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NATIONAL RICE DEVELOPMENT STRATEGY (NRDS)

FEDERAL REPUBLIC OF NIGERIA

Prepared for the
Coalition for African Rice Development
(CARD)

2009

EXECUTIVE SUMMARY

1. The Coalition for Africa Rice Development (CARD) which is an initiative for doubling rice production in sub-Saharan Africa within the next ten (10) years was launched at the Tokyo International Conference on African Development (TICAD IV) in May, 2008. CARD was jointly developed by the Alliance for Green Revolution in Africa (AGRA) and the Japan International Cooperation Agency (JICA). This initiative will be implemented in full respect of African ownership and leadership embodied in the Comprehensive Africa Agriculture Development Program (CAADP), and with strong links to existing structures, programs, networks and initiatives such as Forum for Agricultural Research in Africa (FARA), and the African Rice Initiative (ARI).

2. Nigeria is among the twelve pilot countries selected for the first phase of programme implementation.

3. In realization of the above laudable initiative each participating country is, as a first step, expected to produce a National Rice Development Strategy (NRDS) document in accordance with a given template to be employed by all member nations.

4. Consequently, the workshop on the National Rice Development Strategy (NRDS) is organized by the Nigerian National Food Reserve Agency (NFRA) with sponsorship from JICA to harness contributions from all stakeholders in the rice sub-sector. Other development partners participating in the workshop include AFD, AfDB, AGRA, DFID, EC, FAO, FARA, IRRI, JICA, JIRCAS, IFAD, IWMI, NEPAD, UNDP, USAID, WB, WFP, WARDA etc.

5. Nigeria has a land area of 923,768 square kilometres with a total of 79 million hectares of cultivable land. An estimated 4.6 million hectares of this land is suitable for rice production but only about 1.8 million hectares or 39% is currently developed for rice cultivation.

6. Nigeria's estimated annual rice demand is about 5 million tonnes, while it produces on the average about 2.21 million tonnes milled product. The national rice supply demand gap of 2.79 million tonnes is bridged by importation.

7. Nigeria possesses huge vastly untapped potential for irrigated rice development. There is an estimated 3.14 million hectares of irrigable land out of which less than 50,000 hectares is currently under rice irrigation.

8. Nigeria has large irrigation schemes in Anambra, Kwara, Kogi, Adamawa, Niger, Sokoto, Kebbi, Borno, Bauchi and Benue States. Rice yield in these schemes is between 3.0 – 3.5 t/ha compared to the potential of 7 – 9 t/ha. Therefore, in terms of geographic priorities, emphasis will be put primarily on North Centra l Nigeria for irrigated and rain-fed lowland rice development.

9. Although there is an urgent need to rehabilitate existing irrigation schemes and put more land under cultivation, processing remains the major bottleneck to increasing national rice supply. National processing capacity is low and huge processing gaps exist, e.g. in 2007 paddy production stood at 3.4 million tonnes and only 1.4 million tonnes were processed. The national processing capacity is 2.8 million tonnes of paddy. Modern rice processing equipment need to be introduced to bridge these gaps.

10. The NRDS sets the following overall goal and vision in each issue for the further development of rice sector in Nigeria.

Goal: To increase rice production in Nigeria from 3.4 million tonnes paddy in 2007 to 12.85 million tonnes by the year 2018.

Priority among the issue is as follows:

- Priority 1: Post-harvest Handling and Processing
- Priority 2: Land Development and Irrigation
- Priority 3: Seed Development and Other Production Inputs

In addition, the NRDS presents the following vision in each issue:

(1) Seed System (Breeder Seed, Foundation Seed and Certified Seed)

To increase the availability of rice seed of improved varieties to the vulnerable rice farmers through direct distribution of seed or a market-based option.

(2) Agro-Chemicals Supply, Handling and Application

To improve the farmer-supplier linkage of agro-chemicals at an affordable rate and promote proper handling and application through capacity building

(3) Fertilizer Marketing and Distribution

To create viable fertilizer marketing and distribution through (i) strengthening distribution network, (ii) making private sector the driving force behind fertilizer marketing and distribution, (iii) increasing local production, and (iv) ensuring availability at affordable prices

(4) Promoting Agricultural Mechanization

To promote modern agricultural mechanization in order to minimize drudgery and facilitate commercialization of rice production

(5) Irrigation and Investment in Water Control Technologies

To considerably increase the irrigated land planted to rice within 10 years

(6) Post-Harvest Handling and Processing, and Marketing

(a) Post-Harvest Handling and Processing

To improve rice quality to exportable standard through (i) improving processing capacity and (ii) promoting harvesting and post harvest processing facilities nationwide complemented by adequate training for rice farmers and processors in order to bail the rice sector out of low quality and poor market competitiveness.

(b) Marketing

To increase the market share of locally processed rice and improve distribution networks both locally and internationally.

(7) Access to Credit/Agricultural Finance

To improve lending to stakeholders in the rice value chain in a timely and adequate manner

(8) Extension Services

To provide adequate extension services both to small and large scale farmers

(9) Research and Technology Dissemination

To strengthen research and agricultural extension system to effectively diffuse technologies on improved varieties, IRM options, crop and soil fertility management, integrated pest control (IPM), improved harvest and post harvest practices to farmers through enhanced linkages.

(10) Others
To create better policy environment for rice sector development.

The NRDS also identifies (i) the area necessary for the future donor assistance and (ii) the possible target Nigerian organization in each issue. Thus, this information is expected to provide donors with useful foundation for their programme and project formulation by donors in the near future (see the detail in the main text).

11. The NRDS identified four (4) components of the overall strategy that it will pursue in order to substantially increase rice production within the next 10 years (in order of priority):

    a. Processing and Marketing;
    b. Land Development, Irrigation Development and Paddy Production;
    c. Seed Development; and
    d. Rice Production Inputs Supply Development.

    Project Management (coordination, monitoring and evaluation) is a major part of the implementation and it cuts across all the components.

12. The Processing and Marketing component will address the following issues:
    a. Establishment of new comprehensive rice processing mills that will deliver high quality parboiled milled rice that can compete favourably in both domestic and export markets as a means of expanding Nigeria's processing capacity.
    b. The development of standards, grades and branding of domestic rice to help accelerate the attainment and sustenance of desirable quality that will compete with imported rice. The use of advocacy to convince Nigerian consumers that the domestic rice industry can deliver commodity that is comparable to the imported rice, will lead to trade expansion and ultimately open up the export sector.
    c. Conduct of detailed census/survey of rice farms, farmers, mills and millers and processors in order to assemble reliable data that can be used for meaningful and continuous planning purposes. The services of consultants would be required in conducting this baseline survey.
    d. Provision of adequate training for scientists, extension agents, technicians, farmers and other players in the rice value chain.

13. The Land and Irrigation Development component will address the following issues:
    a. The 11 River Basins have high potential resources for enhancing the rice value chain. The underutilized irrigation schemes located in 26 States have a total land area of 47,300 hectares suitable immediate for rice production. There is need to rehabilitate these schemes and allow them to be operated on a Public Private Partnership (PPP) basis for efficient management.
    b. Land clearing to expand hectarage under rice cultivation.
    c. Increase farm power and mechanisation for enhanced timeliness of farm operations.

14. The Rice Production component will address the following issues:
    a. The inputs supply mechanism is very critical to the cost effectiveness of the rice value chain. Inputs such as seed would be subsidized to ease farmers' access and affordability.

       In the seed system, technical assistance would be provided to National Agricultural Research Institutes (NARIs) and the National Agricultural Seed Council (NASC) for the production of breeder, foundation and certified seeds.

The Community Based Seed System will be strengthened to encourage the provision of large quantities of quality seed within easy reach of farmers. The introduction of hybrid rice varieties and biotechnology would be used to increase rice production.

b. Chemical fertilizers will be made available and affordable to farmers and on time to substantially boost their production. The use of organic fertilizer will also be extensively promoted.

15. Strategies outlined in the NRDS seek to generally create better policy environment for rice sector development and specifically to:

a. increase the availability of rice seed of improved varieties to the vulnerable rice farmers through direct distribution of seed or a market-based option;

b. improve the farmer-supplier linkage of agro-chemicals and their availability at affordable rates as well as promotion of proper handling and application through capacity building;

c. create viable fertilizer marketing and distribution through (i) strengthening distribution network, (ii) making private sector the driving force behind fertilizer marketing and distribution, (iii) increasing local production, and (iv) ensuring availability at affordable prices;

d. promote modern agricultural mechanization in order to minimize drudgery and facilitate commercialization of rice production through PPP arrangement;

e. considerably increase the irrigated land planted to rice within 10 years;

f. enhance rice quality to exportable standard and increase market competitiveness by (i) improving processing capacity and (ii) promoting the establishment of harvesting and post harvest processing facilities nationwide complemented by adequate training for rice farmers and processors;

g. increase the market share of locally processed rice and improve distribution networks both locally and internationally;

h. improve lending to stakeholders in the rice value chain in a timely and adequate manner;

i. provide adequate extension services to both small and large scale farmers; and

j. strengthen research and agricultural extension system to effectively diffuse technologies on improved varieties, IRM options, crop and soil fertility management, integrated pest control (IPM), improved harvest and post harvest practices to farmers through enhanced linkages.

16. To achieve the goal of this programme, a National Coordinating Committee will be set up to guide the implement and monitor the NRDS in Nigeria with representatives of the domestic stakeholders and donor agencies as members.

MAP OF NIGERIA

Map of Federal Republic of Nigeria

ACRONYMS

AfDB	African Development Bank
ADPs	Agricultural Development Projects
AGRA	Alliance for Green Revolution in Africa
ARI	Africa Rice Initiative
BOI	Bank of Industry
CAADP	Comprehensive Africa Agricultural Development Programme
CARD	Coalition for African Rice Development
CBN	Central Bank of Nigeria
CBSS	Community Based Seed System
DFID	Department For International Development
ECOWAS	Economic Community Of West Africa
EIA	Environmental Impact Assessment
FARA	Forum for Agricultural Research in Africa
FCT	Federal Capital Territory
FDA	Federal Department Of Agriculture.
FGN	Federal Government of Nigeria
IPM	Integrated Pest Management
IRM	Integrated Rice Management
JICA	Japan International Cooperation Agency
KOICA	Korean International Cooperation Agency
NACGRAB	National Centre For Genetic Resource And Bio-tech
NACRDB	National Agricultural Cooperative& Rural Development Bank
NAERLS	National Agricultural Extension Research & Liaison Services
NAFPP	National Accelerated Food Production Programme
NARI	National Agricultural Research Institutes
NARS	National Agricultural Research System
NASC	National Agricultural Seed Council
NCAM	National Centre for Agricultural Mechanization
NCRI	National Cereal Research Institutes
NFRA	National Food Reserve Agency
NGN	Nigerian Naira
NGO	Non Governmental Organisation
OFN	Operation Feed The Nation
PLAR	Participatory Learning & Action Research
PPP	Public-Private-Partnership
PVS	Participatory Variety Selection
RBDAs	River Basin Development Authorities
RIFAN	Rice Farmers Association of Nigeria
SEEDAN	Seed Association of Nigeria
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USD	United State Dollar
VAT	Value Added Tax
WARDA	West Africa Rice Development Association/Africa Rice Centre
WUA	Water Users Association
WB	World Bank
NEPAD	New Partnership For Africa's Development
NFSP	National Food Security Programme

Table of Content

1. Introduction

Agriculture remains a key component of the Nigerian economy; currently contributing about 40% of the Nigerian GDP and employing about 70% of the active population. The sector has however significantly performed below its potential. Nigeria with a population of over 140 million people and a land area of 923,768 square kilometres has a total of over 79 million hectares of cultivable land. Out of this, between 4.6 million hectares are suitable for rice production. Meanwhile, only about 1.8 million hectares or 39% is currently utilized for rice cultivation **(see Annex 2)**. Rice is a food security commodity in Nigeria as well as being the fourth major cereal crop after sorghum, millet and maize both in terms of output and cultivated land areas.

Nigeria's estimated annual rice demand is put at 5 million metric tonnes while it produces on the average about 2.21 million tonnes milled product leaving a deficit of 2.79 million tonnes which is bridged by importation. Although there is increase in rice production, consumption is also increasing annually. Average yearly per capita consumption was 15.8 kg in 1981 -1990, and by 2007 it is estimated at 27 kg. During this period, self-reliance has decreased from 87.4% to 71% (National Bureau of Statistics Report, 2007).

The Nigerian food situation is especially vulnerable to the changing global trends, the country being a net importer of major food items. The market demand and prices of rice worldwide are likely going to remain high as other crops, e.g. maize and cassava, are diverted for bio-fuel production. These global changing trends therefore challenge Nigeria to quickly address this vulnerability by refocusing and retuning the entire agricultural system in the country. There is great potential for Nigeria to achieve large-scale production of paddy but this has to be complemented with capacity for high quality post-harvest technologies for processing, storage and marketing to serve both domestic and foreign markets.

