

Agribusiness Indicators: Nigeria



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Abbreviations and Acronyms

ABI	Agribusiness Indicators
ADS	Agricultural Development Strategy
ADPs	Agricultural Development Projects
AgGDP	Agricultural Gross Domestic Product
AGRA	Alliance for Green Revolution in Africa
ASN	Agricultural Society of Nigeria
AU	African Union
DB	Doing Business
CAADP	Comprehensive Africa Agriculture Development Program
CAN	Calcium Ammonium Nitrate
CBN	Central Bank of Nigeria
CRB	Credit Reference Bureaus
CIF	Cost, Insurance and Freight
CMU	Country Management Unit
CNFA	Citizens Network for Foreign Affairs
DAP	Diammonium Phosphate
ECOWAS	Economic Community of West African States
FAMAN	Farm Management Association of Nigeria
FAO	Food and Agriculture Organization of the United Nations
FAS	Foreign Agricultural Services of USDA
FDI	Foreign Direct Investment
FGN	Federal Government of Nigeria
FMARD	Federal Ministry of Agriculture & Rural Development
GDP	Gross Domestic Product
GIS	Geographical Information Systems
HP	Horse Power
IDF	Import Declaration Fee
IFPRI	International Food Policy Research Institute
IFAD	International Federation of Agricultural Producers
IFC	International Finance Cooperation
IMF	International Monetary Fund
ISTA	International Seed Testing Association
LPI	Logistics Performance Index
NAAIAP	National Accelerated Agricultural Input Access Program
NAERLS	National Agricultural Extension and Research Liaison Services
NAFCON	National Fertilizer Company of Nigeria
NARP	National Agricultural Research project
NARS	National Agricultural Research System
NEPAD	New Partnership for Africa's Development

NGO	Non-Governmental Organization
NGN	Nigerian nair
NPAFS	National Program on Agriculture & Food Security
NPL	Non-Performing Loan
OECD	Organization for Economic Co-operation and Development
OPV	Open-pollinated varieties
RAI	Rural Access Index
SSA	Sub-Saharan Africa
UNDP	United Nations Development Program
UNIDO	United Nations Industrial Development Organization
UNECA	United Nations Economic Commission for Africa
USAID	United States Agency for International Development
USD	United States Dollar
VAT	Value Added Tax
VCR	Value Cost Ratio
WB	World Bank
WRF	Warehouse Receipt Financing

EXECUTIVE SUMMARY

Overview

The purpose of this Agriculture Business Indicators Study was to isolate the success factors and construct indicators that reflect the performance of the agriculture sector in Nigeria and that benchmark it in terms directly comparable to agriculture sectors in other developing countries. Providing policy makers and public officials with access to this type of empirical information is seen as way to stimulate and inform policy dialogue about what reforms are needed and about how scarce public resources can be most effectively invested. The indicators can be used to identify specifically where this investment can be used to leverage commercialization through value addition, increasing the competitiveness of a country's agricultural products domestically, regionally, and in international markets. They can also inform decision makers and investors about which policy measures are likely to be the most effective in enhancing food security, reducing poverty, and encouraging sustainable forms of environmental management. To accelerate agricultural development capable of spurring competitiveness of agricultural products in the domestic, regional, and international markets and could enhance food security; poverty reduction and sustainable environmental management.

The study entailed a review of existing literature and the use of informal surveys to obtain information from a variety of stakeholders and actors. The focus was on the key success factors that the Agribusiness Indicators (ABI) team determined to be the most critical factors influencing agribusiness development in Sub-Saharan African countries. The Nigeria study was informed by the outcomes of scoping missions which had been conducted in three initial pilot countries: Ghana, Ethiopia and Mozambique.

The study focused in particular on three factors: a) access to critical factors of production of certified seeds, fertilizer and mechanical input; ii) the enabling environment in terms to access to credit and transportation, and c) policy issues of government expenditures on agriculture, trade and regulatory policies that currently influence the agribusiness environment. These factors are not exhaustive but are intended to serve as a pilot that can be scaled up to include more variables and countries in a new program called Benchmarking the Business of Agriculture (BBA) which will eventually cover 80 countries globally.

Seed Indicators

Rates of certified seed use in Nigeria are very low. Overall, only about 5 to 10 percent of cultivated land in Nigeria was planted with certified seeds, and about 10 percent of farmers use certified seeds. About 7.2 percent of maize, 4.8 percent of rice, 2 percent of cowpea, 1.8 percent of wheat, and 1.7 percent of sorghum in Nigeria was cultivated using certified seed varieties in the 2011 and 2012 cropping seasons. Nigerian farmers would require an estimated 1 million metric tons of improved seeds to cover each of these cereals and pulses, whereas the formal commercial seed industry currently supplies just 20,000 to 50,000 tons of seed annually covering all crops. This represents only 2-5 percent of farmers' actual seed needs and indicates a

significant shortage in the supply of certified seeds in the country. The government dominates the production of foundation seeds, and its seed policy is currently tilted towards the government-owned ADPs in the production and marketing of seed. This tends to crowd out private sector participation and is largely attributable for the shortages in certified seeds in the country.

In addition to insufficient domestic production of certified seed in Nigeria, the lack of effective national seed laws and regulations among the ECOWAS member countries, and the lack of consistency between these laws in the different countries, serves to limit trade in certified seed. For this reason, shortages cannot be addressed through seed imports, further exacerbating supply shortages and resulting high seed prices that deter farmers from using improved seed.

Fertilizer Indicators

Although Nigeria has great potential for fertilizer production given its abundant phosphate deposits and natural gas reserves, almost all the fertilizer currently used in the country is imported. The two fertilizer manufacturing companies – the Federal Super Phosphate Fertilizer Company (FSFC) set up in 1976 and the National Fertilizer Company of Nigeria (NAFCON) set up in 1988, both went on to fail as the result of poor management on the part of the public sector. As a result, fertilizer consumption in the country is low, estimated at about 600,000-700,000 tons annually compared to the potential market size of about 10-12 million tons.

Historically, the fertilizer industry has been characterized by heavy government interventions in the form of subsidies. These subsidies have been in effect since the 1970's, and have come to define the fertilizer sub-sector, affecting its ability to deliver fertilizer at affordable prices and in a timely manner to smallholder farmers.

The presence of subsidies in the fertilizer industry explains why the federal, state, and local governments have all been involved in the procurement, distribution, and price determination of fertilizer at various times. Available information suggests that only 11-30 percent of subsidized fertilizer reaches smallholder farmers at the subsidized price. The parallel sales of “subsidized” and “market” fertilizer tend to create an avenue for the lower priced subsidized fertilizer to be diverted for sale at higher market prices. This situation tended to crowd out the private sector and create opportunities for rent seeking individuals. It is therefore not surprising that average fertilizer application rates are low and are estimated at 13 kgs per ha, or just about 6 kgs per ha in terms of nutrient content – much lower than in most other African countries.

Overall, the Value Cost Ratios (VCRs) for the main staples were calculated (at unsubsidized prices) to be 2.5 for maize, 2.5 for sorghum, 3.5 for cowpea/beans, and 3.4 for rice respectively. These ratios indicate that the use of fertilizer is profitable for these crops, provided they are delivered to farmers in a timely manner.

Farm Mechanization Indicators

Farm power among small-scale farmers in most parts of Africa, including Nigeria, is largely human or animal driven, and relies largely on the use of the hoe and other hand tools. This low level of mechanization greatly limits the amount of land that can be cultivated, and limits the productivity of individual farmers. More than 70 percent of the Nigerian labor force is currently employed in agriculture. The estimated 45,000 tractors in the country translate to a density of 5.7 tractors per 100 square kilometers, far short of the estimated 81,000 tractors that would be needed to satisfy demand for tractors. Given that about half are out of commission at any given point in time, the average 1,000 tractors that the country imports annually is less than adequate to mechanize Nigerian agriculture. And although tractor imports are themselves duty free, high tariffs are charged on imported spare parts, leaving tractors with a short average life span of about six years – compared to other countries in which tractor life spans can be as long as 15 years. Tractors in Nigeria operate an estimated 507 to 682 hours per year, again very few compared to the 1,500 to 2,000 engine hours recorded in other countries.

Rural Finance Indicators

The provision of financial services to commercial agriculture is widely recognized as a critical factor in enabling the private investors to participate in the agriculture sector. Like most African countries, agricultural credit in Nigeria comes from both formal and informal credit sources. Many Nigerian farmers are served by informal money lenders, who generally provide easy access to credit but at higher cost, charging poor borrowers nominal monthly effective interest rates that typically range from about 10 percent to more than 100 percent. Other forms of informal source include farmers' associations and cooperative societies. Formal sources include credit from formal financial institutions such as commercial banks and microfinance enterprises and credit unions.

One main reason limiting agricultural growth in Nigeria is the poor access to the banking system by the majority of the farming population. Limited physical access to bank branches keeps investment in agriculture low, especially among smallholders despite the mandate by the federal government stipulating that a certain percentage of commercial banks branches must be in the rural sector.

During the period under study, figures show that in 2012, 14.0 percent of the rural dwellers were banked and 86.0 percent of the rural population is unbanked. Overall only about 37.4 percent of the adult male population had access to formal banking; a factor that may be responsible for low credit extension to the rural households. In terms of accessing credit, only about 18 percent of smallholders received credit from both formal and informal sources during 2012. Despite the fact that the agricultural sector accounts for about

40 percent of the total GDP of the country, its share of credit from the commercial bank responsible is only 2 percent.

A lack of collateral among smallholders is a major hindrance to accessing credit from formal financial institutions. Other financial instruments like those offered by warehouse receipt systems and credit reference bureaus, which in some countries represent effective alternatives to conventional collateral, are absent.

High interest rates by commercial banks on agricultural loans were also identified as an important barrier to investment. In 2011, formal lending institutions charged between 22 and 30 percent interest on loans to agricultural borrowers, compared to 12 to 14 percent on loans to other core sectors of the economy. Farmers found it difficult to obtain loans from agricultural credit schemes.

Rural Transport Indicators

Transport infrastructure is an important factor in enabling agribusinesses to operate, particularly in rural areas. In Nigeria, this consists mainly of road transport, and while the country has an extensive network of roads, most of its rural roads are in disrepair. Its rural transport indicators compare unfavorably to those of several of Nigeria's African neighbors, both in terms of quality and service coverage.

The price of food is affected by high transport costs. Limited rail service, poor road conditions, frequent bottlenecks, and informal checkpoints have all been identified as causes of inefficiency and contributing factors to the slow pace of agricultural commercialization in Nigeria. The Port of Lagos experiences severe congestion which may cause ships to be docked for up to 20 days, and containers to be delayed for as long as 35 days. This has been identified as one source of delay in getting fertilizer to the farmers. The most important transportation route in Nigeria, the Lagos-Niger corridor (LNC) is a 1,149 km road and carries between 5,000 and 17,000 vehicles per day, an estimated 10-14 percent of which are heavy vehicles.

The country's unpaved roads are in particularly poor condition. Their condition worsens during the rainy season, which also is the land preparation and planting season. Using the geographic information system (GIS) only about 20 percent of rural Nigerians has access to an all-season road. Thus the RAI in Nigeria is below the average for the peer group. If rural road development were to be closely aligned with agricultural priorities, a fully functional classified network of about 50,000 km would be adequate to provide connectivity to areas producing 80 percent of the value of the country's agricultural output.

Lack of adequate funding by local governments, which are largely responsible for maintaining rural roads, is a challenge. The local government road network, which is responsible for transporting farm produce from the farm to the first point of sale, is described as highly dilapidated with more than 70 per cent impassable. This

poor state of rural roads increases travel time, post-harvest losses, and transport prices. At Naira, it costs 99.50 Nigerian naira or US\$67 to move one metric ton one kilometer, about 10 times the cost of shipping on the main road. Dilapidated rural roads are also a contributing factor to the high incidence of vehicular accidents.

Policy Indicators

Frequent and unpredictable changes in government policies, subsidies, and procurement procedures send confusing signals to agribusinesses, and generate uncertainty that is inimical to investors' confidence, including small and medium enterprises, family farmers, and multinational corporations. The division of responsibilities between federal, state, and local governments is unclear, and tends to lead to duplications and omissions, and a general lack of policy cohesiveness or uniformity. For investors, this makes planning difficult.

Public sector investment in agriculture is low and has been declining in recent years. It averaged just 3 percent of public spending between 2006 and 2012, well below the 10 percent goal set by African leaders in the Maputo Agreement. Budgetary allocations by state governments are lower still – and can reasonably be considered indicative of the relatively low priority that public officials assign to agriculture in Nigeria, in spite of the sector's proportionately large contribution to overall GDP. The ratio of public expenditure on agriculture to the sector's share of GDP between 2005 and 2012 was 0.04 – a ratio of 1 would indicate that public spending is commensurate with agriculture's contribution to the country's economy.

Nigeria also falls behind other countries in terms of international standards on budget expenditure. Typically, there is an inverse relationship between income per capita and agricultural expenditure share in the economy. This is not the case in Nigeria, where a structural misalignment between budgeting for agricultural purposes and actual spending on agriculture becomes evident. Applying the Public Expenditure and Financial Accountability (PEFA) standard reveals that 21 percent of the approved budget was never in fact spent during the period covered by the study – a proportion that should be no more than 3 percent.

In some developing countries, civil society organizations and advocacy groups become influential agents advocating for reforms which align policies with market opportunities and encourage private investment in various parts of the economy. Although there are a number of such groups in Nigeria, most of them have little or no influence over public policy.

The Apex Farmers' Association of Nigeria, which is the umbrella of all farmers' organizations in the country, is often perceived as a creation of the government, lacking any effective voice in policy dialogue. Nor have

professional agricultural bodies such as the Agricultural Society of Nigeria (ASN) and the Farm Management Association of Nigeria (FAMAN) been able to lobby the government in any meaningful policy dialogue, despite the broad scope of their membership. A number of these organizations receive financial support from the government and are therefore seen as lacking the independence necessary to represent their members or to be critical or to demand an audience with public officials. Seed and fertilizer supply was singled out by stakeholders as a problem area, with fertilizer suppliers in particular complaining of a lack of transparency in how tenders and contracts are awarded and payments made. The current administration has recently set out to address these problems of policy inconsistency in its Agricultural Transformation Agenda Program, though most stakeholders who were asked see it as too early to assess the Program's prospects for bringing about real reform.

Agribusiness Indicators in Nigeria

1. Introduction

1.1 Rationale and Contextual Framework for Agribusiness Indicators in Sub-Saharan Africa

The importance of agriculture in the economies of sub-Saharan African countries cannot be overemphasized. With agriculture accounting for about 65 percent of the region's employment and 75 percent of its domestic trade, significant progress in reducing hunger and poverty across the region depends on the development and transformation of the agriculture sector. Transforming agriculture from a largely subsistence enterprise to a profitable commercial venture is both a prerequisite and a driving force for accelerated development and sustainable economic growth in sub-Saharan Africa.

A large body of evidence points to the direct correlation between agribusiness development and economic growth and sustainability (OECD 2008; FAO 2010b; UNIDO 2011). In most African countries, where agriculture is a major source of both gross domestic product and employment, increasing levels of investment in the sector is a practical imperative of great urgency.

To spur both domestic and foreign investment in developing countries, the World Bank assigns significant priority to building the capacity of public institutions and to promoting positive, “enabling” regulatory and environments that encourage constructive private investment.

The inclusion of private sector actors along the agriculture and agribusiness continuum tends to improve the whole range of activities in agricultural value chains (production, processing, and marketing) by capitalizing on comparative advantages and by promoting competitiveness – increasing productivity and value addition and improving marketing and infrastructure. The resulting backward and forward linkages created in downstream and upstream activities create employment and generate income.

The World Bank and other international development agencies also see countries' private sector development as being instrumental to their ability to attract foreign direct investment (FDI). FDI can increase the financial capital base for investment spending, which is responsible for much of the economic output that a country produces. The inflow of FDI comes with additional benefits in the form of technology and knowledge transfers across international boundaries (Javorcik 2004, 2008). Policy analysts believe that knowledge brought by foreign affiliates spills over to domestic firms, increases their competitiveness, and accelerates overall economic growth by enabling them to extend their production and efficiency frontiers.

The rationale behind the development of agribusiness indicators (ABIs) is to construct indicators for specific factors that support successful, effective private sector involvement in agriculture. The indicators can be used

to benchmark and monitor performance in the sector over time and to draw comparisons between countries. The resulting information can provoke knowledge flows and meaningful dialogue among policy makers, public officials, donors, private sector actors, as well as other stakeholders in the sector. Ideally, such dialogue would encourage policy and institutional reforms aimed at improving the business environment for agriculture, gradually shifting smallholder production from subsistence to a market orientation, and promoting economies of scale among semi-subsistence and large-scale producers.

By developing information that can foster private participation in African agribusiness, the ABI effort in its entirety is consistent with the goals of the Comprehensive Africa Agricultural Development Program (CAADP). An initiative of the New Partnership for Africa's Development, CAADP seeks to promote investment in agriculture and agro-based industries throughout Africa (UNIDO et al. 2010).

1.2 Overview of the Nigerian Agriculture Sector

Agriculture is the economic mainstay of the majority of households in Nigeria, and is a significant sector in the overall macroeconomy. It is a major source of employment for the large and growing population and contributes about 40 percent on the average to GDP. It is a major source of raw materials for the agro-based industries and it generates the most foreign exchange revenue of any other sector with the sole exception of oil.

Nigeria's diverse range of agro-ecological zones makes possible the production of a wide variety of agricultural products. Yet despite its rich endowment of agricultural resources, the sector has been growing at a very low rate. Less than 50 percent of the country's arable land is under cultivation, mostly by smallholders and traditional farmers using rudimentary production techniques that are associated with low yields.

The advent of the oil boom in the early 1970s has made the country highly dependent on oil revenue. Instead of complementing the agriculture sector, oil has marginalized a large number of farmers and increased rates of rural unemployment, particularly among women and young people. Food insecurity has increased as a result, and agriculture's contribution to growth in the larger economy has remained modest (Adeoti 2002).

An analysis of the contribution of different sectors to real GDP growth between 2007 and 2011 indicates that agriculture accounted for about 2.3 percent of the recorded GDP growth of 7.4 percent. Indeed it was second to services whose contribution was only marginally greater, accounting for 2.4 percent of the overall growth in the economy. Crop production constitutes the most important sector of the agriculture sector in terms of employment and livelihoods to most rural dwellers. In terms of relative contribution to agricultural GDP, the

crop subsector accounts for about 90 percent of the 40 percent of the contribution of agriculture to overall total GDP (see Table 3) (CBN, 2013).

Table 1: Sectoral Growth rates of GDP at 1990 Constant Basic Prices (%)

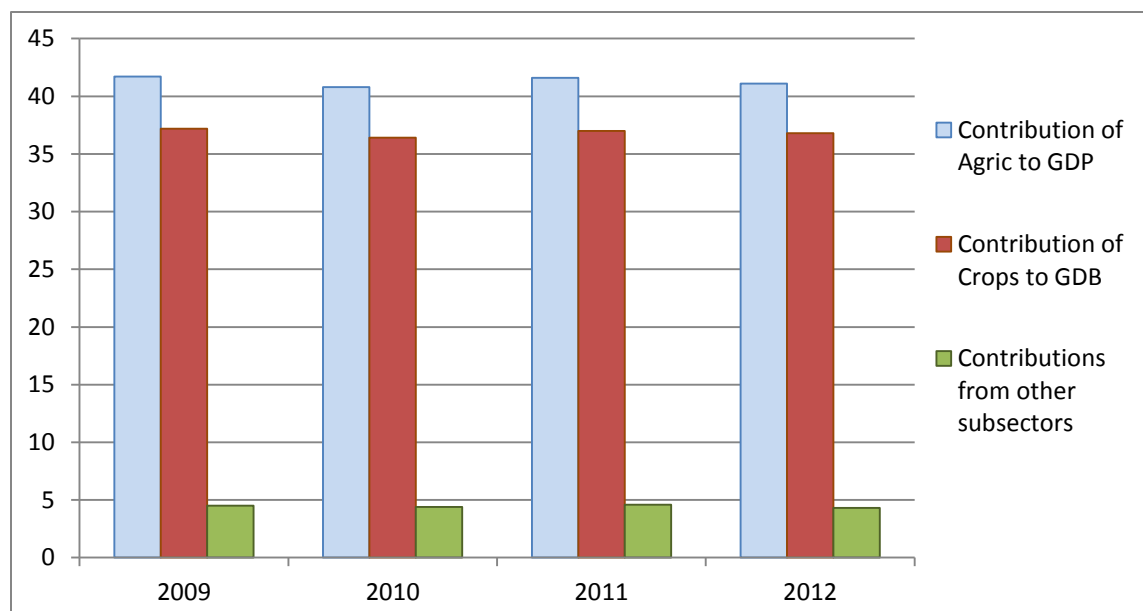
Activity Sector	2007	2008	2009	2010	2011	2007-2011
1.Agriculture	7.2	6.3	5.9	5.6	5.7	6.1
<i>Crop Production</i>	7.3	6.2	5.8	5.6	5.7	6.1
<i>Livestock</i>	6.9	6.9	6.5	6.5	6.2	6.6
<i>Forestry</i>	6.1	6.1	5.9	5.8	5.9	6.0
<i>Fishing</i>	6.6	6.6	6.2	6.0	5.9	6.3
2.Industry	-2.2	-3.4	2.0	5.6	1.3	0.7
3.Building & Construction	13.0	13.1	12.0	12.1	12.3	12.5
4.Wholesale & Retail Trade	15.2	14.0	11.5	11.2	11.3	12.6
5. Services	9.9	10.4	10.8	11.9	13.3	11.3
Total GDP	6.5	6.0	7.0	8.0	7.4	7.0
Non-oil GDP	9.5	9.0	8.3	8.5	8.9	8.8

Source: CBN Annual Report 2013

Table 2: Sectoral Contribution to Growth Rates of GDP at 1990 Constant Prices (%)

Activity Sector	2007	2008	2009	2010	2011	2007-2011
Agriculture	3.0	2.8	2.5	2.4	2.3	2.3
<i>Crop Production</i>	2.7	2.4	2.2	2.1	2.1	2.1
Industry	-0.6	-0.5	0.4	1.2	0.3	0.3
Building & Construction	0.2	0.2	0.2	0.2	0.2	0.2
Wholesale & retail Trade	2.3	2.3	2.0	2.0	2.1	2.1
Services	1.6	1.7	1.8	2.1	2.4	2.4
Total (GDP)	6.5	6.0	7.0	8.0	7.4	7.4
Non-Oil (GDP)	9.0	9.4	8.3	8.5	8.9	8.9

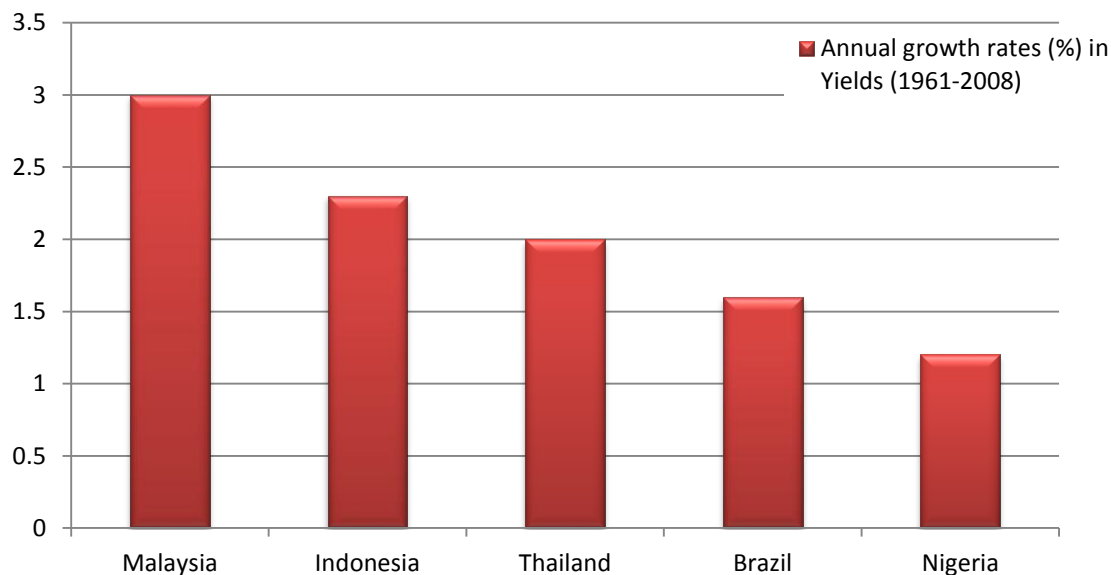
Figure 1: Percentage Relative Importance of the Crop Subsector in the Agricultural Sector



Source: CBN, 2013

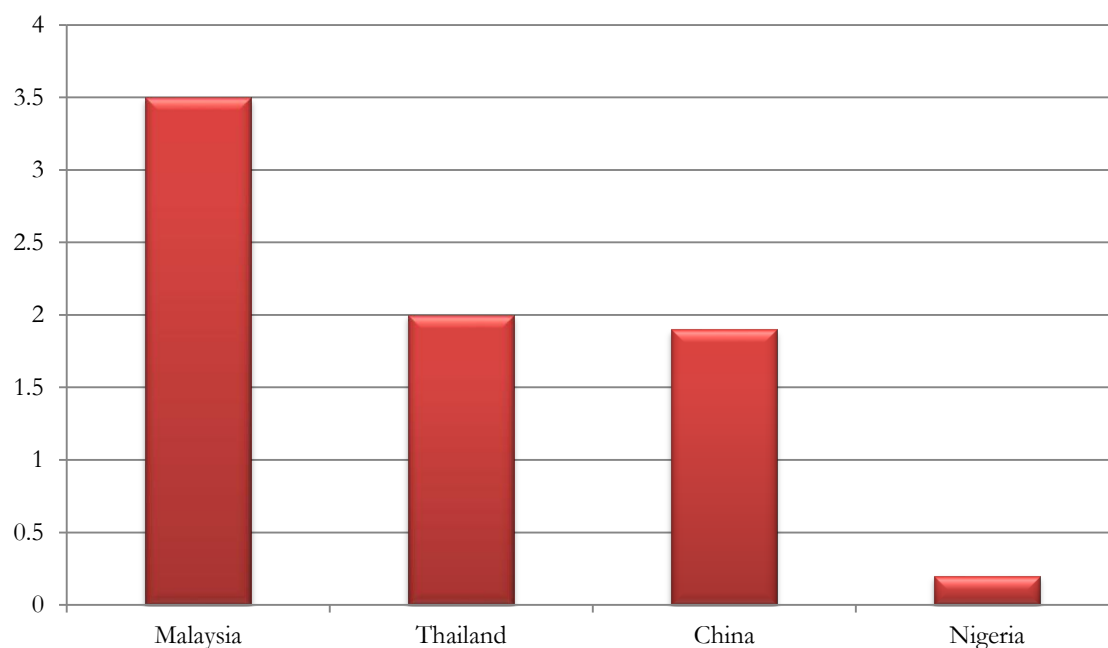
The performance of Nigerian agriculture since the country's independence in 1960 compares unfavorably to agriculture in other developing countries. China and Malaysia for instance had lower annual growth rates both in terms of yields of major crops and agricultural output per capita in 1960. Between 1960 and 2009, Malaysian agriculture saw growth rates in output per capita more than ten times higher than in Nigeria.

Figure 2: Average annual growth rates (%) in yield (1961-2008)



Source: Presidential Brief on Agricultural Transformation Agenda (2011)

Figure 3: Per capita agricultural growth rate (%) in production (1961-2009)



Poverty has increased over time in Nigeria, in terms of both household incomes and food insecurity, in part the results of the country's dwindling agricultural growth. State and federal government policies and programs which have been introduced over the decades to stimulate agricultural growth have had limited success owing to low levels of investment in the sector and to the lack of farm level resources and technology available to small-scale farmers who produce more than 90 percent of Nigeria's agricultural production.

