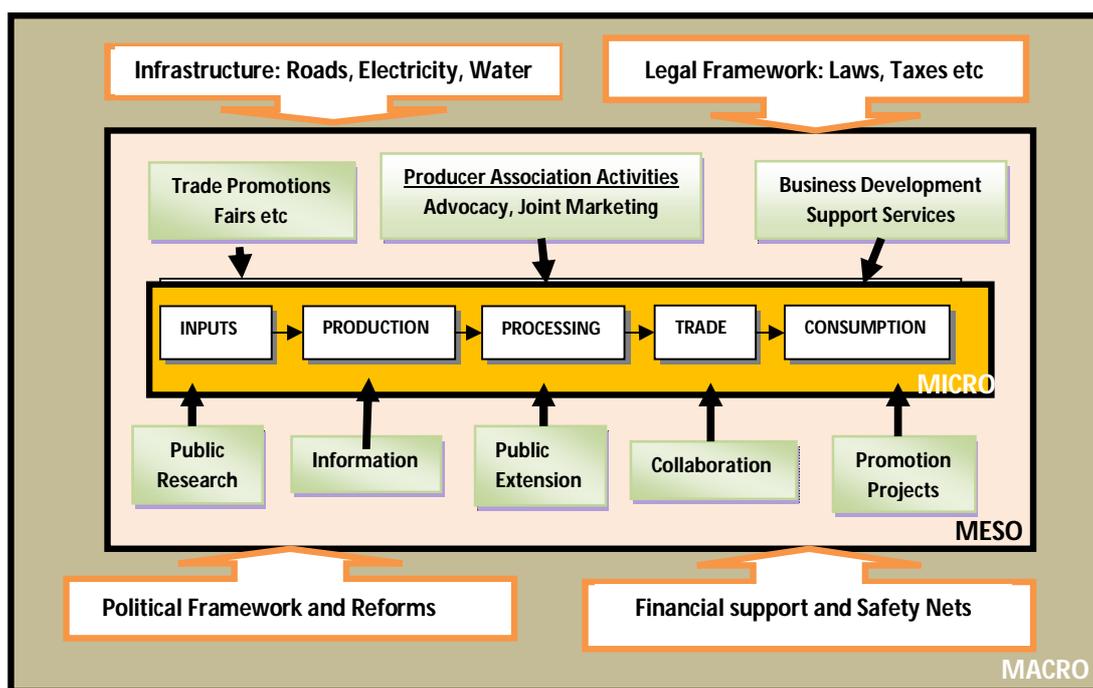


Figure 67: Value chain Actors, Supporters and Promoters

145. However it is important to note that the value chain approach is a “demand driven” approach popularly referred to as “market driven” approaches. It is different from the traditional “supply push” approach whose emphasis is production oriented. Under the traditional approach producers are encouraged and supported to improve productivity through the use of improved seeds and husbandry practices. The Nigerian agricultural sector evolved over the years to perform this function. This implies that the institutional settings and basic trainings and knowledge of majority of the work force are strategically structured to perform traditional function. There is therefore the need for massive re-orientation and capacity building of major actors, facilitators, supporters and promoters to have a better understanding of the approach as the campaign progresses.

The “value chain” metaphor is the starting point.

- The chain a relatively flexible structure that will change its form frequently without changing the basic structure.
- There is also one physical feature of a chain: It is impossible to move it by pushing it. The only way to move a chain is by pulling.

146. Translating this metaphor takes us to the main difference between value chain Approach and traditional approaches. The latter often had a tendency to strengthen the supply capacity of producers and small companies without having a confirmed order, i.e. they assumed that a market would be available, which sometimes was the case and often not. But the value chain approach starts from an understanding of the final demand and works its way back through distribution channels to the different stages of production and manufacturing. This is the major challenge. In a situation where most of the supporting institutions and actors only know how to “push” rather

than “pull” then the ended result can easily be predicted, the “chain” will remain stocked in one place. It is equally important to note that the value chain promotion process is knowledge based and demanding, its success depends on the quantum and rate of generation and dissemination of appropriate information and knowledge on challenges, problems and opportunities facing major actors and service providers in the selected value chain.

Extension Tools/Methods

147. In order to meet the various needs of the different actors in the value chains of interest being promoted by government; both traditional (print: assorted Extension Publications & electronic: Radio, TV & traditional ICTs) and modern tools/methods (Mobile phone & Internet) will be employed. Specifically, recommended tools/methods are presented below based on National Agricultural Research Extension and Liaison Services (NAERLS) Submission:

Publications:

148. This will include the assorted Extension Publications on every crop commodity considered in the agricultural transformation agenda. Guides, Bulletin, Posters, Leaflets, Handbills and Manual would be made on production, processing, product utilization and marketing of the crops involved and would be made available in English, pidgin and applicable local languages across the federation

Radio and Television:

149. This will involve the the Radio and TV farm broadcast packages by NAERLS to support the Agricultural Transformation Agenda including

- Sensitization and Mobilization Jingles
- Radio and TV Support for the Agricultural Transformation Agenda
- Broadcasting: (In English, Pidgin, Yoruba, Hausa, Igbo, Ffulde, and Efik).