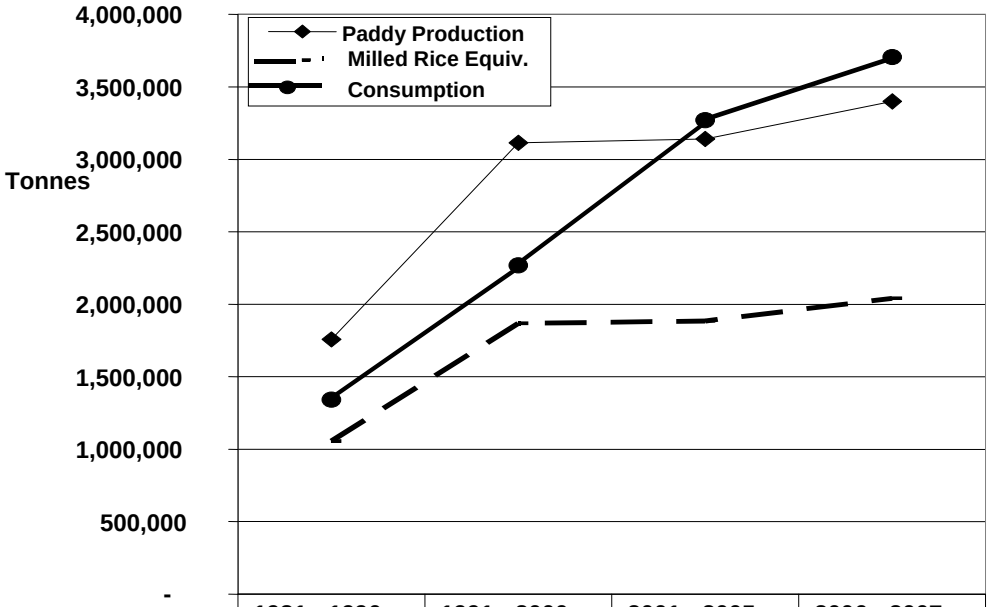
Supply of agricultural inputs has also been generally sub-optimal. The fertilizer per capita consumption in Nigeria at 7 kg/ha is one of the lowest in sub-Saharan Africa. Less than 10% of irrigable land is under irrigation. Farmers have limited access to credit and existing extension services are grossly inadequate. Currently, there is 1 extension worker to 3,000 farm families in Nigeria, compared to best practice of 1 to 500-1,000. Mechanized assistance is also grossly inadequate. Only about 30,000 tractors are available for all 14 million farming groups/farm families. On the processing front, Nigeria loses significant value of between 15% – 40% due to its inability to process most of its agricultural produce.

With increased local rice production, scarce foreign exchange hitherto used for rice importation can be conserved to improve infrastructure for enhanced national socio-economic growth. Average import in 2006 amounted to 1.6 million tonnes, costing the nation US$695 million. This is a marked increased from the 2001 – 2005 average of US$113 million.

2. Review of the National Rice Sector

2.1 Status of Rice in National Policy

The national agricultural policy emphasises self-sufficiency in food production including rice. Policy review target at rice production addresses the pertinent problem of rice production, quality processing, marketing, distribution, domestic and export market in a holistic and integrated manner. In line with policy framework of market liberalization, the Federal Government of Nigeria (FGN) would seek to foster Public-Private-Partnership (PPP). The programme will be private sector driven at production, processing and marketing levels such as seed multiplication, input delivery, while processing companies are expected to go into out-growers schemes to source their paddy locally.



	1981 - 1990	1991 - 2000	2001 - 2005	2006 - 2007
Paddy Production	1,758,132	3,113,800	3,139,400	3,400,000
Milled Rice Equiv.	1,054,879	1,868,280	1,883,640	2,040,000
Consumption	1,340,588	2,267,615	3,270,270	3,704,675

Figure 1: Rice paddy production and consumption trends

The Nigerian government made concerted efforts in the past to encourage rice production and marketing. The most recent is the Presidential Initiative on Rice Production, Processing and Export. Current Government policies that affect rice production and marketing include subsidy on inputs, concessional duties on the importation of farm inputs and machinery, and 50% tariff & 50% levy (from 2007- Date) on imported rice as well as exemption of a number of agricultural goods from Value Added Tax (VAT).

According to the FAO report, policy interventions that may result to hunger reduction in Nigeria include enhanced productivity of small-holder agriculture, creation of an environment conducive to private sector investment and by combining poverty reduction with increased provision of global public goods. Other measures mentioned by the report are ensuring that trade work for the poor by enhancing domestic competitiveness through

policy and institutional reform and having coordinated domestic and international resources for agriculture and rural development.

2.2 Consumer Preferences and Demand Projections

Consumers' preference has shifted from traditional staples (such as cassava, maize and yams) to rice. Rice demand projections for 2009, 2010, 2013, and 2018 are 5.7, 5.9, 6.2 and 6.9 million tonnes respectively. Consumers prefer imported rice over locally produced rice in the urban, while the reverse is the case in the rural areas. Urban consumers select imported rice on the basis of perceived quality, outward appearance (grain size, evenness and brightness), proportion of broken rice, absence of impurities, branding and labelling. Specifically, parboiled long-grain rice tends to be preferred. In rural areas, on the other hand, rice tends to be selected based on level of affordability, freshness, taste, as well as compatibility with the traditional dishes.

2.3 Typology and Number of Rice Farmers, Processors and Traders

In Nigeria more than 90% of rice is produced by resource poor small-scale farmers, while the remaining 10% is produced by Corporate/Commercial farmers. In the same vein, about 95% of processors are small-scale using low capacity and obsolete mills. About 80% of rice trading in Nigeria is retail done by rural women with remaining 20% by wholesalers.

2.4 Gender Dimension of Rice Production, Processing and Trading

Though no comprehensive survey has been conducted to determine the involvement of either men or women in the rice production value chain, it has been observed that men are more involved in tilling the land, while women are involved in planting, weeding, processing and trading. Both men and women are engaged in rice harvesting and threshing. Women play a major role in domestic rice processing. While about 20% of women rice farmers are engaged in production, about 80% of them are engaged in both processing and rice trading.

2.5 Comparative Advantage of Domestic Rice Production (Farm, Processing and Retail Level in Urban and Growth Centres)

There is a large gap in processing capacity and local fabrication of processing equipment is very low. The trading of rice is dominated by imported compared to local rice. The issues of poor quality, low grading and low standard makes the local rice uncompetitive. In urban and growth centres there is huge potential market for locally produced rice if the issues of quality, standard and grading are addressed. There is economic advantage in investing in the rice sub-sector both in the short-term and in the long-term from the standpoint of production and processing as up to 65% of land suitable for rice cultivation remains unutilized while potential for profitable fabrication of machine for rice production and processing is very high.

3. Challenges and Opportunities Facing Rice Production

3.1 Potential of Local Rice in Rural Poverty Reduction and Economic Growth

Nigeria is a major rice importer (second only to The Philippines). Therefore the increasing demand and high price of rice will continue to be a major issue in economic growth and development as well as national food security. In view of the high importation of rice into the country and the changing consumption pattern of Nigerians, rice represents the best opportunity for Nigeria's reduction in food imports. This is further enhanced by the status of rice as a cash crop as well as food security item for the local farmer.

Nigeria's paradigm shift also is to plan to improve her self-sufficiency in local staple food grain especially rice which will replace rice imports purchased with huge foreign exchange. The foreign exchange conserved from importing rice could be used to provide infrastructure at both rural and urban areas.

3.2 Land Tenure

Farm land holdings are small and fragmented. The average farm holding size ranges from 0.5 - 2.0 hectares. Most farmlands remain unsurveyed, unregistered and ungazetted thereby not allowing farmers to use them as collateral to access credit. This has led to farmers' inability to intensify their investments for expansion in land cultivation and other value addition efforts in the rice value chain. In some cases (12%), farmers are tenants to other land owners. It is now the government policy that State Governments will facilitate land acquisition and bush clearing as well as acquire 15% equity of such farmlands for sustainability purposes. The government is putting in place a policy for all farmlands to be surveyed, registered and gazetted, to enable farmers to use such lands as collaterals to access credit.

3.3 Social Issues

The low level of education of farmers and other players in the rice value chain impacts negatively on local rice production. Weak and low number of rice cooperative societies and farmer groups hinder the farmers' ability to access the necessary requirements for improved rice production thus limiting their ability to take advantage of numerous economic opportunities that abound in the rice value chain. There is also low level of private sector investment in the rice value chain especially in processing.

Ageing farming population and the unattractiveness of traditional farming techniques that is deterring the youth from taking to rice farming profession is a critical challenge that is being addressed by all the tiers of governments in Nigeria.

In order to exploit the available opportunities and to overcome the challenges within the Public-Private Partnership (PPP) framework, farmers will be assisted to form capitalized cooperatives and register formally with the government. The government already has in place policies to empower small and medium scale farmers as well as those that provide safety net for those caught in the vicious circle of poverty (HIV-AIDS victims, physically challenged, etc).

3.4 Trans-boundary/Regional Issues

Nigeria has a good trade relationship with its neighbouring countries. However, trans-boundary trade in government subsidized farm inputs and equipment as well as rice smuggling is impacting negatively on effective rice production and marketing in the region. Therefore, there is need to institute common sub-regional and regional strategies to mitigate these problems and also engender better sub-regional/regional cooperation among stakeholders in terms of research, market information sharing and trade.

3.5 Research and Development Issues: Lessons, Gains, and Challenges

Nigeria hosts international and national centres of excellence that have credible international reputation. The impact of their presence is however not fully realized as the rice value chain is still affected by low rate of adoption of research results by farmers, poor yields, seasonal localized glut and scarcity of paddy due to lack of market information and structure, low level of access and affordability of improved processing technologies, poor research linkage as well as poor seed development and seed distribution network. Other challenges include inadequate water management and fertilizer usage (7 kg/ha on average).

Various improvement measures that have been utilised with good results include adoption of improved high yielding varieties, good water management under irrigation schemes, adequate use of fertilizer, better funding of research and universities/colleges of agriculture, and participatory research and development in technology transfer.

By way of intervention, several River Basin Development Authorities (RBDA) were established in 1977 by government, which provided opportunities to exploit water bodies for rice irrigation and promote large-scale mechanized farming in Nigeria.

3.6 Human and Institutional Capacities

Identified limitations in human and institutional capacities with regards to rice production in Nigeria include weak extension services (both staffing and funding) with specific regard to rice, lack of specialized farm input services (mechanization and processing facilities), poor recruitment and succession plan in research institutions and other actors in the rice value chain.

4. Priority Areas and Approaches

4.1 Rice Ecologies Prioritized in terms of Production Potential

The three rice production ecologies and their extent of coverage in Nigeria are as follow:

i. Rain-fed lowland 69.0%
ii. Irrigated lowland..... ... 2.7%
iii. Rain-fed upland.....28.3%

(See Annex 2)

In the North-Central region of Nigeria emphasis will be on rain-fed and irrigated lowland. For irrigated lowland rice, emphasis would be to reactivate and rehabilitate dilapidated rice irrigation schemes nationwide, and in addition, put more land under irrigation for rice production. For upland rice production, NERICA will be promoted in the North-Central and South West regions of the country.

4.2 Identification and Prioritization of Ecology Specific Challenges and Opportunities including Biotic and Abiotic Stresses

The ecology-specific challenges confronting rice production in Nigeria are categorized as follows:

(a) Challenges

Rain-fed Lowland

Under this ecology, rice cultivation is characterized by low yield range of 1.5 - 3.0 tonnes/ha against potential of 3.0 - 6.0 tonnes/ha, poor water management, inadequate weed management/control, low adoption of modern technology especially high yielding varieties, low level of mechanization and investment, problem of pest and disease management, land tenure particularly access to land, rural-urban migration and ageing population.

Irrigated Lowland:

The constraint in the irrigated schemes include alkalinity, salinity, low nitrogen use efficiency and iron micronutrient toxicity, diseases/pests management especially birds and low level of mechanization. Others include non-involvement of farmers and farmer groups in the planning and implementation of irrigation schemes especially in areas related to maintenance, climatic extremities, low input access including credit, migration and ageing population with the human risk factors of HIV/AIDS, Malaria etc.

Upland:

Rice cultivation in this ecology is challenged by climatic changes (rainfall), low adoption of improved varieties, poor yield range of 1.0 – 1.7 tonnes/ha compared to the potential of 2.0 - 4.0 tonnes/ha, drought, soil acidity and general soil infertility, poor weed control and management, limited capital and labour shortages as well as low level of mechanization throughout the production and post harvest operations.

The yields for the different ecologies are based on national averages.

(b) Opportunities

There is great potential for public private partnership in high quality seed production and marketing. Farmers' involvement in participatory research where farmers are actively involved in the choice of varieties to be grown by them will ensure improvement in adoption rate. Production risk can be reduced through the adoption of integrated rice management (IRM) concept with associated potential to boost yield from 2 tonnes to 6 tonnes per hectare. Adequate rain falls also provide an opportunity for optimum filling of Dams and reservoirs for irrigation purposes. Production can be greatly increased through the use of high yielding varieties, increase in land areas and appropriate use of agro-chemicals **(see Annex 7)**.

4.3 Identified Policies and Institutional Challenges and Opportunities

(a) Challenges

Issues that pose serious constraint to rice production here include changes in Government policies in the areas of concessions and tariffs, price fluctuations between harvest and off-season periods, weak producer price support mechanism and low infrastructural development e.g. irrigation facilities, feeder/rural roads. Other limitations are inadequate marketing infrastructure and outlets, poor processing infrastructure, weak agro input system, poor agricultural credit system, and difficulty in accessing farmland by prospective rice investors.

(b) Opportunities

Policies and conditions that offer opportunities for rice sector development in the country include zero tariff on agricultural machinery and equipment, large domestic market for rice products and bye-products, 25% subsidy on fertilizers, 50% Government subsidy on seeds, 40% aggregate subsidy on tractors and implement, and Guaranteed Minimum Price support. The credit system has also received a boost by the Government's establishment of rice processing credit schemes at 4% interest rate and 15 years pay-back period for increased national rice processing capacity.

5. Goals and Priorities

5.1 Goal

To increase rice production in Nigeria from 3.4 million tonnes paddy in 2007 to 12.85 million tonnes by the year 2018.

5.2 Objectives

1. To increase production per unit area from 1.5 – 3.5t/ha to 2 - 8 t/ha depending on ecology, through a deliberate intervention in input delivery and empowerment of rice farmers through capacity building.
2. To improve extension service delivery system with special emphasis on rice.
3. To support private investors in establishment of modern rice processing facilities.
4. To provide functional irrigation facilities through the rehabilitation of dilapidated rice irrigation schemes areas in the flood plains of major rivers of the country.
5. To provide, through Public Private Partnership (PPP), rice production and processing machinery, and market linkage systems.
6. To establish a durable price support mechanism for stable producer prices in order to sustain farmers' interest in rice production through the guaranteed minimum price mechanism and attract the youths to rice farming and processing.