Constraints to Developing Agriculture in Nigeria

Manyong et al (2005) enumerated four challenges faced by Nigerian agriculture. First, more than 70 percent of the farming population in Nigeria consists of smallholder farmers, each of whom owns or cultivates less than 5 ha of farmland, but who collectively account for 90 percent of total farm output. Many small farms are fragmented and scattered in different locations because of inadequate access to farm land under the current land tenure system. This widespread fragmentation raises transaction costs and makes mechanization more difficult and cumbersome, and may explain a great deal about why only 46 percent (32 million ha) of Nigeria's arable land is cultivated.

Second, despite an abundance of arable land that is suitable for the cultivation of a variety of crops, crop yields are far below their potential. On average, Nigeria records 4 tonnes of agricultural product per hectare compared to 13-14 tonnes in other countries with similar climate patterns. Most Nigerian farmers therefore operate at the subsistence level, with marketable surplus ranging between 0-25 percent depending on the size of the household.

Third, agricultural growth in Nigeria is mainly attributable to expansion of cultivated area and because it is mostly rainfed (non-irrigated), is contingent on favorable weather. Climate change makes it more difficult for farmers in rainfed areas to plan based on past experience. Although, crop insurance exists in Nigeria, it imposes an extra cost on resource-poor farmers and is usually only used when financial institutions require it as a condition for formal credit. In its present form, crop insurance is not a viable option for coping with risks imposed by climate change and other risk factors associated with agribusiness.

Finally, agricultural services are weak. The supply of agricultural inputs has been generally sporadic. Fertilizer consumption in Nigeria, which is currently estimated at 13kg per ha, is one of the lowest in Sub-Saharan Africa. Less than 10 percent of irrigable land is under irrigation. Farmers have had limited access to credit and the existing extension services are inadequate. Compared to the Food and Agriculture Organization (FAO) best practice of one extension agent serving between 500 and 1,000 farm households, this ratio in Nigeria is one extension agent per 25,000 farm households.

Agro-dealer networks, which have been instrumental in transforming the agriculture sector in a number of developing countries such as Kenya, remain weak in Nigeria. An estimated 30,000 tractors are used by the 14 million farm households and farmers' groups, a ratio that reflects the low level of mechanization of Nigerian agriculture. The low level of processing of agricultural produce that adds value and creates job is another impediment to developing the sector. It is estimated that Nigeria loses significant value of between 15-40 percent of its post-harvest output due to its inability to process most of the farm produce and lack of efficient storage and transport systems particularly in the rural areas.

The cost of food imports in Nigeria has been growing at an alarming rate. Between 2007 and 2010, the country's food import bill was estimated at 98 trillion Nigerian naira (NGN) – equivalent to US\$628 billion. In 2010 alone, Nigeria spent NGN632 billion on wheat imports, and NGN356 billion on rice imports. That means the country spent NGN1 billion per day on rice alone, NGN217 billion on sugar imports, and NGN97 billion on fish imports (Akinwumi Adesina, 2013).

The Federal Government of Nigeria is under great pressure to relieve food insecurity and poverty and increase the production of raw materials for agro-based industries through domestic production and to stem the current high food import bills that continue to grow at an unsustainable average rate of 11 percent per annum. Agricultural production clearly needs to be increased, and this needs to happen through upgraded productivity rather than through bringing additional land under cultivation. The large yield gaps between actual and potential yields can be systematically reduced through the use of improved packages of certified hybrid seeds, fertilizers, and mechanical technologies (see table 3). The constraints that inhibit farmers' adoption of these inputs need to be identified and removed in order to attract both domestic and foreign investment into the sector.

2.0 ABI Methodology

ABI methodology draws from the World Bank/IFC established method of *Doing Business* (DB). DB focuses on 10 broad indicators, and up to 41 sub-indicators which were designed to gauge general business conditions and the investment climate facing urban-based enterprises in 183 countries. The DB framework is applied to correlate the profile of a country's business environment to the performance of firms operating within that environment. Its overall objective is to advance the World Bank Group's private sector agenda in four main ways, namely: to motivate reforms through country benchmarking; to inform the design of reforms; to enrich international initiatives on development effectiveness, and ultimately to inform theory (World Bank 2008).

The *Doing Business* project has informed over 220 reforms in 65 countries.¹ The World Bank Group and the Bill & Melinda Gates Foundation anticipate that this pilot project will have a similar effect in the long run by focusing the attention of policy-makers, public and private sector stakeholders, and development practitioners on those factors that most affect productivity, efficiency, and competitiveness in agribusiness systems.

In contrast to DB, ABI focuses on a broader spectrum of diverse agricultural actors along the value chain of important agricultural commodities. In this way, ABI entails a relatively holistic perspective of representative farms and firms and actors that operate in the agribusiness industry.

ABI purposefully builds a constituency of key informants and triangulates its data collection to ensure data quality and consistency to enhance the reliability of the indicators that are used in benchmarking, and in cross country comparisons.

2.1 Data for the Study

The study relied on discussions with a range of respondents and informants, representing different stages in the production, processing, and marketing of agricultural commodities. The team conducted an extensive review of scientific publications and policy research papers to examine the context in which agricultural and agribusiness activities are carried out. The information sheds important light on the potential and the limitations which influence private sector participation in the agribusiness industry in the country.

Secondary data were collected from various sources. These included the FAO, the Ministry of Agriculture and Natural Resources, the Nigerian Seed Council, the Agricultural Transformation Agency, the International Food Policy Research Institute (IFPRI), the International Fertilizer Development Center (IFDC), the Central Bank of Nigeria, and a number of financial institutions in the country. Other sources included international researchers, development partners, local institutions and NGOs, and policy makers. The methodology arrived at by the ABI team in Nigeria involved five steps:

¹ [*Doing Business: An Independent Evaluation*](#), IEG, World Bank, 2008

1. A scoping mission to identify important key stakeholders and isolate the important success factors that promote or hinder private sector participation and agribusiness development in Nigeria.
2. A detailed and extensive literature review to investigate the agricultural situation in Nigeria and to collect secondary data to establish indicators for benchmarking and for cross country comparisons.
3. Face-to face interviews with key informants to complement and validate as it were the information that has been obtained from literature and also as a basis for data triangulation and reconciliation in order to ensure data quality and consistency.
4. Internal and external peer review mechanism involving knowledgeable individuals on Nigerian agriculture for the purpose of validating and enhancing the quality and acceptability of the findings of the study.
5. The final stage in the ABI study in Nigeria would involve the strategic dissemination of the findings to selected key stakeholders in Nigeria including government officials as a way to collect feedback and sensitize the government and private sector practitioners and other actors in the agribusiness into meaningful policy dialogues and debate. It is hoped such a process could engender policy reforms and promote public-private partnership that would leverage agribusiness development in Nigeria.

ABI methodology combines the use of literature review with survey data that are generated through a participatory approach that brings all stakeholders onboard including the government in discourse and dialogue with the hope to nudge the government into policy reforms that could improve the efficiency and performance of the agribusiness sector.

In all, about 100 respondents were interviewed in Nigeria, during the course of two missions that lasted approximately 8 weeks in total and with the contributions of a local consultant working for 40 man days.

The success factors identified and data collected for this pilot study are not exhaustive or all encompassing. Rather, what this pilot study intends to do is to identify and focus on the most *critical factors* and over time achieve progress and build upon the number of success factors to be analyzed. The study will be repeated and expanded upon in a number of additional African countries.

2.2 Success Factors and Indicators for Agribusiness

In consultations with other departments and individuals in the Bank and based on deliberations by the ABI team and the outcome of the Ghana pilot study the following success factors were isolated as the most significant for promoting and leveraging private sector investment and engagement in African agriculture.

- Access to critical factors of production, the identification of which included certified seed, inorganic fertilizers, and mechanical inputs.
- Supporting services including finance and transportation.
- Government policies, enabling and regulatory environment. These include fiscal, monetary, and trade policies and private sector perceptions of the investment climate, particularly with regards to government activities that serve to crowd out the private sector.
- The role and influence of civil society and advocacy groups in issues affecting stakeholders in the agribusiness sector.

3. Findings on the Success Factors and Indicators

Determining the presence or absence of success factors and constructing reliable indicators that can be used for benchmarking and for cross country comparisons requires an understanding of production and marketing systems as well as the agricultural policies and elements of the business environment that promote or hinder agribusiness development in a country. This chapter explores the access to critical factors of production by farmers, the extent of supporting services, and the impact of government policies, on *doing agricultural business* in Ethiopia.

3.1 Access to Critical Factors of Production

In Nigeria, as in many other countries in Sub-Saharan Africa, yields of major food crops are well below what is technically feasible – a shortcoming commonly referred to as the “yield gap.” The Comprehensive Africa Agricultural Development Program (CAADP) of the Africa Union’s New Partnership for Africa’s Development (NEPAD) noted the low productivity in most of its member states and determined that crop yields would need to grow 6 percent annually in order for the Millennium Development Goals concerning food security and poverty reduction to be realized. In practical terms, this implies that factors which limit the productivity of major crops will need to be identified and effectively redressed. In Nigeria, where crop yields per hectare are between 20 and 50 percent that of comparable developing countries with similar climates and environmental conditions, doing so is likely to lead to very large gains.

For example, experiments with high yielding varieties of rice have recorded yields of between 2.9 and 7 tons per hectare while farmers who used improved and certified seeds as well as modern technologies that included fertilizer obtained an average yield of 5.4 tons per hectare, implying that the potential yield of rice

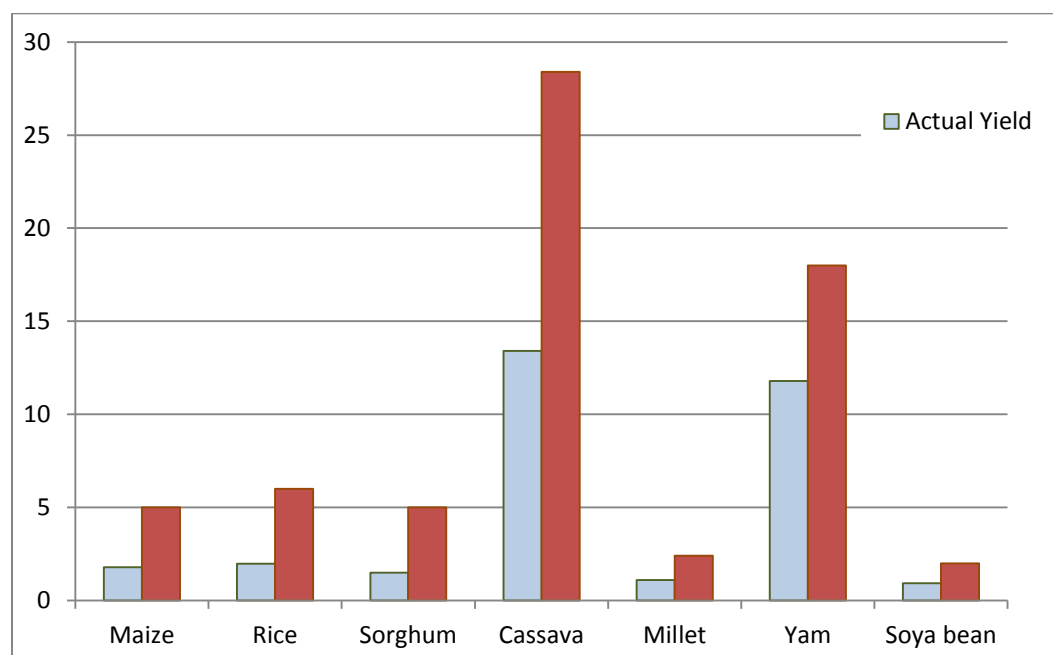
under farmers circumstances averages about 6 tons per hectare (Nwafor, 2011). However, the national average yield of rice has been estimated at about 1.9 tons per hectare implying a yield gap of 4 tons per hectare or a 203 percent shortfall of what is technically feasible using modern seed varieties and other farm inputs. Table 3 shows the yield gaps for major staples in Nigeria. From the table it can be seen that there is a high degree of latitude for farmers to significantly increase yield by adopting new modern agricultural technologies that include use of certified seeds and fertilizers among others.

Table 3: Actual yields (t/ha) versus potential yields of major crops in Nigeria

Crop Yield (1)	Actual Yield on Farmers' Field (2)	Potential Yield (3)	Yield Gap (4)	Actual as a percentage of potential yield	Yield Gap in %
Maize	1.78	5.0	3.22	35.6	181
Rice	1.98	6.0	4.02	33.0	203
Sorghum	1.50	5.0	3.50	30.0	233
Cassava	13.40	28.4	15.0	47.2	112
Millet	1.10	2.4	1.3	45.8	118
Yam	11.80	18.0	8.2	65.6	69
Soya bean	0.93	2.0	1.07	46.5	115

Source: NAERLS and NPFS (2011); NBS (2012); Nwafor (2011)

Figure 4: Actual versus potential yields for major staples in Nigeria: 2011/2012



3.1.1 Access to Certified Seeds

Table 4: key Indicator findings for the use of certified/commercial seeds in Nigeria -2011/2012

Access to Commercial/Improved Seeds	Indicator Findings
% staple crop area planted to certified seed (maize, rice, soybeans or sesame/cowpeas)	% of staple crop area planted to certified seeds (5-10%), % of farmers adopting improved varieties 10%; Rice (4.8%), Maize (7.2%), Cowpea (2.0%), wheat (1.8%), Sorghum (1.7%)
Existence and implementation of national seed laws & regulations (Yes/No; Ordinal scale: 0=no framework; 1=draft law or revision, 2=its passage/conforms with regional protocols, 3=development of bylaws or guidelines for implementation, 4=actual implementation & 5=effective implementation)	The National seed law in Nigeria known as the "National Agricultural Seed Decree, No 72 of 1992" which was formulated in 1992 failed to achieve some desired results and because of structural and functional defects in the law was revised and amended in 2004. Although the 2004 seed law has been drafted and forwarded to the government for ratification and adoption, the seed acts still remains a draft several years after amendment. This situation has continued to becloud the seed industry and has created an uncertain business environment for the seed sub-sector in the country. The country receives a score of 2 on this indicator
Sales of imported seed as % total sales of certified seed (maize)	10% (for rice, maize and wheat combined); Maize (16%); Rice (2%) and Wheat (2%) (2005-2010 cropping seasons). There is a duty of 5% on all seed imports
Time required for registration, testing & obtaining approval for imported seed (<i>if seed tested/ approved in another country in same region, does this shorten the time required?—need to distinguish between domestically developed seed and imports</i>)	Except for inbred lines and new varieties for seed development purposes; importation of large quantity of seed is subjected to multi-locational trials by officials of National Coordinated Research project (NCRP) and the National Agricultural seed Council (NASC). These trials take on the average about 2 years
% of foundation seed provided by government organizations	100% The production of breeder and foundation seeds are the prerogative of research institutes and government agencies and parastatals under the strict supervision of the NASC
% of certified seed multiplied by private firms & farms vs. government entities	2005/06-2009/10 (All crops)= 56%; 2006/07 (All crops) =64%; 2007/08 (All crops) =50%; 2008/09 (All crops) =38%; 2009/10 (All crops) = 87%; Average (2005/2006-2009/2010 (All crops) =54%. <u>SPECIFIC CROPS : 1) Maize (2005/06-2009/10)=71%; Rice (2005/06-2009/10)= 33%; Sorghum (2005/06-2009/10)= 90%; Beans (2005/06-2009/10)= 16%; Wheat (2005/06-2009/10) =<2%</u>
Maize yield gap, Rice Yield gap and Sorghum yield gap.	Actual yield for maize 1.78t/ha, Potential Yield for maize 5t/ha, yield gap 3.22t/ha or 181%; Actual yield for rice 1.98t/ha, Potential yield for rice 6.0t/ha and yield gap is 4.02t/ha or 203%; Actual yield for sorghum is 1.50t/ha, Potential yield is

	5t/ha and yield gap is 3.5t/ha or 233%
Number of private firms operating in country (<i>and their shares</i>)	There about a total of 32 Licensed seed companies in Nigeria. Main ones are about 13. The Seed companies on the average account for about half (50%) of the total certified seeds marketed by the formal seed sector but only about 3-5% of the total seed requirements for the entire country. In terms of certifies seeds of maize and Sorghum, they account for 71% and 90% respectively.
Seed to grain price ratio	Maize (4:1 for both yellow and white maize maize); Rice (2:1 for imported rice and 1:1 for local rice)
ISTA (International Seed Testing Association) accreditation (Y/N)	Nigeria does not belong to either the ISTA or OECD certification scheme. However, Nigeria belongs to the Forum for Africa Seed Testing (FAST) established by FAO and linked to ISTA to fast track the implementation of laws to harmonize the sector and promote seed testing and quality control, including the drafting of seed testing protocols for major crops for both public and private companies.
Perception of stakeholders and private sector about government interventions and crowding out of private sector (0=complete Govt. control; 5=significant opportunities for the private sector to participate)	2.0 as there is a significant amount of crowding out of the private sector. The private sector faces very unfair competition with state agencies particularly the Agricultural Development project (ADPs). Although the government gives the impression that it is encouraging private sector participation in the seed industry, facts on the ground show exactly the opposite. The private seed companies survive under very unfair competition with ADP-subsidized seed, and a debt load created by government seed procurement programs that delay payments to the private companies for seeds supplied or in some cases do not honor commitments.

The use of certified seeds has been instrumental in increasing agricultural productivity throughout the world, with particularly large increases when adopted by smallholders whose traditional varieties have low yields. These improved seeds are attributable for about half of the increase in crop yields associated with modern farming – with the other half attributable to irrigation and fertilizer. The adoption of improved varieties is therefore a prerequisite for increasing agricultural productivity and enhancing profitability for farmers, particularly among smallholders whose productivity is far below potential.

I: Area of major crops planted to certified seeds

Nigeria has two main sources of improved seed. There is the formal or commercial seed sector, with improved seeds supplied by formal agricultural institutions such as the ADPs and the seed companies as well as some NGOs, a limited number of out-growers and farmers' associations who produce about 12-20 percent

of the certified seeds used in Nigeria (FAO and AfricaRice 2011). These improved seeds have been proven to have higher yields than ordinary seeds and are sold to farmers through farmer cooperatives, input suppliers and other registered organizations. The second type of improved seeds comes from the traditional or informal seed sector. These are seeds that farmers save from their crops and use in subsequent planting seasons, or trade or buy informally. The two main types of improved seeds that farmers frequently use are:

- a. *Hybrid seeds* – seeds produced by artificially crossing selected parent lines. Farmers must buy this seed every year – they should not save seed from season to season.
- b. *Self-Pollinated or Open-pollinated varieties (OPVs) or self-pollinated seeds* – these can be saved by farmers for several seasons (three seasons are usually recommended), and account for most of the seed used by farmers in Nigeria. The primary crops that improved OPVs are used for are wheat and maize.

Rates of commercial maize seed use in Nigeria are very low compared to other Sub-Saharan countries such as Zimbabwe, Zambia, and Kenya, where more than 70 percent of the maize seed used is from commercial sources (Alemu et al, 2010). Nigerian farmers require an estimated 1,000,000 metric tons of improved seeds each year to grow cereals and pulses, compared to the 20,000 to 50,000 tons currently supplied through the formal sector – about 2-5 percent of the volume of seed needed. Nigerian farmers fill this gap between supply and demand by using seeds they have saved from previous growing seasons or by obtaining seeds from other farmers. Figure 5 shows the supply and demand for certified seeds for the various staples over a five year period while Figure 6 shows the extent of shortages in selected staples in the country.

Figure 5: Certified Seeds supplied by the commercial/formal seed system versus total seed requirements in the country (2006/07-2009/10)

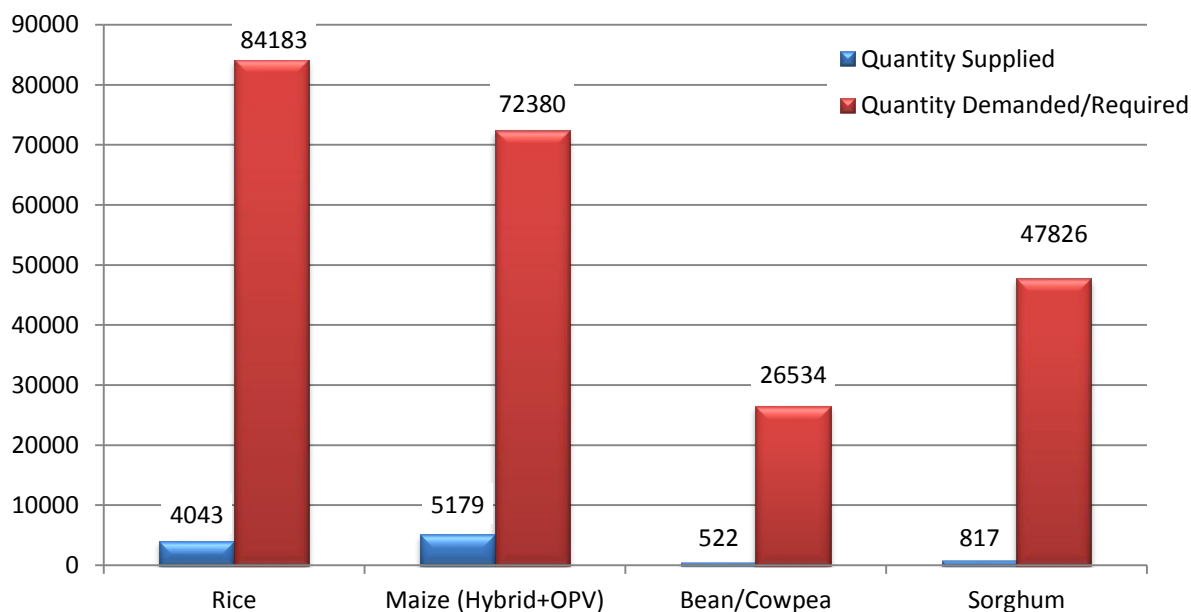


Figure 6: Estimates of Shortages in certified seed in major staples in Nigeria (2006/07-2009/10)

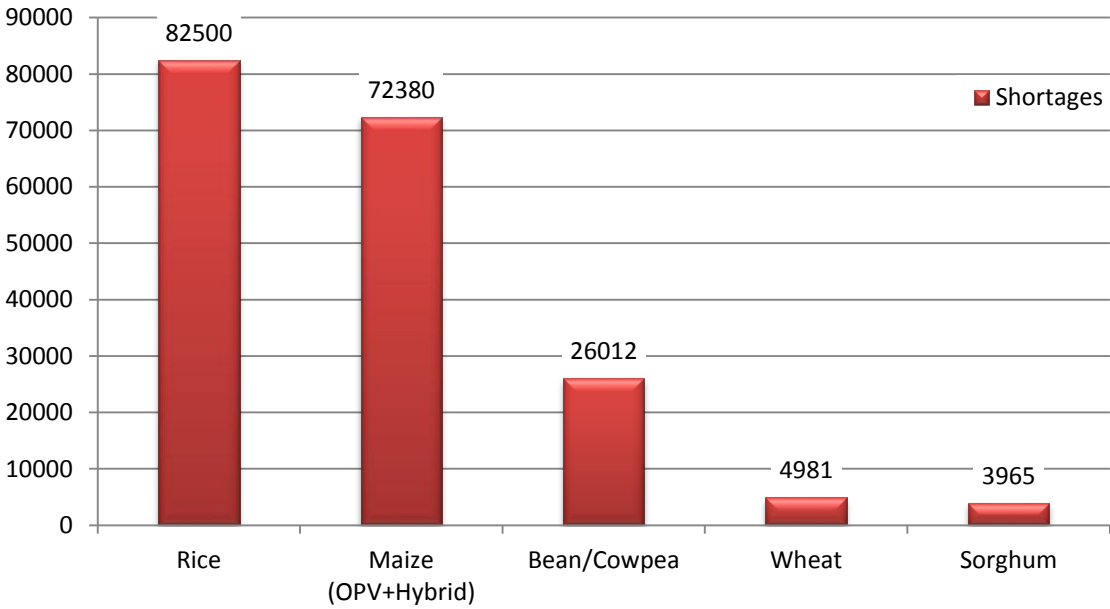
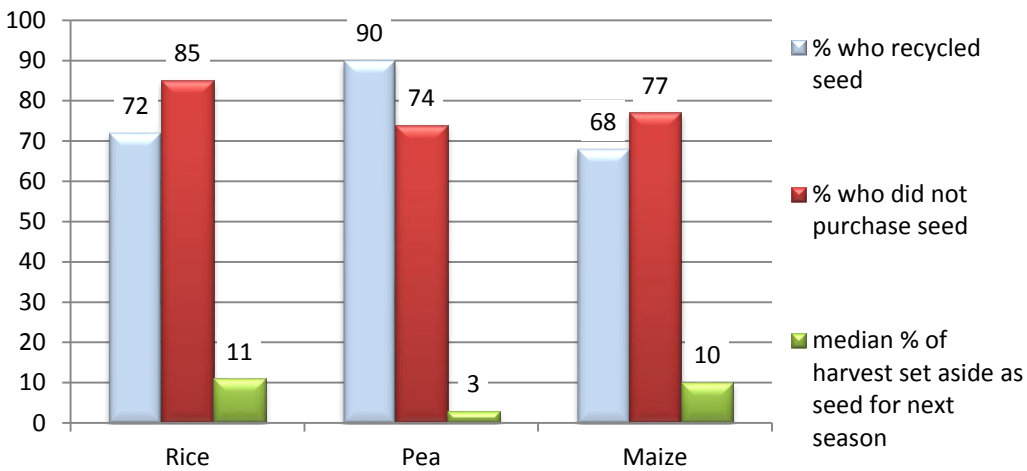


Figure 7: Percentage of Producers who either recycled or did not purchase seed in Nigeria



Source: Hiroyuki et al., 2010

The formal seed sector is currently dominated by public sector agencies, which have been unable to supply seeds in sufficient volumes to meet demand. A number of factors are attributable for The underperformance of the public seed system. The different public agencies active along the supply chain, from breeder seeds to the production and distribution of certified seeds, are underfunded. Nigeria also lacks the essential infrastructure, logistics, and adequately trained manpower which are generally needed for a seed industry to become viable. And most critically, there is a lack of awareness among Nigerian farmers about the benefits that can accrue from the use of certified seeds.

For Nigeria to develop an efficient, demand-driven seed market, the variety of investors and stakeholders active along the supply chain will need to coordinate planning, marketing, production, and timely distribution – which is one of the purposes of the government’s Agricultural Transformation Agenda.

The percentage of land area under certified seed cultivation of major crops in Nigeria is very small despite the large area that is cultivated. Nigeria ranks among the African countries with the smallest proportion of area planted with improved maize seed.