Information Communication Technologies (ICTs):

150. Stakeholders must therefore get set for the mainstreaming of ICT in agriculture because there is really no choice. If well planned and implemented, the use of ICT in agriculture like in all spheres of live will lead to higher operational efficiencies because it will enhance faster, cheaper and sustainable communication – the hallmark of a good extension system; a critical success factor for the much desired agricultural transformation because of its ever increasing importance. A Value chain agricultural development approach, powered by a market-oriented agricultural extension and advisory services, must be driven by ICTs especially the new generation ICTs, now commonly referred to as Web 2.0 for Development (Web 2.0. 4Dev), in order to be both successful and competitive.

The Farmers’ Helpline” (A Mobile phone/Web-based Support):

151. Given the glory of NAERLS-operated Nigerian Question and Answered Service (NAQAS) in receiving and processing request from almost 4000 farmers, farmer groups, marketers,

policy-makers and other stakeholders in the agricultural sector; it is strongly recommended that the NAQAS be upgraded into a sustainable “Web/Mobile phone-based Farmers’ Helpline” which will be: *a comprehensive web and mobile phone-based agricultural extension and advisory service for all the value chain actors*, as presented below. As part of the spinoffs, it will also sustainably reduce the noxious challenges associated with fertilizer distribution in Nigeria.

The services and technologies are categorized as follows:

Phone-based:

- Phone to Phone SMS (both voiced and text)
- Computer to Phone SMS (both voiced and text)
- Computer to Phone Voice Mail
- Phone to Phone Voice Mail

Web-based:

- E-learning
- Online Radio,
- Podcast,
- Social Media (Blog, Facebook, Twitter, and other Google applications),
- Live online text chat
- Electronic newsletter and other publications (PDF, MSWord, etc)

152. The detailed cotton action plan is contained in annexure 10 of this document.

9.11 Poultry Transformation Plan

153. The value of the commercial poultry industry in Nigeria is estimated at N80 billion (\$600 million) and is rated as the most industrialized component of the livestock Sub-sector. Over 25 million people are employed directly and indirectly in the commercial poultry industry. The entire poultry subsector contributes over 25% of agricultural Gross Domestic Products. Commercial and rural family poultry both attract private investors although it is also the most fragile livestock component having attendant high risks.

154. Nigeria’s poultry industry is composed of local unimproved breeds and the high performing commercial breeds. Over the last 50 years, the exotic breed has made an aggressive incursion into the productive economy of the country. While the local chicken is driven by traditional system of management, the exotic breeds have stimulated an industrial advancement of the poultry industry through specialization as egg or meat type strains to satisfy the increasing demand for poultry commodity in the food market. The incursion by the exotic commercial strains into the poultry industry is as a result of globalization and filling a demand vacuum in the poultry product consumption gap. Therefore, the role of commercial egg and meat production to shape and reshape the poultry industry will be key to the transformation agenda within the context of evolving dynamic of the poultry industry for growth and competitiveness.

155. The goal of the Transformation Agenda is to Support the sustained growth of the poultry industry with expanded capacities for regional competitiveness so as to contribute more to animal protein supply, job and wealth creation.

The specifics objectives are however to:

- Provide, mainly through private financing, 267,000 Grand Parent Stock (GPS) and 40,000,000 Parent Stock (PS) for commercial layer flocks in 4 years.
- Exploit the improved commercial layer hybrid strain (Shika Brown Layer) developed by the National Animal Production Research Institute, Shika, Zaria to meet 50% of the GPS and PS requirement of the industry.
- Ensure the completion of the process to declare Nigeria free of Avian Influenza (AI) so that the export potential within the ECOWAS region for DOC and Hatchable eggs produced in Nigeria can be realized.
- Address the shortage of soybean meal and cake to commercial feed mills by introducing to feed mills unconventional protein source ingredients that have been developed by the Raw Materials Research and Development Council (RMRDC) such as vegetable-carried blood meal [VCBM] and rumen content blood meal [RCBM]) as well as by ensuring greater availability of brewers' dried grain (BDG) from the breweries.
- Promote supply of complete feed or supplementary feeds to scavenging rural family poultry through established Agro Dealers or, in their absence, through private Rural Poultry Feed Sellers (RPFS).
- Ensure that more than 50% of commercial farms are enrolled in a Poultry Health Insurance Scheme; and also ensure that 50%-75% of rural family flocks receive Newcastle disease vaccination regularly from private community poultry health workers (CPHW) working in each village.
- Introduce processing systems that convert battery cage manure into organic fertilizer for sale or utilization on crop farms.
- Support investment in small, medium and large scale poultry meat processing and marketing infrastructure from manual processing in the live bird markets to automated processing plants.
- Continuously review emerging challenges in the local and global poultry industry in relation to poultry transformation stated objectives.

