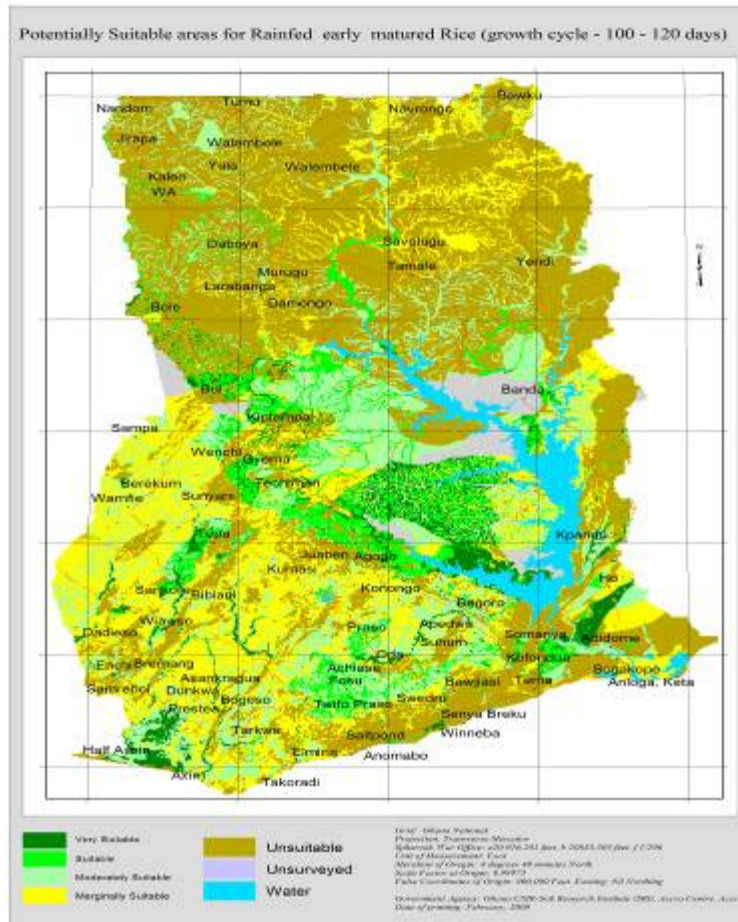


MINISTRY OF FOOD AND AGRICULTURE THE REPUBLIC OF GHANA



NATIONAL RICE DEVELOPMENT STRATEGY (NRDS) (DRAFT)

February 2009

SUMMARY

Following the IV Tokyo International Conference on Africa Development (TICAD IV) in May, 2008 an initiative, Coalition for Africa Rice Development (CARD) was launched. This strategy is an outcome of Ghana Government's subscription to the vision of the Initiative to double rice production in Africa.

The GNRDS which covers the period 2008 to 2018 is a response to forestall the effects of the global food crisis. The strategy proposes to double rice production taking into consideration the comparative production capacities of the three major ecologies (rain fed upland, rain fed lowland and irrigated). Over the last 10 years (1999-2008) rice per capita rice consumption increased from 17.5 kg to 38.0 kg. By 2018 it is estimated that it will grow to 63 kg as a result of rapid population growth and urbanization.

In developing this strategy National Experts from multi-sectoral backgrounds with inputs from donor groups operating in Ghana have variously impacted on the development of production and manpower requirements and set objectives. The major constraints especially land development and land tenure arrangements, seed, fertilizer, inadequate human resource capacity, inadequate harvesting and post harvest management technology, weak local rice marketing system and the role of Government and related agencies have been considered. A governance structure with many of the major/key actors in the rice sector have been considered and may be modified as the project unfolds.

The role of government, public sector, private sector, NGOs have been considered crucial for the attainment of the goals of the strategy. The implementation plan which will be developed subsequent to the adoption of the NRDS will indicate the details of the action plans and funding.

1. INTRODUCTION

Rice has become the second most important food staple after maize in Ghana and its consumption keeps increasing as a result of population growth, urbanization and change in consumer habits. Between 1996 and 2005, paddy production was in the range of 200,000 and 280,000 tons (130,000 to 182,000 tons of milled rice) with large annual fluctuations. The annual production fluctuations are largely due to the area (ha) put under rice cultivation, rather than yield variations (t/ha). Rice is cultivated in Ghana both as a food crop and a cash crop. The total rice consumption in 2005 amounted to about 500,000 tons (JICA, 2007), which is equivalent to per capita consumption of 22kg per annum. Ghana depends largely on imported rice to make up the deficit in rice supply. On the average, annual rice import is some 400,000 tons. The self-sufficiency ratio of rice in Ghana has declined from 38% in 1999 to 24% in 2006 (CIRAD, 2007). It is important for stakeholders in the food and agriculture sector to ensure increased and sustained domestic production of good quality rice for food security, import substitution and savings in foreign exchange.

Global rice imports have increased by 80% - from 2.5 billion tons (grain) in the early 1990s to 4.5 billion tons in 2004. During the same period, African countries increased rice imports by 140% - from 5 million tons in the early 1990s to 12 million tons in 2004. This is equivalent to about a quarter of the world import, with an import value estimated at US\$2.5 billion. West African countries show the same increasing trend of rice import, increasing from 4 million tons (US\$ 0.8 billion) in early 1990s to 8 million tons (US\$1.6 billion) in 2004-2005, accounting for two-thirds of Africa's rice import. Annual import value exceeds US\$200 million (JICA 2007). Rice imports are projected to be between 6.5 and 10.1 million tons in 2020 (Lançon and Erenstein 2002).

