Draft-for NDRS – Versão resultado do Seminário-Benin **09/02/09**

REPUBLIC OF MOZAMBIQUE
MINISTRY OF AGRICULTURE

National Rice Development Strategy
Mozambique

1. Introdution

Rice has been grown in Mozambique for more than 500 years. Nearly 90% of the rice produced in Mozambique comes from small landholders, who farm less than 0.5ha of land and grow rice as subsistence crop. Most of the rice is grown as a rain-fed crop, once per year – the rain-fed lowlands accounts for 90% of the total rice area with yields of 0.8-1.2 t/ha and are located in the Sofala, Zambézia, Nampula and Cabo Delgado Provinces. The major constraints to production are poor in-crop management, especially land preparation, non availability of good seed, weed control, high post-production losses during harvesting and processing, and a lack of rural labor. The return to farmers is further depleted because many of these small farmers live in isolated areas and have limited access and knowledge of rice markets.

The consumption of rice in Mozambique is rising and much of this demand is now coming from the urban markets who want good quality, medium length varieties. The total rice market is estimated to be 550,000 tons with 350,000 tons being imported from Asia.

Food Consumption and Nutrition, according to a study done in 2003/04 which estimates the of total consumption of rice at 440,000 mt in 2003/04 (equivalent to about 23kg/person/year or 234 calories per day) rice contributes about 10.5% of total calorie consumption, and is the third highest source of calories in the Mozambican diet after cassava (719 calories/person/day) and maize (534 calories/person/day). The rice consumption trend is expected to increase in the next ten years as indicated on table below.
The expected prodocution, based on the effort of the Action Plan alredy in place, are indicated on the table below from 2008 – 2018. To meet this challenges it mean effort out of common situation:

Table: 1 Indicative Projection of Rice Production and Consumption 2008 to 2018

	2008	2013	2018
Area (ha)	231 301	352 769	389 485
Yield (ton/ha)	1.15	2.90	3.50
Production (Paddy) (ton)	265 098	1 023 030	1 363 199

Milled Rice (ton)	159 059	613 818	817 919
Consumption (ton)	552 475	625 075	707 215
Deficit/Surplus (ton)	-393 416	-11 257	110 705

1. These projections reflect the official data on PAPA approaved by the Cabinet,
2. This appoach antecipates closing the gap (conumption vs production) in 7 years,
3. There is need to show the coherence between area increase with the necessary effort in terms of resources to achieve this goal,
4. These calculations imply an area increase of 191% in 10 years of which: 13% (2008/2007); 2%/years (2009/2008) onwards,
5. The calculations show projection on yileds of 364% in 10 years and more then double production in 3 years (the CRDS's goal),
6. The calculations show production increase of 668% over 10 years

Options to overcome some of the production constraints already exist but an integrated management approach which includes mechanization of critical operations and opening up new rice growing areas will be required to significantly increase production. Any significant increase in rice production can only come from increasing the yield in the existing rice production systems, as well as expanding the rice area.

It is to underline the implementation units by *Cluster* (Figure 2)must be puted in place and allocation of the necessary resource are essential tools for the support to the Provincial Directorates of Agriculture in the implementation of the Strategy. It is expected that in each province there should be a Coordinating Group for each *Cluster, to be chaired by the* Provincial Director of Agriculture, composed by representatives of following sectors

2. National rice sector

Policy and Strategy. Food security is a priority for the Government of Mozambique that was adopted in 2006 in the Session of the Council of Ministers including Provincial Governors, District Administrators and other directors and staff. The aim of the meeting was to put in place strategic measures regarding the production of food, generation of employment and approval in 2007 of the **Strategy for the Green Revolution**. The Strategy was seen as a measure to stimulate and increase agricultural productivity and most importantly basic food crops. Most recently (21/04/08) the Government, in an Extraordinary Session of the Council of Ministers, debated thoroughly the problem surrounding the global food situation focusing on Mozambique. The Government also identified important measures that could be put in place to stimulate the production of food and in particular cereals. A Government Strategy was adopted in what regards the World Food Situation and an Interministerial Commission was created for elaboration of Plan of Action for Food Crops Production 2008-2011 its implementation and monitoring. According the Action Plan rice is the second top priority crop after Maize.