Figure 8: Percent of land area of major crops planted with certified seeds, 2004/05-2009/10

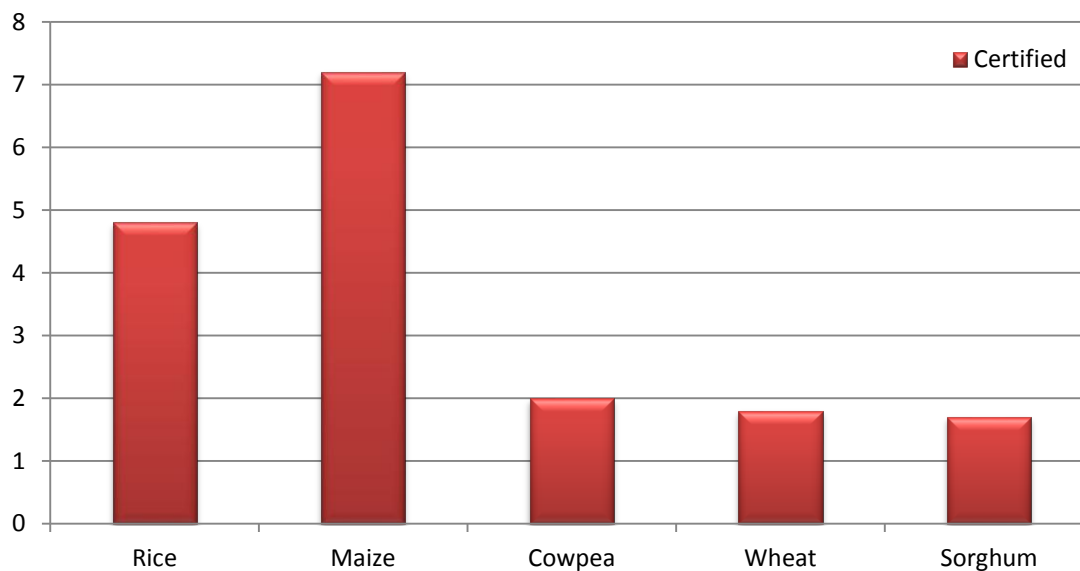


Table 5: Area covered by certified seeds in selected SSA Countries

Country	Area (million ha)	Seed Demand (000mt)	Adoption Rate (% of area)
Ethiopia	1.7	42	19
Kenya	1.6	39	72
Tanzania	2.6	64	18
Uganda	0.7	17	35
Angola	0.8	19	5
Malawi	1.4	35	22
Mozambique	1.2	30	11
Zambia	0.6	14	73
Zimbabwe	1.4	34	80
Benin	0.7	16	NA

Mali	0.3	8	0.3
Nigeria	3.6	89	5

Source: Langyintuo et al (2010)

II. Legal and regulatory framework for seed production, multiplication and certification.

The current legal and regulatory framework governing the seed production, multiplication, and dissemination was promulgated by the then military government in 1992 under National Agricultural Seed Decree No. 72. Through this decree, the National Agricultural Seed Council (NASC) was established as a regulatory body mandated to carry out a variety of tasks in the industry. These included the following.

- a) To analyze and propose programs, policies, and actions regarding seed development and the seed industry in general, including legislation and research on issues relating to seed testing, registration, release, production, marketing, distribution, certification, quality control, supply and use of seeds in Nigeria, importation and exportation of seeds, and quarantine regulations relating thereto.
- b) Propose improved management system and procedure relating to the administration of seed activity and advise the Federal Government on the organization, management, and proper financing of seed programs.

Above all, the decree vested in the council the powers to revoke any certification granted under this Act if it is proven that the certification was obtained by misrepresentation or that the holder of the certification has contravened any of the provisions of this Act or any regulations made thereunder.

However, due to several limitation and loopholes in the seed decree of 1992 and the non-harmonization of other similar acts such as the crop and Varieties and Livestock Breeds Decree of 1973, the FGN in 2002 decided to institute a panel to review the national seed decree of 1992. The terms of reference for this review included the following:

- To examine the current seed policy guidelines with a view of identifying the areas of weakness that needs reforms
- To study the provisions of the National Agricultural Seed Decree No 72 of 1992 and recommend necessary amendments where it was felt necessary
- Identify the strengths and weaknesses of the Seed Decree in delivery the following services

Stakeholders' interviews indicate that since the revision of the decree and associated regulations were finalized in 2004, the suggested amendments have yet to be implemented and enacted into laws. Many stakeholders contend that the amendments are no longer valid because many changes have occurred within the domestic, regional and international seed systems and events have overtaken the amendments. In addition, the current Agricultural Transformation Agenda (ATA) targets the seed sub-sector as an area that needs overhauling. The earlier recommended amendments to the decrees were found to be no longer relevant to the aspirations of the current administration with regards to the transformation of the seed sub-sector.

In the absence of a comprehensive functional seed law that is understood by all, the seed industry in Nigeria continues to operate under a weak regulatory system that fails to guarantee seed quality or quantity, from informal sources in particular. As a result, farmers are subject to paying higher prices for what are purported to be certified seeds, but which in fact are not improved varieties and which do not increase yields. By using recycled seeds, farmers forego as much as 50 percent of potential yield increases, which makes for significant lost opportunities to raise their income. Recycled seeds obtained from the informal sector are much more likely to have become contaminated and to have lost vigor and vitality.

Progress towards regional coordination among the member countries of the Economic Community of West African States (ECOWAS) has been slow in the area of new seed varieties. In 2009, a new agreement stipulated that companies operating within the ECOWAS region can no longer sell uncertified seed – even if it is labeled truthfully. Until recently seed could be sold without being certified in Nigeria, as long as it was truthfully labeled. The ECOWAS agreement will make uncertified, truthfully labeled seed illegal for 11 major crops and so the National Seed Council can no longer tolerate companies selling uncertified seed. Farmers may continue selling seed to other farmers but in smaller amounts than previously allowed.

At the time of the ABI interview, the revised seed decree and regulations were still waiting for approval and ratification by the legislature before being enacted into law. Going by ABI's scoring for the indicator on this success factor, this stage of seed law enactment for Nigeria gives the country a score of 2.

III. Private sector participation in the production and marketing of improved seeds of major Grains

Both public and private actors are important players in the formal seed sector value chain. The public sector is the dominant player in upstream activities and is the leading actor in the breeding and foundation seed production. The private sector plays the leading role in multiplying, marketing, and distributing seed.

There are about 32 licensed seed companies in Nigeria. 13 major seed companies account for more than 80 percent of the total market share of seeds from the formal seed sector. The seed companies on average account for about half (50 percent) of the total certified seeds marketed by the formal seed sector but only about 3-5 percent of the total seed requirements for the entire country. Certified seeds account for 71 and 90 percent of maize and sorghum respectively.

Table 6: key Actors and the role of the Private Sector in the Seed Industry in Nigeria

Activity	Local	Variety	Foundation	Seed	Seed	Marketing	Distribution	Testing,
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the Value Chain	variety breeding	Registration and regulation	seed production	production and Multiplication	processing	promotion And awareness		certification and registration
Key Players and Actors	National Universities with Research Institutes with breeding expertise	National Crop Variety Naming and Release Committee	National/ Public Seed Companies and Research Institutes	Private seed companies and seed growers	Private seed companies	Private seed companies	Private seed agro-dealers and input sellers	National Seed Service

Source:: Midterm Review of Program for Africa's Seed System (PASS), The Alliance for a Green Revolution in Africa (AGRA), September 2010

Table 7: Priority crop information (comparison of 2007 business report and 2010 information)

crop	Year	Source of Foundation seed	Formal sector production (% of total available)	Formal sector distribution channel	Formal sector distribution channel	Number of varieties released in the last 5 years		
						Number released	% commercialized	% adopted
Rice	2007	<i>University Breeding stations, research institutes+ Private companies</i>	Govt/NGO/donor Community Scheme (3%); Private companies (3%)	NASC, ADP, private agro dealers	3550	5	80	100
	2010	<i>Private companies</i>	JIrkur Seed Cooperatives, Manoma Seed	NASC, ADP, private agro dealers		Upland 19; Lowland 33	<20% <30%	<30% <45%
Maize	2007	<i>University Breeding stations, research institutes+ Private companies</i>	Govt/NGO/donor Community Scheme (3%); Private companies (5%)	NSS, ADP, private agro dealers	2600	8	100	63
	2010	<i>Private companies</i>	JIrkur Seed Cooperatives, Manoma Seed	NSS, ADP, private agro dealers		18	45	60
Cassava	2007	<i>University Breeding stations, research institutes+ Private companies</i>	Govt/NGO/donor Community Scheme (10%); Private companies (10%)		2000	8	63	60
	2010	<i>Private companies</i>		NSS, ADP, private agro dealers		17	NA	<30%
Sorghum	2007	<i>University Breeding stations, research institutes+ Private companies</i>	Govt/NGO/donor Community Scheme (3%); Private companies (3%)	NSS, ADP, private agro dealers	750	2	100	100
	2010	<i>Private companies</i>	Manona Seeds	NSS, ADP, private agro dealers		2	100	100

Source:: Midterm Review of Program for Africa's Seed System (PASS), The Alliance for a Green Revolution in Africa (AGRA), September 2010

The private sector's role in the Nigerian seed market is most prominent in the multiplication and marketing of certified seeds. Local variety breeding is undertaken by the public sector through the 10 NARIs, two of

which operate within universities. The NARIs are mandated to conduct breeding for specific crops. Once varieties have been developed, they are put forward for testing to the National Crop Variety, Naming and Release Committee (NCVNRC) who then work to ensure that the descriptions or characteristics provided by the breeder fit the variety. Under a revised process, new varieties can be officially released within two years.

The current legal framework allows for the NASC to coordinate the production of foundation seed, which it does through its own infrastructure, and to contract with the state level parastatal Agricultural Development Projects. It does not permit the private sector to produce its own foundation seed. In theory, private seed companies should obtain all foundation seed from the NASC or Agricultural Development Projects and produce certified seed, either on their own farms or through contracted growers (AGRA, 2010).

Interviews with stakeholders indicated that some private sector seed growers were engaged in the production of foundation seed due to limited availability from the public sector although this was illegal and impossible to verify. No information was available on the quantity or the share of foundation seeds produced by the private sector. The absence of functional seed laws and inadequate regulation of the seed systems meant that illegal seed producers could not be prosecuted.

Another factor affecting private sector participation and profitability is government subsidies of certified seeds. At the time of the study, there was a 50 percent subsidy on seeds which in theory are extended to smallholders with two hectares of land or less. The study team however found excessive leakages, with much of the subsidy benefitting large scale farmers. The subsidy was not only poorly targeted, but distorted the seed market and crowded out the private seed companies in the country.

In terms of overall sales of certified seeds, the dominant private seed company is Premier Seed Nigeria Limited, with a high percentage of the market share in certified seeds in the country. Private companies produced a broad range of seeds, including maize (both OPV and hybrid), rice, sorghum, and soybean.

Seed imports in Nigeria

Despite the dearth of breeder seed, foundation and certified seed, imports of seed in Nigeria are very low. Between 2005 and 2010 the seed imports as a percent of total certified seed in the country was as follows: 10 percent (for rice, maize and wheat combined); maize (16 percent); rice (2 percent) and wheat (2 percent). A duty of 5 percent of the CIF value is charged on all imported seeds. Lengthy multi-locational varietal trials discourage seed imports. Except for inbred lines and new varieties for seed development purposes; importation of large quantities of seed is subjected to multi-locational trials by officials of National Coordinated Research project (NCRP). This lengthy variety testing and registration, which on average takes about two years, is responsible for the limited international trade in seed in Nigeria.

Most recently, the NASC has embarked on aggressive campaigning to leverage seed production and use in the country. The NASC has been partnering with many international institutions and organizations including IFPRI, IFDC, and the African Seed Trade Association to enable the country to develop its agro-dealer network and to develop facilities including laboratories that would qualify Nigeria for ISTA and OECD accreditation. The Council also recently launched a Seed Policy Enhancement Project in Africa Region (SPEAR) designed to open up the Nigerian seed industry to international as well as regional trade. However, the lack of progress in the harmonization of seed laws and regulations continue to undermine the efforts of the NASC to integrate the country into the main stream of trade that could help redress the perennial shortage of seeds in the country.

Private Sector Perceptions of the Business Environment in Seed

About 32 licensed seed companies operate in Nigeria. 13 of them are considered large companies and these account for about half of the total certified seeds sold by the formal sector. In terms of certified seeds of maize and sorghum, the private seed companies account for about 71 percent and 90 percent of the total seed used in the country but supply insignificant amounts of other staples – particularly beans and wheat. Private seed companies engage mainly in the production of hybrid varieties, which are more profitable than OPVs and other forms of improved seeds.

Over the past four decades, the government of Nigeria has assigned the production of seeds (breeder, foundation, and certified seeds) to different seed-related institutions. Breeder seed in the formal seed sector is produced solely through the country's National Agricultural Research Institutes (NARI). In 1975, the former National Seed Service (NSS) was mandated to produce foundation and certified seeds. Later, the Agricultural Development Program's (ADP) seed multiplication units joined NSS in producing foundation seeds, and distributed them through the farm service centers of the Federal Ministry of Agricultural and Rural Development (FMARD) and ADP (Adejobi and Williams 2005).

Supply from the private sector has been on the rise mainly by contracting outgrowers to produce certified seeds by multiplying foundation seeds. With the growing role of the private sector and increasing numbers of out-growers in seed production, it is expected that the capacity of the seed sector to develop suitable seeds for diverse agro-ecological zones will also increase.

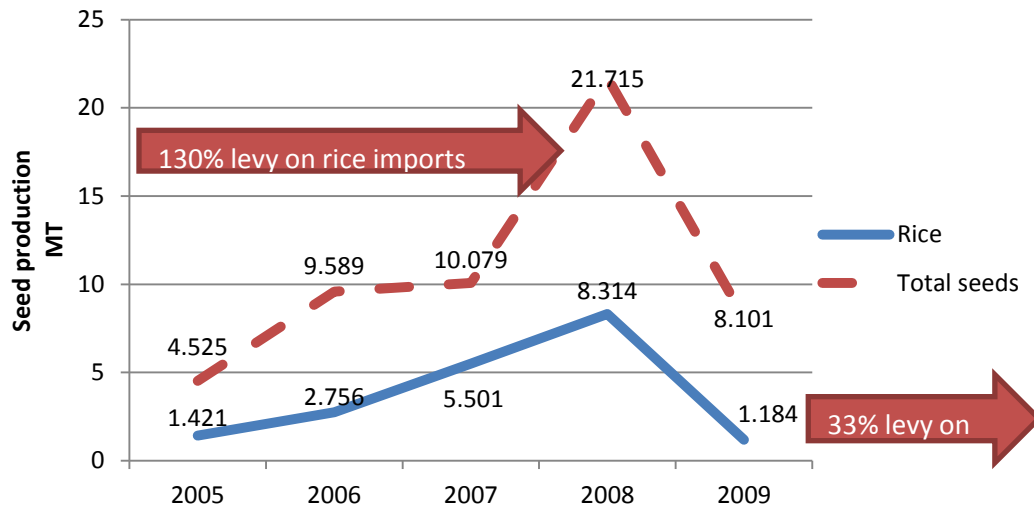
One factor that has hampered the development of the seed industry is the lack of coordinated network of agro-dealers to link up with farmers in the remotest parts of the country, particularly in the north where population density is thin and land area is very large. This problem becomes more confounding in a situation in which the private companies are clustered around cities such as Zaria and Ibadan that have links with the

universities and government parastatals and ministries dealing directly with farm inputs and administering the government subsidies.

Another problem that has seriously burdened the private seed companies is the frequent change in government policies on the rules and regulations particularly as they affect import and export tariffs as well government subsidies on certified seeds. Governments in Nigeria frequently use fiscal policies of subsidies and taxation and tariffs to indirectly regulate the seed market. For example, in 2004 the government imposed a 130 percent levy on rice imports to protect Nigerian rice farmers. This incentive stimulated rice seed production and purchases by farmers trying to take advantage of the rice ban to earn additional income. This high import tariff was later lifted during the 2008 food crisis for 6 months. After the crisis, the tariff was replaced with a much lower (32.5 percent) one. These tariffs on rice imports saw a surge in seed produced in the country in response to rising grain prices. High grain prices stimulated demand for seed at least in the short run. However, inconsistency in the way the tariffs are administered tended to distort the market and made business planning very difficult for seed producers.

In Figure 9 we see the effect that government tariffs on rice imports have had on seed production in the country. Rice seed production is more profitable with high tariffs, while it drops when tariffs are lowered and imported rice floods the local market. Because these mostly ad hoc, temporary policy interventions have been common, most often to address a “sudden surge” in the price of a staple, their impacts invariably distort the market and exacerbate price spikes and volatility in the grain as well as in the seed markets. This makes planning very difficult for the private sector.

Figure 9: Effects of Tariffs on rice import on rice seed production



Source: Van Mele, P and R.G. Guéi, (2011)

The seed to price ratio was obtained as 4:1 for both yellow and white maize and 2:1 for imported rice and 1:1 for local rice respectively. These ratios are consistent with an unfavorable market environment for private seed sector development given that the Nigerian seed market is a development phase and during this phase seed ratios low need to be higher than these for the seed industry to be profitable and attractive to private seed companies. The supply of certified seeds is low because government subsidies and interventions depress seed prices and make the market unfriendly for private seed companies.

Nigeria scores a 2.0 on the private sector perception of business environment in the seed sector based on responses from stakeholders. This is in line with the government interventions that crowd out the private sector. The private sector faces unfair competition with state agencies, particularly the Agricultural Development project (ADPs). The private seed companies survive under very unfair competition with ADP-subsidized seed, and a debt load created by government seed procurement programs that delay payments to the private companies for seeds supplied or in some cases do not honor commitments.

3.1.2 Access to Fertilizer

Table 8: key Indicator findings for access to fertilizer in Nigeria -2011/2012

Total fertilizer use in past three years (in MT)	Total Fertilizer use (2008-2010) = 1,648,361.13; Average (2008-2010)=549, 453.7
Compound Annual growth rate in import (%)	
Fertilizer application rates (kg/ha)	13kg/ha
Fertilizer use by major crops	Sorghum (21%); Maize (18%); Beans/cowpea (14%); Rice (13%); Millet (11%); It is estimated that food crops account for about 80% of the total fertilizer used while about 14 percent of the export grower farmers use around 20-27% of the fertilizers depending on the seasons and commodity prices
Cost of 50 kg bag of NPK, urea and sulfate of ammonia in 2-3 main agricultural production zones in a country	Urea (Naira 6593.35/ US\$40.45); NPK (Naira 6641.20/US\$ 40.74); DAP (Naira 7646.13/US\$46.91); MOP (Naira 6306.28/US\$38.67). These are the unsubsidized market prices for the main fertilizers used.
Timeliness in the importation of fertilizer (proxy for timeliness in the application of fertilizer): Time it takes the government to pay fertilizer importers (days) (This may only be a useful indicator if there is a government subsidy program, involving use of private sector to import and distribute fertilizers. Getting disaggregated import data from major ports of fertilizer entry is challenging).	Several reasons have been advanced for low fertilizer usage in the country but the most constraining factor as identified by elaborate survey of extension agents' perception of factors constraining fertilizer uptake by farmers in Nigeria is the fact that the fertilizers did not arrive at the right time. About 60% of the extension agents interviewed identified lateness in supply as the major factor constrained farmers' usage of fertilizer as against 55 % that cited credit as a major constrain. Surprisingly only about 11 percent of the extension agents interviewed perceived high prices of fertilizer as the main limiting factor. Indeed, about 90% of farmers in the northern states of Nigeria identified getting fertilizer in time for the planting season is more important than the cost of the fertilizers.
Agro-input dealer density (Agro dealers/10,000 farmers)	It is estimated that there are about 10,000 agro-dealers with about 5,000 of them formally trained in the business of agro-dealership. With an estimated population of 160M, 52% are considered rural. Out of this 52% that is rural, 58% is the proportion in active farming implying that only about 30% of the total population of Nigeria is engaged in agriculture. Thus the farming population in Nigeria is about 48M. Thus agro-dealer density in the country is 2.8 per 10,000 farmers or 0.002 per 100,000 farmers or 0.02 per 1 Million farmers
Ease of private sector participation in the fertilizer market (Scale: 0-5)	The inefficient subsidy scheme for fertilizer in Nigeria has effectively depressed private sector participation in the fertilizer industry. Greater subsidy rates have been associated with lower open market fertilizer price which generally lowers the profitability for private fertilizer

	marketing sub-sector. Late and sometimes non-payment has resulted in the illiquidity of some private fertilizer companies. On a scale of 5 and based on the response of fertilizer dealers, the country scores a 1 on a scale of 0-5
Nutrient /Output Price Ratio {Pn/Po}	Maize is 3.5; Rice 1.8; Cowpea/Beans (2.0); Sorghum 5.9 (Calculated using unsubsidized (market) price of the fertilizers)
Measure of Profitability and risk in using fertilizer: value cost ratio (marginal value product of fertilizer use divided by marginal cost of using fertilizer)	VCR for Maize (2.5); Sorghum (2.5); Cowpea/Beans (3.5) and Rice (3.4)
Fertilizer Subsidy (% of retail cost), 2011	50% (25% subsidy from the State Government and 25% from the Federal Government)
Tariffs and taxes on fertilizer	There are no tariffs and duties on imported fertilizer like other agricultural inputs but there is 5% VAT for fertilizers that have been blended within the country from imported raw materials
Inland additional Cost as a percent of retail price	Urea (31%); NPK (31%); DAP (29%); Overall Average 69%
CIF Price as a % of Retail price	Urea (69%); NPK (69%) DAP (71%) and MOP (68%) Overall Average 69%

I. Fertilizer Policy in Nigeria

Significant output and yield increases can be achieved if farmers adopt recommended packages that include all critical factors of production (certified seed, fertilizer and pesticides/herbicides). When applied in combination with other modern inputs, chemical fertilizers can significantly increase yields, yet most farmers in Africa have not fully taken advantage of fertilizers to generate a marketable surplus and move out of subsistence agriculture and into the mainstream market economy.

This section presents indicators that can help policy makers and other stakeholders undertake reforms if necessary to promote fertilizer consumption. Although differences in fertilizer application rates may be influenced by variations in soil and agro-ecological conditions, fertilizer use is very low across most of Sub-Saharan Africa. It must increase significantly if agriculture is to be profitable and stimulate entrepreneurship along agribusiness value chains.

Nigeria has a fertilizer policy in place to guide fertilizer production, import, marketing and distribution within the country. The broad objective of the National Policy for Fertilizer is to facilitate farmers' timely access to adequate quantity and quality of fertilizers at competitive but affordable prices in Nigeria by farmer, among others.

This draft framework for the fertilizer industry is in place but not adopted. The fertilizer sub-sector in the country today remains one of the most controversial of the input sectors. It is fraught with corruption and mismanagement arising from subsidies as well as in the procurement, marketing, and distribution processes. Numerous fertilizer regulatory activities exist concurrently and a number of organizations are involved in enforcing these regulations in Nigeria. The standards and regulatory agencies include the Standards Organization of Nigeria (SON), National Agency for Food and Drug Administration and Control (NAFDAC), Federal Fertilizer Department (FFD) of FMARD, States Ministries of Agriculture (SMAs) and agricultural research institutes among others. Despite these numerous participants, fertilizer quality remains a major issue. To understand and assess the effectiveness of the fertilizer quality regulatory system, questionnaires were administered to desk officers in each SMA and ADP where appropriate.

II. Fertilizer supply and consumption

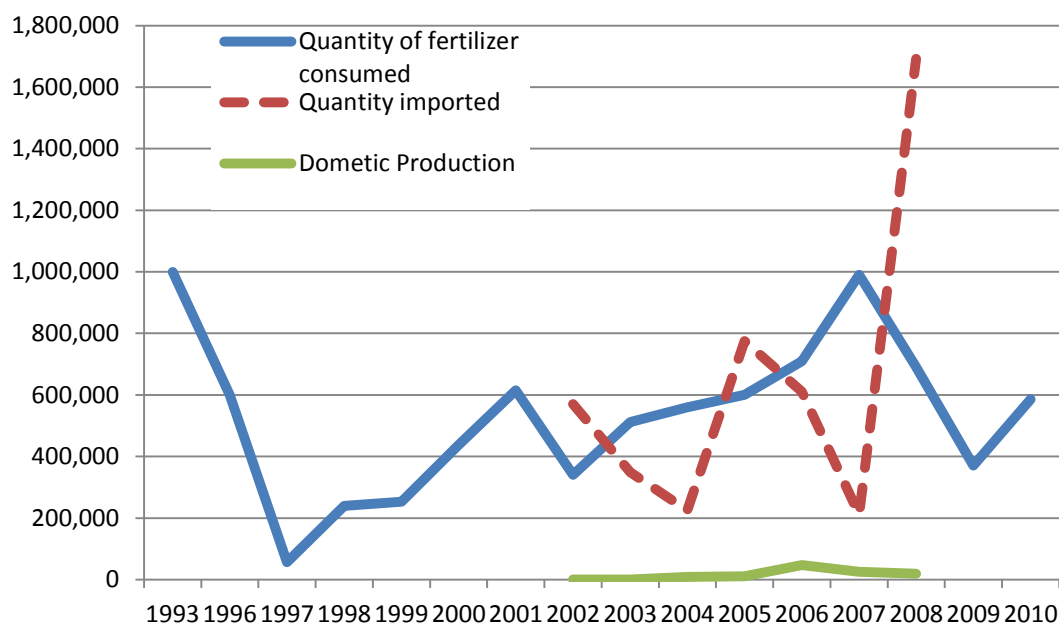
Nigeria has a great potential for fertilizer consumption and use. In 1990, a study conducted by the Agricultural Projects Monitoring and Evaluation Unit (APMEU) put the agronomic potential at 7 million metric tons. With increased release of higher yielding and fertilizer consuming crop varieties, current estimates put Nigeria's potential higher, at around 12 million metric tons per annum.

The abundant natural gas, most of which is now being flared, can be harnessed to produce large quantities of nitrogenous fertilizers. Commercial quantities of rock phosphate deposits in several states including Sokoto, Niger, Kwara, Oyo, and Ogun can be harnessed and used for the production of phosphate fertilizers. The only raw material that is not yet found in substantial quantities in Nigeria is potassium. The two fertilizer manufacturing companies – the Federal Super phosphate Fertilizer Company (FSFC) set up in 1976 and the National Fertilizer Company of Nigeria (NAFCON) set up in 1988 have both been hampered by poor public sector management. They have been out of serious production for nearly 10 years now. The two plants have an installed capacity of over 1 million metric tons per annum. All attempts to turn them around have failed. Recently, the government has decided to privatize the two plants and in spite of that not much production is taking place and output is still far below installed capacity (FEPSAN, op cit 2012). Despite this high potential, supply and consumption, which peaked at average of 1 million metric tons per annum from 1984 – 1996, has now dropped significantly to an average of 500,000 metric tons per annum since the deregulation of the industry in 1997 (Fertilizer Suppliers Association of Nigeria, 2012)

Owing to the lack of local production, most of the fertilizer used in Nigeria is now imported. The consequences of relying on imported fertilizer include drains on foreign reserve, insufficient supply due to high capital requirements for importation, and consequent high retail prices for the farmers, which renders the input unaffordable.

At the time this study was conducted, few activities were underway in terms of domestic production and all the fertilizers used in the country were being imported. Indeed local manufacture of fertilizers in Nigeria has been almost zero in the last 10 years. Combined with inconsistent government policies, supplies in the last ten years have been erratic and insufficient with resulting high retail prices that make the commodity highly inaccessible and unaffordable. This trend has continued to beleaguer the fertilizer industry in Nigeria, a situation that has undermined the development of the fertilizer industry in the country. However, with the advent of the present administration, there seems to be a clear policy that has fully delineated the functions of the private sector, the state and federal government as regards to fertilizer procurement and distribution in the country.