In recent years, rice production in Africa has been expanding at a rate of 60% per annum, with 70% of the production increase due mainly to land expansion and only 3% being attributed to an increase in productivity (ARC, 2007). Much of the expansion has been in the rainfed systems, particularly in two ecosystems, (The upland and rainfed lowland) that make up 78% of rice land in West and Central Africa. Africa cultivated about 9 million hectares of rice in 2006 and production, which is expected to increase by 7% per year, surpassed 20 million tons.

2.0 REVIEW OF THE NATIONAL RICE SECTOR

2.1 Status of Rice in National Policies

Policy strategies over the years as captured in FASDEP 1, GPRS 1 & 2, MTADP, AAGDS Ministry of Food and Agriculture policy documents have sought to promote rice production to address food security and poverty reduction. FASDEP 2, which is the current sector development policy guideline (2008 – 2010), targets reducing rice imports by 30% through increasing production levels to 370,000 tons per annum to ensure food security and import substitution. Specific measures, among others, to reach this level of production are increased mechanization, increased cultivation of inland valleys and efficient utilization of existing irrigation systems. In addition, varietal improvement and increased seed production and utilization are to be pursued vigorously. These Agricultural documents, especially FASDEP 2, are largely in conformity with AU-NEPAD-CAADP principles.

2.2 Rice Consumer Preferences, Per Capita Consumption and Demand Projections

There is a wide variation in rice consumer preference in Ghana on the basis of grain characteristics. However, most consumers prefer long grain perfumed rice of good taste, good appearance, and with whole grains, although broken grains have their place in specific local dishes. Health-conscious consumers patronize local brown rice while parboiled rice is preferred in the Northern regions of Ghana. Annual per capita rice consumption during 1999-2001 was 17.5 kg on average. This increased to 22.6 kg during 2002-2004. In the same period, per capita rice consumption increased to around 8.9% per annum, higher than the population growth of 2.5% per annum. Assuming the same trend continues, per capita rice consumption will increase to 41.1 kg in 2010 and 63.0 kg in 2015. Based on population growth rate alone the current demand of about 500,000 tons per year will increase to about 600,000 tons per year in 2015. However, taking both population growth and increase in per capita consumption together, rice demand will increase to 1,680,000 tons per year.

2.3 Typology and Number of Rice Farmers

Rice producers in Ghana are categorized by agro-ecologies namely: irrigated, rain fed lowland and rain fed upland. In general, the lowland rain fed system covers 78% of the arable area, the irrigated system covers 16% while the upland system covers 6%. On the average, 118,000 ha of land is

cropped to rice per year (Ghana Rice Inter- Professional Body (GRIB), Commodity Chain Study, JICA Study on the Promotion of Domestic Rice in Ghana).

On the basis of access to resources and scale of operation, rice farmers in Ghana can be categorized as in table 1 below:

Table 1: Typology and Percentage Proportion of Rice Farmers

Type	Main Characteristics	% Proportion
1.Ultra Poor rice Growers	1.1 Subsistence; often female headed or elderly headed households. Face labor constraints; have no resources to fall on in event of external shocks.	15%
2.Marginal Rice Smallholders	2.1 Could produce a small marketable surplus; may have some resources on which to fall (i.e. greater physical strength, better health, more land, small savings etc.). Significant proportion of adult household members may migrate during off season.	25%
3. Viable Small Scale Rice Growers	3.1 Poor but potentially viable small scale farmers. Not necessarily factor constrained. (Have land and/or labor). Often have assets that are used inefficiently because of lack of access to markets, poor infrastructure or weather related risks. Limited access to technologies. Willingness to take some risk.	40%
4.Emergent Commercial growers	4.1 Grow rice mainly as cash crop; market orientation; could own small equipment like tractors; use hybrid seed and fertilizer; few with irrigation; have household labor with some hired labor.	20%

Generally, processors and traders are quite few as compared to the numbers of rice producers.

2.4 Gender Dimensions of Rice Production, Processing and Marketing

Although men dominate rice production in all the ecologies, at specific locations in Ghana, women dominate. In the processing and marketing sectors, women are the major actors at the small to

medium scale levels. Within the marketing chain, the main categories recognized are importers wholesalers, retailers and consumers. Generally, three categories of marketers are recognized:

Wholesalers: These are rice traders operating in large shops, selling mostly in large quantities of 25 or 50 kg bags/sacks. They operate in the big cities and function as intermediaries between importers and retailers.

Retailers: Retailers procure rice from wholesalers and sell to consumers. They sell rice in bags of various sizes, as well as in bowls and tins.

Itinerant Rice Traders: These are traders who buy mainly paddy or milled rice from rice producing communities. The paddy is assembled and milled at central points for sale to local traders or retailers. On a relatively small scale, farmers mill their paddy and sell to traders or local retailers.