In the new policy framework rice has been identified as a priority crop by various documents and strategic plan. The Action Plan for the Reduction of Absolute Poverty (PARPA) identified six priority crops for research: maize, cassava, beans, rice, cashew

nuts, and cotton (GOM 2001). PROAGRI, a program of institutional reforms for the Ministry of Agriculture, indicated among the expected results of agricultural intensification at the end of the five-year period an average annual increase of around 6,800 tons of rice through irrigation systems (GOM 2001). In the Conference of Quelimane in 2003 the Government renewed the policy focus on the sector and set the pre-conditions to launch a national development strategy for the sector. The country also conducted a study in 2005 specific for rice where the main objectives were**:**

i. To assess the rice production systems in Mozambique
ii. To review current government policies and institutions related to the rice sector
iii. To evaluate the potential competitiveness of Mozambique's rice sector and,
iv. To prepare a strategy for the development of the rice sector

Poverty. Most of rice production takes place in the Central Mozambique (62%) followed by North (31%) and the South (7%). There is correlation between high potential areas for rice production and where poverty has its highest incidence (the centre). The Centre and the North are also the most populous parts of the country. Therefore, a strategy for development of the rice sector will have an important impact on poverty reduction.

Production. Rice farmers cultivate 0.5 ha of rice on average. Currently, the country is exploiting less than 20 percent of the area suitable for rice production. Approximately 630,000 families (about 3,150,000 people) are engaged in rice production.

Production of paddy increased from about 113,000 tons to about 199,000 tons between 1994/95 and 1997/98. Since then production has stagnated, with annual fluctuations between 151,000 tons and 201,000 tons depending on climatic conditions. Growth of production has been largely due to expansion of the area under cultivation, which resulted from the re-settlement of rural populations after the peace agreement in 1992. In the last ten years, yields have remained low and stagnant at around 1 ton per hectare (Table 2).

Table 2. Rice production in Mozambique

Year	Área (ha)	Prodution (ton.)	Yield (ton./ha)
1994/95	130.000	113.000	0,87
1995/96	175.000	139.000	0,79
1996/97	198.000	183.000	0,92
1997/98	182.000	199.000	1,09
1998/99	190.000	201.000	1.05
1999/00	169.000	151.000	0,89
2000/01	178.000	167.000	0,94
2001/02	174.000	168.000	0,97
2002/03	179.000	200.000	1.37
2003/04	183.000	187.000	1.13
2004/05	182,000	187,000	1.03
2005/06	194.252	182.573	0.94
2006/07	204.031	195.967	0.96

Source MINAG. Aviso Prévio

Ecosystems. Main ecosystems include rain fed lowland, upland and irrigated. The lowland ecosystem represents about 90% of the total cultivated area in the central provinces of Sofala and Zambézia. The upland rice is mostly grown in the northern provinces of Nampula, and Cabo Delgado and accounts for 7% of the total. The irrigated rice represents only 3% and has been declining due to the irregular supply of water and salinization of soils. The main irrigation scheme is located in Chókwè, Gaza Province, where rice is produced by commercial farmers with the use of modern inputs and yields achieve 3 to 5 ton/ha. (MADER-DE 1997). The production of irrigated rice in Mozambique has been limited by unreliable water supply-particularly from the Limpopo River, the source of water for the country's largest irrigation scheme at Chókwè, Gaza Province.

The Plan of Action for the Food Crops Production consists of an accelerated implementation of the Green Revolution Strategy at every stage of the value chain. The areas of concentration include actions to be undertaken by state and the private sector (small producers in the family sector and the commercial sector).The strategy includes the levels of production to be attained, a strategy of intervention, and identification of the priority districts for intervention, the key actions to be taken along the value chain (research, seed, production, commercialization, agro-processing and consumption).

Preference. Consumers in Mozambique have a preference for local rice. Given an option to choose between domestic and imported rice within the same price range, most people prefer local rice because of its perceived characteristics of freshness, fragrance, and taste. Therefore, expected demand for rice in Mozambique indicates that consumers will increase their consumption of rice as a result of increase in income and urbanization, the convenience of rice meal preparation relatively to other food items such as cassava and maize, and the greater versatility of food meals that rice can provide. Some Preferences indicators in Mozambique include:

i. Medium to long grain
ii. Translucent
iii. Intermediate amylase
iv. Non sticky
v. Aroma (is an advantage)

Import. Rice imports have been growing rapidly over the past decade. Even though there are not consistent figures available on imports, FAO databases (FAOSTAT) indicate imports of rice increasing from a level of 71,830 mt in 1990 to a level of 159,350 mt in 2003. There are, however reasons to believe that these data underestimate the actual situation. Indicative imports figures show 343,157 mt of rice in 2004/05. Given a unit price of imported rice in Mozambique (FAOSTAT 2005) of $190/ton, the rice import bill is about $ 70 million. With the actual Food Crises and the high price the situation about price import are doubled.

Gender. The illiteracy rate for women in rural areas is more than 80% - double that for women living in urban areas - compared to 50% for rural men. Targeting resources towards female-headed households will, therefore, be important to increase the income and well-being of a large number of women and children living under especially vulnerable conditions.