Figure 10: Fertilizer consumption in Nigeria: 1993-2010

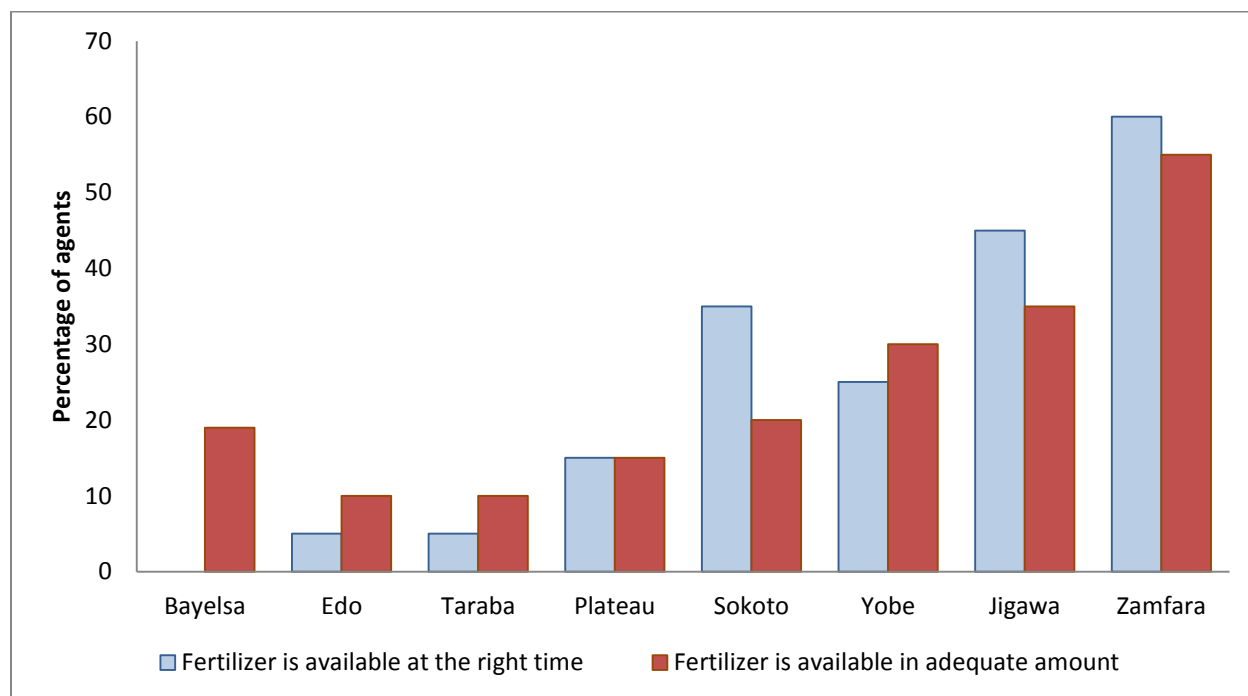


Source: Fertilizer Coordinating Unit, Abuja Nigeria

The amount of fertilizer that farmers have access to varies widely across states. Though Anambra and Bauchi have similar numbers of farming households, in Anambra, the amount of federally procured fertilizer per agricultural household is on average about one-tenth of a bag (50kg) compared to three bags in Bauchi (Banful et al., 2009). The subsidy rates state governments provide on the already federally subsidized fertilizer varies from 0 to 50 percent. In a typical state, there is federally subsidized fertilizer, federal plus state subsidized fertilizer and, (in principle) unsubsidized fertilizer procured through private channels. Arbitrage opportunities and incentives to mislabel the source of fertilizer abound and late arrival and hence late applications continue to hamper the efficient use of this important input. Figure 10 shows the percentage of

state extension agents who reported that fertilizer arrive at the right time and in adequate amount in 2010. Inadequate fertilizer supply and late arrival constitute major bottlenecks in getting the farmers to adopt and use the input

Figure 11: State level variation in extension agents' perceptions of access to fertilizer (%)



Source: Banful et al; 2010

Fertilizer procurement and distribution in Nigeria

Since the late 1970s, fertilizer has typically been heavily subsidized, with rates as high as 95 percent. Currently, the FGN, under the Federal Market Stabilization Program (FMSP), procures fertilizer for sale to states at a subsidy of 25 percent. State governments typically institute additional subsidies on fertilizer. Under the current marketing structure, companies make bids to the FGN to import and distribute subsidized fertilizer. Several states also procure fertilizer outside of the FMSP for sale to their farmers.

Takeshima et al, (2012) have documented the two channels through which farmers can procure fertilizers in Nigeria. Under the first channel, each state government would submit a request to the federal government to procure a certain quantity of fertilizer based on demand projections in their states. The federal government then determines the actual total quantity to be procured based on actual budget allocations and issues tenders to the private sector fertilizer manufacturers. Private fertilizer manufacturers obtain fertilizer, particularly NPK, from the international market, and supply fertilizer to the federal government who then distribute

fertilizer to three Ministry of Agriculture warehouses in each state (Gregory 2008). The federal government would normally calculate pan-territorial delivered prices for NPK, Urea, and SSP based on national freight equalization and then deduct 25 percent of the price, representing the share of the FGN fertilizer subsidy before delivering to each state. Each state then distributed fertilizer to farmers through outlets, mainly the Agricultural Development Project (ADP), after applying an additional state-level subsidy ranging from zero to 50 percent (but more often than not 25 percent) of the federally subsidized price.

The second channel involves sourcing un-subsidized fertilizer from the open market, where the fertilizer is bought directly from the international market or private manufacturers. Takeshima et al, (2012) reported that in 2009 and 2010, the supply of 400,000 and 900,000 tons, respectively, of inorganic fertilizer (NPK, Urea, and SSP combined) was obtained from the open market through procurement awards to fertilizer manufacturers in Nigeria under the federal subsidy program. Of this, 371,063 and 586,145 tons, respectively, were actually supplied by the contracted manufacturers. As Nigeria has 34 million hectares of arable land (FAO 2012), these quantities of subsidized fertilizer translate to rates of approximately 11–17 kg/ha with the figures in line with the 13kg/ha reported by others including the FMANR.

Federal, state, and local governments have all been involved in the procurement, distribution, and price determination of fertilizer at various times. Recent price information suggests that only 11-30 percent of subsidized fertilizer reaches smallholder farmers at the subsidized price. The parallel sales of “subsidized” and “market” fertilizer tend to create an avenue for the lower priced subsidized fertilizer to be diverted for sale at higher market prices. This situation tended to crowd out the private sector and create rent seeking opportunities to exploit the systems, exacerbating corruption and leakages within the sector (Adesina, 2012).

It was against this background that the new administration introduced a number of checks and balances to redress the leakages and waste that have characterized the sector for decades. The new fertilizer subsidy program under the Agricultural Transformation Agenda (ATA), called the Growth Enhancement Support (GES), has as one of its main objectives the goals of increasing fertilizer use from the current level of approximately 13 kg/ha to 50 kg/ha (FMARD 2011). The main aim of the GES program is to target beneficiaries through vouchers and to hand over the distribution of subsidized fertilizer to private dealers from the government. This contrasts with previous subsidy schemes in which the government directly participated in the procurement and distribution of subsidized fertilizer through the agricultural development subsidy. The GES aims to benefit 20 million farmers by 2020 by providing subsidies equivalent to NGN5,000 annually for four years.

Under the plan, each registered farmer is supposed to receive approximately 100 kg of fertilizer (2 bags of 50kg each) each year during the four years of the subsidy program. This will be implemented by providing a 50 percent subsidy throughout the country, in which the federal and state government will each contribute 25 percent of the subsidy worth about N5000 per farmer per year. Going by current market value for fertilizers, it is expected that the end of the tenth year, the expected time it would take the program to fully commercialize the fertilizer sector, the total cost for implementing the scheme would be about NGN400 billion or US\$2.5 billion (Adesina, 2012).

The new subsidy plan is in progress and as reported by the current Minister of Agriculture the country started by registering the farmers in 2012 and by the first year, the country has registered about 4.2 million farmers. In 2013, the country would have registered an estimated 10 million farmers. This implies that before the end of 2014 the country would have succeeded in registering all the 14.2 million farmers in the country going by the FAO's estimated of the total number of farmers in the country.

Intensity of Fertilizer Use

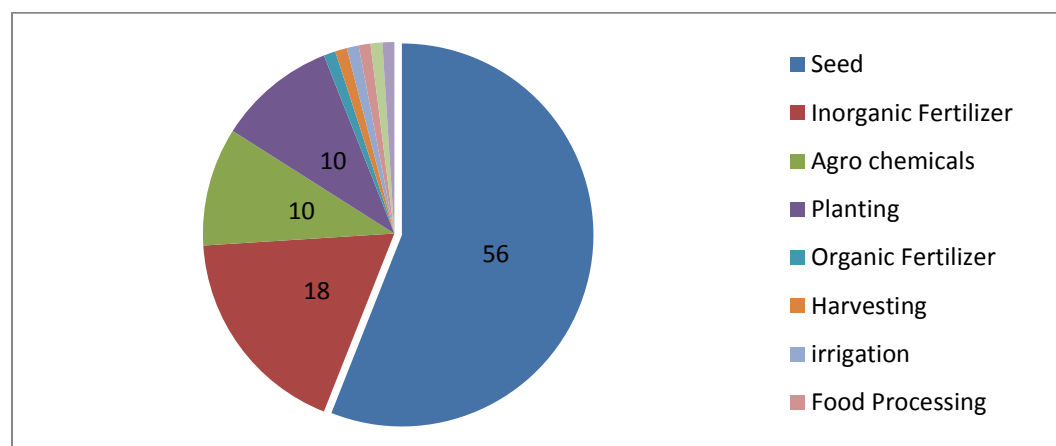
Fertilizer application in Nigeria is estimated at 13 kg/ha by the Federal Ministry of Agriculture and Rural Development. This is far below the 200 kg/ha recommended by the United Nations Food and Agriculture Organization (FAO). This translates to about 6kg/ha of nutrients and is also well below the Abuja Food Summit recommendation of at least 50 kg/ha of nutrients in line with the declaration of the African Union Heads of States of Government on food security and hunger reduction in the continent.

Low fertilizer use has been identified as a major challenge that must be overcome in order to increase Nigeria's agricultural productivity. The amount of fertilizer farmers have access to varies widely between states. Anambra and Bauchi for instance have similar numbers of farming households. In Anambra, the amount of federally procured fertilizer per agricultural household is on average about one-tenth of a bag (50kg) compared to three bags (150kg) in Bauchi (Banful et al, 2009).

Unfortunately, a number of factors that contribute to low fertilizer use are not addressed by direct price subsidies. The extension service system can play an important role in increasing demand for fertilizer by transmitting information about soil improvement technologies to farmers. In Nigeria, the extension service is also instrumental in providing farmers access to fertilizer. Banful et al. (2010) have noted that the primary constraint to fertilizer use in Nigeria is the absence of the product at the time that it is needed, rather than affordability problems or farmers' lack of knowledge about its importance. This constraint or the underperformance of extension service in providing adequate and timely information on fertilizer adoption has been highlighted by Banful et al (2010). By examining the technology that VEAs frequently transmitted most often to farmers, it was found out that transmission of fertilizer technology lags far behind transmission

of improved seed technology (see figure 12). Increases in farm productivity require three elements: high yielding seed varieties, fertilizer, and irrigation – in addition to credit.

Figure 12: Rates of Technology Transfer in Nigeria



Source: Banful et al; 2010

Note: Unlabeled are: organic fertilizer, harvesting, irrigation, food processing, erosion control, livestock technology, all 1%.

Figure 11 shows fertilizer use by types of use and Figure 17 depicts the distribution of fertilizer use by crop. Most fertilizer is used on cereals (food crops), in line with the government’s food security objectives. On average, more than 70 percent of the total fertilizer used in the country is applied to food crops. This might be connected with the food security agenda of the government which is centered on making food available to the population at affordable prices.

Profitability of fertilizer use

Fertilizer prices vary within Africa’s regional economic communities as well as within their member countries, but in general fertilizer prices are much higher in Africa than in any other region of the world. These high costs are largely responsible for the low use of fertilizer throughout the continent. Fertilizers are costly in Africa for a number of reasons (see Morris et al. 2007). This section of the report focuses on how fertilizer prices are established at the port of entry and examines fertilizer cost components within the domestic market. What proportion of the local fertilizer cost is attributable to transportation, handling, and similar charges? The agribusiness indicators used in this analysis should help to explain the reasons behind these costs and therefore inform policies and actions that can be introduced to reduce them.

Analysis of the market prices of fertilizer across the country shows results go against a priori expectations and economic postulates of demand and supply. Normally, prices in the northern states are expected to be significantly higher because the states are much farther from the ports in the south. However this was not typically the case. Fertilizer prices were found to be lower in farther northern states (Banful et al 2008). According to Banful et al (2008), Zamfara State in the north had a functional blending plant in 2008, yet market prices in that state tended to be higher than in nearby states with higher subsidy rates. Economies of scale resulting from the higher amount of fertilizer used in the northern states may partially explain why fertilizers were cheaper in this region compared to the south. However, evidence also suggests that fertilizer sold by the private market is leaked from subsidized sources. Where the government subsidized fertilizer is cheaper, “unsubsidized” fertilizer is also cheaper, despite potentially higher transportation costs (Banfu, *op.cit*).

In 2012, the FOB price for the four main fertilizers used in the country US\$480, \$485, \$590 and \$450 for Urea, NPK, DAP and MOP respectively. Incorporating freight and insurance charges, the CIF price at the Lagos Port for the fertilizers were \$555.33, \$560.34, \$665.40 and \$525.32 for Urea, NPK, DAP and MOP. The average transport cost per ton was estimated at \$85 for all the types of fertilizers. Owing to the large land area occupied by the country, the cost of transportation varies greatly depending on how far a state is from the main port of import, especially from Lagos (see Table 9).

There are about 19 cost items associated with the final price of fertilizers at the state level, or what is described as the total ex-hinterland price (bagged) paid by the farmers. For the four main fertilizers of Urea, NPK, DAP and MOP the retail prices, on the average, across the country were estimated at \$806.53 (NGN131,867.87²); \$812.38 (NGN132,824.90), \$935.31 (NGN152, 922. 67) and \$771.41 (NGN126,125.65) respectively. In other words, the CIF prices accounted for about 70 percent of the total price paid by farmers on these fertilizers. This implies that as much as 30 percent of the prices of fertilizers in the country can be attributed to inland costs including the profit margins for the distributors. Figure 13 shows the disaggregated fertilizer cost components in Nigeria.

Table 9: Transportation costs from Lagos to major fertilizer destinations in Nigeria (\$/MT)

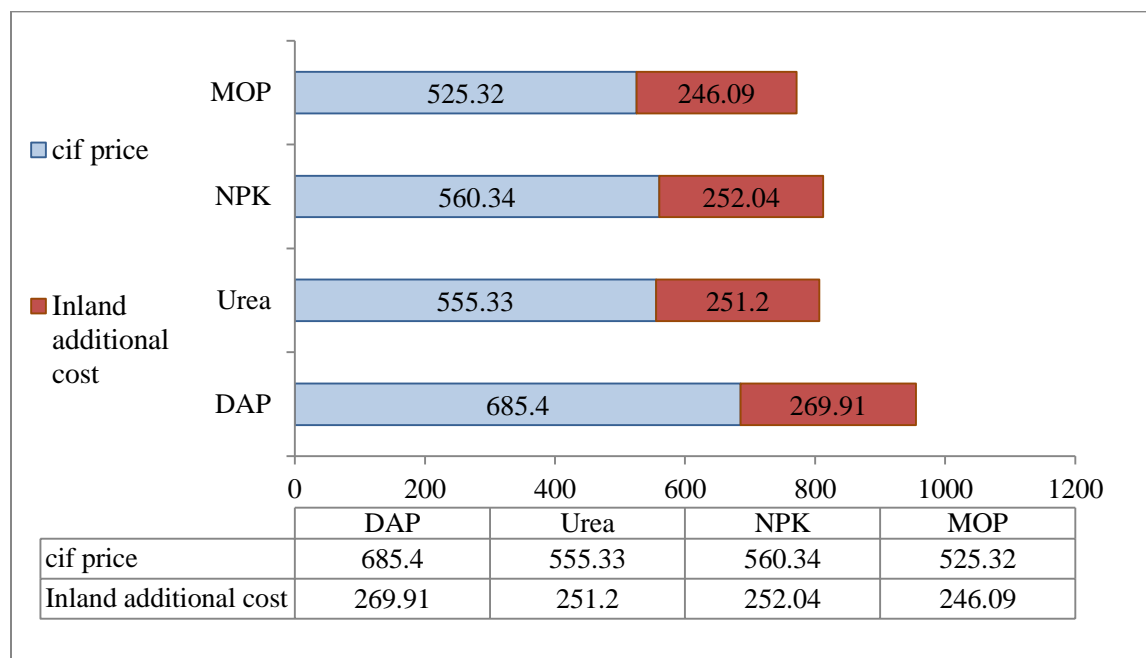
Destination	Geopolitical Zone	Transportation costs (\$/MT)
Sokoto	NW	82
Kaduna	NW	82
Katsina	NW	82
Maiduguri	NE	98
Yola	NE	98
Jalingo	NE	98
Abuja	NC	71

² At the time of the study, the exchange rate was Naira 163.5 to the USD

Ilorin	NC	46
Oyo	SW	44
Oshogbo	SW	49
Calabar	SS	87
Enugu	SE	61

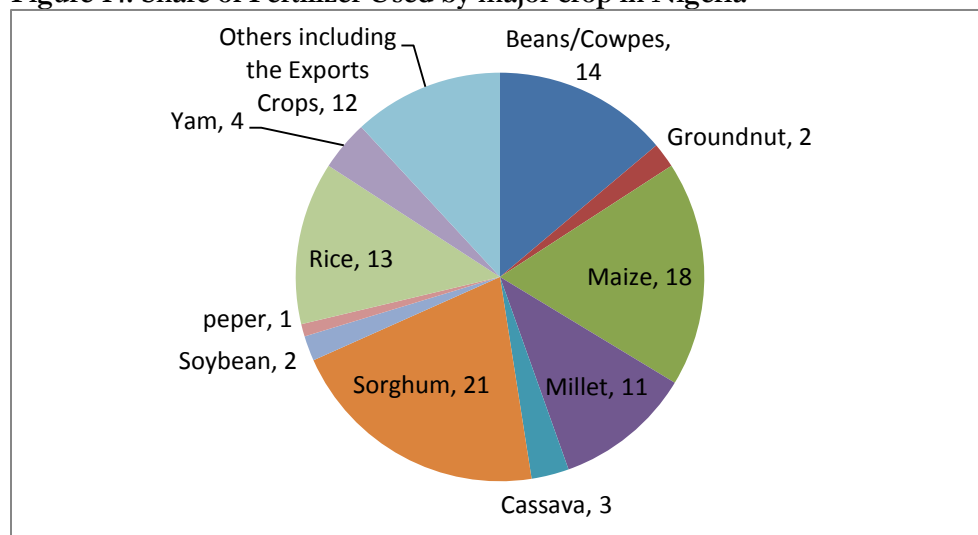
Source: Takeshima et al 2012; Field Survey 2012)

Figure 13: Nigeria Fertilizer Cost Component in US \$



Overall the Value Cost Ratios (VCR) for the main staples were calculated to be for 2.5, 2.5, 3.5 and 3.4 for maize, sorghum, cowpea/beans and rice respectively. This implies that the use of fertilizer is profitable for these crops. In addition, the unsubsidized prices (market prices without subsidy) was used in the calculation indicating that farmers should be willing to apply this input if it is made available in a timely manner and if they are aware of the full benefits of using this important input.

Figure 14: Share of Fertilizer Used by major crop in Nigeria



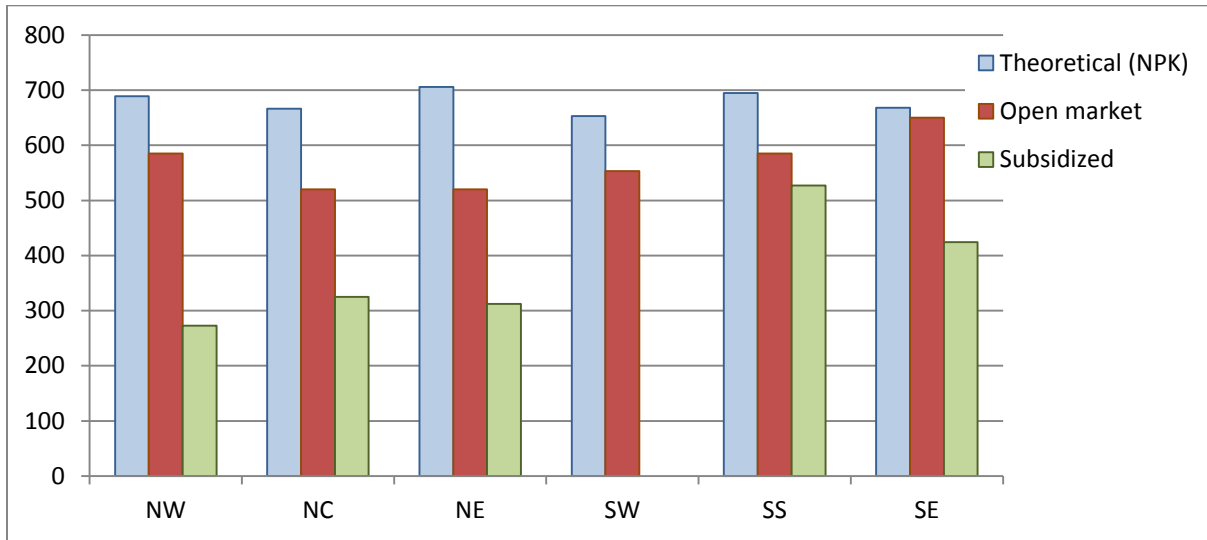
Source: Takeshima et al 2012

Private sector participation in the fertilizer market

Under the current federal government regulations on fertilizers, the marketing of fertilizer in Nigeria is the primary responsibility of the private sector. Nevertheless, in cases of emergency or for the purpose of penetrating the remote areas not serviced by the private sector and for reaching farmers who cannot afford to buy fertilizer, the government may wish to undertake targeted intervention to facilitate access to fertilizer through a market-friendly and transparent mechanism. In addition, wholesalers and dealers involved in fertilizer marketing must operate under a legal and regulatory framework established by the federal government. Despite these conditions and regulations, the fertilizer industry is one of the most controversial industries in the country.

The dual system of fertilizer supply (government and open market) has continued to crowd out the private sector from the fertilizer industry. Findings by Takeshima et al, 2012 have shown significant differences in the prices of subsidized and unsubsidized fertilizers (see Figure 15). The leakage of subsidized fertilizer into the open market appears to be an important hindrance to the development of the private fertilizer sector in Nigeria. If a vibrant private fertilizer sector is to be established, minimizing such leakage will need to assigned priority. Policy issues for reducing leakages in fertilizer subsidy programs include the support for more ex-ante assessments of fertilizer demand, effective targeting or monitoring, and the setting of appropriate fertilizer subsidy levels.

Figure 15: Fertilizer Price (US\$/ton) in 2010-theoretical import parity, open market and subsidized



Source: Takeshima et al 2012. NW = North West; NC = North Central; NE = North East; SW = South West; SS = South South; SE = South East

Taken together, the interviews suggested that public sector interference in the fertilizer market was the primary factor attributable for the private sector’s negative perception of the business environment in Nigeria. The inefficiency of the fertilizer subsidy in particular has discouraged private sector participation in the industry. Higher subsidies have been associated with lower open market fertilizer prices which generally reduce profitability for the private fertilizer market. Late payment, and sometimes non-payment, has led to a lack of liquidity among some private fertilizer companies. Based on the responses of fertilizer dealers, the country scores a 1 on a scale of 0-5.

3.1.3 Agricultural Mechanization and Access to Mechanical Technology

Table 10: Key Indicator Findings for Mechanization

MECHANIZATION	Summary Indicators
Total # of tractors per 100 sq. km of arable land	5.70 Per 100sq km; Tractor density 0.2hp/ha; far below the FAO Recommendation of 1.5 hp/hectare (1.1kw/hectare).
Average HP (horsepower) per 100 sq. km of arable land (requires assumptions about HP distribution among tractors in use; may have HP info w/tractor import data, however, but this may not reflect HP of existing stock of tractors)	There are currently an estimated number of 45,000 tractors with implements in Nigeria, 3,500 power tillers and about 200,000 irrigation pumps. Given that the total arable land in Nigeria is 79 Million Ha it implies that has an arable land of 7,900 hundreds of square kilometers. Thus there are currently about 5.70 tractors per 100 Square kilometers in Nigeria
Cost of plowing one hectare of land (need to obtain & report this by region, as likely big differences; a national “average” is misleading)	Cost of Plowing, Harrowing and ridging respectively: 1) North East Zone = 15,000.00 (\$ 93.75); Naira 15,000.00 (\$93.75); Naira 15,000.00 (\$93.75). 2)North West Zone=Naira 6840 (\$ 42.75); Naira 4725 (\$29.53); Naira 3450 (\$ 21.56) 3) North Central Zone = Naira 7,125 (\$ 44.53); Naira 6750 (\$ 42.19); Naira 7600 (\$47.50). 4) South West Zone =Naira 6813 (\$ 42.58); Naira 4250 (\$26.56) Naira 4250 (\$26.56); 4) South East Zone = Naira 11900.00 (\$ 74.38); Naira 11,50.000 (\$71.88); Naira 10,833.33 (US \$ 67.71); 5) Overall National Average (2011) Naira 9535.00 (\$ 59.59); Naira 8445.00 (\$ 52.78); Naira 8226.67 (US \$ 51.42)
Average cost of buying a medium range HP tractor	The Average Cost of Large Range Tractors (150-200HP) is about Naira 26M (\$162,500.00), Medium Range (65-80 HP) is Naira 6.5M (\$40,625.00) and Small Range Tractors Naira 4.0M (\$ 25,000.00)
Number of tractors imported by the private sector as a % of the total number of tractors imported into the country (tough to get public sector imports; definitional issue—priv. sector may import but public sector buys tractors & distributes them—the case of Mozambique)	Currently, the Public Sector accounts for about 90 percent of the total imports of tractors in the country and the tractors are then transferred to the Ministry of Agriculture. Going by the current estimate of the annual tractor import of about 1000 tractors, it implies that 900 tractors (mainly medium ranged are imported by the government and parastatals while the private sector accounts for only about 10% of the tractor imports which as today's estimate is about 100 tractors per annum.
Useful life of tractors (without a formal survey, our estimates are crude and can be challenged)	Depending on the brand, the average tractor life span in Nigeria is between 6-7 years. Despite an annual import of about 1000, it has been estimated that between 2010 and 2011, about 200 tractors had joined the pool of non-functional machines in the country

Tariff on tractors	Tractors like all agricultural and farm inputs and machinery are zero rated; that is if imported as fully assembled ready to use tractors. However, importation of Completely knock Down parts (CDKs) attract a duty of 5 percent currently, down from 25% about a year ago.
Tariff on tractor spare parts	Tariffs are at 5% for tractor spare parts
Ease of private sector participation in the agricultural machinery market (Scale: 0-5)	The private sector is completely crowded out by the government and cannot compete with the government program on tractor imports and distribution though it is highly inefficient. On a scale of 0-5, the country scores a 1

The potential benefits of using improved crop inputs such as improved seed, fertilizer, and pesticides (as well as increased use of irrigation water), cannot be realized without the use of improved tools and machines. Mechanization, the use of machines on farms, reduces drudgery in agriculture and can free farm labor for other, more productive purposes. An increase in the level of farm power and mechanization is one of the major factors required to increase production. Mechanization enhances agricultural productivity and raises profitability, facilitating private investment and commercialization.

Farm power in most parts of Africa, including Nigeria, especially among small-scale farmers who account for a significant proportion of the total farm output, is largely human- or animal-driven and is based on use of hoes and other hand tools. For most staple crops, a farmer can only prepare an estimated 0.5 ha for planting per season. This farm size is uneconomical to sustain an adequate livelihood. For farmers to earn a living from agriculture, they cannot count only on hand-tool technologies. As a power unit, a man produces only about 0.01 horsepower of continuous output and is therefore a poor primary source of power (FAO, 2010a).