5.3 Target Areas of Intervention

Priority 1: Post-harvest Handling and Processing

Post harvest and processing is the first priority of the country because it is the bottleneck problem in the value chain. Recent production figures stood at 3.4 tonnes of paddy (2007) while estimated national processing capacity stood at 2.8 million tonnes of paddy. Total paddy requirement to meet national per capita consumption of 30 kg/head/year is 6.5 million tonnes (4.2 million tonnes of milled rice). This will provide an aggregate processing capacity gap of 3.7 million tonnes of paddy. Even if farmers increase production the bottleneck of processing still remains. Excess un-milled rice discourages production and results to heavy post-harvest losses.

Priority 2: Land Development and Irrigation

Land development and Irrigation is another priority for the country. There is 3.14 million hectares of potential land for irrigation but only 47,799 ha is under utilization for rice. Since irrigated lowland has the highest rice yield potential ranging from 6 – 9 tonnes/ha, attention would be directed at rehabilitating existing rice irrigation schemes and developing new ones. Farmer cooperatives/groups will be trained and empowered to manage and maintain these structures. Attention would be given to clearing more land to increase the area under lowland and upland rice cultivation.

Priority 3: Seed Development and Other Production Inputs

The priority will be to make available to farmers quality seeds of high yielding rice varieties that are resistant to the major pests and diseases. There is insufficient supply of improved seed in the country. Availability of improved seed will significantly improve rice production. In order to boost production, farmers require fertilizers and agrochemicals at the correct time and at affordable prices. Measures would be put in place to ensure that the private sector is the driving force behind input supply. Currently, there is low use of improved seed by farmers (3-5%), and low use of agro-chemicals due to inaccessibility and high costs. The annual national requirement for various types of seeds, quantity of fertilizers and agrochemicals for the doubling of rice production from 2008/2009 to 2018 are shown in **Annex 3, 4, and 7** respectively.

Also the details of proposed concrete measures to be taken, current donor activities within the country in respect of rice and the list of potential projects requiring donor assistance are shown in **Annex 9**.

6. Strategies for Sub-Sectors-

6.1 Seed System (Breeder Seed, Foundation Seed and Certified Seed)

Vision

To increase the availability of rice seed of improved varieties to the vulnerable rice farmers through direct distribution of seed or a market-based option.

Current Situation

The government agency responsible for the production and distribution of paddy seed is the National Agricultural Seed Council (NASC) under the Federal Ministry of Agriculture and Water Resources. The agency oversees an integrated public and private sector marketing structure. Next in the chain are WARDA and NCRI, commissioned to produce breeder and foundation seed for Nerica 1, Nerica 2 and other improved varieties. This in turn is outsourced (in the form of certified seed cultivation) to respective state ADPs, RIFAN, NGOs, private sector seed companies and subcontracted cultivators (contract farmers; contract agricultural cooperatives) for final nationwide distribution to individual rice farmers and agricultural cooperatives. Seed certification is carried out by NASC. Amount of certified seed produced in 2005 was 3,217 tons. This rose to 5,785 tons in 2006. According to NASC, extension rate for Nerica 1 and Nerica 2 in rain-fed upland fields is 32% (2005 - 2006). Overall extension rate for improved varieties is estimated at 10%. This low rate is due to use of local variety by rice farmers resulting in low crop yield.

Most farmers use low quality home-grown seed. In recent years, improved seed is being extended in both rain-fed upland areas (mainly Nerica rice) and rain-fed lowland areas (mainly WITA 4 and SIPI varieties).

Challenges

Some of the challenges that still impede seed production and distribution system include:

- Poor access to improved quality seed by farmers
- Delay in variety release system
- Inadequate breeder/foundation/certified seed supply
- Inadequate/weak seed law enforcement
- Weak varietal maintenance
- Weak seed certification system
- Mixed seed varieties are used in the case of home-grown seed leading to quality degradation over time in quality

Proposed Concrete Actions

Currently, the federal government takes the following policy measures:

- 50% of subsidy given on certified seeds sold to farmers
- Promotion of private investors in seed production and marketing
- Promotion of NERICA and other improved rice seeds

Further actions required from the federal government with the support of development partners are as follows:

a. Genetic Resource Development and Maintenance

Short-term (within 1-2 year)

- Adequate and timely funding for the following institutions for development of new rice varieties:
  - i Research institutes for conducting participatory varietal selection trials which enable farmers to chose varieties that best suit their needs and for the production of breeder seeds of released varieties for varietal purity maintenance.
  - ii National Maize/Rice Centre to conduct on-farm trials the results of which determine whether a variety should be released or not.

iii The Varietal Release Committee for holding regular meetings to consider new varieties for release.
iv National Centre for Genetic Resource and Biotechnology for effective preservation and regeneration of released varieties.
v National Agricultural Seed Council for the performance of all its functions, such as organization of the foundation seed production, certification, monitoring and quality control, as well as seed law enforcement.

Long-term (more than 5 years)

- Implementation of existing seed laws and to make the existing mechanism for seed control and certification more functional and efficient, with active involvement of private investors.
- Continue to fund NASC to enable National Maize/Rice Centre and National Centre for Genetic Resource and Biotechnology perform their statutory responsibilities.
- Continue to fund research institutes for conducting participatory varietal selection trials.

b. Rice Seed Production/Distribution Systems

Short-term (within 1-2 year)

- Emphasis here would be on the following:
  i Planning of national seed requirement to give seed producing institutions adequate time to produce the required quantities of seed.
  ii Provision of funding and technical assistance to National Agricultural Research Institutes (NARIs) to produce breeder and foundation rice seeds suitable for the various rice ecologies.
  iii Introduction and use of hybrid rice varieties to increase rice production.
  iv Adoption and utilization of Community Based Seed Systems (CBSS) to encourage the provision of large quantities of quality seed within easy reach of farmers.
  v Promotion of seed fair and seed voucher options.
  vi Provision of a complete all-in-one input package (as in R-Box programme) to ensure increase in adoption rate of improved varieties.
- Build capacity for seed production (from breeder to certified seed or seed of acceptable quality).

Long-term (more than 5 years)

- Support National Agricultural Research System (NARS) to produce breeder and foundation seed.
- Streamline and fast track the procedures for releasing high yielding varieties through the use of participatory methods.
- Provide adequate training for scientists, extension agents, technicians and farmers to specialise in seed multiplication, storage and marketing.
- Such released varieties may then be multiplied by farmers in a Community-Based Seed System (CBSS).
- Continue to promote the use of hybrid seeds for increase rice production.
- Promote further development of private sector seed industry to meet national rice seed requirement.

c. *Common*

- Funding to the National Agricultural Seed Council to carry out its regulatory functions.

The Relevant Organizations at the Nigerian Side

- National Agricultural Seed Council (NASC)
- National Cereal Research Institute (NCRI)
- National Rice Maize Centre (NRMC)

- National Varietal Release Committee (NVRC)
- The State Agricultural Development Programme (ADP)

6.2 Agro-Chemicals Supply, Handling and Application

Vision

To improve the farmer-supplier linkage of agro-chemicals at an affordable rate and promote proper handling and application through capacity building.

Current Situation

Agro-chemical handling and application in Nigeria is characterized by improper handling and application of technology which pose a danger to the farmers and others as well as the environment. This is mostly attributable to the high illiteracy rate among farmers which results in lack of capacity in the utilization of modern technologies.

By 2002, statistics from the International Centre for Soil Fertility and Agricultural Development (IFDC) showed between 8,000 and 10,000 input dealers operating in Nigeria out of which only 400 to 450 had received any formal training (On use and abuse of pesticides, An Article from Tide Online). Consequently, they are unable to educate farmers on the importance of proper handling and application of the chemicals.

The IFDC started training input dealers in 2002 through its USAID-funded Development of Agro-Input Markets in Nigeria (DAIMINA) project. Under the project, private sector capacity building was initiated in 20 selected markets in Kano and Oyo States and later extended to another 20 markets in Bauchi and Abuja.

Challenges

- Poor handling and application of agrochemicals
- Lack of regulation of the agrochemical industry/market leading to loses due to adulterated and fake products.

Proposed Concrete Actions

Currently, the federal government takes the following policy measures:

- Promote the handling and application of agro-chemicals by the government.
- Facilitate access to credit facilities from an intervention fund at a single digit interest rate to accredited agro-chemical companies to increase the volume and quality of import.
- Encourage the establishment of sales outlets in the rural areas by input dealers.
- Institute an import tax relief regime for accredited agrochemical industries so as to scale down the prices of products for the benefit of farmers.
- Establish a graduate training system to build up the critical mass of skilled hands that would ensure appropriate application of pesticides in the country.
- Formulate a proper system of regulation for the industry.

Further actions required from the federal government with the support of development partners are as follows:

Short-term (within 1-2 year)

- Supply of good quality agro-chemicals through accredited vendors to rice farmers.
- Supply of high quality sprayers and chemical handling appliances to rice farmers.

- To provide agro-chemicals to farmers at good time and at 50% subsidy.
- To educate farmers on the effective use of agro-chemicals.

Medium-term (within 3-5 years)

- Development of domestic capacity for the production of good quality agro-chemicals for rice production.
- Provide adequate training on the handling and application of technology on agro-chemicals.

Long-term (more than 5 years)

- Development and promotion of local manufacturing capacity for chemical sprayers and handling appliances.

The Relevant Organisations at the Nigerian Side

- Agricultural Production and Input Services (APIS) Department of the National Food Reserve Agency
- State Ministries of Agriculture
- Local Government Councils

6.3 Fertilizer Marketing and Distribution

Vision

To create viable fertilizer marketing and distribution through (i) strengthening distribution network, (ii) making private sector the driving force behind fertilizer marketing and distribution, (iii) increasing local production, and (iv) ensuring availability at affordable prices.

Current Situation

Rice is very responsive to the use of fertilizer. But due to huge demand and inadequate availability of fertilizer, farmers are missing out on the opportunity to increase output per unit area. Taking into consideration the fertilizer dosage of 300 kg/ha NPK and 100 kg/ha Urea, fertilizer requirement for the next ten year period is 11,660,000 tonnes valued at NGN 1.250 trillion at the current price of NGN107,250/tonne. On annual basis, fertilizer requirements would range from 720,000 tonnes in 2008 to 1,060,000 tonnes in 2013 and 1,400,000 tonnes by 2018 **(see Annex 4)**. The demand for fertilizers in Nigeria will remain high and considerable resources will be required for its importation.

The official administrative agency dealing with fertilizer is the Agricultural Production and Input Services (APIS) Department, which formulates fertilizer policies and strategies. This agency is responsible for distributing subsidized fertilizers as well as drafting fertilizer quality control and technical specifications. Its activities are overseen by the National Fertilizer Technical Committee. In addition, national fertilizer development centres have been established in respective zones to inspect fertilizer, and carry out verification analysis in cultivated fields.

The originally government run National Fertilizer Company of Nigeria (NAFCON) (located at Port Harcourt in Rivers State) established in 1976 has been privately operated for the past few years. Main products are urea and compound fertilizers. Also a second fertilizer producing plant is located in Kakuri in Kaduna state, and is operated by Federal Superphosphate Co. Ltd. (FSFC) which like NAFCON has been privatized. The plant produces single-super phosphate fertilizer (SSP). There are a total of 24 moribund plants (both government run and privately run) that are supposed to produce compound fertilizers

and urea. Commercial production of organic fertilizer is now being pursued under the Pace Setter Organic Fertilizer Plant (state operated) in Ibadan as well as compost Organic Fertilizer (privately operated). The IFDC is also providing some technical support to the private sector on fertilizer through its USAID-funded Development of Agro-Input Markets in Nigeria (DAIMINA) project.

The government subsidizes approximately 30% of annual fertilizer import, and distributes urea and compound fertilizer to the individual farmer at a subsidized rate of around 25% (this subsidy rate varies depending on the state).

Challenges

- **High price of fertilizer:** Retail price for urea in 2006 was NGN3,000/50kg. This is a 13% increase from the previous year. Retail price for compound fertilizer (N15:P15:K15) has risen by 18% from the previous year to NGN2,950/50kg. This has affected rice cultivation by increasing the production cost, leading to a more difficult situation in terms of cropping profitability. Furthermore, this increases the possibility of farmers switching to crops other than rice, or abandoning farming altogether.
- **Disorganized marketing network:** Although 70% of chemical fertilizer supply is by the private sector, the marketing network to the end user is disorganized (i.e., constraints on financial input and trading markets by private enterprises, as well as inadequate road infrastructure, etc.). As a result, there is a recognized difficulty in procuring fertilizer in the appropriate amount at the appropriate time. Many rain-fed rice farmers accordingly, cultivate without fertilizer in light of the above described issues.
- **Government's subsidy and private sector business:** The current program for subsidized distribution of fertilizer (approximately 30% of the currently marketed quantity) greatly reduces production cost at the individual farmer level. On the other hand, however, private sector marketers of fertilizer that are not price-wise competitive are limited to only a very small portion of the market even if a certain fixed amount of demand is present year round. This in turn constrains private sector participation in the fertilizer market.

Proposed Concrete Actions

Currently, the federal government takes the following policy measures:

- 25% subsidy given on fertilizer.
- Complementary subsidy further contributed by the state governments for enhancing farmers' affordability.

Further actions required from the federal government with the support of development partners are as follows:

Short-term (within 1-2 year)

- To liberalize fertilizer marketing and make the private sector the driving force behind fertilizer marketing and distribution.
- To develop transport infrastructure.
- To introduce quality control framework.
- To give private sectors production incentives for local fertilizers manufacturing and distribution at affordable prices to farmers.

Medium-term (within 3-5 years)

- To strengthen distribution networks by:
  - Promoting private sector in fertilizer marketing and distribution;
  - Maintaining the provision of incentives to local fertilizer producers; and

- Maintaining quality control measures.
- To maintain the development of transport infrastructure.

Long-term (more than 5 years)

- To continue to facilitate the promotion of local production of fertilizer.
- To maintain the support to the private sector in fertilizer marketing and distribution.
- To maintain the provision of incentives to the private sector local fertilizer producers.
- To continue the development of transport infrastructure.
- To maintain fertilizer quality control measures.