Women historically have had less access to education, health, resources and decision making opportunities, resulting in gender gaps and inequities in rural livelihoods. These are aggravated by traditional practices and beliefs that relegate women to a subordinate position in society. Limitation of access to resources, such as land, information and extension services, literacy, education and finance, has left women in poverty. Although they are the main farm workers, their access to cash is restricted, and their voice often not heard. Men are in a better position to get cash income, through access to markets, trading or wage labor.

Usually women produce for household food security; men are more involved in cash crops; even food crops move to the male domain if they become surplus and a source of income. Female enterprises include chicken rearing, traditional vegetables, and food processing.

As in many other crops, women play a significant role in rice production and commercialization. Thus, the NRDS will address the issues of gender to ensure the equality and to give the same chance to women.

Environmental issues

Environmental issues will be considered in NRDS strategy in order to succeed in a sustainable manner. Issues such as reduction of slash and burn practices will have to be addressed along with the development of sustainable NRM practices for different ecosystems (integrated soil management practices) through the adoption of improved best practices.

Challenges and opportunities facing national rice development

Many of the constraints and problems experienced in Mozambique are similar to those already addressed in other parts of the world such as:

- Variability in rainfall during the growing season
- Lack of high-yielding varieties that have good grain quality and resistance to pests and diseases
- Poor land preparation which is often done using hand labor
- Poor plant establishment and high seeding rates
- Inefficient water management in un-level and fields without levies
- Limited availability of inputs such as fertilizer and labor
- Poor weed management
- Time delays at harvest and poor post-harvest processing reducing quality and yield
- Farmers' limited understanding and access to markets
- High transport cost.

Main challenges to be overcome in the domestically produced rice are related to major constraints which can be summarized as follows:

Post harvest. Post-harvest operations of interest that affect the quality of milled rice include threshing and drying practices. The main competitiveness constraints in the Mozambican milling sector regarding recovery rates revolve around the high percentage of broken grains resulting from outdated and poorly maintained machinery. As an example, husking units use rubber rollers to separate the husk from the rice grain. Poorly tensioned rollers and different sized grains (different varieties mixed together) mean variable pressure is exerted on the grain during husking, resulting in inefficient husking and a high percentage of broken grains. The lack of stone sieving units at the pre-husking stage means that stones are mixed with the paddy, increasing the percentage of broken grains, increasing the wear and tear on rubber rollers necessitating more frequent replacement, and increasing the level of foreign matter contamination in the final milled rice.

Marketing. In the area of marketing the role of collectors and traders appears relatively modest in rice trade; it appears unlikely that more than 4-5,000 tons were handled by these operators in the last five years. Traders are not specialized in a single crop. The bulk of these operators are informal. Typically these are small scale operators that trade small volumes and can also have a role in processing as well as retailing. The role of other intermediary (NGO, public sector) is overall modest. However, some NGO, such as ORAM, CARE and World Vision, have become active in promoting rice production and marketing.

The marketing chain for imported rice is highly integrated and concentrated. Three importers handle over 80 percent of rice import in Mozambique, which was estimated to total about 330,000 tons in 2004. Most of these operators have warehouse facilities and fairly developed distribution networks.

The figures on rice sales by type of operator can be estimated only roughly and indicative. Medium wholesalers and retailers buy directly from importers, have storage facilities and re-sell to retailers (shops, market retailers) and to final consumers. Small shop retailers often act as small wholesaler to informal retailers who buy small volumes and re-sell in less accessible village markets. The last link of the marketing chain of imported rice is constituted by a multitude of small operators who buy 25-50kg sacks and re-sell in village markets.

Many of the small retailers sell both domestic and imported rice. Volumes per operator are small, but the distribution network of small retailers is pervasive and reaches out to small rural villages. Finally, organized distribution is a small but growing segment of the overall retailing system of Mozambique.

Regarding standards, as Mozambique does not export rice, current grades and standards for export markets do not affect domestic production. It is worth however, noting though that most of the exporters of other goods take grades and standards as market requirements, as opposed to, for instance useful tools for product differentiation. There are standards both for regional as well as for global markets. Across countries, standards are in the process of harmonization in accordance with regional trade agreements to facilitate trade.

Recognized to be internally weak, the grades and standards system in Mozambique is yet to become an important tool for both domestic production and consumption. Most of the rice consumed in Mozambique is imported, and its quality, as reflected in the average unit price of imports ($190/tons in 2004) is also relatively low.

Labor Inefficiency. Given the high labor input requirements, the typical household has difficulty in cultivating more than 1 hectare. Low productivity of labor and availability.

Appropriate Technology. improved seed, fertilizers and mechanization, are key constraints to the adoption of improved technologies to increase productivity.

Improved Water Management. With less than 3% of total rice cultivated area that is irrigated, Mozambique rice production system is heavily dependent on rainfall. This limits the opportunity of increasing crop intensity, controlling weeds, and supporting higher plant growth. The problem of limited irrigated area is aggravated by the numerous inefficiencies in water use, as reflected in largely unutilized irrigation systems already in place, lack of proper drainage resulting in soil salinity, and low capacity in managing and maintenance of existing systems.