2.5 Comparative Advantage Of Domestic Rice Production, Processing and Trading

With a current import levy of 20% of FOB price, imported high grade rice sells at about US\$ 650 per ton and low grade rice sells at US\$ 530 per ton. Comparatively, rice farmers in Ghana sell milled rice at an equivalent of US\$ 563 per ton. Averagely, with other distribution costs, wholesale and/or retail price is about US\$ 626. Ghana is recorded to have comparative advantage in the production of paddy rice over other countries in the sub-region (Assuming-Brempong, 1998). However, this advantage reduces as rice is processed and distributed, due to associated high cost of processing and transportation systems. By increasing rice yields, introducing standard rice mills, improved parboiling equipment, storage facilities, drying patios and warehouses, it is expected that the factors that militate against the competitiveness will be addressed. Access into producing areas and marketing centers will also be improved.

Furthermore, rice cultivation plays a very important role in providing employment to about 10% of farming households. With a total rice cropping area of 118,000 hectares in 2008, an estimated average household holding of 0.4 hectares indicates an approximate total of 295,000 households' involvement in rice cultivation.

3.0 CHALLENGES AND OPPORTUNITIES FACING NATIONAL RICE SECTOR

Ghana has a relatively long history of rice production. Despite policy interventions aimed at developing the industry, the following challenges and opportunities have been identified:

3.1 Land Tenure

The land tenure system is a constraint to rice production in Ghana because of its general effects on both access and security. The system tends to limit the size of holdings and investments towards land improvement, especially in the lowland rain fed ecology. There is general gender bias in favour of men in the allocation of land. The country has a large rain fed lowland ecology that is suitable for rice production but remains largely unexploited. Inventories will be taken of all ecologies suitable for rice production. The NRDS (Ghana Government) proposes to engage traditional rulers and/or land owners and district assemblies ahead of the development of the specific ecology for long term lease or using land as equity in the investment. Once secured, a joint public-private land investment partnership arrangement will be put in place to ensure sustainability.

3.2 Socio-Cultural Issues

In communities where women are engaged in rice production as a major source of livelihood, development of the industry would improve their lot. However, gender inequalities prevent many women from accessing land and agricultural credit even though studies have shown that women are more credit worthy. While traditional rice festivals (e.g. in parts of Volta Region) tend to promote rice production, low literacy rates, especially in the northern part of Ghana, adversely affect technology adoption and utilization.

3.3 Trans Boundary/Regional Issues

The ECOWAS protocol allows free movement of goods and services across countries in the West African sub region. As a result, there is potential to improve trans-boundary rice trade, exchange of market information, research findings and seed varieties. The protocol could however have negative effects (e.g. phyto-sanitary problems) on food security, depending on its management. Regulated regional varietal release systems are anticipated to ensure easy access to promising seed varieties capable of contributing to food security and poverty reduction in the sub-region.

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

Among the different actors identified in the rice value chain, majority of them are small holder male producers and processors dominated by women. Promoting the local rice industry will enhance the output and income of the small holder farmers, processors and traders, thus promoting national economic growth.

3.5 Lessons Learnt from Previous Rice R & D

The research-extension linkage committees (RELCs) ensure that constraints of farmers and processors are reviewed and prioritized during annual planning meetings between researchers, MoFA staff and stakeholder representatives at the district level. Due to inadequate funding, many research interventions are not implemented while periodic reviews are not carried out at the district level. Some inland valley sites in the Western, Volta, Upper-East and Upper-West regions have participated in the WARDA-funded PADS (Participatory Adaptation and Diffusion of Technologies for Rice Based Systems in West Africa) and PLAR (Participatory Learning and Action Oriented Research) programmes that brought researchers, extension agents and farmers closer. These approaches speeded the technology transfer and diffusion processes and empowered rice farmers.

Under the National Agricultural Research Programme (NARP), the rain-fed lowland system was identified as a viable and sustainable option for rice production in Ghana. It is important to characterize and select suitable valleys in order to identify their developmental approaches for sustainable and cost effective rice production.

3.6 Human and Institutional Capacities

There is inadequacy of researchers, technicians and extension staff for effective research to generate technologies for dissemination to stakeholders along the value chain. This has been exacerbated by inadequate funds and equipment for research. Technology generation and dissemination under the RELCs have been ineffective and need to be strengthened in terms of staffing and logistics.

4.0 PRIORITY AREAS AND APPROACH

4.1 Rice Ecologies in Terms of National Production Potential

Rice is cultivated in Ghana under three main production systems namely: rain fed upland, rain fed lowland and irrigation. The rain fed lowland ecology is dominant, covering over 78% of total harvested area. The irrigated ecology covers 16% of total rice area while the upland area covers 6%. Whereas it is feasible to have a rice cropping intensity of 1.5 in the rain fed lowland and irrigated ecologies, an intensity of 1.0 is achievable in the uplands.

4.1.1 Rain Fed Lowland Ecology

This ecology has water management problems as a result of frequent flooding from ground water and precipitation. However, when well developed (through simple water management techniques) and mechanized, its yield potential can be substantially enhanced. Studies undertaken in 1996 and confirmed in 2000 showed that the rain fed lowland ecology is the most profitable for rice production provided water management and cultural practices are improved. Ghana's strategy conforms to CARD's own strategy which aims at targeting this ecology for rice production. Conservatively, it is estimated that Ghana has over 5 million ha of unexploited rain fed lowlands.