The Relevant Organisations at the Nigerian Side

Agricultural production and input services (APIS) Department of the National Food Reserve Agency

6.4 Promoting Agricultural Mechanization

Vision

To promote modern agricultural mechanization in order to minimize drudgery and facilitate commercialization of rice production through PPP arrangement.

Current Situation

The present agricultural mechanization level in Nigeria shows that agricultural work done with engine powered technology is estimated at 3%, hand tools application stands at 90% and animal drawn technology takes 7% (Onwualu and Pawa, 2004). The number of serviceable tractors available nationwide is estimated at 30,000 units.

The national research system is into the fabrication and assessment of specific agricultural production tools and equipment. Various other existing institution and their responsibilities are:

1. NCAM, Ilorin, established to carry out the following:

- fabricate low cost labour saving tools;
- carry out machinery testing;
- standardize agricultural machineries and equipment in collaboration with SON; and
- produce and develop equipment prototype in priority areas for small and medium scale industries in Africa.

2. Agricultural Machines Mechanics and Operators Training Centre (AMMOTRAC) established for:

- training of operators and machinery operation and maintenance.

Presently, tractors/implements importation is duty-free while Federal Government subsidy on agricultural machinery distribution to farmers is 25% of the delivery price.

Challenges

In spite of the above stated government effort, the desired level of mechanisation in Nigerian agriculture has not been achieved due to some of the following problems:

- inadequate availability of appropriate specific machinery/equipment for the peculiar farm sizes (intermediate machines);
- high cost of machinery and equipment;
- lack of service providers;
- Inadequate supply of spare parts for imported machines and equipment.
- inadequate mechanization technology; and
- low level of Equipment leasing.

Proposed Concrete Actions

Further actions required from the federal government with the support of development partners are as follows:

Short-term (within 1-2 year)
- To provide incentives for demand and supply for mechanization
- To provide 20,809 tractors of 75HP with implements
- To provide 4,162 power tillers with rotavator
- Promote the provision of agricultural equipment leasing services

Medium-term (within 3-5 years)
- To provide 15,600 75HP tractors with implements
- To provide 3,120 power tillers

Long-term (more than 5 years)
- To provide 5,200 tractors of 75HP yearly
- To provide 1,040 power tillers yearly

The Relevant Organizations at the Nigerian Side

- National Food Reserve Agency (NFRA)
- National Centre for Agricultural Mechanization (NCAM)
- Agricultural Machinery Mechanics and Operators Training Centre (AMMOTRAC)
- African Regional Centre for Engineering Design and Manufacturing (ARCEDEM)
- The state agricultural development programmes (ADPs)

6.5 Irrigation and Investment in Water Control Technologies

Vision

To considerably increase the irrigated land planted to rice within 10 years

Current Situation

The present rice production situation in Nigeria depicts the following indices:
- Rain-fed rice production accounts for 77%
- Irrigated rice production accounts for 17%
- Total potential land for irrigation is estimated at 3.4 million hectares
- Total potential land for irrigated rice production amounts to about 1.6 million hectares
- Irrigated rice production yield is 3.0 – 3.5 tonnes/ ha
- Potential irrigated rice yield estimate is 7-9 tonnes/ha

The irrigation systems in the country cover varying levels of water control from partial to full water control with possibilities of double cropping, spate irrigation, equipped wetlands and

inland valley bottoms (including FADAMAs). Currently rice yield in these schemes is between 3.0 – 3.5 tonnes/ha but with a potential of 7 – 9 tonnes/ha.

Challenges

- Existing dams and reservoirs are dilapidated and inadequate for the irrigable land in the country.
- Lack of infrastructure (power, roads, etc).
- Management difficulty owing to sizes of some of the dams.
- Insufficient water retention due to siltation.
- Salinity and water logging problems.
- Inadequate funds for operation and maintenance.
- Inadequate manpower.
- Problems of land acquisitions.

Proposed Concrete Actions

Currently, the federal government takes the following policy measures.

- Rehabilitation and expansion of dilapidated Federal and the State government Irrigation Schemes
- Establishment of new Irrigation Schemes

In addition, the federal government is required to take the following actions with the support of development partners:

Short-term (within 1-2 year)

- To provide small and medium scale irrigation equipment to the farmers.
- To rehabilitate 62,347 hectares of rice irrigation schemes.
- To complete on-going projects, rehabilitate dilapidated schemes, and expand existing irrigation schemes.
- To involve beneficiary farmers at planning and implementation stages for efficient management and operation of irrigation schemes by forming Water Users Association (WUA) for sustainability.
- Provide alternative power source that would be sufficient for the operations of the irrigation schemes.

Medium-term (within 3-5 years)

- To ensure ultimate ownership through gradual transfer to beneficiary communities or cooperative societies.
- To establish hydro-met stations at project sites for adequate data collection for effective planning and management purposes.
- To record water volumes and levels to ensure optimal water use efficiency.
- To conduct proper environmental impact assessment (EIA) before embarking on any medium to large irrigation projects in order to checkmate any adverse environmental and health hazards.
- To rehabilitate 32,459 hectares of irrigation schemes.
- To provide the following equipment for land clearing and rural road construction, 12Nos each of bulldozers, long-broom excavators, graders, pail loaders, low-bed/swamp boogies, tippers hand compactors, mobile concrete mixers, mobile workshops, dumpers, pick-ups and motorized boats, wheel barrows and tools.

Long-term (more than 5 years)

- To develop 50,000 ha of FADAMAs and new irrigation land (annually) until all potential land area is put under cultivation.

The Relevant Organizations at the Nigerian Side

- Federal Department of Water Resources
- River Basin Development Authorities (RBDAs)
- The States' government irrigation schemes

6.6 Post-Harvest Handling and Processing, and Marketing

(a) Post-Harvest Handling and Processing

Vision

To improve rice quality to exportable standard through (i) improving processing capacity and (ii) promoting harvesting and post harvest processing facilities nationwide complemented by adequate training for rice farmers and processors in order to bail the rice sector out of low quality and poor market competitiveness.

Current Situation

Post harvest handling and processing of rice consists mainly of manual operations in harvesting, threshing, drying, cleaning, parboiling, milling, and packaging with attendant contamination and high crop losses.

Rice crop loss is estimated at between 25 – 40%. This loss occurs mainly through the following inlets:

- disease and pest by bacteria, RYMV, rodents and birds;
- quality degradation arising from immature rice;
- inappropriate drying; and
- threshing, drying, sorting, storage, parboiling, milling and transportation.

Quality control of un-husked and un-milled rice presents additional problems to post-harvest processing.

Harvesting: Harvesting of rice is greatly under-mechanized which leaves farmers struggling with high and sometimes unaffordable labour wages. In some instances, there is outright lack of labour to meet harvest schedule. Late and untimely harvesting, which is due to lack of available labour and excessive competing demand for existing labour, results in poor quality paddy harvest. In addition, high rate of broken rice due to weather extremities is prevalent.

Drying: Direct sun drying and sorting of harvested and parboiled rice on bare ground, by roadside, on tarpaulin, or on used plastic bags spread on the ground introduce foreign matter, small stones and other impurities to rice. Platform for drying of rice is predominantly insufficient.

Threshing: The traditional threshing methods employed in Nigeria introduce impurities into the rice and are inefficient and labour intensive.

Parboiling: Parboiling facilities are established close or adjacent to farm areas and mills to allow for simultaneous operations. Official parboiling manuals are not available leaving the operators at the mercy of experienced expatriates. Sorting of rice with traditional crude method permits introduction of further impurities.

Challenges

- Dearth of modern processing equipment.
- Poor knowledge of quality control by processors.
- Poor harvesting and processing methods.
- Availability of paddy, quantity and quality.
- Homogeneity of paddy grain.
- Lack of fund for purchase of machinery and paddy stocking.
- Lack of infrastructural support- Power, Road, Water etc.
- Poor management, technology/technical capacity.
- Limited installed capacity for processing.

Proposed Concrete Actions

Currently, the federal government takes the following policy measures:

- Rice Processing Intervention Fund (i.e. establishment of 10 large scale rice processing mills and upgrading 3 other existing large scale rice mills, etc).
- Operation of rice development levy on imported rice to develop domestic production and processing.
- Zero tariff on imported processing equipment.

In addition, the federal government is required to take the following actions with the support of development partners:

Short-term (within 1-2 year)

- To establish 10 nos. large scale mills of 100,000 tonnes/yr capacity.
- To establish 2,360 nos. small mills of 1000 tonnes/yr capacity.
- Government and private processing firms to support and encourage development of out-grower scheme to ensure availability and quality of paddy.
- Provision of harvesters and threshers to farmers groups and cooperative societies.
- Increase farmers' appreciation of strict quality control through extension services and training.

Medium-term (within 3-5 years)

- To establish 10 nos. large scale mills of 100,000 tonnes/yr capacity.
- To establish 916 nos. small mills of 1000 tonnes/yr capacity.
- Capacity building for processors and farmers on postharvest handling and processing.

Long-term (more than 5 years)

- To establish 2 nos. large scale mills of 100,000 tonnes/yr capacity annually.
- To establish 362 nos. small mills of 1000 tonnes/yr capacity.
- Continue promoting development of out-grower schemes.
- Continue capacity building for processors and farmers on postharvest handling and processing.

The Relevant Organizations at the Nigerian Side

- National Food Reserve Agency (NFRA)
- National Cereal Research Institute (NCRI)
- National Centre for Agricultural Mechanization (NCAM)
- The state agricultural development programmes (ADPs)

(b) Marketing

Vision

To increase the market share of locally processed rice and improve distribution networks both locally and internationally.

Current Situation

In Nigeria, the marketing structure includes producers (farmers and agricultural cooperatives), importers, wholesalers, retailers, brokers, collectors and shippers, parboilers, millers and the end consumer. Marketing of imported rice involves an organized distribution network geared to consumer taste ranging from low priced rice (grain break-rate of 100%) to high priced produce (long and aromatic grains). Specifically, Thai and Indian rice are a major source of supply. Domestic rice, on the other hand, is subject to a complex distribution structure involving numerous levels of middleman and rice merchant. Rice is supplied primarily to the immediate and adjacent urban markets. Large scale inter-state transfer of produce does not appear to be carried out with the exception of the harvesting period. Accordingly, marketing of domestic rice heavily depends on the season.

The Nigeria Agri-Market Information Service (NAMIS) is responsible for provision of the market information services of produce including rice. It began operation in 2004 under the auspices of IFDC, USAID, FAO and MISTOWA (Market Information Systems and Traders' Organizations Systems in West Africa). The service main office is located within the Project Coordinating Unit (PCU) of the Federal Ministry of Agriculture and Water Resources. Market information is distributed to 27 markets nationwide (Abeokuta, Akure, Ado Ekiti, Awka、Benin, Bauchi, Birnin, Kebbi, Damaturu, Dutse, Enugu, Gombe, Ibadan, Kaduna, Kano, Katsina, Lafia, Maiduguri, Makurdi, Minna, Onitsha, Osogbo, Owerri, Port Harcourt, Umuahia, Uyo, Yenogoa, Yola) with regard to food stuffs, fish, meat and fertilizer (NPK 15 %, 15 %, 15 % and urea).

Challenges

Lack of Market Infrastructure: The city, town and village public market facilities in existence in Nigeria are open air and lack the required facilities, a situation that fosters spoilage of agricultural products especially in the rainy season.

Lack of Storage Facilities: Most storage facilities are under the jurisdiction of the Federal Ministry of Agriculture and Water Resources, and the Department of Storage and Strategic Grain Reserves (storage capacity is 295,000 tons, comprising 275,000 tons of silo capacity and 20,000 tons of warehouse capacity). Nevertheless, use of available storage capacity by rice marketers is considered to be low. This in turn lowers marketing efficiency by imposing constraints on volume of marketed rice transactions as well as the length of time that rice is stored after harvest.

Lack of Transport Infrastructure: Interstate highways and roads are asphalt surfaced. However, feeder roads connecting villages with local and city markets are unpaved. As a result, there are numerous locations where transport is not possible during the rainy season. Because of the lack of transportation infrastructure from the village level to surrounding markets, the cost of moving produce to market accounts for an extremely high.

Lack of Market Information Service: Market information is published in periodical newsletters as well as being made available on the web sites. However, this information is

not relayed to remote and impoverished farmers via mass media including radio, etc. The present status is sharing of information with a limited number of market related agents. In this regard, the NAMIS office cites a difficulty in funding provision of market information service using private sector radio. In the case of remote area farmers and marketers, there is a lack of awareness of the importance of marketing information. This is especially evident with regard to subsistence farmers who do not produce an excess amount that could be marketed.

Absence of Grading Standards: Introduction of a grading system for domestic rice has been impeded by several factors including: (i) low awareness of quality control on the part of farmers and farmer organizations, and (ii) a general consumer belief in the quality and taste of imported rice. Standards for have been set by the Standards Organization of Nigeria since 1997 for brown rice, white rice and parboiled rice. However, specific grading standards for rice have not be established, which is considered to have a negative effect on establishing a price structure in line with rice quality. Moreover, at present clear-cut quality criteria have not yet reached down to the farmer or rice merchant level.

Lack of Access in Institutional Credit: Lack of marketer access to institutional credit is a major constraint on rice marketing. This is due to high interest rates (21 - 23% /year) and collateral required by commercial banks (fixed assets such as real estate, machinery/vehicles, etc.). Because government run NACRB, credit is limited to national projects and agricultural cooperatives under donor assisted projects, small marketers other than wholesalers or millers with more robust cash flow are forced to limit transaction scale and commercial area of activity due to lack of access to institutional credit.

Limited Commercial Activity: Lack of cash on hand limits marketers in terms of scale of rice transactions as well as commercial area of activity. Most marketers are thus characterized by short distance transactions, short period rice storage and small transaction scale.