Expected outputs

- A. Increased investment in commercial poultry industry to create 51,300 jobs by:
- Injecting 270,000 Grand Parent Stock (GPS) and 40,000,000 Parent Stock (PS) from Shika Brown Layer and other sources into the industry between 2012 and 2015.
 - Increasing local production of soy bean and alternative protein sources for poultry feed.

- Introducing a private national poultry health insurance scheme (PHIS).
- Converting battery cage manure into a value-added by-product for sale.
- Enabling export of domestic DOC and Hatchable eggs.

B. Creation of 131,000 jobs in rural Family Poultry development through:

- Effective disease control and bio-security intervention programme to reduce production cost and mortality of birds.
- Introduction of Community Poultry Health Workers.
- Introduction of Rural Poultry Feed Sellers.
- Introduction of small scale processing, storage and secondary markets.

Poultry performance levels

156. The driving force in commercial poultry industry is production efficiency that is based on quantifiable and predictable production parameter that drive returns on investment. The market is therefore controlled by best practices through production inputs that determine outputs. Local chicken have maximum capacity to produce 80-120 eggs per hen per year and a cock weighing 1.5-2kg by one year of age. In contrast, commercial layer produces an average of 220-260 eggs per hen per year. Broilers are finished at 8 weeks after attaining an average weight of 1.8-2.5kg.

Meeting national consumption level

157. A protein requirement of 53gm per head per day is a World Health Organization (WHO) recommendation for healthy growth. Poultry meat and egg consumption is vital in this regard. The 2008 Food and Agricultural Organization (FAO) data puts the total Nigerian poultry population at 175 million. Direct relation of the chicken population at average carcass weight of 1.4kg showed a daily contribution of 5gm per caput from poultry meat. This is far below the 35gm recommended to be provided by animal sources.

Consumption pattern

158. The consumption of meat and egg are still considered a luxury in the rural areas where household incomes are significantly lower than national average. Also, the market demand for the local chicken is on the rise in the urban centres, though reared in the villages, the supply pressure on local chicken is driven from the urban centre for sustained consumption. In the urban settlements, consumption though heightened at festivities, is however consistent with a programmed production and demands to meet the requirement of food outlets across the country. There is a consistent growth but, a rarely undulating demand pressure on inflow of poultry for the urban needs. This trend will continue with industrialization of the urban centres to meet efficient food supply in view of the changing habit to accommodate social flexibility and evolving trends as seem in other parts of the world where poultry has become the most consumed meat source through direct and ready-to-eat processed food.

Poultry Value Chain

159. Commercial poultry industry has marginal value chain in the processing industry for local and export opportunities. However, poultry droppings are fast becoming an interstate business.

Dry poultry droppings have added to the profit net of the industry. However, the demand is heightened in the dry season where dry waste are bagged for transportation to northern states of Kano, Plateau, Kaduna and Bauchi for use as organic fertilizer especially in dry season farming. This development has contributed in decreasing environmental pollution within the farm settlement while acting as a potential danger in disease transmission. Mode of treatment and sterilization of dropping used in organic farming is therefore important in disease control policy.

Constraints

160. Commercial poultry industry has continued an upward growth with increasing capacity of existing farms while the rate of new entrants around peri-urban settlement is encouraging. However, some farms are equally battling with survival in the industry due to a wide range of problems. The key constraints to production that will be addressed are broad based problem that require collective input through policy articulation that will promote a measurable growth in the industry. These are:

- Inadequate supply of imported commercial breeder stock as Shika Brown Layer has not been able to provide parent stock for commercial layer farms
- Increasing activity of quacks and fake products in the market while there is irregular supply of vaccines and poor bio-security.
- There is an increasing cost of feed leading to compromises in quality and standards as production capacity of free range birds are still low due to poor supplementary feeding.
- Low investment in large scale processing facilities due to lack of clusters and contrast production.
- The industry has failed to identify export and niche markets due to the absence of value addition while the ECOWAS market has not been exploited to its fullest.
- Family product niche that can provide catalyst for programmed investment in communal poultry farming that is relevant to economy of scale are yet to be developed.

Overview of Poultry Commodity Subsector Transformation Plan

161. The target of the transformation agenda is to develop an investment cushion and the repositioning of the poultry industry through a stress relieving strategy by militating against constraints of volatility, rising production cost and redefining international barriers to stabilize the industry. The intervention strategy will be considered in line with the following components:

- Renewal strategy to inject new breeder stock into the poultry industry to rejuvenate the egg and meat strain supply lines, while Shika Brown Layer developed by local research is repositioned to favourably compete in the commercial egg market.
- Building an Investment security through appropriate intervention to reduce production cost by alternative feed ingredients, standardizing practices and sustaining disease control strategy.