4.1.2 Rain Fed Upland Ecology

This ecology is characterized by an erratic rainfall pattern. There are also problems of weed competition, low soil fertility and pest damage. Rice varieties suitable for the ecology are short duration and drought tolerant types.

4.1.3 Irrigated Ecology

This ecology records the highest rice yields because the levels of technology utilization are higher than in both rain fed lowland and upland ecologies (improved land preparation, improved varieties, fertilizer application and weed control through water management). It may be Suitable for rice-fish culture.

4.2 Policies and Institutional Challenges/Opportunities

The Ministry of Food and Agriculture has developed a rice sub sector strategic plan in collaboration with stakeholders. The strategic plan has focused on seven thematic areas:

land development and management, seed production, capacity building, research and development, micro credit management, processing and marketing.

The strategic plan was derived from the Food and Agriculture Sector Development Policy (FASDEP II) Document and the joint initiative for developing the African rice sector document prepared by JICA and Alliance for Green Revolution in Africa (AGRA).

Among other things, the policy initiatives of the rice sub-sector seek to: (i) adopt value chain approach to agricultural development with emphasis on value addition and market access,

(ii) build capacity to meet challenges of quality standards on the international market, whilst focusing on increasing productivity along the value chain, (iii) scale up appropriate land and water management practices in various farming systems, (iv) build stronger partnerships between government and the private sector, (v) develop FBOs to improve small holder access to services and (vi) enhance support to commercial farming ventures.

5.0 VISION AND SCOPE OF NRDS

Per capita rice consumption in Ghana has increased from 13.9kg to 30kg per person per year over the last decade thus increasing the rice import bill. It is desired that Ghana will double local rice production by the year 2018 so as to contribute to food security and increased income in rice production. The modalities for achieving this are guided by the following goals and objectives:

Goal:

To contribute to national food security, increased income and reduced poverty towards the attainment of self sufficiency from sustainable rice production.

Objectives:

- i. To increase domestic production by 10% annually over a 10-year period through the promotion of gender sensitive and productivity-enhancing innovations of small and commercial local rice producers and entrepreneurs along the value chain.
- ii. To promote consumption of local rice through quality improvement, value addition and both domestic and regional marketing.
- iii. To promote stakeholder innovation capacity for the utilization of rice by-products while ensuring sound environmental management practices.

5.1 Rice Sector Projections

Projections for average rice production in the rice ecologies and human resource capacity are indicated in Tables 2 and 3. Over the ten-year period, an average yield increase of 1 t/ha in the rain fed upland and lowland ecologies and 2 t/ha in the irrigated ecology are envisaged (Table 2). Based on the assumption of expected growth rate in rice per capita consumption, population and urbanization, Ghana's rice requirement will be in the range of 1.4 – 1.6 million tons per annum by 2018.

Table 2: Production Targets in the Rice Ecologies

Year	Rain fed upland			Rain fed lowland			Irrigated			Total/Average		
	Area (x1000ha)	Yield (tons/ha)	Prod. (x1000 tons)	Area (x1000ha)	Yield (tons/ha)	Prod. (x1000 tons)	Area (x1000ha)	Yield (tons/ha)	Prod. (x1000 tons)	Area (x1000ha)	Yield (tons/ha)	Prod. (x1000 tons)
2008	7.1	1.5	10.6	92.0	2.5	230.1	18.9	4.0	75.5	118.0	2.7	318.6
2013	30.0	2.2	66.0	150.0	3.0	450.0	25.0	5.0	125.0	205.0	3.3	676.5
2018	45.0	2.5	112.5	300.0	3.5	1,050.0	30.0	6.0	180.0	375.0	4.0	1,500.0

Source: (MoFA/SRID, 2008)

Currently, over 50% of rice researchers and technicians are fully engaged in the rice sector and it is expected that this number would quadruple by 2018 (Table 3).

Table 3: Human Capacity Targets for the Rice Sector

Year	Agricultural Researchers with MSc, MPhil or PhD			Research Technicians			Extension Workers		
	Total	Rice Specialist (full time)	Rice Specialists (part time)	Total	Rice Specialist (full time)	Rice Specialist (part time)	Total	Rice Spec (full time)	Rice Specialist (part time)
2008	48	28	20	24	15	9	2300	70	2230
2013	55	50	5	110	100	10	4070	100	3970
2018	60	55	5	130	120	10	5630	300	5330

Source: (MoFA, 2008, CSIR, 2008)