Inefficient Marketing: Inefficiency of rice marketing is due to small scale transactions stemming from a range of factors including:

(i) supply excess or deficiency easily occurs in response to seasonal market changes; this induces an unstable pricing structure which subsequently impacts on producers, marketers and consumers;
(ii) the current production and marketing system makes it difficult to ensure delivery of an appropriate quantity at appropriate timing to the market;
(iii) long distance transport increases transaction risk;
(iv) motivation on the part of producers to produce rice is depressed by a low farm-gate price, limits on access to institutional credit, lack of chemical fertilizers at the appropriate time and in an appropriate amount, and a general rise in production costs;
(v) introduction of new technology is delayed due to insufficient agricultural extension services;
(vi) weak quality control capacity on the part of producers and processors (at respective harvest, threshing, drying, sorting, and post-harvest processing stages); and
(vii) harvest period differs depending on the producing area.

Lack of accurate weight and measures: For rice transactions, large rice bags, bowls (referred to as Mudu and Tiya) and cans are usually used. Weighing scale is not used when determining quantity.

Proposed Concrete Actions

Currently, the federal government takes the following policy measures.

- Guaranteed minimum price for rice paddy.

- Promotion of use of standard weights and measures in rice retail marketing.

In addition, the federal government is required to take the following actions with the support of development partners:

Short-term (within 1-2 year)

- To promote consumption of Nigerian produced and processed rice to the public.
- The Federal Government to announce Guaranteed Minimum Price and varieties the mills will purchase well before each planting season so that farmers are assured of a market to encourage them to produce more rice.
- To strengthen the National Food Reserve and Storage Department of the National Food Reserve Agency (NFRA) and Arable Crops Development and Marketing Company to mop up excess produce from farmers and processors to ensure that there is no glut at any point in time.
- To apply strict quality control procedures to ensure delivery of wholesome paddy of uniform variety that will give high quality milled rice.
- To provide appropriate market infrastructures in conjunction with private sector to assist rice farmers and traders.
- To exploit communication technologies to provide farmers and other stakeholders with adequate market information.
- To develop smaller packs of rice right from the processing factories.
- To support the formation of additional marketing groups.
- To develop storage facilities, marketing infrastructure and establish market information service.
- To develop transport infrastructure.
- To establish appropriate grading standards and precise weighing.
- To improve access to institutional credit by marketers.
- To promote commercial activity.
- Government to make concerted efforts to address the issue of rice smuggling.

Medium-term (within 3-5 years)

- To maintain strict quality control measures for locally processed rice.
- NFRA and Arable Crops Development and Marketing Company will continue to strengthen the mop-up of excess paddy in the market.
- Government and the private sector will continue to provide appropriate market infrastructure to assist farmers and traders.
- To maintain market information system for the rice sub-sector.
- To establish grading standards and branding by private processors.

Long-term (more than 5 years)

- Continue to promote and facilitate strict quality control and ensuring standards and branding.
- To expand market infrastructure and information network.
- To promote export of locally processed rice.

The Relevant Organizations at the Nigerian Side

- Agro Processing and Marketing Department, NFRA
- Storage Department, NFRA
- Rice Farmers Association of Nigeria (RIFAN)
- Private Rice Processors
- Arable Corps Development and Marketing Company
- Abuja Commodity Exchange

6.7 Access to Credit/Agricultural Finance

Vision

To improve lending to stakeholders in the rice value chain in a timely and adequate manner

Current Situation

The Nigerian Agricultural, Cooperative and Rural Development Bank Ltd. (NACRDB) was established in 2001 by the merger of two banking institutions. Its operating capital derives 60% from the Ministry of Finance and 40% from the Central Bank. The NACRDB has 201 branches nationwide, and engages in both savings account and credit activities. Its headquarters are in Kaduna. Types of credit are broadly classified into:

i. micro-credit (NGN 1,000 - 250,000 with a credit period of less than two years);
ii. small credit (NGN 250,000 - 5 million with a credit period of 2 - 3 years); and
iii. Medium credit (NGN 5 - 30 million with a credit period depending on amount of credit).

A uniform interest rate of 8% p.a. is applied. Micro-credit is limited to agricultural cooperatives. Small and medium credit targets small and large farmers, as well as agricultural enterprises. Micro-credit encompasses group credit related to ECOWAS, UNICEF and NGO activities and accounts for 20,000 credit issuances nationwide. Repayment rate is reported to be extremely high. In the case of late payment, a penal interest rate of 2% p.a. is applied. At present, small credit is not being extended to wholesale and retail marketing agents. Furthermore, credit is not currently being directly extended to individual impoverished farmers who do not belong to an agricultural cooperative. Instead, credit is extended to poor farmers via lending from the bank to NGOs. Collateral in the case of micro-credit is a deposit equivalent to 10% of the borrowed amount, as well as a group guarantee by an agricultural cooperative. Small credit collateral entails buildings, farm machinery, etc. (land per se is not recognized as collateral). Credit application processing requires 4 - 6 weeks, and a credit evaluation is carried out at respective bank branches in each state and zone. At present, there has been a significant drop in number of credit issuances and credit amounts targeting agricultural cooperatives.

Aside from financing by government run banks as described above, there are also institutional credit from commercial banks and non-institutional credit from local creditors and marketing agents. The latter in particular is an important credit source for farmers. Interest levied by commercial banks is 21 – 23% per annum, and collateral is required equivalent or more to the assessed amount. Interest in the case of non-institutional credit is 50% or more, with payment in kind with paddy being the main repayment method.

However, access to credit is still low and unaffordable. Small-scale farmers who form the majority of the rice growing community are highly disadvantaged in accessing credit.

Challenges

Farmers have difficulty in financing agricultural development because of the following:

- There has been a significant drop in the number and amount of credit issued for agricultural development purposes from development banks.
- Although credit is accessible from commercial banks, the interest rates are very high; 21 – 23% compared to 8% from development banks.
- Small-scale farmers often times fail to secure credit through commercial banks because they do not have collateral, or interest rates are not affordable.
- Credit, in some instances is extended to poor farmers via lending from the banks to NGOs.

Proposed Concrete Actions

Currently, the federal government takes the following policy measures.

- Restructuring of NACRDB.
- Provision of new intervention funds to support establishment of new rice processing industries through selected investment and commercial banks (e.g. Bank of Industry (BOI)).
- N200 billion naira bond by the Central Bank of Nigeria (CBN) to support agricultural production including rice.

In addition, the federal government is required to take the following actions with the support of development partners:

Short-term (within 1-2 year)

- To make NACRDB a sustainable entity by enlarging its lending capacity.
- For CBN to relax its procedure for payment of guarantee claims.
- To increase guarantee to commercial banks under the ACGSF from 75% to 85% for rice production and processing.
- To use the 50% rice levy fund to support rice production and processing.
- To speed up the release and utilization of N10 billion approved for rice processing intervention fund.
- To access external funding for the NRDS e.g. (i) the World Bank – Import Substitution Facility and (ii) ECOWAS bank for regional development etc.
- To create a dedicated credit fund for provision of credit to the small-holder who form a majority of the rice growing community.
- Funds accrued by government from taxes levy on imported rice should be channelled to dedicated credit lines through NACRDB and BOI to rice farmers to finance developments in production and processing.

Medium-term (within 3-5 years)

- To enlarge the number of rice farmers benefiting from credit both from NACRDB and Commercial banks.
- To enlarge the rice processing intervention fund by another N10 billion.
- To promote PPP arrangement through signing of the Memorandum of Understanding (MoU) with private investors.

Long-term (more than 5 years)

- To maintain and increase credit to rice farmers and processors.
- To increase fund to marketers.
- To continue to support development banks in providing loans at low interest to small-scale as well large-scale farmers and on favourable terms with regards to collateral.

The Relevant Organizations at the Nigerian Side

- Nigerian Agricultural, Cooperative and Rural Development Bank Ltd. (NACRDB)
- Central Bank of Nigeria
- Bank of Industry
- NEXIM Bank
- Commercial Banks

6.8 Extension Services

Vision

To provide adequate extension services both to small and large scale farmers

Current Situation

Although extension workers have been deployed to state ADPs which have jurisdiction over agricultural extension services, the number of deployed staff is small and are not necessarily experts in rice cultivation. As a result the level of technical expertise and supervisory capacity specifically with regard to rice cropping is a problem. There are 54 extension personnel assigned to Ebonyi State, each of which is responsible for around 8,000 farm households. In the case of Niger state, one extension worker is responsible for 1,600 households. Accordingly, it is considered physically impossible for extension staff to provide regular service to their constituent farmers.

Challenges

- Wide extension – farmer Ratio (current average is 1:3000).
- Poor quality of extension services.
- Inadequate training and re-training of Extension Agents.

Proposed Concrete Actions

Currently, the federal government takes the following policy measures.
- 10,000 extension agents to be employed and trained annually nationwide.
- Capacity building of the existing state extension agents.
- To strengthen extension delivery system at all levels.
- To conduct training for rice farmers and processors.

In addition, the federal government is required to take the following actions with the support of development partners:

Short-term (within 1-2 year)
- To promote agricultural cooperatives so that they can access agricultural extension services more easily.
- To increase budgetary allocation to agriculture extension stations and effect timely disbursement.
- To conduct training for agricultural extension workers.
- To formalize and strengthen the linkage between the Rice Farmers' Association of Nigeria (RIFAN) and the federal and state agricultural establishments (e.g. ADPs). RIFAN will be used as effective channel for disseminating technology to rural farmers.
- To strengthen farmers' organisations to help them enter the rice value chain.

Medium-term (within 3-5 years)
- To reduce extension agent- farmer ratio from the current 1:10,000 to 1:1,000.

Long-term (more than 5 years)
- To develop private sector extension service delivery system.

The Relevant Organizations at the Nigerian Side

- FMAWR
- State ADPs
- Private Agricultural Input Companies
- NFRA

6.9 Research and Technology Dissemination

Vision

To strengthen research and agricultural extension system to effectively diffuse technologies on improved varieties, IRM options, crop and soil fertility management, integrated pest control (IPM), improved harvest and post harvest practices to farmers through enhanced linkages.

Current Situation

In Nigeria, the National Cereal Research Institute (NCRI) has the national mandate for the development of rice. This effort is complemented by the international research institute, WARDA and several other research institutes in the rice field such as National Agricultural Seed Council (NASC), National Rice Maize Centre (NRMC), National Varietal Release Committee (NVR), the State Agricultural Development Programme (ADP), National Centre for Agricultural Mechanization (NCAM), Agricultural Machinery Mechanics and Operators Training Centre (AMMOTRAC), and African Regional Centre for Engineering Design and Manufacturing (ARCEDEM) .

Challenges

- The use of NERICA and other improved rice varieties has increased rice production output (yield/ha) and therefore the income of farmers, however, there is low adoption rate of these new technologies.
- There is also the low multiplication rate of NERICE and other improved varieties allowing only very few farmers access to these seeds.
- Poor funding of research institutes and the extension services.
- Low level of technical knowhow of various actors in the rice value chain especially as it relates to capacity building of researchers both at NCRI and other Nigerian universities.

Proposed Concrete Actions

Currently, the federal government takes the following policy measures.

- The research institutes, National Rice/Maize Centre and National Agricultural Seed Council will be adequately funded to enable them carry their responsibilities towards varietal release, seed multiplication and conservation of rice genetic resources.
- Introduction of farmers participatory technology dissemination methods such as participatory varietal selection PVS) participatory learning and Action Research and the use of videos in local languages for easy adoption and diffusion of improved technology.
- Training of 37,000 Extension Agents (100/states/year) to educate farmers on modern farm techniques.

The federal government is required to take the following actions additionally with the support of development partners:

Short-term (within 1-2 year)

- To develop farm machinery, especially for land preparation, harvest and post-harvest activities.
- To close yield gaps through improved integrated crop management.
- To enhance input use efficiency (especially water and fertilizer).
- To develop irrigation and introduce low-cost water control measures for rain-fed lowlands.

Medium-term (within 3-5 years)

- To build in-country rice research and extension facilities.
- To add value through improving grain quality, tailored to consumer preferences and processing.
- Provide adequate funding to the research institute.
- Ensure coordination among the institutions to avoid duplication and ensure complementary research activities.
- Enhance linkage with the state agricultural development programmes (ADPs) and rice farmers' association, processors and millers through wider dissemination of the results of research activities.

Long-term (more than 5 years)

- To build capacity for research and extension.
- To improve rice knowledge, management and information exchange.
- To maintain government policies at increasing rice production.
- To provide a conducive environment for private sector players to operate in the country.

The Relevant Organizations at the Nigerian Side

- National Agricultural Seed Council (NASC)
- National Cereal Research Institute (NCRI)
- National Rice Maize Centre, National Varietal Release Committee (NVR)
- The State Agricultural Development Programme (ADP)
- National Centre for Agricultural Mechanization (NCAM)
- Agricultural Machinery Mechanics and Operators Training Centre (AMMOTRAC)
- African Regional Centre for Engineering Design and Manufacturing (ARCEDEM)

6.10 Others

Vision

To create better policy environment for rice sector development.

Current Situation

In Nigeria, less effective rice specific sub-sector development strategy currently results in un-systematic interventions at all levels. Also, the rice development strategy has been observed to be relatively weak due to the long neglect of the processing and marketing component of the value chain in the rice sub-sector and the weak statistical data base that makes demand and supply forecast difficult for investment decision making.

Consequently, the promotion of public private partnership arrangement which is currently in progress needs to be vigorously pursued with the government, the private investors and the farmers symbiotically benefitting from the market driven approach to the rice value chain development.

By clarifying the sub-sector development strategy more, the government intends to describe a clear picture on the vision and the direction of the future investment in the short-, medium- and long-term.

Proposed Concrete Actions

Currently, the federal government takes the following policy measures.

- Agriculture is in the concurrent list as such all agricultural policies are being harmonized to strengthen the sector.
- Enabling environment is being created for investment in agriculture through the provision of subsidies and liberalisation of tariff and duty on agricultural inputs as well as capacity building.
- Public Private Partnership (PPP) programme is being encouraged at production, processing and marketing levels of agricultural activities.