Over 70 percent of the Nigerian labor force is deployed in agriculture. Animal and tractor power have both declined in Africa during the past few years, leaving farmers more reliant on manual methods on a continent where severe health problems weaken manpower and where demographic shifts make it a scarce resource (FAO op. cit). This situation has inevitably put severe limitations on the amount of land that can be cultivated per family as it reduces the timeliness of farm operations and limits the efficacy of essential operations such as cultivation, fertilizer application, and weeding, thereby reducing crop yields. Given that in the next 20 years the population of Nigeria is set to increase significantly, there is need for effective mechanization to cater to the increase in both rural and urban populations.

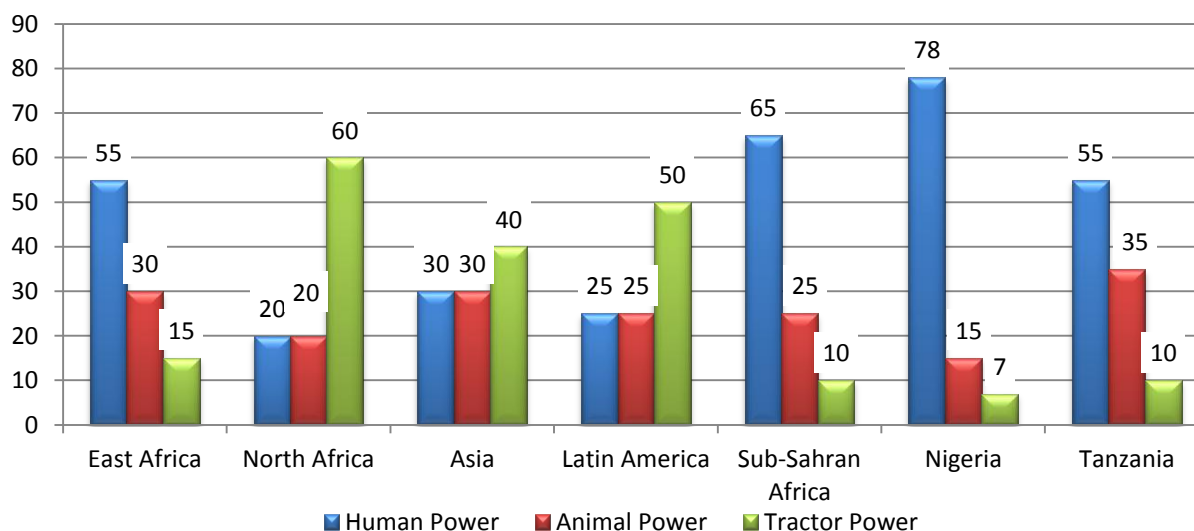
Rural youth, who associate subsistence and even potential commercial farm activities with hard physical labor and drudgery, are disenchanted and disillusioned with the meager opportunities for a rural livelihood. This

has created an incentive for youth to migrate to cities, leaving the farm for the weak and the feeble and thus worsening an already marked low productivity in the farms. This further justifies the need to use mechanize in agriculture.

Tractors are the most important and versatile type of equipment used by farmers wanting to mechanize some or all of their farm operations (FAO op. cit). Apart from providing an important means of transporting heavy farm inputs and produce to and from farms, tractors are useful in coupling other motorized and non-motorized implements for efficient and timely land preparation necessary for achieving high yields and for minimizing postharvest losses (FAO 2008b). The use of tractors is therefore pivotal to agricultural mechanization and the basis for the utilization of other machines and equipment for plowing, harrowing, ridging, planting, weeding, fertilizer and pesticide application, and harvesting and transporting farm produce.

Figure 16 shows the different sources of farm power in Sub-Saharan Africa and other regions. Much of the progress that Asia and Latin America have made in transforming agriculture is due in part to the great improvement in the use of machines as opposed to the use of hand tools of hoes and knives. 65 per cent of the farm power in Africa comes from human sources compared to Asia (30 percent), Latin America (25 percent) and North Africa (20 percent). Within Africa, the source of traction and other power varies as well, with Nigeria relying on manual labor for 78 percent of its power and Tanzania 55 percent.

Figure 16: Farm Power Sources (percentages) in SSA, Asia, and Latin America



Source: FAO (2008); FMA& RD (2011)

The use of tractors and tractor-drawn implements is becoming increasingly important in Africa as the result of the establishment of many large commercial farms by both foreign and domestic investors in Ethiopia,

Ghana, Nigeria, and elsewhere. At the same time, land consolidation is beginning to occur as youth migrates to urban areas in search of white-collar jobs and a better quality of life.

Nigeria’s agricultural mechanization technology continues to be import-oriented despite the establishment of the National Centre for Agricultural Mechanization (NCAM) in the Federal Ministry of Agriculture in 1974. Though NCAM was established based on the need to develop “home grown” mechanization technologies that improve agricultural production and productivity, relieve continuously increasing labor constraints, enhance farmer’s income, reduce food imports, increase food exports and save foreign exchange – these objectives have yet to be achieved.

Table 10: Rates of Farm Operations Using Hand and Mechanical Power Systems in Nigeria-2012

S/No.	Operation	Hand power (Ha/Man-day)	Mechanical (Ha/hr.)
1	Shrub Clearing	0.03	0.68
2	Plowing	0.02	0.44
3	Harrowing		0.64
4	Ridging	0.02	0.56
5	Maize Planting	0.08	0.30
6	Cassava Harvesting	0.05	--
7	Weeding	0.03	--
8	Fertilizer Application	0.05	0.50
9	Mound Making	0.01	--
10	Maize Harvesting	0.06	1.30
11	Spraying		--
12	Using Knapsack		0.43
13	Using Boom Sprayer		1.30

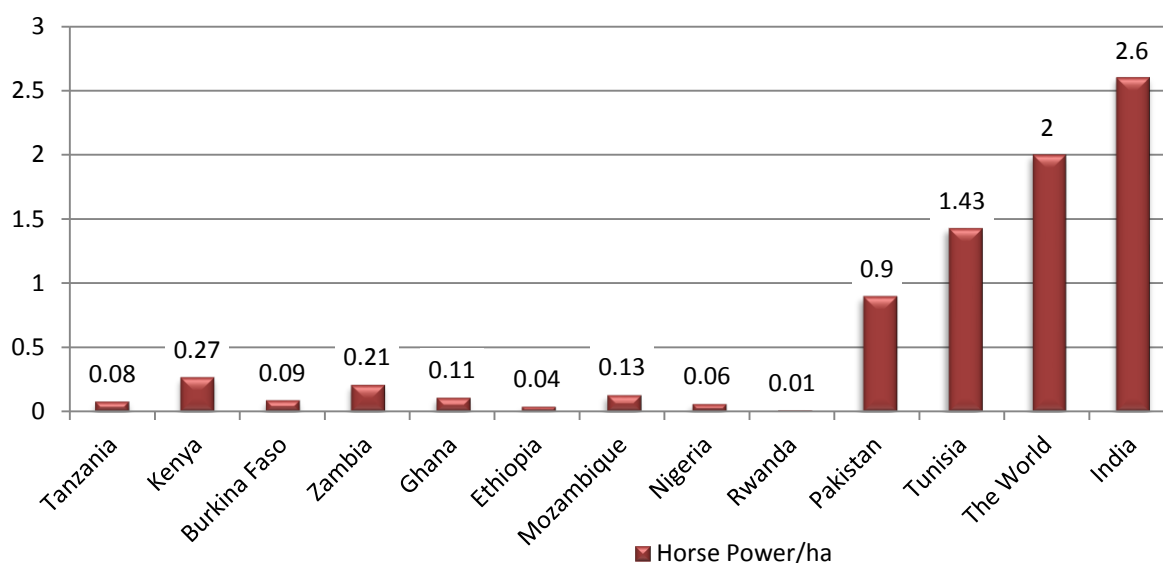
Source: Nigerian Institute of Agricultural Engineers, Ilorin, Nigeria

Number of tractors and horsepower per 100 square kilometers of arable land

There are currently an estimated 45,000 tractors with implements in Nigeria, 3,500 power tillers, and about 200,000 irrigation pumps. This is far below the number of about one million tractors that would be needed in Nigeria for effective mechanization (NAERLS, 2010). Total arable land in Nigeria is 79 million hectares, or about 79,000 square kilometers. This leaves about 5.7 tractors per 100 square kilometers. In 2010, the estimated tractor density per 100 square kilometers was about 6.8. At any point in time only about 50 percent is in full working condition – from about 20,000 to 30,000 tractors. The total annual demand for tractors in Nigeria is about 81,000 tractors, including about 1,000 imported tractors. In order to attain the mechanization level recommended by FAO, about 100,000 tractors are needed annually.

Tractor horsepower per hectare of land has also been declining in Nigeria, consistent with the decline in tractor density. Over a decade ago, the average tractor horsepower per arable land was put at 0.2 horsepower per hectare, compared to the 1.5 horsepower per hectare recommended by the FAO. Going by today's current estimate of 0.06HP per ha and assuming the current size distribution of tractors in the country, it implies that for effective mechanization, Nigeria would have to increase the number of tractors by about 25 times to a projected number of 1,125,000 tractors in line with the estimates given by the National Policy of Agriculture and Mechanization development (FMARD, 2011).

Figure 17: Average Horsepower per Ha of Arable Land in Nigeria and selected countries -2012



Cost of plowing, harrowing and ridging - Renting tractors in Nigeria

Over the last decade, there has been a surge in the daily rates of casual labor from about NGN200 per day (US\$1.50) to about NGN500 (US\$ 3.50). This cost has been rising in response to adjustments by the federal government to the national minimum wage. Rural and urban wages are closely related and any increase in the minimum wage in the formal sector of the economy, which is usually directed towards urban dwellers, increases rural-urban migration, causing additional drains in rural labor. The migration accentuates the dearth in rural labor causing rural labor wages to also rise. Thus it is not surprising that the average costs associated with manually prepared land now range from NGN8,200/ha (US\$55) or NGN9,600/ha (US\$64) with an ox-plough to NGN11,400/ha (US\$76) in the north and southwest respectively (PrOpCOM, 2011)

Table 11: Cost of Hiring Tractors in the Different Agricultural Zones in the country

Zone	Plowing Naira (USD)	Harrowing Naira (USD)	Ridging Naira (USD)
North East	15000.00 (93.75)	15000.00 (93.75)	15000.00 (93.75)
North West	6840.00 (42.75)	4725.00 (29.53)	3450.00 (21.56)
North Central Zone	7125.00 (44.53)	6750.00 (42.19)	7600.00 (47.50)
South West Zone	6813.00 (42.58)	4250.00 (26.56)	4250.00 (26.56)
South East Zone	11900.00 (74.38)	11,500 (71.88)	10,833.00 (67.71)
National Average	9535.00 (59.59)	8445 .00 (52.78)	8226.67 (51.42)

Source: Field Survey, 2012; NAERLS & NPFS (2011)

During the period under study the cost of hiring tractors varied from one part of the country and was much higher in the northeast compared to other zones in the country. This difference is attributable to the greater demand for tractors in the northeast where agriculture is more commercially oriented. Farmers there are more aware of the benefits of timely operations, increasing demand at the peak of the farm season in the face of tractor scarcity.

Tractor use and useful life of tractors in Nigeria

Depending on the brand, the average tractor life span in Nigeria is between 6-7 years. Despite an annual import of about 1,000, between 2010 and 2011, an estimated 200 tractors joined the pool of non-functioning machines in the country. Several factors have been adduced for the high rate of tractors breakdowns. Prominent among them were poor management systems, inadequate knowledge of tractor ownership costs, and lack of funds to enable prompt repairs and maintenance services.

Findings from the study indicated that the useful life of tractors varied and was largely determined by the brand and type of tractor, the availability of spare parts, and the provision of after-sales services by dealers. Some dealers do not have service centers outside of the main cities and there were little or no after-sale services or routine check-up and maintenance of the tractors. Because most of the people acquiring tractors live in the rural areas, it is difficult for them to access regular tractor maintenance and services. This in part explains the relatively short economic life span compared to what is technical feasible. Tractors in Nigeria can only deliver about 507.2 hours to 682 hours per annum. This contrasts very sharply with an estimated maximum 30,000 engine hours, working on the average of 1,500-2,000 engine hours per year which translates

to about 15 years of useful life. Tractors in Nigeria deliver on average about 13, 000 engine hours, thus with an average useful life of about 6 years.

Table 13 shows the average useful life of the different brands of tractors as established from interviews with key stakeholders in this industry which included the importers, cooperative unions, agricultural machinery services providers as well as the end user farmers.

Table 12: Average useful life of tractors in Nigeria-2012

Type and Brand of Tractor	Useful life (in years)
Massey Ferguson	8
I.H CASE	5
Ford	8
Fiat	5-7
SAME (Italy)	5
Average	6

Source: Field Survey, 2011

Tariff/ taxes on tractor and tractor spare parts

Tractors like all agricultural and farm inputs and machinery are zero rated; that is if imported as fully assembled ready to use tractors. However, imports of completely knock down parts (CDKs) attract a duty of 5 percent currently, down from 25 percent about a year ago. Tariffs are at 5 percent for tractor spare parts.

Apart from the direct incentives such as low tariffs on the import of tractors and tractor spare parts, the government has also introduced other indirect incentives such as the liberalization of land acquisition for large scale farming, the agricultural credit guarantee scheme, which guarantees agricultural credit and loans to small and medium farmers; Nigerian Agricultural Insurance Corporation which provides risk coverage for crops against natural hazards. Commercial banks have been directed to earmark 10 percent of the profit before tax, for development of agriculture sector, by way of loans and finances at concessional rate of interest. These new policy initiatives are expected to create avenues for Indian exporters to increase the range of their export of agricultural machinery and tractors to Nigeria.

Private Sector participation and perception of the agricultural machinery market

Various governments (state and federal) have over the years imported agricultural machines and equipment to boost their mechanization policies. Between 1975 and 1985, a total number of 15,906 tractors were in use in Nigeria. Though in 2009, the number of tractors available had increased to 20,000, only 70 percent or 14,000 units were functional.

The public sector accounts for about 90 percent of the estimated 1,000 tractors imported annually, leaving the number of tractors imported by the private sector at about 100. Of the 45,000 tractors in the country today about 70 percent of the tractors are medium range tractors because of the predominance of small-scale farmers in the country who own on the average about two hectares.

In 2012 when this study was undertaken, the Average Cost of Large Range Tractors (150-200HP) was about NGN26 million (\$162,500), Medium Range (65-80 HP) was NGN6.5 million (\$40,625) and the cost of Small Range Tractors (50-60HP) was established at NGN4.0 million (\$25,000.00).

The low level of farm mechanization in the country has been attributed in part to the government's program of tractor procurement which has prevented the development of a private tractor market for smallholders. The federal and state governments procure tractors from tractor suppliers. These are "given out" at the state level at subsidized rates to farmers with political connections, or employed by state agricultural services. Alternatively, these tractors can be purchased through a government scheme with bank financing at prices substantially higher than market value due to over-invoicing. However, tractors purchased under this scheme are not serviced by the suppliers, nor are spare parts available for them since no direct relationship exists between the purchaser and the tractor supplier. Extension services to train farmers on tractor use and tillage techniques are provided by neither the government nor the tractor suppliers (PrOpcom 2011).

Under the proposed new system of mechanization, tractor imports would be concentrated solely in the hands of the private sector actors. To achieve this, the federal government under the ATA has established Nigerian Incentive-based Risk Sharing Agricultural Lending (NIRSAL). The NIRSAL through the CBN guarantees up to 75 percent of banks' loans to the sector that individuals and entrepreneurs can borrow to finance the import of tractors for sale in the domestic market. This will hopefully take care of the high initial investment needed to establish and operate a tractor firm capable of providing the ancillary services associated with mechanization in a timely and efficient manner. The current system of tractor procurement and import leaves the private sector entirely crowded out by the government. On a scale of 0-5, the country scores a 1.

3.2 Enabling Environment: Access to Financial Services and Transportation in Nigeria

3.2.1: Access to Financial Services

Table 14: Key Indicators for Agricultural Finance

% of commercial bank lending to agriculture	2007 (3.2%); 2008 (1.4%); 2009 (1.4%); 2010 (1.7%); 2011 (3.5%) Average (2007-2011) 2.2%
Average lending rates by commercial banks for loans to agriculture	The Nigeria government has put in place a number of institutions including a specialized Agricultural Bank-the Agricultural Development Bank (ADB), an Agricultural Credit Guarantee Scheme Fund ACGSF), the Commercial Agricultural Credit Scheme (CACs) entirely devoted to help promote agricultural development in the country. Under these schemes the agricultural sector particularly smallholders who qualify receive loans on Concessionary interest rate. as 2011, the interest rate by these agencies to the agricultural sector was between 12-14% as compared to the market interest rate of between 22 and 30% charged by the commercial and other formal lending institutions
% of nonperforming loans within the agriculture portfolio of commercial banks	NPL for the core sectors (2011). Agriculture (5.5%); Manufacturing (2.1%); Construction (4.9%); general Commerce (7.0%), Transportation and Storage (4.8%); Finance and Insurance (9.9%); Real Estate 9.50%); Education (4.3%)
Bank branches per 100,000 adult population	6.8 and this has been projected to grow to 7.5 to 7.6 in 2015 and 2020 respectively
Bank Branches per 100,000 rural adult population	The number of rural branches of Commercial Banks = 722. The rural bank branch per 100,000 adult population in the rural areas is 1.27.
Access to Banking by Rural dwellers	23.2 of the rural dwellers are banked; 76.2% of the rural population is unbanked
Access to Banking by urban dwellers	
Access to Banking by Men (2012)	37.4% of the adult male population are banked; 63.9% of the male population are financially included with 37.4 banked and formally financially included , 10.0% are formally included from other formal institutions other than the banks while 16.5% are financially included from informal financial institutions. This implies that 36.1% of adult males were financially excluded by 2012
Access to banking by women	27.2% of the women are banked and 56.5% of all the adult women are financially included -banked (27.2%), all other formal financial intuitions (11.1%) plus informal financial intuitions (18.2%). In other words 43.5% are financially excluded. In terms of formal financial services about 72.8% of adult women are excluded from formal financial services
Financial Inclusion-Percent of adults accessing who have access to bank accounts.	43% of all adults in Nigeria are formally financially included; 60.3 are financially included -32.5% banked; 10.5% from all other formal financial institutions and 17.3 from the informal financial institutions only. In effect 39.7% of all adults in Nigeria are financially excluded (in 2012).
% of rural HHs receiving credit for agriculture	18%; mainly smallholders from both formal and informal sources. However only about 2% received credit from formal financial institutions including the Agricultural development Bank

Existence of a warehouse receipt system (Scale: 0-5)	Although there is the Abuja Securities and Commodity Exchange (ASCE) established in June 1998 with warehouses but ASCE has very limited trade and no viable warehouse receipt system. At the time of the interview the management of ASCE was expecting a working visit with the Ethiopian Commodity Exchange (ECX) management to share ideas and good practices of the ECX. thus Nigeria score a zero (0) based on the ranking scale adopted by ABI for this indicator
Existence of a law on leasing (and extent of use of leasing) (Y/N)	No; The law on leasing was law on leasing during the period of study although a detailed proposal has been laid out.
Presence of a collateral registry	None-there is no collateral registry in operation during the time of the study.
Existence of Credit Reference Bureau (CRB) (Y/N, 0-5 scale)	Yes, there is public Credit Reference Bureau that is maintained by the Central Bank of Nigeria which has very limited use for the purposes of analyzing the credit worthiness of prospective customers from formal financial institutions

Financial services are a critical enabler factor for sustainable economic growth and for private sector participation in the agriculture sector (FAO, 2008a). Although an important factor for private sector development, access to finance is significantly more difficult for entrepreneurs in the agriculture sector and more so for smaller firms that are agro-based. At the same time, small firms are presumed to be significantly less productive, representing a higher credit risk to banks. The International Finance Cooperation (IFC) found that the high real rate of interest can stifle investment. For economic development, capital investments (gross private domestic investment and government investment) should not only keep pace with capital depreciation but must increase in intensity for accelerated economic and sustainable growth. There is also a direct correlation between credit availability and Foreign Direct Investment (FDI). Countries with tight credit conditions do not attract much FDI (Javorick 2008).

To underscore the role of enabling environment on agribusiness in Africa, we focus in this section on the success factor of credit in agribusiness in the country by considering the following: commercial banks' lending to the agriculture sector, cost and access to credit, banking sector efficiency as measured by the spread in interest rate, loan performance and default rates as well other factors such as the existence of warehouse receipts and the use of leasing arrangements and movable property and non-conventional collaterals that could influence credit availability among actors in agribusiness

1: The Agricultural Finance Landscape in Nigeria

Apart from the investment capital that is directly provided by the entrepreneurs of the farm, several other sources of finance exists for farm operation in Nigeria. These are broadly classified as formal and informal sources of finance and credit.

Informal sources of credit and funds are distinguished from the formal source because strict rules and conditions are not normally observed before accessing the funds. Informal sources include (i) the farmer's personal income which consists of the equity capital and the retained earnings; (ii) friends, relatives and neighbors, sometimes with terms involving little or no interest but rather special agreements such as crop sharing agreements or other non-monetary reward like labor rendered to the lender. However, by and large the most significant source of informal credit for most smallholders in particular is from private money lenders. In Nigeria, many rural farmers are served by informal money lenders, who generally provide easy access to credit but at higher cost, charging poor borrower's nominal monthly effective interest rates that typically range from about 10 percent to more than 100 percent (Robinson (1999:7). Borrowing from money lenders saves time and removes the additional expenses incurred by farmers in borrowing from formal financial institution, but on short-term basis and exorbitant interest rates that are usually higher than that of formal institutions.

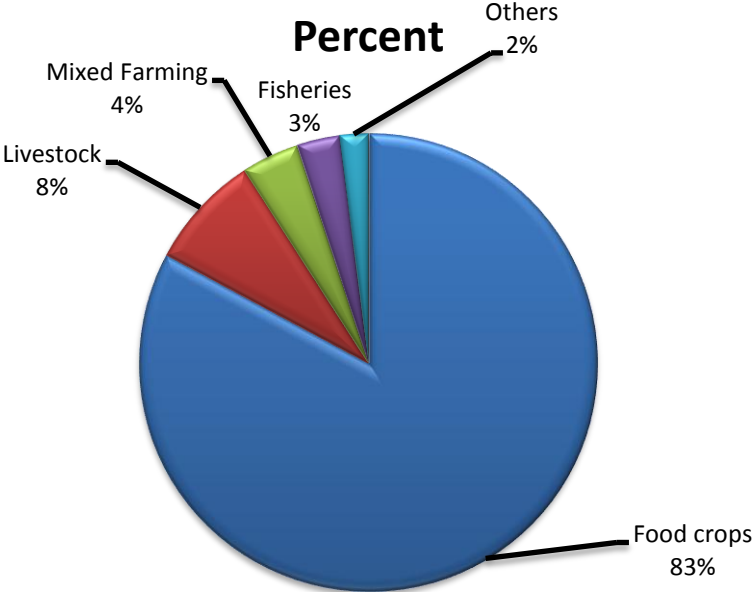
Another form of informal sources of finance and credit involves farmers associations and cooperative societies. Farmers associations are informal groups usually formed by farmers involved in a given line of production. They are formed primarily for members to benefit from the financial services of the associations, government, and to speak with one voice on matters concerning their operations (Ejike, 2012).

The final source of informal credit is self-help groups (SHGs). A good example of these SHGs is the Rotating Savings and Credit Associations (ROSCAS) and Esusa groups, which exist in various forms throughout the country. Although these sources of informal credit and finance account for an estimated 70 percent of credit to Nigerian farmers, the amounts loaned are often too small to have any significant impact on farmers' productivity.

The formal financial sector in Nigeria consists of an array of agricultural finance providers which occupy different niches in terms of the clientele they serve. These include commercial banks, merchant banks, insurance companies, and microfinance institutions. Microfinance institutions in particular specialize in providing financial services to poor clients who are traditionally not served by the conventional financial institutions. In addition to these, the government has put in place a number of specialized banks and schemes to serve smallholders. These include the Nigerian Agricultural and Cooperative Bank (NACB), the Agricultural Credit and Guaranteed Scheme Fund of the Federal Government (ACGSF) the Central Bank of Nigeria (CBN), the Commercial Agriculture Credit Scheme (CACs), and the Small and Medium Enterprises Credit Guarantee Schemes (SMECGS) among others.

The ACGSF was established by Decree No. 20 of 1977, and started operations in April, 1978. The Fund guarantees credit facilities extended to farmers by banks up to 75 percent of the amount in default net of any security realized. The Fund is managed by the CBN, which handles the day-to-day operations of the Scheme. Its guidelines stipulate the enterprises eligible for guarantees to be issued under the Scheme (CBN, 2010). In terms of loan disbursement by the ACGSF, most of the loans distributed are extended to food crops producers (see Figure 18).

Figure 18: Distribution of Number of Loans Guaranteed by type of activity under ACGS -2011



The Commercial Agriculture Credit Scheme (CACS) was established in 2009 with the primary objectives of i) fast-tracking the development of the agriculture sector by providing credit facilities to large-scale commercial farmers at a single digit interest rate; ii) enhancing national food security by increasing food supply and effecting lower agricultural produce and products prices, thereby promoting low food inflation; iii) reducing the cost of credit to enable farmers to exploit the untapped potential of the sector; and iv) increasing output, generating employment, diversifying Nigeria’s revenue base, raising the level of foreign exchange earnings, and providing input for manufacturing and processing on a sustainable basis (CBN 2013).

The Scheme which is a sub–component of the Federal Government of Nigeria’s Commercial Agriculture Development Program (CADP) is financed through a NGN200 billion bond raised by the Debt Management Office (DMO). Loans to eligible entities under the Scheme are disbursed at a maximum interest rate of 9

percent. The subsidy arising from this stipulated rate and the market rate on all loans granted, and the administrative expenses of the Scheme are borne by the Central Bank of Nigeria (CBN, 2010).