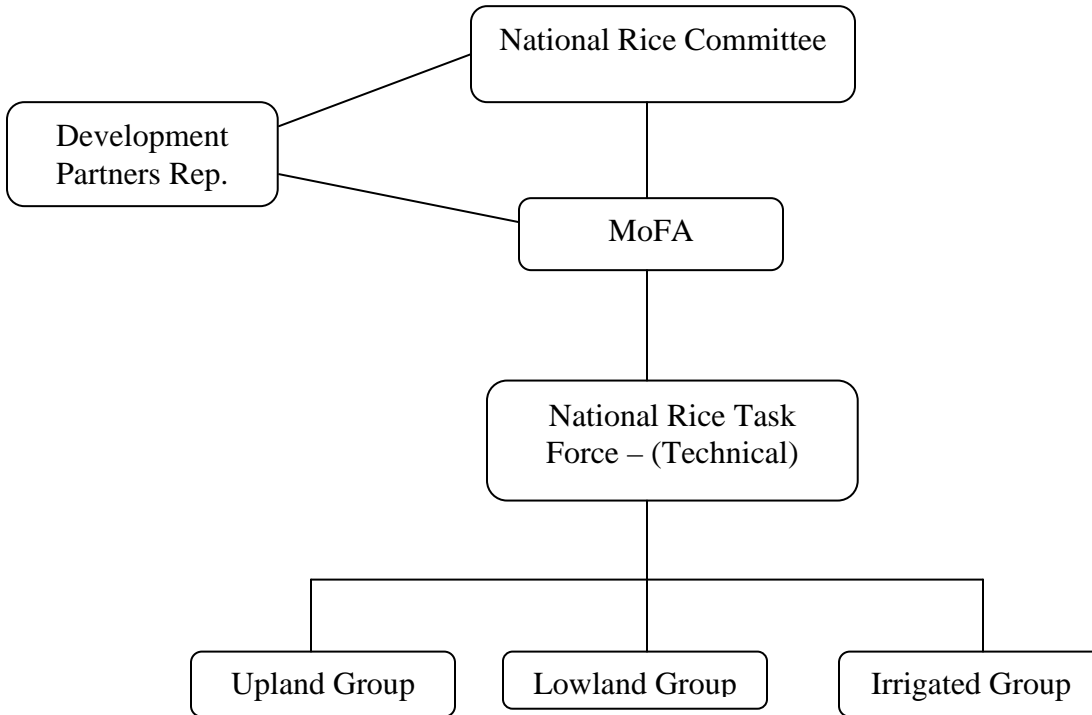
5.2 Long-Term (10 Years) Target Farm Gate/ Market Price of Rice

Currently, there is no long-term data on rice prices. However, using 2007 figures, the producer and retail prices from baseline survey data is indicated as follows:

Farmers sold an 84kg bag of paddy at \$252.0 or \$280.0 per bag of milled rice, ie. \$566 per bag of 100kg milled rice. At the wholesale level, a 100kg bag of milled locally produced rice sold at \$626.0. This is comparable to the average price of \$550 per 100kg of the imported rice. However, making a ten-year price projection remains an arduous task due to paucity of data.

5.3 Governance of NRDS

MoFA has primary responsibility of facilitating and catalyzing the operations of the National Rice Committee. MoFA will actively involve research institutions and universities, among other state actors. Representation of non-state actors, in particular farmer-based organizations, private sector, NGOs and development partners on the committee will be assured. Further to this MoFA will oversee the setting up and functioning of the National Rice Task Force which will see to the technical implementation of the strategy.



5.4 Financial and Human Resource Commitment of the Government

In accordance with the Maputo declaration of the national 10% annual budgetary allocation to Agriculture development, it is expected that government will provide counterpart support to contributions from development partners.

5.5 National Stakeholders and Linkages to Trans-Boundary / Regional Initiatives

The Ministry of Food and Agriculture (MoFA) currently collaborates with the Universities, Council for Scientific and Industrial Research (CSIR), NGOs, private sector operators (farmers, processors, traders) and GRIB. Linkages will be strengthened with other national programmes in the sub region as well as WARDA-IRRI, CIRAD, WAAPP, ARI, CORAF/WECARD, WASA, ASN and FARA for implementation of the strategy. Some of the key regional activities target collaboration on market information, germplasm exchange, seed systems management and policy review and implementation. The implementation of the strategy will seek to harmonize both on-going and pipeline programs/projects to ensure attainment of National goals, objectives and outputs in the rice sector. MoFA will continue to serve as the lead facilitator in the harmonization process.

5.6 Key Interventions of the Strategy

The strategy will focus on the following innovations and technologies: development of water control structures, integrated soil fertility management and rice varietal improvement and post harvest handling and value addition. With respect to post harvest technology, institutions such as GRATIS, ITTU will collaborate with CSIR in the fabrication of equipment, branding and packaging of rice.

Government policy will focus on the following areas: Improving research and extension delivery in the context of a new paradigm of innovation systems, promoting micro-finance for agricultural production, capacity building for rice stakeholders, improving inter- and intra-regional communication and collaboration, developing rice information system through ICT, improving seed supply, promoting public-private partnership, addressing gender mainstreaming, promoting human health and ensuring sound environment management.

6.0 STRATEGIES FOR THE VARIOUS SUB-SECTORS

6.1 Seed System

In the short to medium term, public institutions will continue to be the major facilitators and catalysts for breeder and foundation seed production and overseeing the production of certified seed by the private sector and farmer seed growers. In the medium to long term, however, these responsibilities will be ceded to the private sector and farmer seed growers. The government, in partnership with actors, will continue to provide responsive regulatory regime for the seed sector. The rice seed system should be developed within the remits of the overall input needs of the rice sector.

For genetic resource development and maintenance, germplasm collection will be continued while molecular tools will be used to characterize and evaluate germplasm for the relevant ecologies. Human and institutional capacity will be developed and strengthened to meet these requirements. To adhere to varietal release, quality control and certification mechanisms, the national seed law will be amended to reflect challenges and opportunities within the seed system.

Some of the key requirements for improvement of the seed system include rehabilitation of existing and provision of new infrastructure such as cold storage facilities and warehouses and development of human capacity for breeding and seed certification.