The federal government is required to take the following actions additionally with the support of development partners:

Short and Medium-term (within 1-2 year)

- To develop rice sub-sector policy consistent with the overall agricultural development plan of the country.
- To establish environment conducive to effective PPP arrangement.
- Improve capacity of federal/state/local government, public institutions to implement the set plans;
- Build capacity to engage more rice farmers and their views into the decision-making process
- Build capacity to research and correctly analyze constraints along the rice value chains, including gathering and organization of necessary data/information

Long-term (more than 5 years)

- To maintain government policies at increasing rice production.
- To provide a conducive environment for private sector players to operate in the country.

Subsidy

Federal and State governments have over the years provided subsidy under the agricultural sector. All over the world, farmers enjoy subsidy either on inputs or output. This subsidy component would no doubt encourage farmers and processors to develop more interest in agriculture with the resultant effect of more food for the teeming population of Nigeria at affordable rates. This will also attract the youth to rice farming and facilitate the succession of the ageing farming population.

The recommended rates of inputs subsidy under this project are as follows;

(i)	Seeds	-	50%
(ii)	Fertilizers	-	25%
(iii)	Tractors/ Farm Implements	-	25%
(iv)	Processing equipment	-	25%

7. Institutional Framework for Implementing NRDS

The Projects will be implemented through bilateral agreement between the government and the donors. The federal government will establish a national coordinating committee to implement and monitor the NRDS process in Nigeria. Proposed function and members of the committee is as follows:

(1) National Level

Proposed Function

The functions of the National Coordinating Committee will be:

- To encourage the federal and state government and development partners to take the necessary actions in accordance with the Nigeria's NRDS.
- To take stock of the progress and achievement to be made by the federal and state government and development partners and organize monitoring meetings periodically, more specifically biannually or quarterly.
- To provide the necessary information required for donor assistance and other stakeholders.
- Project formulation.
- To source funds for the programmes.
- To approve work programmes and budget.
- To approve disbursement of funds.

Proposed Member Organizations

- Federal Ministry of Agriculture and Water Resources
- National Food Reserve Agency (NFRA)
- National Agricultural Seed Council (NASC)
- National Cereal Research Institute (NCRI)
- National Rice Maize Centre, National Varietal Release Committee (NVR)
- The State Agricultural Development Programme (ADP)
- National Centre for Agricultural Mechanization (NCAM)
- Agricultural Machinery Mechanics and Operators Training Centre (AMMOTRAC)
- African Regional Centre for Engineering Design and Manufacturing (ARCEDEM)
- Development partners
- Federal Ministry of Finance
- National Planning Commission

Secretariat

National Food Reserve Agency (NFRA)

This is set through the discussion in the federal government in close contact with the development partner.

Funding and Fund Management

The funding for the NRDS will be sourced from the Federal and State Governments of Nigeria, and the development partners.

Funds for NRDS will be managed by NRDS Committee at National level in collaboration with donor agencies. The funds will be sourced from Federal Government, development partners and donors. The National NRDS Committee will consider and approve all proposals for funding and expenditure.

(2) State Level: State Committee on NRDS (SC/NRDS)

At the State level, proposed functions and membership of the state coordinating committees are as follows:

Membership

- H. E. Executive Governor - Chairman
- Hon. Commissioner, Agric & rural Dev. - Member
- Hon. Commissioner, Land and Survey - Member
- State Chairman RIFAN - Member
- Regional Head, NFRA - Member
- Rice Processors Association - Member
- Programme Manager - Member/ Sec

Functions of SC/NRDS

(a) Registration and documentation of participating farmers.
(b) Authentication of all applications from participating Local Govt Authority (LGA)
(c) Collation and review of farmers' demands.
(d) Monitor and supervise the registration of input supply companies and distribution.
(e) Oversees project implementation.

At the State level, the ADPs Programme Managers will be the coordinators, while there would be a processing engineer and marketing specialist.

8. Monitoring and Evaluation

The federal government will monitor the progress and achievement of NRDS quantitatively and qualitatively on a biannually or quarterly basis (**See Policy Matrix in Annex 10)**. In the monitoring process, the federal government will ensure wider participation of stakeholders such as development partners, and share the latest development of its and donors' assistance, experiences and lessons learnt, and finally produce progress report. Through this process, the federal government will create a momentum of significance for the continuous assistance in the development community in Nigeria and encourage development partners to scale up its assistance to Nigeria's rice sub-sector.

Concrete Monitoring Plan

1. Develop a reporting system that would provide information that meets the needs of all stakeholders to enable them take appropriate action on a monthly, quarterly, annually or biannually.
2. Conduct Core Surveys to collect information on various components of the project after implementation.
3. Develop appropriate work plan with cost implications for each activity for easy assessment.

4. Establish a functional information management system for processing and storing data generated during core surveys.

Short-term (within 1-2 year)

- Put in place a management information system and a website for the NRDS.
- Conduct a participation base line survey on rice production, processing and marketing.
- Present to management appropriate reports on core activities.
- Draw up work plans with activities that are verifiable and monitor same.
- Conduct market surveys on rice.

Medium-term (within 3-5 year)

- Make available to management appropriate reports.
- Conduct Crop, Area and Yield Survey (CAYS).
- Draw up work plans for the next 3 years and monitor their implementation.
- Conduct market price survey for rice.
- Conduct a Mid – Term Review in the 5^{th} year.

Long-term (within 5 year and above)

- Report regularly on activities of the NRDS.
- Draw up work plans for the rest of project circle.
- Conduct the Completion Review.
- Conduct an Impact Assessment Survey.

Annex 1: Problem Analysis on Rice Sector

Stages	Problems	Constraints
Production	Rigid production system (Low productivity, predominant rainfed rice cultivation, And subsistence agriculture) ↓ Small-scale marketability (seasonal shipment and supply shortages) ↓ Low competitiveness of domestic rice in terms of quantity and quality ↓ Comparative advantages of imported rice (stable price and supply and quality rice)	(1) Lagging rice development (lack of policies and strategies) (2) Inadequate irrigation and water storage facilities (inadequate O&M of existing facilities and lack of funds available for new facilities) (3) Low level of farming technologies (Lack of technical know-how) (4) High production cost (rising prices of chemical fertilizers and high wages of hired labour) (5) Inadequate agricultural input supply system (Difficulty in procuring chemical fertilizers in a timely manner and in adequate quantity) (6) Delay in disseminating improved seeds (use of inherent and inferior home seeds mixed with different varieties of rice) (7) Inadequate and weak agricultural extension agents (shortage of extension agents and lack of their technical knowledge) (8) Lack of purchasing power (non-existence of off-farm income sources) (9) Delay in forming agricultural cooperatives (delay in adopting a communal shipment system) (10) Poor accessibility to institutional credits (lack of agricultural investments and dependence on non-institutional credits) (11) Absence of the effective use of by-product (lack of rice straw usage)
Post-harvest processing	Low awareness of quality control (generation of impurities at each stage of harvesting, threshing, drying, sorting, storing, parboil processing, drying, and mill processing) ↓ Low level of post-harvest processing technologies (adoption of labour-intensive technologies by farmers, diverse parboil processing techniques, use of obsolete milling machines, and increased crop losses) ↓ Low quality rice (mixture with impurities) ↓ Low competitiveness of domestic rice in terms of quality	(1) Traditional methods of harvesting, threshing, drying, sorting, shoring and processing (generation of post-harvest losses, labour-intensive methods, generation of impurities) (2) Lagging agricultural mechanization (lack of access to institutional credits, delay in forming agricultural cooperatives) (3) Poor drying and vetting techniques of farmers (improper drying, uncertain moisture content, generation of impurities, lack of concrete drying platform) (4) Low farmers' awareness of quality control (appropriate moisture content, removal of impurities, high awareness of the high quality – high price principal) (5) Poor parboiling techniques (obsolete parboiling equipment, diverse parboiling techniques, use of low quality water) (6) Poor drying and sorting techniques of

	(inferior quality of rice and strong consumers' preference for imported rice) ↓ Comparative advantages of imported rice (stable price and supply, and high quality rice)	parboilers (improper drying, uncertain moisture content, generation of impurities, lack of concrete drying platform) (7) Low parboilers' awareness of quality control (appropriate moisture content, removal of impurities, high awareness of the high quality – high price principal) (8) Use of obsolete milling machines (predominant Engelberg-type milling machines, high generation of broken rice, generation of impurities such as chaff and bran) (9) Low milling efficiency due to frequent power failures (conversion of a type of power source from electricity to diesel) (10) Low millers' awareness of quality control (regarding removal of impurities, good understanding of the high quality – high price principal) (11) Low awareness of farmers, parboilers and millers on rice losses
Marketing	Lack of farmers' aspiration to produce surplus rice (difficult procurement of agricultural credit and high production cost) ↓ Small scale marketability (seasonal shipment, supply shortages, and strong consumers' preference for imported rice) ↓ Large variations in rice prices (unstable supply of rice in a timely manner and in adequate quantity) ↓ Low competitiveness of domestic rice in terms of price (price inferiority of domestic rice and stable prices of imported rice) ↓ Comparative advantages of imported rice (stable price and supply, and high quality rice)	(1) Uneven locations of rice surplus and shortage areas: differing state-wise self-sufficient rates in rice production (agro-ecological rice production systems based on natural conditions, advancement in urbanization, high population growth) (2) Complex marketing channels for local rice (intervention by numerous layers of marketing agents) (3) Lack of collection and shipment facilities (at the LGA and community levels) (4) Lack of storage facilities (at the LGA and farm levels) (5) Inadequate rural road network (feeder roads, roads between communities and district capital markets) (6) Limited inter-state transportation of rice (high transportation cost, scarcity of operational funds, lack of access to institutional credit) (7) Absence or inadequate supply of market information (traditional commercial transactions: pricing by marketing agents, limited number of marketing agents with access to price information) (8) Absence of rice grading standards (inappropriate determinants to pricing rice, the poor focusing more on quantities than quality, lack of farmers' awareness of quality control)

		(9) Lack of access to institutional credit (credit with high interest rates, low assessed value of collateral, inaccessibility to NACRDB by individual farmers and marketing agents) (10) Delay in introducing a precise scale system in quantity measurement in rural markets (unhusked/milled rice bags, bowls and cans are popularly used without using a scale when determining quantity.)

Annex 2: Rice Production Area, Yield, and Production in 2008 and Targets in Future by Agro-ecological Condition

	Rain-fed Upland			Rain-fed Lowland			Irrigated Lowland			Total		
	Area (Ha)	Yield (T/Ha)	Product (T)	Area (Ha)	Yield (T/Ha)	Product (T)	Area (Ha)	Yield (T/Ha)	Product (T)	Area (Ha)	Yield (T/Ha)	Product (T)
2008	510,050	1.62	826,281	1,243,151	1.99	2,471,880	47,799	3.50	167,297	1,801,000	1.92	3,465,458
2013	714,927	1.72	1,229,674	1,663,271	2.20	3,663,596	269,802	4.50	1,214,109	2,648,000	2.30	6,107,379
2018	875,000	2.00	1,750,000	2,065,000	3.40	7,021,000	560,000	8.00	4,480,000	3,500,000	3.79	13,251,000

Annex 3: Seed Requirement

	Upland (t)			Rain-fed Lowland (t)			*Irrigated Lowland (t)*			Total		
	2008	**2013**	**2018**	**2008**	**2013**	**2018**	***2008***	***2013***	***2018***	**2008**	**2013**	**2018**
Breeder seed	52	52	53	52	67	71	*17*	*21*	*26*	121	140	150
Organisations	*Research institutes (NCRI, WARDA, universities with Rice breeder e.g. FUT Minna, Ebonyi state university), seed companies with rice breeder.*											
Foundation seed	1,561	1,559	1,574	2,069	2,689	2,868	*664*	*856*	*1,050*	4,294	5,104	5,492
Organisations	*NASC, ADPs, through contract out growers, seed companies*											
Certified seed	46,845	46,774	47,219	82,760	107,547	114,717	*26,546*	*34,238*	*41,998*	156,150	188,559	203,934
Organisations	*Seed companies, ADPs (through out-grower system), private farmers, (community based seed system)*											

Annex 4: Projected Fertilizer Requirement and Costs for 2008 - 2018

YEAR	PROJECTED LAND REQUIREMENT (Million ha)	FERTILIZER REQUIREMENT AT 400kg/ha (Tonnes)	COST AT NGN107,250/tonne (N Millions)
2008	**1.8**	**720,000**	**77,187,600**
2009	1.97	788,000	84,477,540
2010	2.14	856,000	91,767,480
2011	2.31	924,000	99,057,420
2012	2.48	992,000	106,347,360
2013	**2.65**	**1,060,000**	**113,637,300**
1014	2.82	1,128,000	120,927,240
2015	2.99	1,196,000	128,217,180
2016	3.16	1,264,000	135,507,120
2017	3.33	1,332,000	142,797,060
2018	**3.5**	**1,400,000**	**150,087,000**
Total		11,660,000	1,250,010,300

Note: 2008 is taken as base year.