162. The transformation Agenda has further developed an action plan to address other key constraints in production such as:

- ✓ **Health care plan:** A target of 50 % participatory involvement of commercial farms in PHIS through VHMO on promoting investment security is to be achieved. Also, a coordinated poultry health control service will be achieved by establishing private Community Poultry Health Workers in at least 387 Local Government Area Councils in the country for rural poultry farmers.
- ✓ **Feed Quality Assurance**

163. FMARD will establish poultry feed ingredient requirement and harmonize with the existing Standard Organization (SON) feed standard for gazetting. It will also finalize the operating standard for the milling industries and also promote Rural Poultry Feed Sellers (RPFS).

- ✓ **Feed Grade Cassava Chips**

164. The action plan will entail public awareness on the use of feed grade cassava chips (FGCC) for poultry feed by encouraging 10% addition in poultry diets with the aim of reducing cost pressure on maize and wheat as the main source of metabolizable energy in poultry ration. FMARD and NIAS will jointly establish and enforce standard protocol on the quality of FGCC used in the industry. The projected feed requirement of 2.4m MT, 3.0m MT, 3.125m MT and 3.3m MT for 2012 to 2015 respectively is programmed into the action plan to meet the targeted growth.

- ✓ **Agro-industrial By-Product (AIBP)**

165. This plan is to expand the raw material options in ration formulation. FMARD will create awareness of good drying and storage technologies for high volume AIBP like brewers' dried grain (BDG) and vegetable-dried blood meal (VDBM). The plan will also require an input from RMRDC to promote the adoption of field tested medium and high scale technologies such as vegetable carrying, solar dryer and spray drying of blood. FMARD will set up the apparatus to encourage breweries and slaughter houses to render and dry waste and by-product of relevance to animal feeds. However, Transformation Agenda's goal in increasing the national egg and meat production outputs to 1 million MT and 0.5m MT by 2015 will create substantial work force for job creation. It will help in consolidating the investment in the industry through insurance coverage. Expanding optimal feed ingredient is to assist in reducing production cost in order to increase access to protein source for the birds.

166. The detailed cotton action plan is contained in annexure 11 of this document.

9.12 Fisheries Transformation Plan

167. Fish constitutes about 41% of the total animal protein intake by the average Nigerian hence there is great demand for fish in the country. Nigeria requires about 2.66 million metric tons of fish annually to satisfy the dietary requirement of its citizens (150 Million). Regrettably, the total aggregate domestic fish supply from all sources (capture and culture fisheries) is less than

0.7 million metric tons per annum. Nigeria has to import about 0.7 million metric tons of fish valued at about \$500 million annually to augment the shortfall. This massive importation of frozen fish in the country has ranked Nigeria the largest importer of frozen fish in Africa.

168. It has been noted that Nigeria can be fully self-sufficient in fish production, while local capacity can potentially turn the country from being a net importer of fish and fish products to a net exporter. In order to effect this reversal, the Aquaculture Value Chain Group has focused attention on (intensive) aquaculture as the best mode of production to bridge the wide chasm between latent demand and local production. With a target to produce over 1million tons of fish per annum within the next 5 years, the Transformation of the fish industry will involve virtually all other sectors of the economy including air and road transport, education, agriculture, finance, science and technology, energy and telecommunications. However, the socio-economic benefits of a successful Transformation process will more than justify the immensity of the task at hand. It was projected that over 500,000 new jobs will be created directly from the Transformation process with a projected industry valuation in excess of N1trillion.

169. The goal of the Transformation Agenda is to create an enabling environment for the increased and sustainable production of over one million metric tonnes of aquaculture fish and to generate five hundred thousand jobs within five years.

The specific objectives are:

- a) Development of the various products along the aquaculture value chain
- b) Establish the chain linking up the market to consumers
- c) Establish, maintain and enforce quality standards along all the value chains backed up by appropriate regulation for the purpose of fish farms certification
- d) To reduce importation/eliminated aquaculture products and inputs
- e) To increase production of aquaculture products to arrive at over 1 million metric tonnes in 5 years
- f) Employment generation for food security of Nigerians
- g) To improve cultural, social and economic benefits from Nigeria's aquaculture resources
- h) To generate foreign exchange through export of aquaculture products
- i) To create enabling environment for small scale fish farmers to be part of the value chain
- j) To encourage clusters of farmers to produce fish that will service fish processing and packaging plants

Expected Outputs

- a) 1.25 billion fish seeds per annum
- b) Production of 400,000MT of fish feed per year
- c) Production of 250,000MT of table size fish in a year
- d) Create 100,000 jobs per annum for the next five years

Transformation Agenda Strategy

170. The strategy for the attainment of these goals is increase production and activities along the aquaculture value chain. The set goals were on the aquaculture production potential based on existing output using existing infrastructure thus; to meet existing and projected demands through aquaculture production will therefore require doubling the hectares (previously 60,000ha) under production, i.e. to 120,000 ha at 18 tons per hectare maximum production, the establishment of WRS and other intensive systems that can produce 40 tons per hectare or combination of the various systems.

Market Development

However, coordination and support from the Government is critical to the success of this programme. The coordinating unit should be autonomous of the bureaucratic system if targets are to be met within the stipulated timeframe.