Table 4: Projections for Seed Requirement

Year	Rain fed upland			Rain fed lowland			Irrigated			Total	
	Area (x1000ha)	Seed rate(kg/ha)	Total qty (tons)	Area (x1000ha)	Seed (kg/ha)	Total qty (tons)	Area (x1000ha)	Seed rate	Total qty (tons)	Area (x1000ha)	Total (tons)
2008	7.08	60	424.8	92.04	50	4,602	18.88	35	633.8	126.29	5,660.6
2013	30.0	60	1,800	50.0	50	7,500	25.0	35	875.0	173.13	10, 175
2018	45.0	60	2,700	300.0	50	15,000	30.0	35	1,050.0	375.0	18, 750

It is projected that by 2013, approximately 10,000 tons of quality seed will be required to cultivate 173,130 ha across the ecological zones. Similarly, about 19,000 tons will be required for 375,000 ha by 2018.

6.2 Fertilizer Marketing and Distribution Strategy

The African Union Fertilizer Summit in 2005 called on the African Development Bank to establish fertilizer facility to enhance African member states' access and affordability of fertilizers. It further encouraged member states to purchase fertilizer in bulk and, where possible, establish a fertilizer production facility.

In Ghana fertilizer requirement is largely met by imports however there is also local blending of fertilizer types by the private sector using imported active ingredients. About 45% of fertilizer requirement comes from this initiative and there are plans to increase this capacity. However, the distribution of fertilizers, access and affordability by small holders remains a fundamental policy challenge.

Table 5: Projections for Fertilizer Requirement

Year	Land area (Ha) (x1000)	Nutrient Requirement (kg/ha)			Total requirement (kg)		
		N	P	K	N	P	K
2008	118	90	45	35	10,620	5,310	4,130
2013	205	90	45	35	18,450	9,225	7,175
2018	375	90	45	35	33,750	16,875	13,125

The NRDS proposes to involve the private sector in the blending of appropriate straight fertilizers based on the ecology, the soil type and variety to be adopted by farmers. Where applicable, organic sources of fertilizer will be part of the specific rice ecology.

6.2.1 Logistic Requirement for Fertilizer Use, Distribution and Marketing Strategy

There is need to improve haulage and storage facilities nationwide. Furthermore, repackaging of fertilizer into appropriate smaller packages will ensure easy access and affordability by smallholder farmers. Establishing quality control and testing facilities for fertilizer quality assurance is essential.

6.3 Post- Harvest and Marketing Strategy

In order to promote and sustain profitable rice production, it is essential to minimize postharvest losses and also improve the quality of rice for the market. The use of appropriate harvesting and threshing facilities (small–medium scale harvesters and threshers) will be encouraged. Paddy will be processed into acceptable national minimum standards by providing standard rice mills (equipped with pre-cleaners, destoner, hullers, polishers, paddy separators, aspirators, and graders). Existing one-pass mills will be improved by adding attachments while processing centers will be equipped with storage facilities for paddy/milled rice. Drying patios and improved parboiling equipment will be needed to improve on the quality of parboiled rice. Brown rice and parboiled rice production will be promoted to enhance the nutritional status of rural and urban consumers.

To enhance preference consumption of locally produced rice, the following marketing strategies will be adopted: branding and promotion, packaging, retailing in supermarkets and organisation of food bazaars. There will also be the need to establish warehouses for milled rice at central locations of major producing and consumption areas, sustain rice marketing credit lines, build capacity of marketers and processors and improve access into producing areas and marketing centers.

6.3.1 Logistics Requirement for Post- Harvest and Marketing Strategies

To enhance the competitiveness of locally produced rice it is important to improve the generally low-quality drying, storage and milling facilities by introducing standard rice mills, improved parboiling equipment, storage facilities, drying patios and warehouses.

Furthermore, access into producing areas and marketing centers will be also improved.

6.4 Irrigation and Water Control Investment Strategy

To expand rice production under irrigation, existing schemes will be rehabilitated while new gravity-controlled schemes will be developed. In the rain fed lowlands, communities will be mobilized to participate in the development of simple and low cost water control structures (dykes, bunding, catchment areas protection, drainage) for improved rice production. Farmers will be trained in the operation and maintenance of schemes. Water measuring devices for improved water usage under irrigation will be provided.

6.4.1 Logistic Requirements for Irrigation and Water Control Investment Strategies

It is intended to develop the skills of technicians to mobilize farmers to participate in the development of water control structures and to attract communities' willingness to maintain these structures.

6.5 Equipment Access and Maintenance Strategy

To ensure easy and timely access to improved agricultural equipment, the government in the short term will facilitate the supply of power tillers and accessories, water pumps, tractors and accessories, transplanters and seed drills. In the long term however, the government will encourage the private sector to play a greater role including public-private partnership ventures. Government and the private sector will empower communities in accessing and use of equipment for maintenance of irrigation systems (cleaning and desilting of canals and drains, e.t.c).

6.5.1 Logistic Requirements for Equipment Access and Maintenance Strategy

To implement the above strategy there will be the need to build the capacity of communities, farmers and entrepreneurs to access, operate and maintain the following rice production and processing equipment: power tillers and accessories, water pumps, tractors and accessories, transplanters and seed drills, rice reapers, rice threshers and dryers.