Annex 5: Equipment Required for Doubling Rice Production Over the next 10 Years in Nigeria

YEAR	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total Quantity	Unit Cost (NGN)	Total Cost USD (mln)
Total Area Planted in 2008 (TAP 2008) 3,123,000 ha	25% TAP 2008													
Planted Area for Machine /Equipment provision	780,750	1,040,750	1,300,750	1,560,750	1,820,750	2,080,750	2,340,750	2,600,750	2,860,750	3,120,750	3,380,750			
1. LAND PREPARATION: (i) 75 Hp Tractor with implements (Plough, Harrow)	15,609	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	67,609	3,800,000	1835.1
(ii) Power Tiller with rotavator	3,122	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	13,522	650,000	62.78
2. PLANTING:														
(I) Seed Drill	1,561	520	520	520	520	520	520	520	520	520	520	6,761	1,500,000	72.44
(ii) Transplanter	780	260	260	260	260	260	260	260	260	260	260	3,380		
3. CROP PROTECTION:														
(I) Knapsack Sprayer	3,122	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	13,522	9,000	0.87
(ii) Boom Sprayer	780	260	260	260	260	260	260	260	260	260	260	3,380	150,000	3.62
4. HARVESTING:														
(i) Rice Reaper (0.5 tonne/hr)	8,417	3,649	4,083	4,516	4,949	5,333	5,632	5,933	6,233	6,532	6,833	62,110	600,000	266.19
(ii) Thresher (0.75 tonne/batch	2,799	1,216	1,359	1,505	1,648	1,777	1,876	1,977	2,077	2,176	2,277	20,687	900,000	132.99
(iii) Combine Harvester														
a. 1 tonne/hour	4,193	1,824	2,041	2,258	2,474	2,666	2,816	2,966	3,116	3,266	3,416	31,036	1,000,000	221.69
b. 5 tonnes/hour	837	364	408	451	494	533	562	593	623	652	683	6,200	30,000,000	1328.57
5. PROCESSING:														
(i) Parboiler	12,689	8,760	9,800	10,840	11,880	12,800	13,520	14,240	14,960	15,680	16,400	141,569	150,000	151.68
(ii) Dryer	126,890	87,600	98,000	108,400	118,800	128,000	135,200	142,400	149,600	156,800	164,000	1,415,690	80,000	808.98
(iii) Mechanical Dryer	12,689	8,760	9,800	10,840	11,880	12,800	13,520	14,240	14,960	15,680	16,400	141,569	540,000	546.05
(iv) Probe Moisture Tester	12,689	8,760	9,800	10,840	11,800	12,800	13,520	14,240	14,960	15,680	16,400	141,569	50,000	50.53
(v) Rice Mill 1000 tonnes/yr	178	109	122	135	148	159	169	177	187	195	205	1,784	2,500,000	31.86
(vi) Rice Mill 50,000 tonnes/yr	8	4	4	4	5	5	6	7	8	8	8	67	2,300,000,000	1,100.70
(vii) Destoner	594	365	408	451	494	533	662	593	623	652	683	6,058	450,000	19.47
(viii) Packaging equipment (Bag sewing and hot sealing machines)	950	583	652	721	790	851	900	947	997	1,042	1,093	9,526	85,000	5.78

(NOTE) Exchange rate $ =N140.00 as at 6th March 2009

Annex 6: Projected Small – Scale Rice Processing Requirement

YEAR	AREA UNDER CULTIVATOIN MILLION(HECTARES)	EXPECTED YIELD OF PADDY IN MILLION TONNES	MILLED RICE IN MILLION TONNES	NO. OF SMALL-SCALE MILLS REQUIRED	TOTAL COST OF RICE MILLS REQUIRED/ANNUM (N/M)
2008	1.80	3.40	2.04	2,040	20,910,000,000
2009	1.97	3.94	2.36	320	3,280,000,000
2010	2.14	4.28	2.57	210	2,152,50,000
2011	2.31	4.62	2.772	202	2,070,500,000
2012	2.48	5.46	3.276	504	5,166,000,000
2013	2.65	5.83	3.50	224	2,296,000,000
2014	2.82	6.205	3.72	220	2,255,000,000
2015	2.99	6.58	3.95	230	2,357,500,000
2016	3.16	7.90	4.74	990	10,147,500,000
2017	3.33	8.33	5.00	258	2,644,500,000
2018	3.50	8.75	5.25	250	2,562,500,000

Assumptions;

(1) Average rice yields:
2 tonnes/ha from 2008 – 2011
2.2 tonnes/ha from 2012 – 2015
2.5 tonnes/ha from 2016 – 2018
(2) Output capacity of mill: 4 tonnes/8hr day
(3) 250 days/annum for operation
(4) Small Scale Rice Mills
(5) Unit cost of Rice mill (Small scale) N 10.25m

NOTE: 2008 taken as base year.
- Large mills (100,000 tons. p. a.) =20nos – 2.0m tons p. a
- Small mills (1000 tons p. a) =6,750nos – 6,75m tons p. a

Annex 7: Projected Agro-Chemicals Requirement (2008 – 2018)

ACTIVITY	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	AVERAGE COST/ HA	TOTAL COST(27.35Ha. 2009 - 2018)N BILLION
1. Seed - (breeder, foundation, certified) at 60kg/Ha	108,000 tons	118,200 tons	128,400 tons	138,600 tons	148,800 tons	159,000 tons	169,200 tons	179.400 tons	189,600 tons	199,800 tons	210,000 tons		
Seed Treatment(10gm/kg) chemical	1.08 tons	1.182 tons	1.284 tons	1.386 tons	1.488 tons	1.590 tons	1.692 tons	1.794 tons	1.896 tons	1.998 tons	2.100 tons	1,250	34.188
Pre-emergence at 4lt/Ha	7.2m Lts	7.88m Lts	8.65m Lts	9.24m Lts	9.92m Lts	10.60m Lts	11.28m Lts	11.96m Lts	12.64m Lts	13.32m Lts	14.00m Lts	4,000	109.4
Post emergence at 5Lts/Ha	9.0m Lts	9.85m Lts	10.70m Lts	11.55m Lts	12.55m Lts	13.25m Lts	14.10m Lts	14.95m Lts	15.80m Lts	16.65m Lts	17.50m Lts	4,250	116.238
Insecticides at 1lt/Ha x2	0.9m Lts	0.985m Lts	1.07m Lts	1.155m Lts	1.24m Lts	1.325m Lts	1.41m Lts	1.495m Lts	1.58m Lts	1.66m Lts	1.675m Lts	2,400	65.64
Fungicides at 1lt/Ha x2	0.9m Lts	0.985m Lts	1.07m Lts	1.155m Lts	1.24m Lts	1.325m Lts	1.41m Lts	1.495m Lts	1.58m Lts	1.66m Lts	1.675m Lts	2,000	54.7
Storage at1lt/ton.	2.448m Lts	2.679m Lts	2.91m Lts	3.142m Lts	3.37m Lts	3.60m Lts	3.84m Lts	4.07m Lts	4.30m Lts	4.53m Lts	4.76m Lts	1,300	4.127
Average yield of 2.22tons /Ha	3.996m	4.373m	4.75m	5.13m	5.51m	5.88m	6.26m	6.64m	7.02m	7.39m	7.77m		
Rodenticides 5kg/Ha	9,000 tons	9,850 tons	10,700 tons	11,550 tons	12,410 tons	13,250 tons	14,100 tons	14,950 tons	15,800 tons	16,650 tons	17,500 tons	4,000	109.4
Sprayers	500,000											7,500	7,500

Annex 8: Number of Researchers, Technicians, and Extension Workers in 2008 and Targets in Future

	Agricultural Researchers with MSc/ PhD.			Research Technicians			Extension Workers		
	Total	Rice specialist (full time)*	Rice specialist (part time)*	Total	Rice specialist (full time)*	Rice specialist (part time)*	Total	Rice specialist (full time)*	Rice specialist (part time)*
2008	30	20	10	15	15	-	5	5	-
2013	40	25	15	30	20	10	15	10	5
2018	50	30	20	40	25	15	25	15	10

Annex 9: Rice Projects in the Last 5 Years

S/N	TITLE	SOURCE OF FUNDS	PROJECT BUDGET	IMPLEMENTING AGENCY	PROJECT STATUS	DURATION	PURPOSE	OUTPUT
1	National Special Programme for Food Security	FGN, FAO, ADB	USD$45.2 Million	NFRA	Ongoing	2002 to date		Establishment of 95 Demonstration Farms, Development of 13,442 Ha of land for rice cultivation, Provision of production inputs to benefit 12 764 farmers, Distribution of 25283 agro-chemicals, Distribution of 5,199.11 tonnes of fertilizer, General training of of 9736 farmers in 655 sessions.
2	Rehabilitation of Small Scale Irrigation Schemes	FGN, FAO, CHINA	USD$22.4 Million	FMAWR	Ongoing	2003 to date	Achieve food security, Improve farmers productivity and income	Food security, Improved farmers income
3	DAIMINA Project (Developing Agric Inputs Market in Nigeria)	USAID		USAID, ADPs	Ongoing	2004 to date	Strengthen market information system, Capacity building in the private sector	Establish national agric input dealers association, train 100 marketers from Bauchi State and FCT, Establish 5 fertilizer Demonstration Farms in Kano State
4	MARKETS (Maximizing Agricultural Revenue and Key	USAID, FGN	USD$24 Million	Private Sector Companies	Ongoing	2005 - 2010	To promote Nigerian agricultural development by improving	Provide technical guidance to marketers for domestic rice, Train individuals engaged in rice value chain (input

	Enterprises in Targeted Sites)						productivity, Better value added products, Encourage greater commercialization of agriculture and private enterprise	marketing, millers, marketing agents etc)
5	PROPCOM (Promoting Pro-Poor Opportunities through Commodities and Services Markets)	DFID		DFID			To alleviate poverty by improving the efficiency of credit and services market	Improve parboiling technology, Focus on transparency for rice marketing
6	National Fadama Project	World Bank, FGN, ADB		NFRA			Establish Nigerian food security and reduce poverty	
7	Post Harvest Rice Improvement Project	JICA		NFRA	Processing of request in progress		Improve milling quality	Accelerated research and development of post-harvest technologies, transfer of post-harvest technologies to farmers and processors
8	Construction of Rice Processing Complex in Nigeria	KOICA	USD$1.8 Million	NFRA	Ongoing	2008-2009	Increase rice production and improve milling quality	Production of high quality rice, Improved farmer's production and processing know-how, Improved farmer's income and standard of living
9	Presidential	FGN		States, FGN and	Ongoing	2003 to date	Improve &	

	Initiative on Rice Production, Processing and Export			Private Sector			increase the Rice Milling quality	
10	Rice Processing Intervention Fund	FGN	N10 billion	FMA&WR (NFRA), FMC&I, FMF, BOI	Ongoing		To expand the domestic rice processing capacity by a minimum of one million (1.0m) tonnes per year, reduce the National Import bill on rice, reduce market prices of rice in Nigeria, stimulate local production for self sufficiency in rice, create employment opportunities	Self-sufficiency in rice, Adequate market for paddy and locally processed rice, improved quality of milled rice, Improved participation of both private and public sector in the rice value chain
11	Nationally Coordinated Research Programmes on Rice (NCRP-Rice)	FGN, World Bank		NCRI in collaboration with ADPs, National Seed Services (NSS), Private Sector	Ongoing	15 years (1996 - 2010)	To revitalise the agricultural research system in the country	
12	The African Rice Initiative (ARI)			FMA&WR			Promote NERICA-based food security in Sub-Saharan Africa, Promote complementary technologies to	

							enhance soil fertility and make rice farming sustainable	
13	Rice Alliance	USAID and Others (IITA, WARDA, NCRI, Candel Co. Ltd, Union Bank, DAIMINA Project, SG2000, HANIGHA Nig. Ltd, Golden Fertilizer)		USAID and the other partners			To offer appropriate technology options with identified market opportunities in selected locations. To influence the emergence of enabling policy environment that would make Nigerian rice competitive	
14	The Inland Valley Consortium (IVC)			Research Institutes			To promote research efficiency within the member countries	
15	WIN2000							

Annex 10: Policy Matrix

Seed System (Breeder Seed, Foundation Seed and Certified Seed)

Vision: To increase the availability of rice seed of improved varieties to the vulnerable rice farmers through direct distribution of seed or a market-based option					
Issue: Genetic resource development and maintenance					
Current policy measures	Proposed policy measures			Relevant organization at the Nigerian side	Interventions by development partners
	Short-tem	Medium-term	Long-term		
	Adequate and timely funding for the following institutions for development of new rice varieties (1) Research institutes for conducting participatory varietal selection trials which enable farmers to chose varieties that best suit their needs and for the production of breeder seeds of released varieties for varietal purity maintenance. (2) National Maize/Rice centre to conduct on-farm trials whose results determine whether a variety		(1) Implementation of existing seed laws and to make the existing mechanism for seed control and certification more functional and efficient, with active involvement of private investors. (2) Continue to fund NASC to enable National Rice / Maize Centre and National Centre for Genetic Resource and Biotechnology perform their statutory responsibilities	Agricultural Seed Council (NASC), National Cereal Research Institute (NCRI), National Centre for Genetic Resource and Biotechnology National Rice Maize Centre, National Varietal Release Committee (NVRC),	

	should be released or not. (3) The Varietal Release Committee for holding regular meetings to consider new varieties for release. (4) National Centre for Genetic Resource and Biotechnology for effective preservation and regeneration of released varieties. (5) National Agricultural Seed Council for the performance of all its functions, such as organization of the foundation seed production, certification, monitoring and quality control, as well as law enforcement.		(3) Continue to fund research institutes for conducting participatory varietal selection trials.	The State Agricultural Development Programme (ADP)	
Issue: Rice seed production/distribution systems					
Current policy measures	Proposed policy measures			Relevant organization at the Nigerian side	Interventions by development partners
	Short-tem	Medium-term	Long-term		
(1) 50% of subsidy given on seeds (2) Promotion of private investors in seed	(1) Emphasis would be on the following: ● Introduction and use of hybrid rice		(1) Support National Agricultural Research System (NARS) to	NCRI, NASC, Private Seed Companies	

production and marketing (3) Promotion of NERICA and other improved rice seeds	varieties to increase rice production ● Planning of national seed requirement to give seed producing institutions adequate time to produce the required quantities of seed. ● Funding and technical assistance would be provided to National Agricultural Research Institutes (NARIs) to produce breeder and foundation rice seeds suitable for the various rice ecologies. ● Community Based Seed Systems (CBSS) would be adopted and utilized to encourage the provision of large quantities of quality seed within easy reach of farmers. ● Seed fair and seed voucher (2) Build capacity for seed production (from breeder to certified seed or seed of acceptable		produce breeder and foundation seed (2) Streamline and hasten the procedures for releasing high yielding varieties through the use of participatory methods (3) Provide adequate training for scientists, extension agents, technicians and farmers to specialise in seed multiplication, storage and marketing (4) Such released varieties may then be multiplied by farmers in a Community-Based Seed System (CBSS) (5) Continue to promote the use of hybrid seeds for increase rice production (6) Promote further development of private sector		

	quality)		seed industry to meet national rice seed requirement		

Agro-Chemicals Supply, Handling and Application

Vision: To improve the farmer-supplier linkage of agro-chemicals at an affordable rate and promote proper handling and application through capacity building					
Current policy measures	Proposed policy measures			Relevant organization at the Nigerian side	Interventions by development partners
	Short-tem	Medium-term	Long-term		
(1) Promote the handling and application of agro-chemicals by the government (2) Facilitate access to credit facilities from an intervention fund at a single digit interest rate to accredited agro-chemical companies to increase the volume and quality of import. (3) Encourage the establishment of sales outlets in the rural areas by input dealers.	(1) Supply of good quality agro-chemicals through accredited vendors to rice farmers (2) Supply of high quality sprayers and chemical handling appliances to rice farmers (3) To provide agro-chemicals to farmers at good time and at 50% subsidy. (4) To educate farmers on the effective use of agro-chemicals	(1) Development of domestic capacity for the production of good quality agro-chemicals for rice production (2) Provide adequate training on the handling and application of technology on agro-chemicals	Development and promotion of local manufacturing capacity for chemical sprayers and handling appliances	Agricultural Production and Input Services (APIS) Department of the National Food Reserve Agency State Ministries of Agriculture Local Government Councils	