Table 15: NIGERIA: Summary of Community Banks/Microfinance Banks' Activities
(Naira million, unless otherwise stated)

Item	2008	2009	2010	2011
Number of Licensed CBs/FBs	745	828	801	821
Number of Reporting CBs/MFBs	745	828	801	821
Number of Non-Reporting CBs/MFBs				
Capital and Reserves	33361.3	45258.6	43997.5	47332.2
<i>Total Assets</i>	<i>115124.5</i>	<i>158795.9</i>	<i>170338.9</i>	<i>19072.2</i>
Deposit Liabilities	58481.3	72750.6	75739.6	84044
Loans & Advances	42024.4	55818.9	52867.5	67632.4
Investments	7317.7	7753.6	8674.2	11855.5
Average Loan/Deposit Ratio (%)	71.86	76.73	69.8	78.6
Percentage Change (%)				
<i>Sectoral Distribution of Loans & Advances</i>				
(i) Agriculture & Forestry	2961.57	5957.8	5102.9	4600.9
(ii) Mining & Quarrying	345.28	491.98	520.4	579
(iii) Manufacturing	2032.4	2625	2172.8	2430.6
(iv) Real Estate & Construction	2267.9	2411.5	2257.4	1859.3
(v) Commerce	2126.8	25036.7	23333.8	36741.6
(vi) Transportation/Communication	2649.2	3357	2642.1	2973.5
(vii) Others	16054.9	20554.9	16957	27727.2

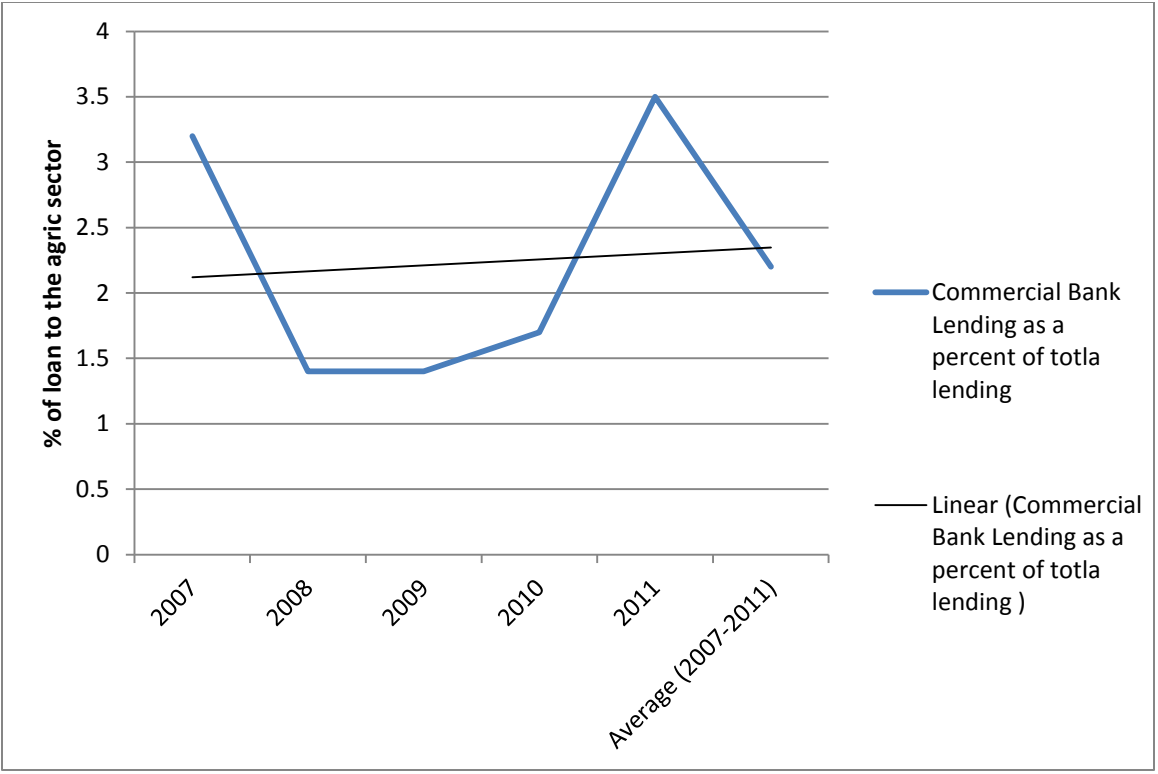
Source: Central Bank of Nigeria, 2013

3.2.2 Commercial lending to agriculture sector

Despite, the existence of many specialized agencies and institutions to leverage agricultural credit to the farming population in Nigeria, the overall lack of agricultural credit remains an impediment to agricultural development in Nigeria. This is mainly because of limited loan extension to the sector from the commercial banks, the main source of credit extension to entrepreneurs in the Nigerian economy. Commercial banks still perceive the risk of lending to the sector to be very high. In addition, banks still charge high interest rates and lack term financing for agribusiness.

The federal government therefore decided that a new model was required to leverage commercial bank financing to agriculture. NIRSAL – an incentive based system incentives was designed to: (a) stimulate innovations in agricultural lending; (b) encourage banks that are lending to the agricultural sector; (c) eliminate state-dependency by banks for deploying loanable funds to agriculture; (d) leverage commercial bank balance sheets for lending into agriculture; and most importantly; (e) ensure risk sharing approaches that will build a business approach in which banks share in the risk of lending to the sector.

Figure 19: Commercial banks’ Lending to agriculture as a percent of total lending



Source: Original data from CBN, 2013

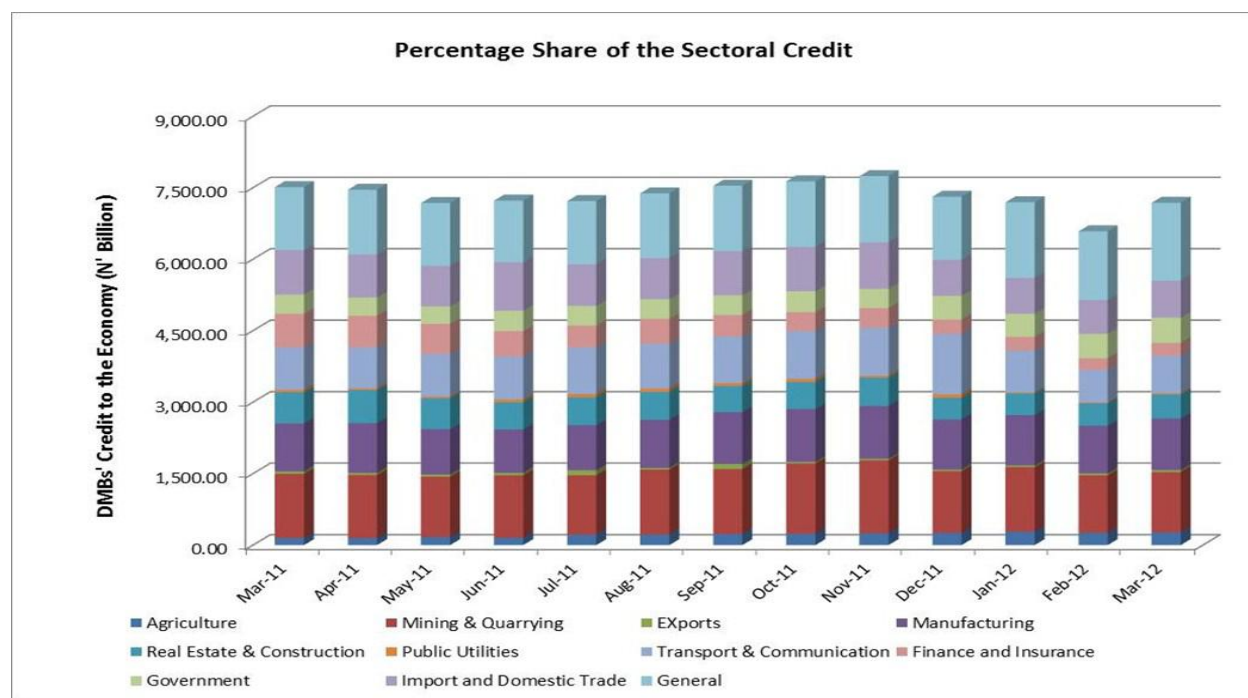
Table 16 shows the share of credit to the core private sector, 2007-2011 while Figure 18 shows the fluctuations in commercial banks’ lending to the agriculture sector indicating that there is still no commitment by the commercial banks to extend loans to the sector. In addition to the riskiness that commercial bankers perceive in lending to agriculture, there are also the long gestation periods for agricultural lending to show returns. This compares unfavorably in an economy in which the oil sector offer a variety of opportunities for quick returns with lower risks.

Table 16: Share of Credit to the Core Private Sector 2007-2011

	2007	2008	2009	2010	2011
1.Priority Sector	25.9	26.2	25.2	30.4	36.1
Agriculture	3.2	1.4	1.4	1.7	3.5
Solid Mineral	10.7	11.3	12.7	15.3	17.7
Exports	1.4	1.0	0.5	0.6	0.5
Manufacturing	10.4	12.5	10.6	12.8	14.4
2.Less Preferred Sector	41.2	42.0	46.9	47.8	45.8
Real Estate	6.2	6.2	8.3	8.7	6.2
Public Utilities	0.6	0.6	0.8	0.7	0.9
Transport & Communication	6.8	7.2	8.3	10.7	17.3
Finance & Insurance	9.4	9.5	13.1	11.3	4.1
Government	3.7	1.9	3.7	4.9	6.8
Imports & Domestic Trade	14.5	16.4	12.8	11.7	10.3
Unclassified	32.9	31.8	27.9	21.8	18.1
Total (1+2+3)	100.0	100.0	100.0	100.0	100.0

Source: CBN, Annual Report 2011

Figure 20: Share of credit to the core sectors of the Economy



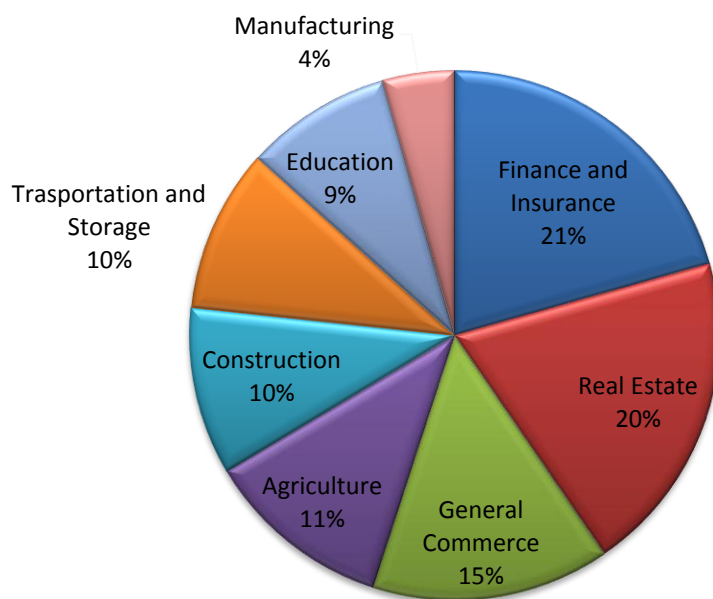
Loan performance from the Commercial Banks by sectors (2005-2009)

Default rates on loans, reflected by the proportion of nonperforming loans, are seen by many commercial bankers as being exceptionally high in the case of agriculture. While the 5.5 percent default rate of agricultural loans was relatively high compared to education at 4.3 percent and manufacturing at 2.1 percent, it is

significantly lower than lending in the real estate market, with NPLs of 9.5 percent. Yet lending to real estate is much higher than to agriculture in absolute terms.

Among commercial banks interviewed, the amount of non-performing loans seemed to be very much influenced by the quality of the human capital and the monitoring and advisory strategies adopted by each bank in supervising the loans. With a bank like Fidelity Commercial Bank that has well trained professional staff in the field of agriculture and a proactive monitoring strategy in overseeing the utilization of the loans, the NPL for the bank was less than 1 percent as compared to the national average of 5.5 percent. This finding highlights the importance of efficient capacity in the financial institutions for agricultural credit extension to help manage the risk inherent in agriculture and thus reduce the rate of default in the sector.

Figure 21 Share of NPL in the core sectors of the economy -2011.



III: Cost of and access to credit and financial services

In terms of commercial bank lending the average deposit rates on various maturities declined to a range of 2.4 – 6.1 percent in 2011, from a range of 2.5 – 6.9 percent at the end of December 2010. The annual weighted average prime and maximum lending rates decreased by 1.6 and 0.1 percentage points to 16.03 and 22.44 percent respectively in 2011. Consequently, the spread between the average term deposit and maximum lending rates widened to 17.65, from 16.91 percentage points in 2010. With the annual inflation rate of 10.3 percent in December 2011, this meant that all the deposit rates were negative in real terms, while lending rates

were positive in real terms. In 2011, the concessionary interest rates charged by specialized agricultural banks and credit schemes were between 12 and 14 percent, compared to the market interest rate of between 22 and 30 percent charged by the commercial and other formal lending institutions. Given the difficulty in obtaining loans from the agricultural credit schemes, it meant that for those farmers who needed credit, they had to obtain credit from the commercial banks at a very exorbitant rate of interest rate of about 22 percent or higher. Using the lending and deposit rates reported by most respondents, the average interest rate spread for the agricultural sector was estimated at 21 percent as compared to about 17 percent in the other sectors of the economy.

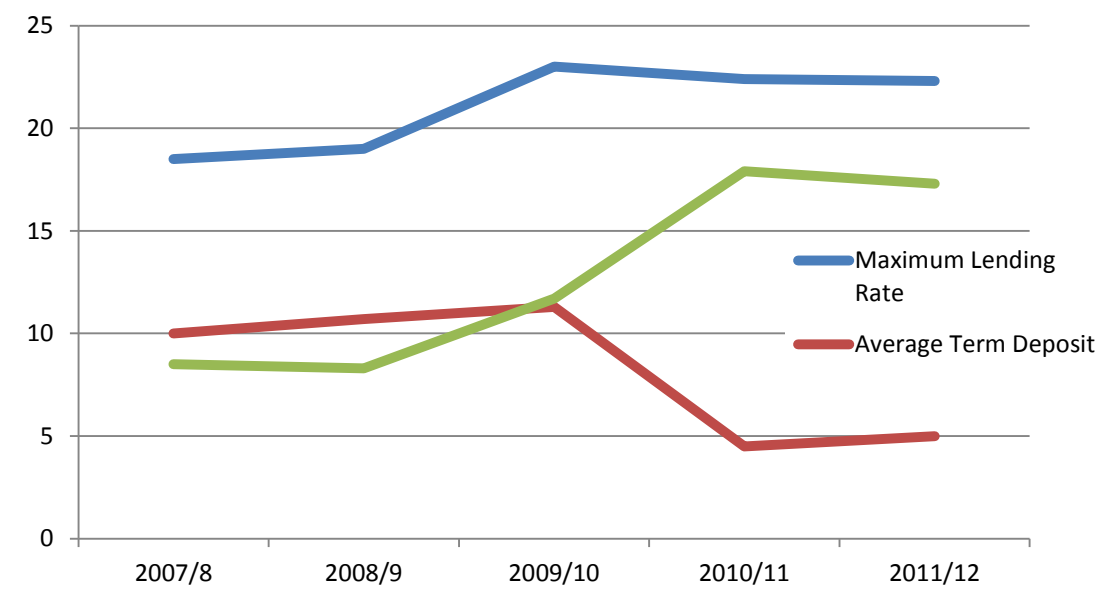
Cost of and access to credit and financial services

Table 17: Deposit Rates, Lending Rates and Interest Rate Spreads -2010/11-2011/12

	2010/11				2011/12			
Deposit Rates)	Mar	Jun	Sep	Dec.	Mar	Jun	Sep	December
Savings	3.03	1.95	1.49	1.51	1.41	1.40	1.46	1.41
Call	2.86	1.63	3.34	1.82	4.67	6.50	1.73	5.00
Lending Rates								
Prime	19.03	17.65	16.66	15.74	15.81	15.76	15.87	16.75
Maximum	23.62	22.03	22.20	21.86	22.02	22.02	22.09	23.21
Average Term Deposit	6.43	4.35	3.47	3.76	4.25	4.84	4.82	5.94
Spread	17.19	17.68	18.73	18.09	17.77	17.18	17.27	17.27

Source: CBN, 2013

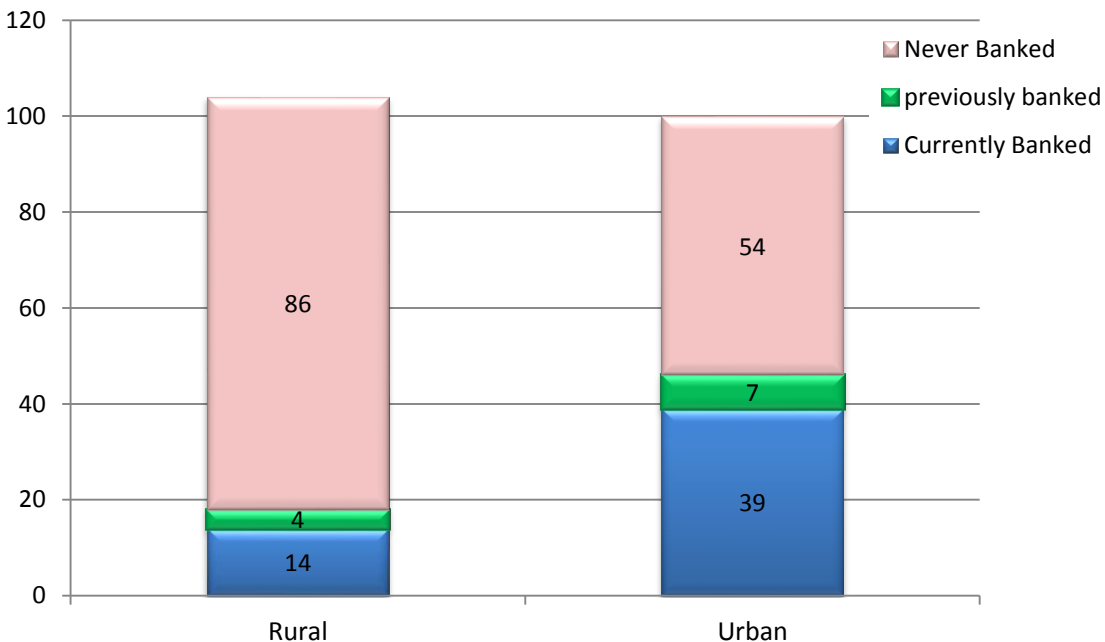
Figure 22 Average Interest Rates 2007/8-2011/12



Access to Banking by the Different Segments of the Population in the Country

Lack of access to credit, including limited physical access to bank branches, keeps investment in agriculture low, particularly among smallholders. During the period under study, official statistics show that in 2012, 14.0 percent of rural dwellers were banked with the remaining 86 percent unbanked (CBN 2012). Overall only 37.4 percent of the adult male population and 27.2 percent of women had access to formal banking. Only about 18 percent of smallholders received credit from either formal or informal sources during 2012. However, the government has been pursuing an aggressive policy that requires the commercial banks to have a specified number of their branches located in the rural areas as a way of increasing access to banking which invariably could lead to an increase of banking activities including credit extension to rural farmers.

Figure 23: Access to Finance: Rural versus Urban-2012



Source CBN, EFINA. 2012

Warehouse receipt financing (WRF) system in Nigeria

The Abuja Securities and Commodity Exchange (ASCE) was established in June 1998. While the ASCE operates warehouses, it has very limited trade and no viable warehouse receipt system. Recently however, the federal government entered into an agreement with African Exchange Holdings (AFEX) to create Nigeria's pioneering warehouse receipt system. The system will enable Nigerian farmers and cooperatives to store their

produce at accredited warehouses while produce in the warehouses can be used as collateral to get loans. The aim is to eventually have 800 warehouses across the country, with at least one warehouse in every local government area in Nigeria. In addition, the federal government will create an Agriculture Information System to help gather data and recruit personnel to manage the warehouses.

When operational, the warehouses will be leased by the government to private investors who can then work with farmers to bring their commodities to the warehouse to be used as collateral for loans from commercial banks who work in collaboration with the warehouse operators. In order to fast-track the take-off of the warehouse system, seven pilot warehouses have been established (in Kano, Kaduna, Katsina, Zamfara, Kwara, Gombe and Oyo states) to ensure grains standards, guarantee collateral for farmers and secure and link farmers to the market in a way that guarantees maximum income for the farmers while regularizing their flow of income and operating capital. This is intended to control price volatility by maintaining a buffer stock, enabling farmers to sell produce at better price points. At the time of the interview, the management of ASCE was expecting a working visit with the Ethiopian Commodity Exchange (ECX) management to share ideas and good practices of the ECX. Nigeria scores a zero (0) based on the ranking scale adopted by ABI for this indicator

Leasing arrangements and movable property as collateral

Borrowers who own economically useful collateral make larger loans for longer periods of time at lower interest rates. Thus the use of movable assets and property as collateral for loans is very helpful, particularly in the case of smallholder farmers who typically cannot offer real estate as collateral or get the co-signature of someone who can in order to access a loan from formal credit granting institutions.

During the period of study, there was no law on leasing arrangements in Nigeria that allowed the use of movable property as collateral for loans and particularly for agricultural loans in the country. However, there was a draft that was under consideration that would permit broader use of movable property as collateral. The law would apply to tangible goods such as inventories, machinery, and livestock. It would also apply to intangible property such as accounts receivable, mortgages, and chattel paper in movable property or fixtures. The proposed Law on Security Interests in Movable Property permits expanded use of collateral that will allow lenders to create security interests in movable property. This reform, when implemented will therefore benefit Nigeria's manufacturers, farmers, and business operators who borrow and sell on credit. It will improve the terms of access to credit by operators of small factories, farms, and businesses.

Existence of collateral registry and Credit Reference Bureau (CRB)

The two main kinds of institutions for collecting and sharing information on credit transactions are private credit bureaus (PCBs) and public credit registries (PCRs). PCBs are usually created by the private sector, while the PCRs are largely public institutions. This distinction is important. PCBs are likely to be created due to demand in the market for reliable credit information on borrowers. As such, their presence in an economy is in response to demand by lenders where the benefits from sharing credit transaction data exceeds the gains to relying solely on the information rent specific to one lender. On the other hand, PCRs are usually public institutions created to supervise the banking sector.

In 2012, when this study was undertaken there was no PCB in operation that was unified geographically and by asset, as set type, as well as indexed by the grantor's name of a security right although there was PCR maintained by the CBN. Financial institutions interviewed confirmed that there was a limited informal exchange of information on delinquent clients particularly with regards to large scale entrepreneurs and business men given the prevalence of fraud and corrupt practices within the business environment in the country. It is to be noted however, that three Reference Companies were awaiting licenses from the Central Bank of Nigeria (CBN), and these included Credit Reference Company (in association with Dun & Bradstreet) and XDS Credit Bureau that were expected to be granted licenses in early 2013.

Enabling Environment: Success Factor of Transport

Table 18: Key Indicator Findings for Agricultural Finance

Price paid to ship a standard container load of inputs and outputs (\$ per ton)	Ex Tampa Florida/Ex Lagos for export and imports is between US\$ 1800 and US\$ 2,000 for a 40 ft. container depending on the goods
The average freight per ton per km on main and secondary routes	The average freight from the Lagos Port to state capitals is Naira 6.1 (US\$ 0.04) per ton/km by road and Naira 10.05 (US \$0.08) per ton per km by rail. The average freight from the Port Harcourt Port to state capitals was Naira 12.27 (US \$ 0.08). The country overall average from the ports to major cities is Naira 9.91 (US \$ 0.06) per ton per km.
Freight from Primary to secondary market Freight from Secondary market to terminal market Inland freight from Lagos to major Cities Freight in the Main ports of Lagos and Port Harcourt to other state capitals Overall freight Average	The average freight charges from the primary market to the secondary market is Naira 99.50 or US \$0.67 per ton per Km. The average freight from the primary market to the tertiary or city market is Naira 70.83 or US \$ 0.47 per metric ton per km
Length of time required to register a truck for hauling agric. products (days)	On the average it takes about 28 working days to get a license and register a truck with the Motor Licensing Authority
Transit Fee	A transit fee, including "under the carpet fees" of about Naira 10,000 (US\$ 67.67) on the average in a long distance haul of about 300 km and above.
Ease of entry into trucking (Scale: 0-5)	3; most transporters stated that anyone was free to enter and leave the transport business as long as the person has the initial capital to invest in the trucks and register and insure the trucks although many agreed that the business was very risky due to the incessant road blocks and the menace of bandits and the interstate taxes all add significant cost to doing business in the transport sector in Nigeria. During the time the study was undertaken (2012), there were about 26 well established truckers and transporters
Opinion of traders and truckers on the competitiveness of trucking services (Scale: 0-5)	Although, it is relatively easy to enter the trucking industry but transporting agricultural commodities across the country present an uphill task due to the bad roads and the poor conditions of the trucks. As most food stuffs are transported in their vey raw form, most get to the final destination in conditions where their market values have been greatly diminished and thus do not attract optimum prices. This makes transporting agricultural produce less competitive that transporting industrial products and raw materials. On this basis the traders, truckers and stakeholders score Nigeria 2 on this indicator.

Quality of trade and transport related infrastructure (e.g. ports, railroads, roads, IT)--LPI	In terms of the overall LPI, Nigeria ranks 121 out of 155 countries, well below the top performer in the region South Africa (ranked 23) and just above Kenya (122). In the infrastructure dimension that measures quality of trade and transport related infrastructure (e.g. ports, railroads, roads, IT), Nigeria scores 2.27 and again is well below South Africa (3.79) and also below the average performance for all Sub-Saharan Africa countries with a score of 2.29
Rural Access Index: % rural population within two kilometers of a	The Rural Access Index (RAI) for Nigeria is 19.7% (2006) which is below the average for resource rich countries in the same category in SSA (26.0%) but above the middle-income countries (31.5%).

I: Overview of the Nigeria road transport system and implications for Agribusiness

An efficient transport infrastructure facility acts as a catalyst for the development of agriculture and other sectors. It facilitates the opening of new and previously unreachable areas, including farm lands. A good transport system serves to enable effective agricultural production and facilitates the transport of farm inputs as well as farm products to the appropriate market.

The Nigerian transport sector compares unfavorably with those of several African nations both in terms of quality and service coverage. Rural areas in particular, where the bulk of the population resides, are largely deprived of basic transport infrastructure.

The key component of transport this study focuses on is road transport. Road transport is the most commonly used mode of transport and transportation in Nigeria. Road traffic depends on the pattern of human settlements, accounting for more than 90 per cent of the transport sector's contribution to the Gross Domestic Product (GDP). Among the public institutions responsible for transport in Nigeria are the Federal Ministry of Works, the Nigerian Railway Corporation, the Federal Airports Authority, and the Nigerian Ports Authority. It is not so much the ownership and control of these modes that are in question as far as transport reforms are concerned, but the nature of competition needed to bring about both allocation and distributional efficiency in the transport sector.

II: Regulations and government intervention in the transport (road) industry

The Vision 20:2020 and First National Implementation Plan (2010-2013) framework constitutes a transport development strategy that is private-sector driven, providing an environment capable of addressing the issues of wealth creation, employment generation, and poverty reduction. This overarching strategy formed the

basis of the fundamental objective of the country's National Transport Policy, which is to develop an adequate, safe, environmentally sound and efficient transport system in the context of a progressive and competitive market economy (The Draft National Transport Document, 2010).

Road transport consists of 32,000 km of federal highways including several bridges, 30,500 km of state roads; and 130,000 km of local roads. Road transport operation is largely in the private sector. Its growth has, however, been encouraged through a large investment program on roads compared to investment in railways and inland waterways.

As provided for in the Constitution, the different tiers of government have independent responsibilities for the planning, financing, and maintenance of roads. Three major issues affect the road network including axle overloading causing damage to roads; neglect of periodic and routine maintenance, an absence of emergency maintenance; and inadequate design and construction. The above diagnosis reveals that there is an urgent need to ensure an adequate and efficient maintenance of the existing road network (NARTO, 2012). Past failures to ensure adequate and effective maintenance, largely the result of inadequate resources, are the major cause of the current need for road rehabilitation. Current transport operations are characterized by large-scale movements of goods and passengers that could have been moved more cost effectively by other modes, such as railways and inland waterways. The predominance of truck transportation accounts for the excessive damage of the road infrastructure.