6.6 Research and Technology Dissemination Strategy

Lessons from previous research efforts have revealed the need for technology development and dissemination along the rice value chain. To sustain high level of rice production improved varieties will be developed and disseminated to farmers. At the farm level, the capacity of farmers will be enhanced to ensure adaptation of Good Agricultural Practices (GAPs) for rice cultivation. Furthermore, adaptation and fabrication of equipment for small and medium scale operators along the value chain will be pursued. Training manuals, videos, fact sheets and posters on the rice value chain will be developed and disseminated. There will also be training on improved processing technologies and value addition while information dissemination through ICT will be promoted. As a long term strategy, more extension staff from MoFA and NGOs with knowledge on rice and rice based cropping system will be progressively engaged to achieve an improved farmer- extension ratio whilst promoting farmer – to – farmer extension.

Due to the high cost and limited accessibility to fertilizers by small holders, rice yield levels are not maintained due to declining soil fertility levels. It is important to maintain and improve the fertility status of rice soils. There is need to conduct studies into land suitability, land use and delineation for rice-based cropping. It is important to conduct soil tests to establish fertility status for appropriate soil amendments. In addition, incidence of nematodes and other soil-borne diseases will be monitored while studies on soil and water management will be conducted.

6.6.1 Logistic Requirement for Research and Technology Dissemination Strategy

To effectively implement this strategy, laboratory equipment and funds are to be provided while human resource capacity is improved.

6.7 Communities Mobilization, Farmer Based Organizations and Credit Management Strategy

Given the nature of the rice industry it is important that the key actors (small holder producers, processors, traders) are mobilized and animated into cohesive and well functioning groups. It is important to empower these groups through training, linkage to credit sources and easy access to inputs and equipment. Effective management of credit by these groups is very important and therefore training in this area will be pursued. Current and past options for credit implemented over the years have to be reviewed and suitable options identified for adoption.

6.7.1 Requirements for Farmer Based Organization and Credit Management Strategy

It is important to identify sources of credit for farmers and parboilers (through especially micro finance institutions), traders and processors while training support will be provided for these stakeholders by government and NGOs.

7.0 CONCLUSION

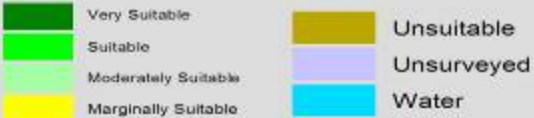
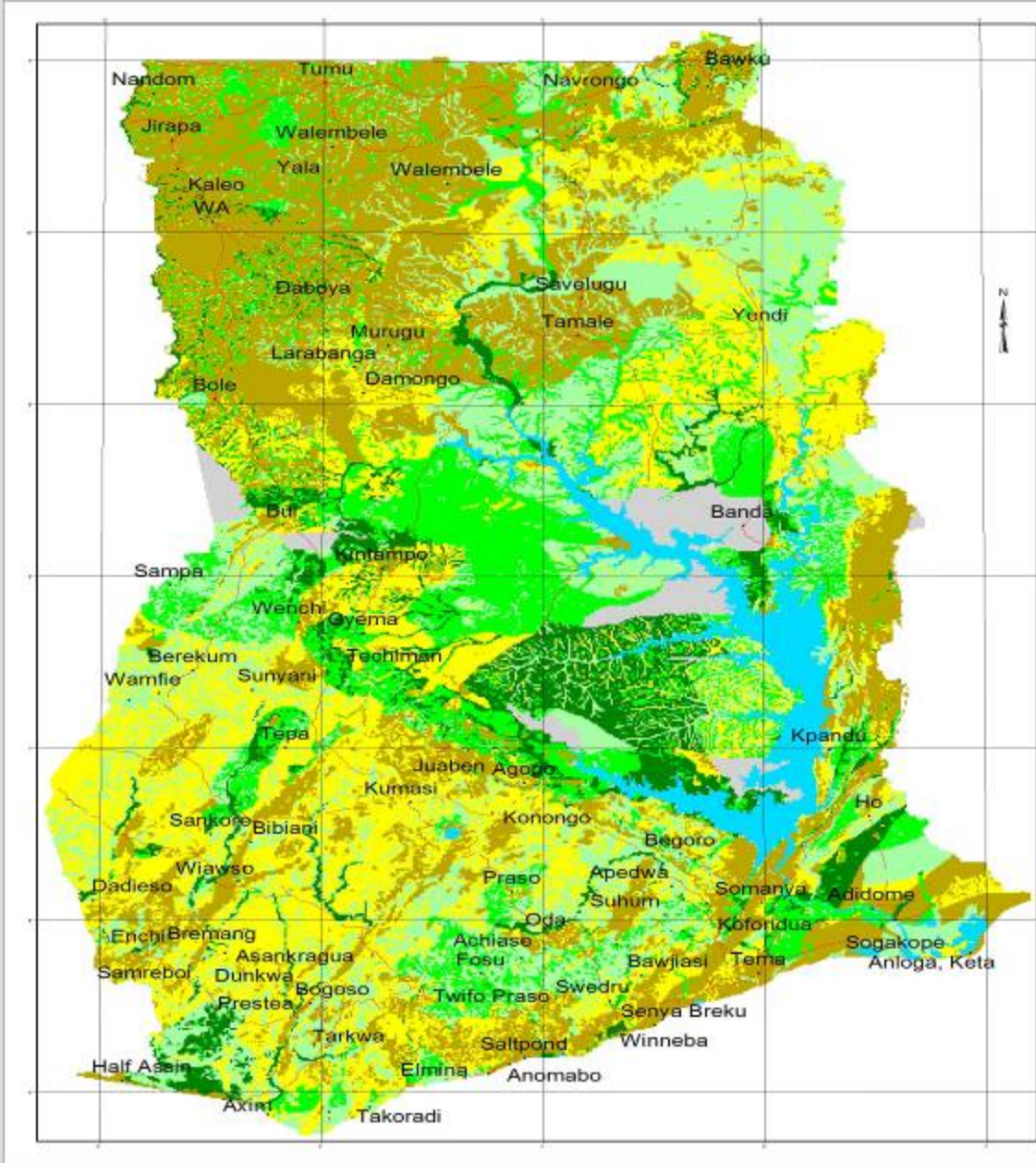
The strategy recognizes the importance of developing and sustaining rice production along the value chain. This requires a multi-sectoral approach and contributions from government and non government sources. Conservatively the set targets and milestones when vigorously pursued and monitored would be achieved.