Table 10: Fish Supply – Demand Projection (2000 – 2015)

Year	Projected Population (Million)	Per Capita Fish consumption (Kg)	Projected Fish Demand(Tons)	Projected Domestic Fish Production (Tons)	Fish Supply Gap Deficit (Tons)
2000	114.4	13.5	1,430,000	467,098	962,902
2010	151.2	13.5	1,890,000	634,560	1,255,440
2015	174.0	13.5	2,175,000	730,248	1,444,752

It is projected that the per capita consumption of fish would be 13.5kg from 2010-2015, while projected demand for fish would have increase from 1,430,000tons in 2000 to 2,175,000tons in 2015, with supply gap deficit of 1,444,752tons.

Table 10: Aquaculture Value Chain Map

VALUE CHAIN	INPUT	PRODUCTION	PROCESSING	MARKETING	CONSUMPTION
ELEMENTS	Broodstock, Seeds, Feeds, Equipments, inputs	Flow Through, Water Recirculatory, Cage Culture, Integrated Culture	Fresh (Frozen), Smoked, Fillet, Fish Oil, Fish Cake, Food Additives	School Feeding Program, Fast Food Chains, Food Processing Companies	Restaurants, Fish bars, Homes, Schools, Prisons, Hospital
OPERATORS	Inputs Producers, Inputs Suppliers	Farmers Corporation	Processors, Packagers, Transporters, Aquaculture industries	Traders, Exporters	
TECHNOLOGY	Broodstock Banks, Hatcheries, Fish Feed Milling, Equipment Manufacturing, Research	Semi-intensive, Intensive	Ice freezing, Plastic Packaging, Canning, Oil Press, Smoking Kiln, Food additive (seasonings) Extraction, Research	Local market, Super markets, Home Delivery, Fish Shops, Logistics, Research	
STAKEHOLDERS	Private Sector, Research Institutes, Universities	Farmers, NGOs	Processors, Private Sector, Industries	Marketers, Transporters, NGOs, Private Sector	
POLICY	Import Tax Exemption Standardization Quality control and Assurance	Land tenure Tax Exemption Guaranteed Market Contracts Production	Quality Standards and Compliance Guaranteed market Infrastructure Development	Infrastructure Development Supply Agreements, Quality Assurance	
FINANCE					
MONITORING AND IMPACT EVALUATION					
COORDINATION, REGULATION, CONTROL, AQUABUSINESS DEVELOPMENT, SUPPORT					

171. The aquaculture value chain is recognized as comprising various levels as shown in Table 10. The fish value chain is essentially made up of 3 sub-categories – production, processing and ancillary. Fish fingerling hatcheries, Fish production, Fish feed production, Fish farm supplies are some of the activities which make up the production category, while Fish processing includes Filleting, Drying, Gutting, scaling and deboning, Smoking, Production of fish paste and Production of fish oil. Ancillary activities include Storage, Packaging, Warehousing, Marketing, Haulage, Distribution, Freighting and all export related activities.

Key Constraints in Aquaculture Value Chain

- Insufficient development of the fish processing.
- Under-utilization of the seafood processing capacity
- Insufficient knowledge, technology and investment for aquaculture products for storage and transport.
- Insufficient food safety and traceability standards.
- Unsustainable food safety practices along the value chain, hinders entering into higher value markets.
- Lack of Access to microcredit
- Insufficient investment and lack of information

Solutions

- Improvement on the post-harvest handling techniques and cold chain infrastructure
- Promoting compliance with EU standards and developing a National Standard
- Linking fish farmers to business development services and microcredit providers
- Supporting leading firms and extension agents.
- Engaging leading service providers and input suppliers to improve and expand services and input delivery to fish farmers.

Transformation Agenda Fiscal Targets

The Fish Value Chain Group has set the following Fiscal targets in the Fish industry.

1. Fish Value Chain total industry value of over N1 trillion within 5 years

- a) Hatchery Industry N50 billion
- b) Fish production industry N500 billion
- c) Fish Processing industry N900 billion
- d) Feed mill industry N230 billion

2. Fish Value Chain industry job creation of over 500,000 jobs within 5 years and with a minimum wage of N18,000 per annum translates to =N=9 billion in the hands of Nigerians.

- a) 10,000 Hatcheries jobs

- b) 500,000 Fish production Jobs
- c) 3,700 Fish processing jobs
- d) 2,500 Feed mill jobs

All jobs under the Aquaculture Value Chain give equal opportunity to men, women and the youths. Federal Government to receive over 1 billion Naira in new taxes 5 years down the line.

172. The detailed cotton action plan is contained in annexure 12 of this document.

9.13 Oil Palm Transformation Plan

173. The Oil palm (*Elaeis guineensis*) is native to West Africa, including Nigeria. It produces the world's largest and most consumed vegetable oil. The oil palm contributes 72% of the nation's vegetable oil production estimated at 1 million mt, and is therefore significant in growing the vegetable oil industry in Nigeria which has plummeted. Presently, Nigeria produces 1.3 million mt of vegetable oil as against the national demand of 1.6 million mt. The deficit of 0.3 million mt is met through import where the nation annually expends an average of USD 500 million.