Some transport corridors are very heavily travelled and this shows the patterns of inter-linkages and the need for strategic planning and investments within the sector. Such corridors include:

1. Lagos – Ibadan/Lagos-Shagamu;
2. Lagos - Ibadan-Kaduna-Kano;
3. Port Harcourt – Aba-Abuja-Kaduna-Kano;
4. Lagos-Shagamu-Benin city;
5. Lagos – Onitsha;
6. Port Harcourt - Aba-Enugu

III: Transportation costs in Nigeria

The high price of food in Nigeria is substantially attributable to high transportation costs. Limited rail service, poor road conditions, 'go-slow' bottlenecks, and informal checkpoints all contribute to reducing the competitive trade of agricultural goods produced. The Port of Lagos experiences severe congestion which may cause ships to be docked for up to 20 days, and containers to be delayed for as long as 35 days. The most important transportation route in Nigeria, the Lagos-Niger corridor (LNC) is a 1,149km road that sees a large amount of traffic: between 5,000 and 17,000 vehicles per day, 10-14 percent of which are heavy vehicles. The neglected railway is no longer useful to ship goods within or between countries

Table 19: The Costs and Time Needed to Deliver Goods (30 ton) From Coastal Ports of Lagos to Hinterland Towns in Nigeria

Freight transport from Lagos port complex								
Towns	Distance by Road	Distance by Rail	Cost by Road (N)	Cost by Rail (N)	Cost/Ton /Km by Road (N)	Cost/Ton/ Km by Rail (N)	Duration of delivery by road (hrs.)	Duration of delivery by rail (hrs.)
Ibadan	166	193	80794	35319	16.22	6.1	12	8
Osogbo	256	293	118750	53619	15.46	6.1	24	12
Ilorin	325	391	129758	71553	13.3	6.1	24	16
Minna	762	743	189375	135969	8.28	6.1	48	30
Kaduna	925	909	230000	166347	8.28	6.1	67	48
Jos	1034	1173	260526	214659	8.39	6.1	70	56
Kano	1175	1126	264318	206058	7.49	6.1	72	53
Bauchi	1166	1310	285455	239730	8.16	6.1	76	60
Gombe	1354	1476	295000	270108	7.26	6.1	76	64
Maiduguri	1625	1878	373333	343674	7.66	6.1	106	80

Source: Federal Highways Department of Federal Ministry of transportation, Abuja

Table 20: The Costs and Time Needed to Deliver 30 tons From Coastal Port of Port-Harcourt to inland Towns in Nigeria

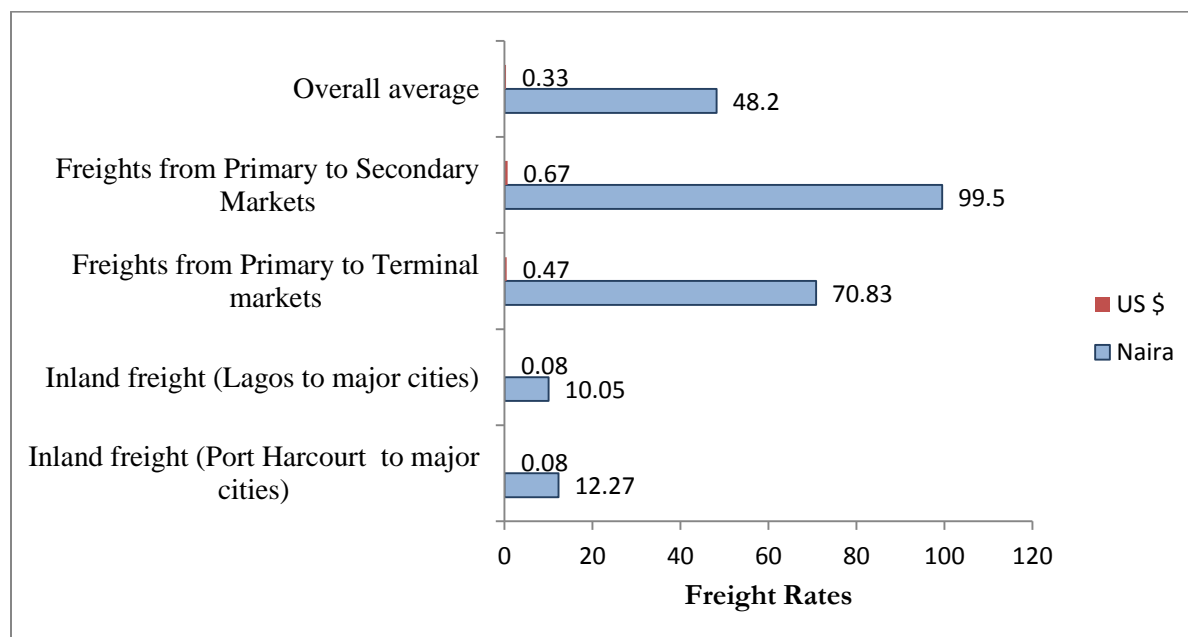
Towns	Distance by Road	Distance by Rail	Cost by Road (N)	Cost by Rail (N)	Cost/Ton /Km by Road (N)	Cost/Ton/ Km by Rail (N)	Duration of delivery by road (hrs.)	Duration of delivery by rail (hrs.)
Aba	64	63	45221	33692	23.55	6.1	5	2
Enugu	281	243	121785	77316	14.45	6.1	24	10
Makurdi	525	463	150000	65271	9.52	6.1	36	24
Jos	864	830	250000	96646	9.64	6.1	68	60
Bauchi	996	975	290500	112075	9.75	6.1	78	74
Gombe	1184	1141	320166	111363	9.01	6.1	84	78
Maiduguri	1460	1443	350000	85931	9.99	6.1	93	84

Source: Federal Highways Department of Federal Ministry of transportation, Abuja

Table 20 shows Maiduguri as the most distant town in Nigeria by road from either the Lagos Port Complex (1625 km) or Port Harcourt (1460 km) with an estimated freight of N373,333 (US 2489) per truck load from Lagos or N350,000 (US \$ 2333.33) from Port Harcourt. The duration of delivery by road is 106 hours from the Lagos Port Complex or 93 hours from the port in Port Harcourt. Also about 60 per cent of general dry

and liquid cargoes are handled in Lagos. This accounts in part for the current congestion costs which are a significant burden on the economy of the nation.

Figure 24 Comparison of transport price for the different road networks in Nigeria, 2011/12



Source: Field Survey, ABI, 2011/12

The transport price was found to be highest along the primary route (NGN99.50) to the secondary route as compared to the other segments of the roads; (NGN70.83 market from the secondary to the tertiary market). Unfortunately this is the most important section for farmers because they need to get their produce to the primary market or the aggregator as fast as possible to limit spoilage and attract premium price. One reason why this section of the food transport system was very expensive was because of the poor condition of the road. There were also very few transporters along this route, sometimes with only one person who monopolized the market and charged exorbitant prices.

IV: Rural Access Index (RAI) and road quality in Nigeria

Rural Access Index (RAI) shows the proportion of the rural population which has adequate access to the transport system. RAI is usually defined in terms of road transport. Rural accessibility remains a serious problem in Nigeria, with major repercussions for agricultural and rural development. The country's unpaved roads are in particularly poor condition and this gets worse during the rainy season which coincidentally is also the land preparation and plantings season when agricultural inputs have been transported to the farms.

The evidence on rural access levels is somewhat conflicting. According to household survey evidence (LSMS), about 47 percent of rural inhabitants in Nigeria live within 2 kilometers of an all-season road. This is well above the average of around 34 percent for Sub-Saharan Africa, but still falls well short of the 67 percent average found in other developing countries. On the other hand, geographic information system (GIS) analysis suggests that only about 20 percent of rural Nigerians have access to an all-season road, a figure somewhat below the average for the peer group. Be it as it may, it is clear that Nigeria's rural road network falls well short of what is needed to service the rural economy. (Foster and Pushak, 2011)

Realistic extension of rural access will require strategic alignment of road and agricultural development policies. Nigeria's classified road network amounts to 85,000 km. To provide all-season road coverage to just 75 percent of the rural population would require the classified network to be extended by a further 20,000 km. This will be an uphill task given the huge amount of resources needed. A World Bank study has shown that if rural road development were to be closely aligned with agricultural priorities, a fully functional classified network of just 50,000 km would be adequate to provide connectivity to areas producing 80 percent of the value of the country's agricultural output (Foster and Pushak, 2011).

Table 21: Nigeria's road indicators benchmarked against Africa's low and middle-income countries, 2006

Unit	Resource Rich Countries	Nigeria	Middle Income Countries
Paved Road density Km/1000Km ² of arable land	50.1	174.1	318.4
Unpaved road density Km/1000Km ² of arable land	38.1	94.2	278.4
GIS rural accessibility % of rural population within 2km of all season roads	26.0	19.7	31.5
Paved road traffic Average annual daily traffic	1,408.2	1,772.4	2,558.3
Unpaved road traffic Average annual daily traffic	24.7	32.7	74.7
Paved network condition % in good or fair condition	67.9	67.4	82.0
Unpaved network condition % in good or fair condition	61.4	32.9	57.6
Perceived transport quality % firms identifying roads as major business consistent	30.2	29.9	18.2
Over-engineering % paved network with <300 vehicle per day	19.8	4.8	18.4
Under-engineering % unpaved network with >300 vehicles per day	9.3	26.7	20.0

Source: Gwilliam and others 2009.

Statistics from the federal Rural Road Access and Mobility Project (RAMP) reveal that 85 percent of Nigerians roads are in bad condition. An estimated 15 percent of the secondary and tertiary roads in the country are accessible and usable. The local government road network responsible for the transporting farm produce from the farm to the first point of sale is highly dilapidated with more than 70 percent impassable. This state of rural roads was indeed responsible for the long travel time, huge post-harvest losses, high rate of

auto accidents, and high transport costs in this segment of transportation (NGN99.50 or \$0.67) compared to the inland freight (NGN12.27) from the main port to major cities in the country. As a result of the conditions of the rural roads, an estimated 20 percent of total agricultural production never gets to the market.

Figure 23 and Table 22 show the Logistics Performance Index (LPI) of Nigeria for 2012, as reported by the World Bank which is the weighted average of the country scores on the six key dimensions in the overall areas of transport and custom clearance in the doing business indicators of a country. In terms of the overall LPI, Nigeria ranks 121 out of 155 countries, well below the top performer in the region South Africa (ranked 23) and just above Kenya (122). In the infrastructure dimension that measures quality of trade and transport related infrastructure (e.g. ports, railroads, roads, IT), Nigeria scores 2.27 and again is well below South Africa (3.79) and also below the average performance for all Sub-Saharan Africa countries with a score of 2.29.

Figure 25: Logistics Performance Index of Nigeria Versus SA (top performer in the Region) and other ABI countries-2012 (Scale 0-5)

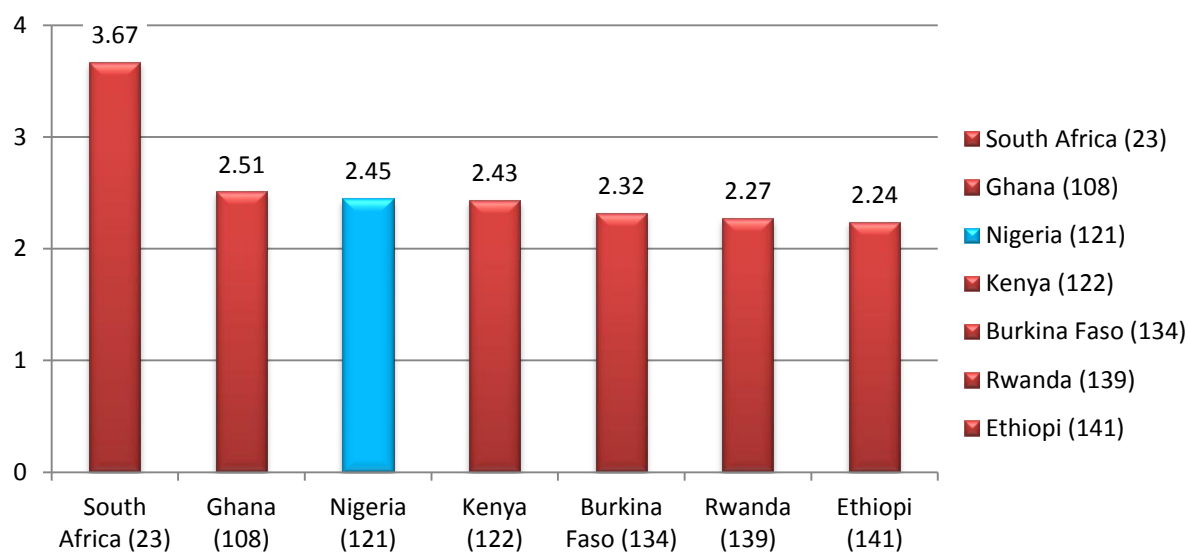


Table 22: Nigeria’s Logistics Performance Index (LPI)

	Nigeria		Sub Saharan Africa	Top Performer in the Region (South Africa)
	score	rank	Score	score
Overall LPI	score	2.45	2.46	3.67
	rank	121		23

Customs	score	1.97	2.27	3.35
Infrastructure	score	2.27	2.29	3.79
International shipments	score	2.50	2.47	3.50
Logistics competence	score	2.52	2.43	3.56
Tracking & tracing	score	2.35	2.41	3.83
Timeliness	score	2.92	2.85	4.03

Source: Logistics Performance Index, World Bank 2012

V: Private Sector Perception of Road Transport Business in Nigeria

The major actors in the dry cargo transport sector in agricultural commodities and inputs are the private companies with considerable fleet size. The Nigerian Association of Road Transport Owners (NARTO) and the Federal Ministry of Roads and Transport have lately become active players in importing and distributing passenger buses under the Mass Transit Program that is geared towards improving road transportation in the country.

NARTO is the umbrella organization of all commercial vehicles owners in Nigeria engaged in hauling petroleum products, general cargo, agricultural produce, and movement of passengers within the country. A main objective of NARTO is to promote and protect the interest of transport entrepreneurs and NARTO members in the road hauling industry. As at the time of the interview, NARTO had about 5,000 registered members. Membership is divided into two categories; private and cooperative. Individual membership attracts a registration fee of NGN10,000 (\$67) and annual dues of NGN5,000 (\$33). Owners of fleets greater than 10 trucks become corporate members and must register with NGN 15,000 (\$100) and pay annual dues of NGN12,000 (\$80).

Interviews with stakeholders revealed a number of problems that constitute handicaps in the transport business. Prominent among these is the bad network of roads that quickly wear out trucks and limit their economic lifespans. Owners of truck businesses criticized the poor engineering work by contractors who commit less than 30 percent of the approved amount in building new roads. In effect, they contended that very little of the allocated funds are used to construct the roads resulting in roads of very poor quality. This, they argued, was the main reason for the poor road conditions rather than axle overloading and lack of periodic and routine maintenance and an absence of emergency maintenance; and inadequate design and construction.

On average it takes about 28 working days to get a license and register a truck with the Motor Licensing Authority. Truckers interviewed disclosed that they pay a transit fee, including “under the carpet fees” of about NGN10, 000 (US\$68) on average during a long distance haul of about 300 km. Most transporters stated that there was no barrier to entry and that anyone was free to enter the transport business as long as the person has the initial capital to invest in the trucks and register and insure the trucks. Many however, agreed that the business was very risky due to incessant road blocks, the menace of bandits, and interstate taxes. These direct and indirect costs significantly increase the risk of doing business in the transport sector in Nigeria. In addition to these risks, lack of necessary mechanical spare parts and truck tires was singled out as a major constraint to efficient trucking business in the country. There was no single tire manufacturing company in the country despite the fact the country produces natural rubber, the raw material for motor tires. Lack of reliable electricity was the main reason why the tire industry exited the market in Nigeria as the cost of generating one’s own electricity made the enterprise unprofitable and unsustainable.

Although, it is relatively easy to enter the trucking industry, transporting agricultural commodities across the country presents an uphill task due to the bad roads and the poor conditions of the trucks. Because most food stuffs are transported in raw form, they tend to arrive at the final destination in conditions when market values have been diminished and do not attract optimum prices. This makes transporting agricultural produce less competitive than transporting industrial products and raw materials. However, there are no legal barriers to entry into the transport market. The only barriers appears to be the huge initial investment capital needed and for a trucker to find his or her own niche to be competitive and earn economic profit. On this basis traders’, truckers’ and stakeholders’ rate ease of entering the transport industry in Nigeria at 3.5.

3.3 Government Policies on Agribusiness

Table 23: Key Indicator on public and trade policies and role of Civil Society in influencing agribusiness in Nigeria

Private sector perception of agribusiness enabling environment (0-5 scale) ;	Until very recently, the Federal government has only been paying lip service to the development of the agricultural sector. Although the present government has taken some bold steps to address the problem of food production in the country, most stakeholders believe that it is still too early to assess the sustainability and efficacy of such endeavors. On the basis of this argument the average score for the country as perceived by the stakeholders is 2.5
Policy Consistency: 0-5 scale as perceived by foreign and domestic investors w/r to (frequent, unexpected or arbitrary) changes in policy, regulations & rules that affect operations and profitability of businesses	One major problem constraining the development of the agricultural sector in Nigeria is the frequent change of policies orchestrated by frequent change of government and policy and decision makers in the country. As the policy changes and governments go down (less common recently), so also do the policies go with them or lead to institutional and policy "obsolescence" no matter how relevant or effective those policies might have been. This situation is most prevalent in the input sector, particularly the fertilizer sector and is largely responsible for the apparent insufficient use of the farm inputs (fertilizer, seed and machinery in the sector today. In fact some policy analysts have described the Nigerian Agricultural Policy Environment as lacking "coherence and continuity". The stakeholders scored the country a 2.0 on this indicator.
Private sector advocacy group for agribusiness: existence & effectiveness	Although there are a number of organizations along the agricultural value chains in the country, most of them lack the authority, and the intervention of the government in different forms and capacity render these advocacy groups virtually ineffective and incapacitated to influence government policies. Indeed, the Apex Farmers' Association of Nigeria which is the umbrella of all the other farmer organization has been described as the creation of the government and the as such its independence as an advocacy group has been questioned and criticized. The country scores 2.0 on this indicator
Federal government budget outlays on agriculture as % total budget.	2001-2005 (1.67%); 2006 (4.1%); 2007 (4.4%); 2008 (4.6%); 2009 (1.9%); 2010(2.0%) 2011 (1.7%); 2012 (2.3%)
AgGDP as percentage of Total GDP	2006 (41.7%); 2007 (42.0%); 2008 (42.1%); 2009 (41.7%) 2010 (40.9%); 2011 (40.21%); 2012 (34.4%); Average (2006-2012)=40.4%
Ratio of ag expenditure to ag GDP	2005 (3.3%); 2006 (4.3%); 2007 (4.7%), 2008 (6.0%); 2009 (6.1%) 2010 (4.7%) 2011 (2.5%)
AgGDP per agricultural worker at current market prices	2005 (N61,762.09/\$486.31); 2006 (N75,056.86/\$610.21); 2007 (N83419.75/\$725.38); 2008 (N90,982.67/\$664.10); 2009 (N102,613.81/\$698.15); 2010 (112899.69/\$747.68); 2011 (N124463.05/\$782.78)

CAADP investment plan development: stage that government is in this process (0-5 scale)	The Nigerian Government has long held the Roundtables on CAADP and by October 30, 2009 signed the CAADP Compact in support of the successful implementation of the CAADP agenda in the country. The country has also convened post compact investment plan meeting and a draft invested plan has been finalized and validated. At two business meetings have been held and the country is among the 15 African Countries that have submitted a complete proposal package for Global Agriculture and Food Security Program (GAFSP) funding for CAADP implementation.
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I: Public policies and New Institution for Promoting Agribusiness

The Five-Point Agenda and the CAADP Principles

Until very recently, Nigerian agriculture lacked coherent and consistent policies as previous governments paid lip service to the sector with little or no commitment, although prior to the oil boom it was the backbone of the country's economy. The Agricultural Transformation Agenda (ATA) marks a dramatic change from this past neglect and is a major focus of the current administration. In line with the diversification program of the government, the Federal Ministry of Agriculture and Rural Development is implementing the ATA that is aimed to promote agribusiness, attract private sector investment in agriculture, reduce post-harvest losses, add value to local agricultural produce, develop rural infrastructure and enhance access of farmers to financial services and markets. The ATA sets out to create over 3.5 million jobs along the value chains of the priority crops of rice, sorghum, cassava, horticulture, cotton, cocoa, oil palm, livestock, fisheries, etc. for Nigeria's teeming youths and women, in particular (Adesina 2012).

Under the ATA, new policies, institutions and financing structures have been put in place to drive sector growth. Deregulation of seed and fertilizer sectors; marketing reforms to structure markets; innovative financing for agriculture; new agricultural investment framework are all part of the new ATA that the current administration is implementing to boost agricultural production, reduce unemployment, enhance food security and reduce poverty in the country. The ATA is complemented with the 5-Point Agenda of the FMARD which is largely consistent with the four principles of the CAADP in keeping with the African Union Heads of State and government resolution.

Table 24: The Five-Point Agenda and the CAADP Principles

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

Source: Adapted from the FMARD, 2010

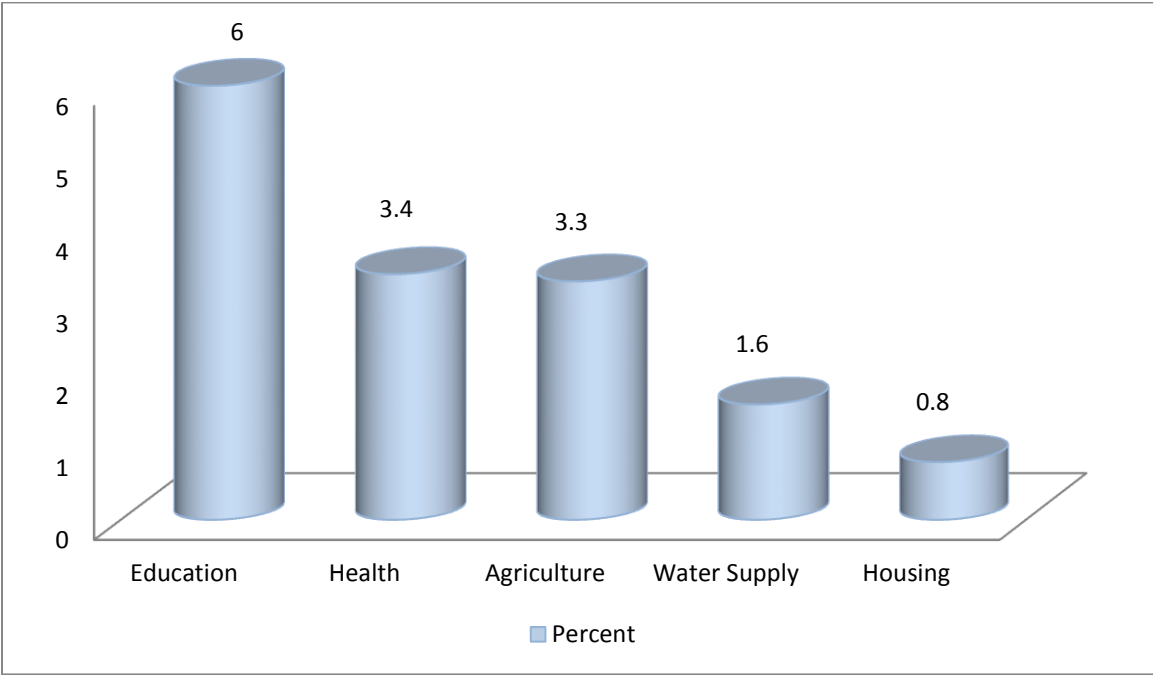
Among stakeholder interviewed, policy consistency is seen as a major issue constraining the development of the agricultural sector in Nigeria. Frequent turnovers in administrations have seen parallel changes in policy, whether or not the policies introduced in the outgoing administration were effective. While changes in government have recently grown less frequent, much of the uncertainty that was generated by abrupt policy

change persists, and their impacts have been most prevalent in the input industries – particularly fertilizers. The absence of indicators has made it harder to track and evaluate different policy strategies and their effectiveness on the agricultural sector. Complex divisions of responsibility between federal, state, and local levels of government have led to both duplications and omissions. Again, this lack of coherence seems to be improving in more recent years. The stakeholders scored the country a 2.0 on this indicator.

II: Government Budget Allocation and Expenditures on Agriculture

Public spending on agriculture in Nigeria in the past two decades has been very low. Between 2001 and 2005, only 1.67 per cent of total federal expenditure was allotted to the agricultural sector far lower than spending in other sectors such as education, health, and water. There is no appreciable increase in the last decade as the allocation to the sector between 2006 and 2012 still averages only 3 per cent. The allocation by state governments was even much lower compared to federal allocations; an indication of the relatively low priority accorded to the sector (see Figures 24 and 25). This low expenditure contrasts dramatically with the sector’s importance in the Nigerian economy, which ranged from 30 to 40 per cent of total GDP. Above all, it falls well below the 10 per cent goal set by African leaders in the 2003 Maputo agreement (see Figure 26) and shows a downward trend in recent years.

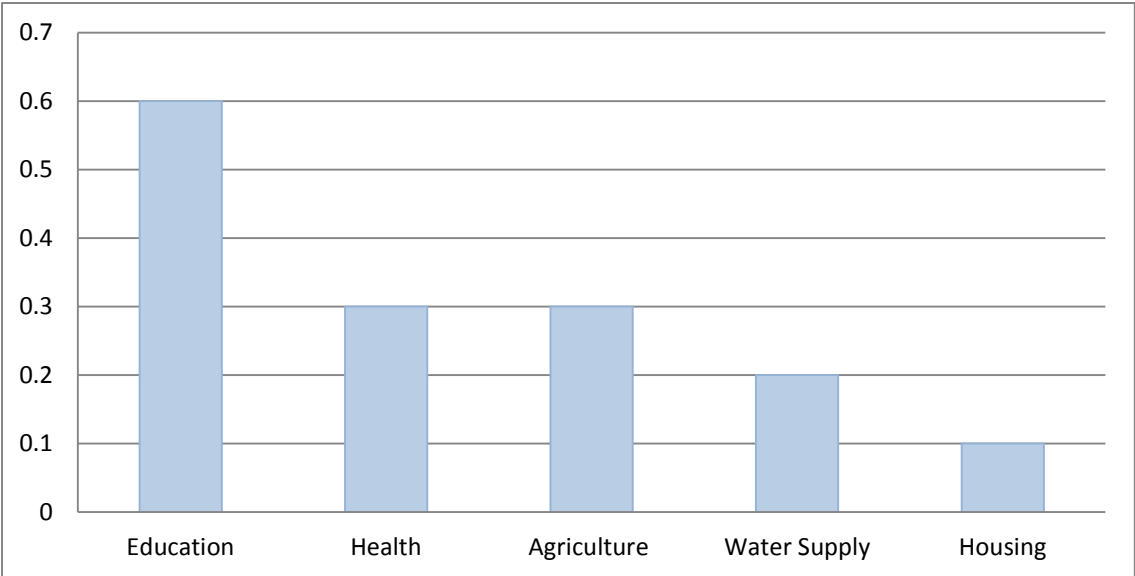
Figure 26: State Governments’ Expenditure in Key Sectors for 2011 (per cent of Total Expenditure)



Source: CBN, Annual Report, 2011

At the Second Ordinary Assembly of the African Union in July 2003 in Maputo, African Heads of State and Government endorsed the Maputo Declaration on Agriculture and Food Security in Africa.³ The Declaration contained several important decisions regarding agriculture but prominent among them was the “commitment to the allocation of at least 10 percent of national budgetary resources to agriculture and rural development policy implementation within five years.” Since the Maputo Declaration the share of national budget allocated to agriculture has therefore been taken as a proxy to governments’ commitment to promote investment in the agricultural sector and thus a positive step in government policy to leverage agribusiness development. Under the Comprehensive African Agricultural Development (CAADP), the main framework for accelerating agricultural development in the continent, member countries are mandated to allocate at least 10 percent of their annual budget to agriculture.