(4) Institute an import tax relief regime for accredited agrochemical industries so as to scale down the prices of products for the benefit of farmers (5) Establish a graduate training system to build up the critical mass of skilled hands that would ensure appropriate application of pesticides in the country. (6) Formulate a proper system of regulation for the industry					

Fertilizer Marketing and Distribution

Vision: To create viable fertilizer marketing and distribution through (i) strengthening distribution network, (ii) making private sector the driving force behind fertilizer marketing and distribution, (iii) increasing local production, and (iv) ensuring availability at affordable price					
Current policy measures	Proposed policy measures			Relevant organization at the Nigerian side	Interventions by development partners
	Short-tem	Medium-term	Long-term		
(1) 25% subsidy given on fertilizer (2) Complementary subsidy further contributed by the state governments for enhancing farmers' affordability	(1) To liberalize fertilizer marketing and make the private sector the driving force behind fertilizer marketing and distribution (2) To give private sectors with production incentives of fertilizers for them to increase local production at affordable prices (3) To introduce quality control framework (4) To develop transport infrastructure	(1) To strengthen distribution networks ● Promote private sector in fertilizer marketing and distribution ● Maintain the provision of incentives to local fertilizer producers ● Maintain quality control measures (2) To maintain the development of transport infrastructure	(1) To continue to facilitate the promotion of local production of fertilizer (2) To maintain the support to the private sector in fertilizer marketing and distribution (3) To maintain the provision of incentives to the private sector local fertilizer producers (4) To continue the development of transport infrastructure (5) To maintain fertilizer quality control measures	Agricultural Production and Input Services Department of National Food Reserve Agency, Private Fertilizer Companies	

Promoting Agricultural Mechanization

Vision: To promote modern agricultural mechanization in order to minimize drudgery and facilitate commercialization of rice production.					
Current policy measures	Proposed policy measures			Relevant organization at the Nigerian side	Interventions by development partners
	Short-tem	Medium-term	Long-term		
(1) Import duty free agricultural machinery (2) 25% subsidy given on tractors by the federal government	(1) To provide incentives for demand and supply for mechanization (2) To provide 20,809 tractors of 75HP with implements (3) To provide 4,162 power tillers with rotavator	(1) To provide 15,600 75HP tractors with implements (2) To provide 3,120 power tillers with power tillers	(1) To provide 5,200 tractors of 75HP yearly (2) To provide 1,040 power tillers yearly	National Food Reserve Agency (NFRA) National Centre for Agricultural Mechanization (NCAM) Agricultural Machinery Mechanics and Operators Training Centre (AMMOTRAC) African Regional Centre for Engineering Design and Manufacturing (ARCEDEM) The state agricultural development programmes (ADPs)	

Irrigation and Investment in Water Control Technologies

Vision: To considerably increase the irrigated land planted to rice within 10 years					
Current policy measures	Proposed policy measures			Relevant organization at the Nigerian side	Interventions by development partners
	Short-tem	Medium-term	Long-term		
(1) Rehabilitation and Expansion of Federal and the State Government Irrigation Schemes (2) Establishment of New small and medium scale Irrigation Schemes	(1) To rehabilitate 62,347 hectares of rice irrigation schemes (2) To complete on-going projects, reactivate abandoned schemes, and expand existing irrigation schemes (3) To involve beneficiary farmers at planning and implementation stages for efficient management and operation of irrigation schemes by forming Water Users Association (WUA) for sustainability	(1) To ensure ultimate ownership through gradual transfer to beneficiary communities or cooperative societies (2) To establish hydro-met stations at project sites for adequate data collection for effective planning and management purposes (3) To record water volumes and levels to ensure optimal water use efficiency (4) To conduct proper environmental impact assessment (EIA) before embarking on any medium to large irrigation projects in order to	To develop 50,000 ha of FADAMAs and new irrigation land (annually) until all potential land area is put under cultivation	Federal Department of Water Resources , River Basin Development Authorities (RBDAs) , States' Government Irrigation schemes	

		checkmate any adverse environmental and health hazards (5) To rehabilitate 32,459 hectares of irrigation schemes (6) To provide the following equipment for land clearing and rural road construction, 12Nos each of bulldozers, long-broom excavators, graders, pail loaders, low-bed/swamp boogies, tippers hand compactors, mobile concrete mixers, mobile workshops, dumpers, pick-ups and motorized boats, wheel barrows and tools			

Post-Harvest Handling and Processing and Marketing

(1) Post-Harvest Handling and Processing

Visions: To improve rice quality to exportable standard through (i) improving processing capacity and (ii) promoting harvesting and post harvest processing facilities nationwide complemented by adequate training for rice farmers and processors in order to bail the rice sector out of low quality and poor market competitiveness					
Current policy measures	Proposed policy measures			Relevant organization at the Nigerian side	Interventions by development partners
	Short-tem	Medium-term	Long-term		
(1) Rice Processing Intervention Fund (i.e. establishment of 10 large scale rice processing mills, and Upgrading 3 other existing large scale rice mills, etc) (2) Operation of rice development levy on imported rice to develop domestic production and processing (3) Zero tariff on imported processing equipment	(1) To establish 10 nos. large scale mills of 100,000 tonnes/yr capacity (2) To establish 2,360 nos. small mills of 1000 tonnes/yr capacity	(1) To establish 10 nos. large scale mills of 100,000 tonnes/yr capacity (2) To establish 916 nos. small mills of 1000 tonnes/yr capacity	(1) To establish 2 nos. large scale mills of 100,000 tonnes/yr capacity annually (2) To establish 362 nos. small mills of 1000 tonnes/yr capacity	National Food Reserve Agency (NFRA) National Cereal Research Institute (NCRI) National Centre for Agricultural Mechanization (NCAM) The state agricultural development programmes (ADPs)	

(2) Marketing

Vision: To increase the market share of locally processed rice and improve distribution networks both locally and internationally					
Current policy measures	Proposed policy measures			Relevant organization at the Nigerian side	Interventions by development partners
	Short-tem	Medium-term	Long-term		
(1) Guaranteed minimum price for rice paddy (2) Promotion of use of standard weights and measures in rice retail marketing	(1) To promote consumption of Nigerian produced and processed rice to the public (2) The Federal Government to announce Guaranteed Minimum Price and varieties the mills will purchase well before each planting season so that farmers are assured of a market to encourage them to produce more rice (3) To strengthen the National Food Reserve and Storage Department of the National Food Reserve Agency (NFRA) and Arable Crops Development and Marketing	(1) To maintain strict quality control measures for locally processed rice (2) NFRA and Arable Crops Development and Marketing Company will continue to strengthen the mop-up of excess paddy to ensure there is no glut in the market (3) Government and the private sector will continue to provide appropriate market infrastructure to assist farmers and traders (4) To maintain market information	(1) To promote and facilitate strict quality control and ensuring standards and branding (2) To expand and develop market infrastructure and information network (3) To facilitate the establishment of guaranteed minimum price system (4) To promote export of locally processed rice	Agro Processing and Marketing Department, NFRA Storage Department, NFRA RIFAN Private Rice Processors Arable Corps Development and Marketing Company Abuja Commodity Exchange	

	Company to mop up excess produce from farmers and processors to ensure that there is no glut at any point in time (4) To apply strict quality control procedures to ensure delivery of wholesome paddy of uniform variety that will give high quality milled rice (5) To provide appropriate market infrastructures in conjunction with private sector to assist rice farmers and traders (6) To exploit technologies such as telephone email and text message to provide farmers and other stakeholders with adequate market information (7) To develop smaller packs of rice right from the processing factories (8) To support the formation of	for the rice sub-sector (5) To maintain the establishment of grading standards and branding by private processors			

	additional marketing groups (9) To develop marketing infrastructure (10) To build storage facilities (11) To develop transport infrastructure (12) To establish market information service (13) To establish grading standards (14) To improve access to institutional credit by marketers (15) To promote commercial activity more (16) To establish precise weighing				

Access to Credit/Agricultural Finance

Vision: To improve lending to stakeholders in the rice value chain in a timely and adequate manner					
Current policy measures	Proposed policy measures			Relevant organization at the Nigerian side	Interventions by development partners
	Short-tem	Medium-term	Long-term		
(1) Restructuring of NACRDB (2) Provision of new intervention funds to support	(1) Make NACRDB sustainable entity by enlarging its lending capacity. (2) CBN to relax its	(1) To enlarge the number of rice farmers benefiting from credit both from NACRDB	(1) To maintain and increase credit to rice farmers and processors (2) To increase fund	Nigerian Agricultural, Cooperative and Rural Development	

establishment of new rice processing industries through selected investment and commercial banks (e.g. Bank of Industry (BOI)) (3) 200 billion naira bond by the Central Bank of Nigeria (CBN) to support agricultural production including rice	procedure for payment of guarantee claims (3) Increase guarantee to commercial banks under the ACGSF from 75% to 85% for rice production and processing (4) Use the 50% rice levy fund to support rice production and processing (5) Speed up the release and utilization of N 10 billion approved for rice intervention fund. (6) Access to external funding for the NRDS e.g. (i) the World Bank – Import Substitution Facility and (ii) ECOWAS bank for regional development etc (7) To create a dedicated credit fund for provision of credit to the small-holder who form a majority of the rice growing community.	and Commercial banks (2) To enlarge the rice processing intervention fund by another N10 billion (3) To promote PPP arrangement through signing of the Memorandum of Understanding (MoU) with private investors	to marketers	Bank Ltd. (NACRDB) Central Bank of Nigeria (CBN) Bank of Industry (BOI) NEXIM Bank Commercial Banks	

	(8) Funds accrued by government from taxes levy on imported rice should be channelled to dedicated credit lines through NACRDB and BOI to rice farmers to finance developments in production and processing.				

Extension Services

Vision: To provide adequate extension services both to small and large scale farmers					
Current policy measures	Proposed policy measures			Relevant organization at the Nigerian side	Interventions by development partners
	Short-tem	Medium-term	Long-term		
(1) 10,000 extension agents to be employed and trained annually nationwide (2) Capacity building of the existing state extension agents (3) To strengthen extension delivery system at all levels (4) To conduct training for rice farmers and processors	(1) To promote agricultural cooperatives so that they can access agricultural extension services more easily (2) To increase budgetary allocation to agriculture extension stations and effect timely disbursement (3) To conduct training	To reduce extension agent- farmer ratio from the current 1:10,000 to 1:1,000	To develop private sector led extension service delivery system	FMAWR State ADPs Private Agricultural Input Companies NFRA	

	for agricultural extension workers (4) To formalize and strengthen the linkage between the Rice Farmers' Association of Nigeria (RIFAN) and the federal and state agricultural establishments (e.g. ADPs). RIFAN will be used as effective channel for disseminating technology to rural farmers. (5) To strengthen farmers' organisations to help them enter the rice value chain.				

Research and Technology Dissemination

Vision: To promote research and technology dissemination through enhancing the linkage among research, extension, farmers and the seed system					
Current policy measures	Proposed policy measures			Relevant organization at the Nigerian side	Interventions by development partners
	Short-tem	Medium-term	Long-term		
	(1) Develop farm machinery, especially for land preparation, harvest and post-harvest activities (2) Closed yield gaps through improved, integrated crop management (3) Enhance input use efficiency (especially water and fertilizer) (4) Develop irrigation and introduce low-cost water control measures for rain fed lowlands	(1) Build in-country rice research and extension facilities (2) Add value through improving grain quality, tailored to consumer preferences and processing	(1) Build capacity for research and extension (2) Improve rice knowledge management and information exchange (3) Continue to maintain government policies at increasing rice production (4) Provide a conducive environment for private sector players to operate in the country	National Agricultural Seed Council (NASC) National Cereal Research Institute (NCRI) National Rice Maize Centre, National Varietal Release Committee (NVR) The State Agricultural Development Programme (ADP) National	

				Centre for Agricultural Mechanization (NCAM) Agricultural Machinery Mechanics and Operators Training Centre (AMMOTRAC) African Regional Centre for Engineering Design and Manufacturing (ARCEDEM)	

Others

Vision: To create better policy environment for rice sector development					
Current policy measures	Proposed policy measures			Relevant organization at the Nigerian side	Interventions by development partners
	Short-tem	Medium-term	Long-term		
	(1) To develop rice sub-sector policy consistent with the overall agricultural development plan (2) To establish environment conducive to effective PPP arrangement.		(1) Continue to maintain government policies at increasing rice production (2) Provide a conducive environment for private sector players to operate in the country		

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