174. The oil palm is grown in 24 states in Nigeria namely; Abia, Akwa Ibom, Cross River, Rivers, Bayelsa, Imo, Anambra, Ebonyi, Enugu, Delta, Edo, Ondo, Ogun, Osun, Oyo, Ekiti, Benue, Kwara, Kogi, Nasarawa, Plateau, Taraba, Adamawa and Kaduna (Southern Kaduna). The wide coverage of the oil palm in the country shows the enormous potential it has for employment and wealth creation in the affected states. Its use in local food preparations and by major food industries attests to its significant contribution to national food security for which more efforts must be made to grow the industry

Objectives

175. The specific objectives of the Oil Palm Transformation Agenda are as follows:

- i. Increase vegetable oil production (through the increase of oil palm production and processing) in order to achieve import substitution and cancel the deficit of 300,000mt which is annually met through import.
- ii. Increase the yield and productivity of both the unorganized and organized plantings.
- iii. Arouse greater interest and concern for engagement in competitive market activities within the oil palm value chain.
- iv. Create employment for the youth and reduce poverty in affected states.

Review of the Status of Oil Palm Industry in Nigeria

176. This section of the document on Oil Palm Transformation Value Chain Action Plan provides background information on where we are, and justifies the need for the industry to move

to a new and higher position. Information on the industry is hereunder presented on sector by sector basis.

Production

177. The key players in production are homesteads, smallholders and estates. About 2.1million ha of unimproved and unorganized semi-wild grove (SWG) grow in homestead with paltry yield of 2mt ffb/ha. Nonetheless, the SWG is a significant area of raw material supply that cannot be ignored in a future reform of the industry. The organized smallholders established 250,000ha of improved oil palm with an average yield of 8mt ffb/ha while the estate plantations totaling 110,000ha record an average yield of 10mt ffb/ha. If more vegetable oil production is to be realized from oil palm production, a key challenge will be how to improve the yield of the vast area of oil palm in the SWG around homestead, and how to get more smallholders and estates to efficiently put more land areas, the access of which is usually difficult, under production.

Agro-Input Dealership

178. Input supply for oil palm production such as improved planting material has often been from one point which is the Nigeria Institute for Oil Palm Research (NIFOR). The inability of NIFOR to cope with the demand pressure has resulted in farmers looking elsewhere and collecting seedlings from doubtful local and outside sources. Some Estate developers have had to import seedlings to meet their planting targets, where such imported seedlings failed in the field due to susceptibility to diseases (fusarium wilt) and other pests and plunged investors into financial crisis. The above raises the issue of unrestricted importation of oil palm planting materials. It has also drawn attention to the need for strengthening NIFOR in the short and medium term to meet the seedlings demand by farmers and estate developers.

179. Fertilizer application rate in oil palm is low, its accessibility and affordability is also restricted, with few benefitting from the fertilizer subsidy in the past. There is not only the need to put in place a better fertilizer distribution system that makes the commodity available at affordable rate, but also the necessity for advocacy and sensitization on the positive values of applying fertilizer and indeed agro-chemicals.

Processing (Upstream)

180. The capacity of the upstream industrial and integrated medium/small scale mills is 471mt ffb/hr. However, most of these mills are over -aged and need to be rehabilitated or replaced. There will be need for a re-assessment of existing mill capacities in order to determine the actual need of the country. Their major end products of upstream processing activities include the following:

181. Crude palm oil (CPO), Palm kernel oil (PKO), Palm kernel cake/mill (livestock feed) and Palm kernel. Others include: Palm kernel shell (used in firing boilers), empty bunch refuse (EBR- for mulching/organic manure) and Palm oil mill effluents (POME). With the exception of CPO and PKO, full commercial values are yet to be found for the other value chain products

Processing (Downstream)

183. Growth in the downstream sector is slow because of its complexities, huge capital outlay requirement and dearth of premium crude palm oil which is the primary raw material needed to run the refineries. About 35-40 major downstream refineries majority of which are old exist with a total capacity of more than 3,500mt/day. However, by far less than 40% of the installed capacity is functional. There is need to do a re-assessment of existing capacities, so that the actual capacity and need of the country can be ascertained

184. The major products of the downstream value chain include; Refined bleached deodorized palm oil (RBDPO), Palm oil fatty acid distillate (PFAD for soap) and Crude palm olein. Others include: Neutralized bleached deodorized palm olein, Crude palm stearin and Neutralized bleached deodorized palm stearin

Major uses of the above products include pharmaceuticals, cosmetics industries (lotions, creams), detergents/soap, food industries, lubricants, etc. Downstream refinery is the key to the development of oil palm industry in Nigeria. The vegetable oil deficit supply is actually to service the needs of the downstream industries as the requirement for local food consumption is not a problem. It is the unsatisfied requirement of this sector that has intermittently brought up the issue of unbanning and banning vegetable oil importation.