Growth in rice demand in Ghana is increasing at such a rate that both intensification and area expansion must be vigorously pursued to fill the demand gap. It is therefore necessary to address the challenges in this sector to ensure the effective implementation of the various strategies and policies.

These strategies and policies need the utmost attention to ensure the country's self sufficiency in rice production and also to help overcome the global food crisis that is expected to require medium to long term interventions to address.

Rice Production Capability Map

Potentially Suitable areas for Rainfed early matured Rice (growth cycle < 100 days)



Grid: Ghana National
 Projection: Transverse Mercator
 Spheroid: War Office - 20,920,201 feet, 5 20833,303 feet, f 1:296
 Unit of Measurement: Feet
 Meridian of Origin: 4 degrees 40 minutes North
 Scale Factor at Origin: 0.99975
 False Coordinates of Origin: 900,000 Feet Easting; Nil Northing

Government Agency: Ghana CSIR-Soil Research Institute (SRI), Accra Centre, Accra.
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Annex 1

NRDS Stakeholders and Responsibilities

Stakeholders/Institutions	Description	Responsibility
1. Government	MoFA, MES, MOTI, DFR, MOLG, MOFEP, ML&F etc.	Coordination, policy direction, financing and technology testing and dissemination, M&E
2. NGO's	Identifiable local and international (e.g GRIB, Amasachina, CRS, TechnoServe)	Extension, group formation and development, micro-financing, marketing, M&E
3. Public Institutions	CSIR /Universities	technology development, testing and dissemination, M&E
4. Financial Institutions	Banks, Micro-finance Institutions	Credit support (disbursement and recovery), M&E
5. Development Partners	Multilaterals/Bilaterals	Technical assistance, funding, capacity building, M&E
6. Private Sector	Investors, service providers, etc	Value chain development, investment/financing, consultant services and
7. International Institutions	Research Sub-Regional Organisations & Networks/Agencies	Technical back stopping, research information dissemination and technology sharing
8. On-going Rice Development Programmes	MoFA projects, Research projects, etc	Coherence and linkages for harmonization

Annex II

PRESENTATION OF NRDS TO DONOR PARTNERS IN AGRICULTURAL SECTOR – 23RD APRIL, 2009 COMMENTS AND SUGGESTIONS

Summary of Comments

Main points of discussion were issues such as

- (i) access to land, seed, fertilizer
- (ii) competitiveness and
- (iii) involvement of the private sector

Donor Partners recommended that the NRDS should include issues such as lessons learnt from economics of rice production, access to finance and a well structured governance system.

Specific Comments from Members of the Development Partners (DPs)

1. As a whole, as many donor partners pointed out, role and responsibility of the stakeholders such as private sector, government and donor partners are not clearly defined.
2. NRDS specified a research and technology dissemination strategy, the document does not mention much about the improvement of extension structure such as agricultural extension agents (AEAs)
3. Donor Partners wanted to ascertain the relationship between the Rice Sub-Sector Strategic Plan and the NRDS
4. Paragraph 5.3 (The role of each organization in the Governance structure is not clear. In addition, Institutions to be represented on the National Rice Committee should also be mentioned.
5. As for the Financial and Human Resource Commitment of the Government (5.4) especially the sentence “It is expected that government will provide the following: office space, human resource, salaries and tax exemptions”. This sounds like a Project document.

6. Issues relating to harmonization between the different Projects that are being implemented in the rice sector. Maybe, this should be stated and added in or around “5.5 National Stakeholders and Linkages to Tran-boundary/Regional Initiatives.

Annex III

Presentation of the NRDS for discussion at Workshop on Agriculture Sector

(30th April-4th May 2009)

Summary of Comments

The Workshop examined the sections on

- (i) Challenges and Opportunities
- (ii) Priority Areas and Approach
- (iii) Strategy Interventions outlined in the NRDS

The program on rice developed by a sub-group was greatly enriched by the proposals in the NRDS.

However, the only points of departure between the sector plans rice program and the NRDS was

- (i) the time frame
- (ii) the target set

Suggested the need to get the two documents harmonized along the process