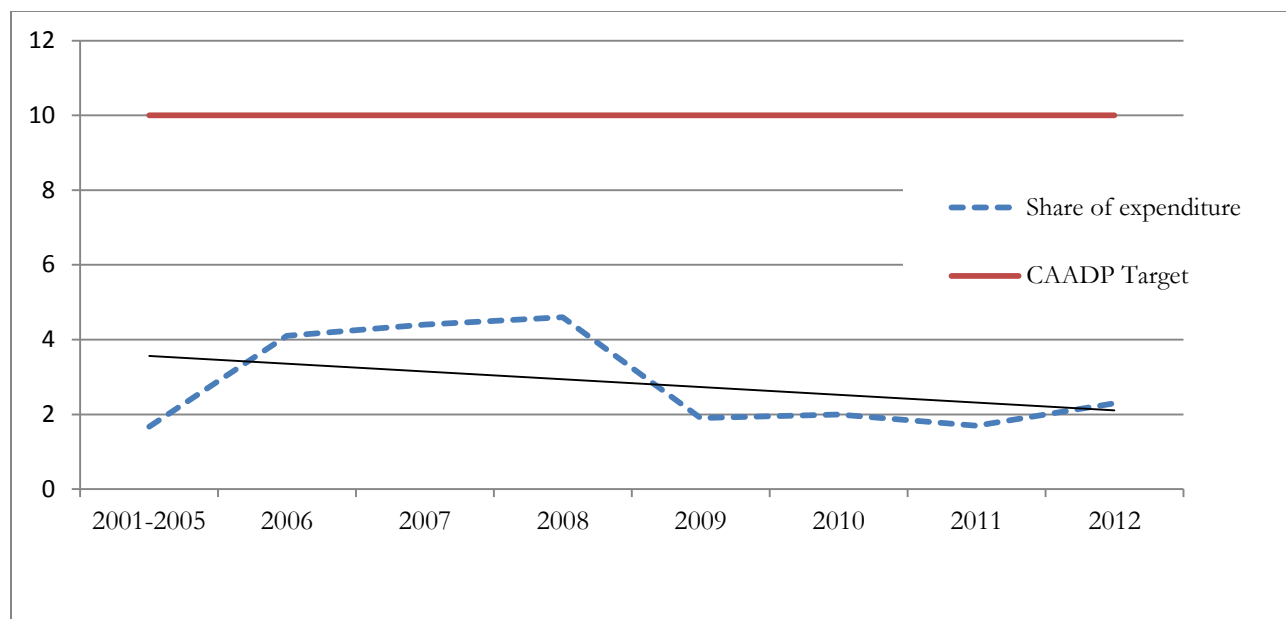
Figure 27: States Governments’ Expenditure in Key Sectors for 2011 (percent of GDP)



Source: CBN, Annual Report 2011

Figure 28: Agricultural expenditure as share of total government expenditure, 2001-2012

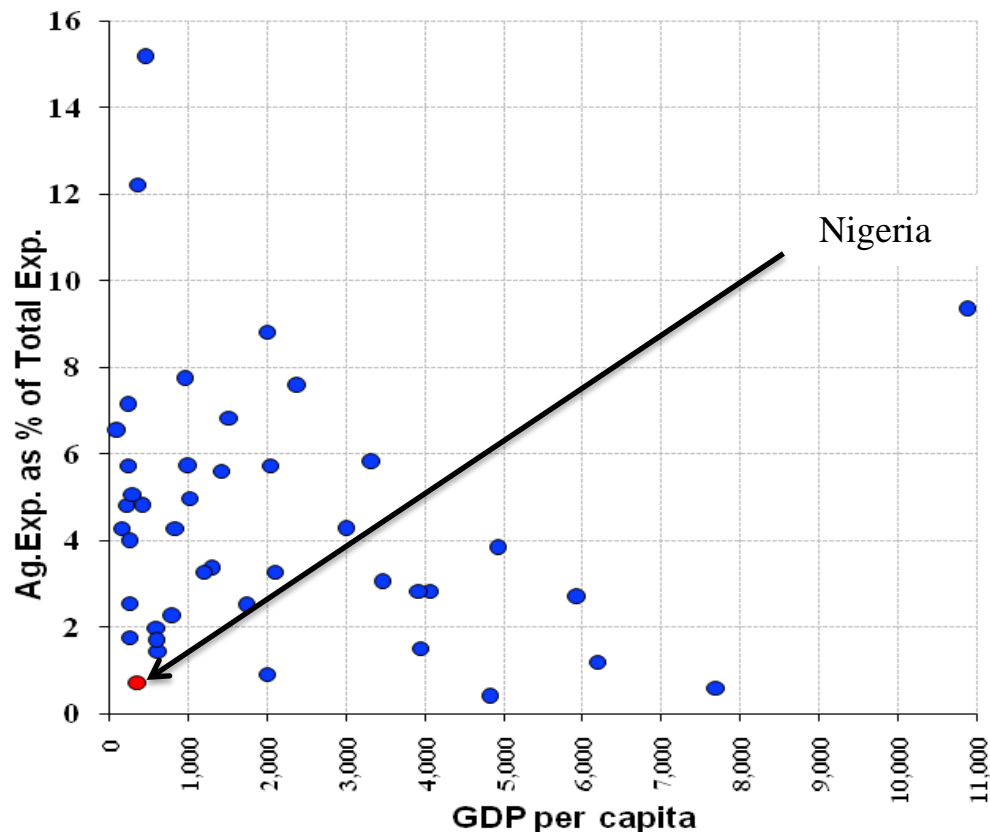
³ (Assembly/AU/Decl. 7(II))



Source: Original data from CBN, Annual Report, various issues.

Nigeria also falls far behind in agricultural expenditure by international standards, even when accounting for its level of income (see Figure 26). Normally, there is an inverse relationship between income per capita and agricultural expenditure share in the economy. Nigeria, however, does not conform to this general pattern: GDP per capita is very low, but so too is the share of agricultural expenditure in relation to the rest of the economy. (Mogues et al, 2008) This trend indicates a structural misalignment between agricultural expenditure and budget execution. It has been pointed out that one reason why the expenditure pattern in agriculture in the country does not follow a priori expectations may be the poor execution of the budget as well as the quality of the budget implementation. The Public Expenditure and Financial Accountability (PEFA) best practice standard for budget execution is no more than 3 percent discrepancy between budgeted and actual expenditures. In contrast, during the period covered by the study, the Nigerian federal budget execution averaged only 79 percent, meaning 21 percent of the approved budget was never spent. Budget execution at the state and local levels was even less impressive, ranging from 71 percent to 44 percent (Mogues et al, 2008).

Figure 29: Nigeria's Agricultural Expenditure and International Comparators



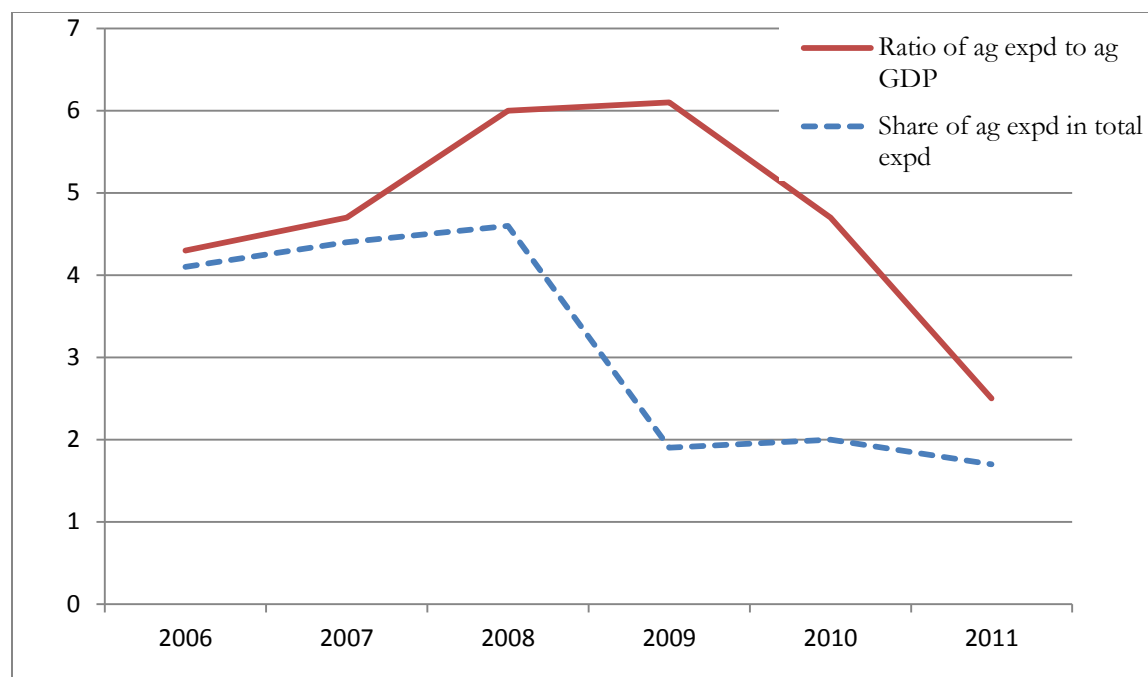
Source: Mogues et al., 2008

Even within the agricultural sector, some areas receive very low priority and the share of budget and expenditure to some of the sub-sectors is disproportionately low. Available data show that, at the federal level, a very large proportion of capital spending is directed toward crop-related activities, and an extremely small proportion is directed toward livestock- and fisheries-related activities. From example, from 2001 through 2005, data show that within the Federal Ministry of Agriculture, on average nearly 97 percent of capital spending went to support the crops subsector, and only 3.1 percent of capital spending went to support the livestock and fisheries subsectors combined. Similar patterns obtain at the state levels (Xinshen, et al; 2010).

Another way to measure the relative importance attached to agriculture is by measuring the expenditure on the sector in relation to the contribution of the sector to the national economy. The measure combines the agriculture expenditure share and the contribution of agriculture to GDP. This ratio which is calculated as the ratio of agricultural expenditure share to the agricultural GDP share can be used to better measure the position of the agricultural sector in the country's government budget allocation. A ratio of 1 indicates that the government allocates part of its budget consistently with the contribution of agriculture to the country's

economy. If the ratio is smaller than one, then it indicates that the agricultural sector did not receive the public fund consistent with its role in the economy (Xinshen, et al; 2010).

Figure 30: Share of agric. expenditure in total expenditure and share of agric. total GDP, 2006-2012



Source: Original data from CBN, Annual Report, various issues-2006-2012

The long-term average for this period is 0.04, signifying that the share of public resources allocated to the agricultural sector is equivalent to less than one-twentieth of the contribution of the sector to the country's economy (measured by its share in GDP). In addition, going by previous estimate of .07 for the period of 2001-2007 (see Xinshen, et al; op.cit), it also shows that the government is paying less attention to the agriculture sector although the contribution of the sector to the overall economy has been relatively stable.

III: Role of Civil Society and Advocacy Groups in Influencing Agricultural Policies

Policy advocacy is defined as efforts of individuals or groups to inform policymakers and influence policy decisions and government actions (AIAE 2006) by championing issues, educating officials and citizens, mobilizing support, and creating coalitions (Brinkerhoff and Crosby 2002). Private advocacy and civil society groups, which are also referred to as pressure groups, lobby groups, and special interest groups, use various forms of advocacy to influence public opinion and policy (Onyekuru, 2010). This interface with public officials can be useful in driving and guiding economic reforms which are instrumental in bringing about

improved development outcomes. In the area of agricultural development more specifically, civil society and advocacy groups can play important roles in campaigning for improved services to farmers and for policies that create a more favorable investment climate for agribusiness.

There are several advocacy groups in Nigeria which vary considerably in size, influence, and social purpose. They include core and non-core agricultural groups. Core groups' mandates focus entirely on agriculture. They include, for example, the All Farmers Association of Nigeria (AFAN), National Agricultural Foundation of Nigeria (NAFN), Farmers Development Union (FADU), National Agricultural Foundation of Nigeria (NAFN), Fertilizer Suppliers Association of Nigeria (FEPSAN), and Women Farmers Advancement Network (WOFAN). The non-core groups do not have agriculture as their primary mandate, but have some agriculture oriented activities (Onyekuru, 2010).

Although a number of these organizations function along the agricultural value chains in the country, most of them lack influence. Government intervention in different forums and capacity render these advocacy groups ineffective and with little voice with which to influence government policies. The Apex Farmers' Association of Nigeria for instance, which is the umbrella of all farmer organizations has been described as the creation of the government and the as such its independence as an advocacy group has been questioned and criticized.

Nigeria has many inter-professional agricultural bodies. The two main ones are the Agricultural Society of Nigeria (ASN) and the Farm Management Association of Nigeria (FAMAN). The societies were established with the aim of "uplifting the observed downward trend in the fortunes of agriculture in the national economy." Membership is drawn from all agricultural professionals from agriculture faculties in the universities, colleges of agriculture, research institutes, the federal Department of Agriculture, state Ministries of Agriculture, and agricultural development programmes. Others include private farmers and farm managers, and other key stakeholders in agriculture and related areas such as financial institutions and insurance and banking professionals.

Unfortunately, despite the broad-based nature of some of the inter-professional associations, there is no strong advocacy or lobbying from these groups to engage the government in dialogue to influence policies. Some factors have been identified as responsible for this apathy and lack of interest by advocacy societies in the country. Some policy analysts describe a lack of "originality and authenticity," and a tendency of these groups to pursue narrow and highly localized interests. The groups therefore tend to be viewed and described as regional, sectional, and ethnic, and unfortunately often act in ways that reinforce this perception. Prior to the current government, the experience of having operated under the earlier undemocratic, military regimes also left many advocacy groups too apprehensive to assert themselves

purposefully in policy dialogue. Based on the overall response of the stakeholders, Nigeria scores 2.0 on this indicator.

IV: Private sector perception of agribusiness enabling environment (0-5 scale)

Stakeholders affirmed that Nigeria's agriculture sector lacks consistent policies and that the predictability of business environment is generally difficult and very worrisome. There is general concern about issues of continuity of policies and lack of coherence at both federal and state levels. These gave mixed signals to private sector actors and made planning investments very difficult.

One area the stakeholders singled out as particularly problematic was in the supply of inputs, mainly seed and fertilizers. Fertilizer suppliers in particular complained of a complete lack of transparency in the way tenders and contracts are awarded and payments made to suppliers.

The overall perception of major stakeholders is that there are long delays in the ratification and approval of reform bills and legislation that should be in place for effective private sector development in agriculture. The case of seed laws shows that the government takes far too long to ratify and approve laws that determine the ways business should be done. Even when bills have been passed and signed into law, implementation can be slow and incomplete. The frequent changes that the government is introducing to improve the enabling and business environment for private sector participation cause a lot of anxiety among agribusinesses and entrepreneurs. Most stakeholders believe that it is still too early to assess the sustainability and efficacy of such endeavors and think that the overall business environment is not very conducive at the moment. On the basis of this argument the average score for the country as perceived by the stakeholders is 2.5

4. Concluding Remarks

This study has focused on identifying the factors that support and the factors that inhibit the development of the agribusiness sector in Nigeria, and on constructing and using indicators that reflect the conditions that agribusinesses and investors face in the country. The indicators are intended to give policy makers and others a clear understanding of where they stand and a means of monitoring performance over time, as well as points of reference for drawing comparisons with neighboring countries and competitors.

Applied to Nigerian agriculture and agribusiness, the indicators clearly reflect low levels of investment in agriculture and agricultural research as a pressing challenge – one which has led to among other things, inadequate use of yield-enhancing technologies, weak linkages between agriculture and other sectors, and low productivity. The state of infrastructure in general and road transport in particular emerge as constraints, affecting agriculture and a number of other sectors. And the confidence of investors who contemplate moving into the various fields of agribusiness, particularly with regards to policy stability and the public sector's role in agribusiness-related markets, warrants priority on the part of policy and decision makers. Strategies for transforming agriculture in Nigeria will need to purposefully address these issues.

As a first step towards developing a comprehensive and robust methodology that will scale up the study to include more variables and countries within Sub-Saharan Africa, the ABI studies isolated and analyzed three categories of success factors i) access to critical factors of production, ii) supporting services and enabling environment and iii) policy issues as related to government expenditures and interventions in the agribusiness sector in nine different countries in Africa including Nigeria.. These success factors formed the basis for the construction of indicators, cross-country comparisons, and possibly rankings in the hope of nudging governments toward undertaking reforms that enable more productive investment in agribusiness in Africa.

The amount of certified seed used by farmers in the country is still very low and overall account for only between 5 and 10 percent of the national seed requirement. Except for a few crops, most varieties being planted now are improved varieties, although many have been saved by farmers over successive growing seasons without ever having been renewed. The reason for this underperformance of the seed industry includes the absence of functional national seed laws and non-harmonization of regional laws and regulations that could otherwise allow seed trade among ECOWAS countries. The ECOWAS regulatory harmonization effort is an attempt to standardize seed certification throughout the region thus eliminating the need for seed certified in one member country to undergo further testing and certification in another importing member state.

The fertilizer sector continues to be beleaguered by procurement, distribution, and marketing problems, mainly as a result of the inefficient subsidy programs. Less than 30 percent of the intended farmers obtain the fertilizer at subsidized rates. The subsidy rates, which in some states are as high as 95 percent of the total cost of fertilizers, have created rent seeking opportunities that divert much of the fertilizer to politically connected farmers, as well as opportunities to adulterate the material. This acts as a disincentive that discourages farmers from using this important input. In addition, the leakage of subsidized fertilizers into the open market discourages private investment and tends to crowd out the private sector that otherwise would have encouraged competition and lowered the cost of the input to farmers. The result is that fertilizer application rates in Nigeria are very low at 13 kilograms per hectare annually – compared for instance to Kenya where rates are as high as 100 kilograms per hectare.

Despite the large area of arable land in Nigeria, large scale agriculture is highly limited and the use of agricultural machinery, tractors in particular, is very low. Although of new tractor imports are duty free, imported spare parts that are necessary to keep the tractors running are not. This limits the economic lifespan as well as the profitability of the tractor hiring service business. There is however, a new initiative by the current government to mechanize agriculture. This involves among other things a public-private partnership in form of Nigerian Incentive-based Risk Sharing Agricultural Lending (NIRSAL). NIRSAL will guarantee up to 75 per cent of bank loans to individuals and entrepreneurs who import tractors to sell in the domestic market. The program will hopefully leverage agricultural mechanization in Nigeria.

Agricultural finance has been a critical enabling factor for leveraging agricultural development throughout much of the world. The lack of this finance is a serious constraint to farmers and to private sector investors who operate in the agriculture sector. Like in most other African countries, entrepreneurs who are interested in making agricultural investments find it more difficult to obtain loans for this purpose than investors in other sectors. For smallholder farmers who simply want credit to purchase farm inputs, obtaining commercial credit is particularly difficult – and if they succeed it is particularly expensive. In their case, lack of collateral is the most basic handicap. Despite agriculture's importance to Nigeria's economy in terms of both share of GDP and employment, just 2.2 percent of commercial bank lending went to the sector between 2007 and 2011.

Other financial instruments that would have enabled farmers to access credit were either not in place or not fully developed and functional at the time this study was conducted. Although, the Abuja Securities and Commodity Exchange (ASCE) was established in 1998, its involvement in the trade of agricultural commodities is very limited. And although the ASCE maintains warehouses, no viable warehouse receipt system has been established. Such a system could have provided the necessary collateral for farmers to access

credit from formal credit institutions. Similarly, there was no Credit Reference Bureau that was elaborate enough to provide information for banks to access and evaluate risks for prospective borrowers.

In terms of credit extension estimate show that about 18 percent of smallholders obtained from both formal and informal sources; however only about 2 percent received credit from formal financial institutions including the Agricultural Development Bank. The number of bank branches per 100,000 adults in rural areas was 1.27, a factor that may also be responsible for the low rate of credit extension to the rural smallholder.

Roads account for more than 90 percent of the transport sector's contribution to Nigeria's GDP, and are essential to the delivery of both farm inputs and outputs. Nigeria's extensive road network is another area of large-scale underinvestment in the country, and as a result is poorly maintained, with large segments of rural roads in particular in disrepair. An estimated 30 percent of the food produced for urban markets never arrives at its destination as a result of spoilage caused by excessive times in transit. Poor road conditions, bottlenecks, and informal checkpoints all contribute to reducing the competitive trade of agricultural goods produced in Nigeria. High transport costs are also a contributing factor to the high price of food.

Transport prices are typically higher for the primary routes (NGN99.5; \$0.67) as compared to the main trunk roads from the ports to the main cities (NGN12.27, \$0.08) underpinning the need for rehabilitation of the rural roads that are very important for transporting agricultural produce before they deteriorate. Not surprising then that the Rural Access Index which measures the percentage of rural people living within 2 km (typically equivalent to a walk of 20–25 minutes) of an all-season road⁴ as a proportion of the total rural population was only 19.7 using the GIS system. This contrasts with countries like Kenya and Ghana at 31.5 and 24.0 respectively.

With regards to the overall quality of infrastructure, which measures the quality of trade and transport related infrastructure (e.g. ports, railroads, roads, information technology), as given by the Logistics Performance Index (LPI)⁵, Nigeria (2.27) ranks below the average for all Sub-Saharan Africa countries (2.27) and far behind the top performer in the region, South Africa (3.79).

Public expenditure on agriculture is negligible (about 2 percent), far below the 10 percent mandated by the African Heads of State and Government in the Maputo Declaration, and reinforced in the Abuja Food Summit that was hosted by Nigeria. Nigeria has signed the CAADP compact which requires the government

⁴ An all-season road is a road that is accessible all year by the prevailing means of rural transport, typically a pick-up or a truck that does not have four-wheel drive (Roberts et al., 2006).

⁵ LPI is the weighted average of the country scores on the six key dimensions: (i) Efficiency of the clearance process (i.e., speed, simplicity, and predictability of formalities) by border control agencies, including Customs; (ii) Quality of trade and transport related infrastructure (e.g., ports, railroads, roads, information technology); (iii) Ease of arranging competitively priced shipments; (iv) Competence and quality of logistics services (e.g., transport operators, customs brokers); (v) Ability to track and trace consignments; and (vi) Timeliness of shipments in reaching destination within the scheduled or expected delivery time (World Bank, 2012)

to commit at least 10 percent of its budget to agriculture. The ratio of agricultural expenditure share to the agricultural GDP (0.04) shows that the agricultural sector receives less than 5 percent in government allocation compared to its contribution to the GDP of the economy. This contrasts sharply with the government objective of transforming agriculture through the new Agricultural Transformation Agenda (ATA).

Advocacy and civil society groups that represent agribusiness and farmers before government have little influence in shaping policy in Nigeria. Most of these groups represent only parochial interests and have little clout with which to lobby policy makers. Some are seen as the creation of government, and lack the independence that is necessary to effectively take issue with public officials. This leaves farmers and agribusinesses with a strong impression that their interests and concerns are not adequately represented in government, and that they lack voice in decision making processes that directly affect them. Resolving this issue and opening policy dialogue to agribusinesses and farmers' groups would go far in fostering the kinds of public-private collaboration and partnership that greatly reassures investors and prospective investors.

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APPENDIX 1: Fertilizer Production Units, Product Range, Capacity and Locations

S/N	Fertilizer Production Unit	Product Range	Installed Capacity	Location
1.	Federal Super phosphate Fertilizer Company	SSP	100,000	Kaduna
2.	National Fertilizer Company of Nigeria (NAFCON) **	Ammonia Urea NPK	200,000 550,000 250,000	Onne, Port-Harcourt
3.	Fertilizers & Chemicals Co	NPK Grades	200,000	Kaduna
4.	Morris Nigeria Ltd.	NPK Grades	200,000	Minna
5.	Agro-Nutrients & Chemicals Co. Ltd.	NPK	300,000	Kano
6.	Kano Agricultural Supply Company (KASCO)	NPK	100,000	Kano
7.	Golden Fertilizer Company Ltd.	NPK	200,000	Lagos
8.	Zungeru Fertilizer Company*	NA	20,000	Niger State
9.	Funtua Fertilizer Company*	-do-	100,000	Katsina
10.	Bauchi Fertilizer Company*	NPK	121,000	Bauchi
11.	Gombe Fertilizer Company*	NPK	96,000	Gombe
12.	Borno Fertilizer company*	NA	120,000	Borno
13.	Edo Blending Plant*	NA	40,000	Edo
14.	Zamfara Blending Plant*	NPK	84,000	Gusau
15.	Samrock Blending Plant*	NA	30,000	Sokoto
16.	Kebbi Blending Plant*	-	NA	Kebbi
17.	Adamawa Blending Plant*	-do-	-do-	Yola
18.	Crystal Fertilizer Blending Plan*	-do-	100,00	Kagara
19.	Scentum Al fertilizers*	NA	NA	Enugu
20.	Gaskiya Fertilizer Co*	NPK	54,000	Kano
21.	Sasisa Fertilizer Co*	-do-	20,000	Kano
22.	Morgan Int. Ltd.	-do-	60,000	Lagos
23.	Jimco Nig. Ltd.	-do-		Lagos
24.	Yobe Fertilizer Co.			Damaturu
25.	Pacesetter Organic Fertilizer Co. Ltd.	Organic Fertilizer	NA	Ibadan
26.	Cybernetics Nig. Ltd.	Micro Nutrients		Kaduna
27.	Albarka Agro Allied & Chemical Nig. Ltd.			Kano
28.	Aweba (Nassarawa) Fertilizer Co.			Nasarrawa
29.	Plateau Fertilizer & chemicals Co.			Jos/ Bokkos
30.	Ebonyi State Fertilizer & Chemicals Co.			Abakaliki
31.	West African Fertilizer Co.			Okpella
32.	Bauchi Kaolin Industry			Bauchi
	TOTAL		2,945,000	

Nigeria: Agricultural Mechanization Statistics, 2006-2011

<u>Description</u>	<u>2006</u>	<u>2008</u>	<u>2010</u>	<u>2011</u>
<u>Average Purchase Price for 50kw tractor (N'000)</u>				
<i>[A]: By Make of Tractor</i>				
Steyr	13833.0	15529.5	16599.6	18674.6
I.H. Case	13250.0	14875.0	15900.0	17225.0
Masey Furguson	13780.0	15470.0	16398.2	17500.6
Ford	12932.0	14518.0	15518.4	15958.1
Fait	13197.0	14815.5	15374.5	16205.9
<u>Average Purchase Price for Disc Plough (N'000)</u>				
<i>[B]: By Make of Tractor</i>				
Steyr	1277.3	1434.0	1609.8	1807.2
I.H. Case	1219.0	1368.5	1536.3	1724.8
Masey Furguson	2285.0	2565.6	2880.7	3234.6
Ford	1590.5	1785.0	2003.3	2248.3
Fait	1510.5	1695.7	1903.6	2137.0
<u>Average Purchase Price of Disc Harrow (N'000)</u>				
<i>[C]: By Make of Tractor</i>				
Steyr	1407.2	1579.7	1773.4	1990.9
I.H. Case	1431.0	1606.5	1803.5	2024.7
Masey Furguson	2597.0	2916.7	3275.8	3679.0
Ford	1277.3	1433.9	1609.7	1807.1
Fait	1669.5	1874.3	2104.2	2362.4
<u>Average Purchase Price for Ridge (N'000)</u>				
<i>[D]: By Make of Tractor</i>				
Steyr	1494.6	1677.9	1883.7	2114.7
I.H. Case	1378.0	1547.0	1736.7	1949.7
Masey Furguson	1326.1	1488.7	1671.2	1876.2
Ford	1314.4	1475.6	1656.6	1859.7
Fait	1303.8	1463.5	1642.8	1844.0
<u>Average Purchase Price of other Implements (N'000)</u>				
<i>[E]: Implements</i>				
Tipping Trailer (4 tons)	1802.0	2023.0	2271.1	2549.6
Boon Sprayer (400 Lt)	1378.0	1547.0	1736.7	1949.7
Multipurpose	1378.0	1547.0	1736.7	1949.7
Seed Drill Master	589.4	661.0	741.3	831.4
Planter/Fertilizer (4 row)	3233.0	3629.5	4074.6	4574.3