Market/Trade

186. The major challenge in this area is the absence of competitive market demand for various products. Market infrastructure is generally poor and produces standardization lacking, especially at the upstream sector. Unwholesome practices go on in the marketing chain such as the blending of palm oil with iron oxide in order to give it a reddish colouration. This makes the product unsafe for human consumption. There is poor market information which no doubt leads to poor produce pricing. Delay in harvesting fresh fruit bunches (ffb) as well as processing harvested bunches late, results in a high fatty acid palm oil product that lowers the returns to farmers/processors. It also makes premium CPO unavailable for the downstream refineries.

187. The palm oil and other product markets must be reorganized for more effective local and export market activities, now that more activities are envisaged in the upstream and downstream sectors. Sustainable market practices must be put in place to give more confidence in the quality and safety of products marketed. There is also need to promote the non-food uses of the oil palm products along the value chain. In this way too, some environmental challenges of the industry such as are caused by products like POME could be addressed.

188. The oil palm value chain target and implementation strategies under the Transformation Agenda are summarized in Table 11.

189. The detailed cotton action plan is contained in annexure 13 of this document.

Table 11: SUMMARY OF OIL PALM VALUE CHAIN TARGETS AND IMPLEMENTATION STRATEGIES

S/N	Major Activity	Present Status	Total to Add by 2015	Yearly Targets				Strategies
				2012	2013	2014	2015	
	Vegetable oil production (from oil palm)	1 million mt	2 million mt				30,063 mt	(i) Support for promotion of planting activities (ii) Support for agro-input dealership (iii) Support for upstream and downstream processing/refining (iv) Market development support
1-2	Support for planting activities and agro-input dealership	2.1 million ha (SWG)	-	26,250ha (13,125)	26,250ha (13,125)	26,250ha (13,125)	26,250ha (13,125)	(i) Targeting 2 ^{1/2} % of SWG (Two states- Ebonyi/imo) (ii) Advocacy/sensitization on improving productivity of SWG (SWG yield enhancement) and implementation of smallholder youth farms (5ha/youth farmer). (FMARD/OPGAN) (iii) Sensitization visit to State Government; seeking support for access to farm land/title to land/compensation. (FMARD/OPGAN) (iv) Identification/registration of participating homestead (FMARD/OPGAN/Ebonyi-agro) (v) Mopping up of oil palm nuts in NIFOR for take off of field planting in 2012. (vi) Identifying certified nursery operators and commencing nursery operation. (vii) Support to NIFOR for annual production of 9million sprouted nuts to plant 60,000ha-involving upgrade of seed production facilities (viii) Capacity building to staff/nursery operators (NIFOR/FMARD) (ix) Release and under-planting of 2 palms for every one palm to be felled. (FMARD/OPGAN/MANR/Ebonyi-agro) (x) Supervision of under planting. (FMARD/OPGAN/MANR/Ebonyi-agro)

		250,000ha (smallholder)	100,000ha	25,000	25,000	25,000	25,000	<ul style="list-style-type: none"> (i) Identification and registration of youth farmers. (OPGAN/MANR/FMARD) (ii) Liaison with SG/Communities for youth farmers' access to land (FMARD/OPGAN/MANR) (iii) Three weeks orientation/training for youth farmers in nursery operations, field establishment, maintenance and harvesting. (NIFOR/FMARD/OPGAN) (iv) Support/supervision for land clearing, field planting, and maintenance. (FMARD/OPGAN/MANR) (v) Support in identifying, supervising and organizing agro-input dealers for delivery of nuts, seedlings, fertilizer, fungicides, and wire collar equipment. (FMARD/MANR/OPGAN/NASC) (vi) Finalizing regulation on quality control/standardization and other issues on varietal releases. (NASC,NIFOR,RSPO,FMARD)
		110,000ha (Estates)	35,000ha	8,750	8,750	8,750	8,750	<ul style="list-style-type: none"> (i) Identification/registration of participating estates (FMARD/POFON/MANR) (ii) Supervision of agro-input delivery by dealers at estates. (FMARD, POFON, NASC, NIFOR, MANR) (iii) Supervision of field establishment and maintenance. (FMARD/POFON/MANR)
3	Support for upstream processing and downstream refining	471mt ffb/hr (Upstream)	94mt ffb/hr (20% increase)	23.5mt (5% increase)	23.5mt (5% increase)	23.5mt (5% increase)	23.5mt (5% increase)	<ul style="list-style-type: none"> (i) Assessment of installed national milling and refining capacities, age, condition and present capacity utilization. (FMARD/OPGAN/POFON/NIFOR/RMRDC) (ii) Estimating upstream processing and downstream refining needs and cost and the different areas of support to give. (FMARD/OPGAN/POFON/RMRDC)
		3,500mt/day (Downstream)	525mt/day (15% increase)	87.5 (2 ^{1/2} % increase)	87.5 (2 ^{1/2} % increase)	175 (5% increase)	175 (5% increase)	<ul style="list-style-type: none"> (iii) Negotiating/fixing the line of credit support for upstream millers and downstream refineries. (FMARD/MANR/BOI/BOA) (iv) Facilitation/supervision of credit delivery to millers and refiners. (FMARD/BOI/BOA) (v) Capacity building on timely processing of ffb for premium crude palm oil production.
4	Support for market/trade	Absence of competitive	Organised competitive					<ul style="list-style-type: none"> (i) Support for establishment of Oil Palm Marketing Corporation (OPMC). (FMARD/SG/ASCE/AEA)

		market/low market infrastructure/lack of produce standard/poor market information/poor produce pricing	market/common facility market/sustainable market activities/ICT-based market information/Good produce pricing						<ul style="list-style-type: none"> (ii) Support for regulation of product standards. (FMARD/RSPO/OPGAN/POFON/FMIT/RMRDC) (iii) Support for establishment of physical/visual offices, publications and product fairs to create market information and linkage. (FMARD/ASCE/AEA/FMIT) (iv) Support for ICT compliance in the use of websites, telephone platforms. (FMARD/ASCE/AEA/FMIT) (v) Capacity building for sustainable oil palm production, processing and marketing. (FMARD/NIFOR/RSPO/OPGAN/POFON/ASCE/AEA) (vi) Linkage of value chain products to relevant local and export markets.
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10.0 SUMMARY OF KEY POLICIES AND LEGISLATION REQUIRED FOR SUCCESSFUL TRANSFORMATION

190. Agricultural Policies

- There is need for creation of institutions to support the agricultural transformation agenda
 - Such as Marketing Corporations replacing marketing boards
 - Transforming the Agricultural Research Council (ARCN) to a National Agricultural Transformation Agency like EMPRAPA that transformed Brazilian agriculture
- There is need to ensure guaranteed minimum price for food crops
- The Land Use Act should be revised to enable easier access to land for investors in agriculture
- Irrigation facilities should be rapidly expanded and existing ones revamped

191. Financial Service Policies

- There should be provision of incentives to create farmers access to weather index insurance in order to adapt to climate change
- Removal of the current monopoly on agricultural insurance by the National Agricultural Insurance Company and liberalization to allow private sector insurance companies to compete.

192. Industrial Policies

- There is a need to move gradually away from fertilizer consumption subsidies to support for local fertilizer manufacturing, leveraging the gas industrialization policy (e.g., Nagajuna 1.4 mil MT plant).

193. Market Development (Enabling Legislative Acts)

- There should be 10% cassava flour substitution for bread wheat flour
- There should be blending of 10% ethanol with petrol.

194. Fiscal Policies

- Zero tariffs (custom, excise and value added) for import of agricultural equipment and agro-processing equipment
- Tax holidays for investors putting processing plants in staple crop processing zones
- Increase levy (import, excise duties) on any commodities that Nigeria can produce (starch, sugar and wheat)

- Current policy on import levy of 5% for brown rice and 30% for polished milled rice, and 5% on raw sugar and 10% on starches should be increased and revenue used to support domestic production.
- Supportive incentives for investors establishing blending plants for ethanol

11.0 ESTIMATED INITIAL IMPACT (EXPECTATIONS IN 2012 -2015)

195. Jobs

- Provision of Over 3.5 Million jobs within five value chain rice, cassava, sorghum, cocoa and cotton, with expected increase in job creation.

196. Wealth

- Over 300 Billion Naira (US\$2 Billion) additional income in the hands of Nigerian farmers
- Over 350 Billion Naira (US\$2.2 Billion) injected into the economy from rice self sufficiency
- Over 60 Billion Naira (US\$380 Million) injected into the economy from substituting 20% of bread wheat flour with cassava flour

197. Food security

- Enabled Nigeria to be food secure by increasing production of key food staples by 20 Million metric tons.
 - Rice: 2 Million metric tons
 - Cassava: 17 Million metric tons
 - Sorghum: 1 Million metric tons

12.0 KEY PERFORMANCE INDICATORS

198. The following expectations are anticipated in 2015 from the (2010) base on the priority crops and the fertilizer program (Table 12).

Table 12: Key Performance Indicators

Priority Crops/ Fertilizer	Indicators	As at 2010	By 2015
Rice	Paddy	3.4 Million MT	7.4 Million MT
	High quality processed rice	Negligible	2.5 Million MT
	Jobs		1 Million
Cassava	Cassava Tubers	34 Million MT	51 Million MT
	Yield	12.5 MT/Ha	25 MT/Ha
	Jobs		1.2 Million
Sorghum	Sorghum Grain	9.3 Million MT	11.3 Million MT
	Yield	0.75 MT/Ha	2.5 MT/Ha
	Jobs		150,000
Cocoa	Cocoa Beans	250,000 MT	500,000 MT
	Yield	300 Kg/Ha	500 Kg/Ha
	Jobs		360,000
Cotton	Cotton Lint	20,000 MT	140,000 MT
	Yield	150 Kg/Ha	400 Kg/Ha
	Jobs		125,000
Fertilizer	Number of Farmers Reached	550,000	20,000,000