Climatic risk. Climatic risk is directly related to the dependence of the rice system on rainfall. Erratic rainfall may cause droughts, floods, and delays in the production cycle. Risks of droughts and floods are more common in the South than in the central and northern regions of the country.

Opportunities

Mozambique has a large potential and favourable political environmental conditions for rice development. For instance, the new policy framework has identified rice as one of the priority crop after maize.

The country has around 900,000 ha suitable soils for rice production in which only 200.000 are being cultivated. . This number of families (630.000) involved in rice production could easily increase if inputs and irrigation infrastructures were put in place.

An increase in domestic production could also gradually reduce the burden of rice import and save the so much needed foreign currency (USD $ 70 million per year) currently spent with rice imports. This money could be used for other purposes such social and economic activities.

Transboundary issues

In Mozambique, policy, trade liberalization and economic reforms have accelerated after the end of the civil war in 1992 resulting in rapid economic growth. Mozambique is a member of WTO since 1996 and various international and regional agreements including the Southern African Development Community (SADC). The country has been making a determined effort at creating an environment that is conducive to private investment, both domestic and foreign. The reforms have significantly liberalized Mozambique's trade regime that is essentially based on tariffs. The simple average applied Most Favored Nation (MFN) tariff is 13.8%, among the lowest import duties in Southern Africa. The average applied MFN tariff for the agricultural sector (including hunting, forestry, and fishing) is 16.8%.

Like other WTO Members, Mozambique has bound customs duties on all agricultural products; the tariffs are bound at a ceiling rate of 100%. For rice, the tariff rate is 7.5% and it is 2% for paddy.

3. Priority areas and approaches

Priority areas for intervention in the strategy include:

i) Increase in production and productivity

- Provision of inputs to producers: (Clusters Centre and North: Vouchers/Revolving Fund; South: Concessional Credit)
- Research;
- Seed Production;
- Technology Transfer: technology packages adapted for each Cluster and production system;
- Irrigation: improvement of infrastructures and water management

ii) Competitiveness

- Stablish quality standards;
- Improvement of post harvest technologies;
- Development of agro processing;
- Promotion of national brands (Ex: “Arroz de Nante”, “Arroz de Mopeia”)

The rice intensification program will be adhered by farmers if it is competitive and profitable. In order to comply with actual input and rice prices situation in the market, conditions are in place to produce rice in a competitive manner.

The table below shows the main economic indicators of rice competitiveness.

Critical yield: 2,3 ton/ha

Item	**Cost/ha (MZM)**
Field operations	7.900,00
Inputs	6.100,00
Indirect costs	1.500,00
Total Costs	**15.500,00**
Yield/ha	3.000 kg
Cost per kg	5,10
Farm gate Price	7,00
Gross income/ha	21.000,00
Net income /ton	5.500,00

iii) Capacity Building and Coordination

- Capacity building for Human Resources;
- Monitoring of production system, market and rice policy;
- Coordination at *Cluster level*: Mechanism for integration between several partners in the rice value chain;
- Infrastrutures (transport and commercialization);

- Establish Implementation Unit of Plans in each Cluster and;
- Coordination at Central level.

4. Vision and scope

The development of the rice sector in Mozambique needs to be based on a determined effort to develop the rice sector in order to reverse the increasing dependence on rice imports and derive the opportunities from its rich natural resources and strategic location in the Southern Africa region and balance commercial agricultural sector as well as to develop the rice sector which is consistent with the country overall strategy for poverty reduction through a competitive and commercialized rice system based on increasingly productive farmers, milling industry and the marketing system for agricultural inputs and outputs. Therefore the vision for the sector is:

"*A competitive sector on productive smallholder farming system integrated with the commercial sector and capable of increasingly meeting the domestic demand and generating exportable surplus of quality rice to supply the Southern African Region*"

Goal

To reduce poverty and improve the livelihoods and food security of poor rice producers and consumers in Mozambique

Strategic Objective

Contribute to food security, income and profitability of rice farmers and increase of rice production that is market oriented in sustainable, competitive and rapid manner in the most relevant production ecosystems.

5. Strategy for sub-sectors

- Increase production and productivity
- Northern and Central Clusters: Provision of inputs to producers through the implementation of Vouchers/Revolving Fund;
- Southern Cluser: Concessional Credit
- Research;
- Seed Production;
- Technology Transfer: technology packages adapted for each Cluster and production system;
- Irrigation: improvement of infrastructures and water management

The Strategy will be implemented through the action plan already approved by the Government which also includes direct support to farmers in areas of provision of inputs and training, capacity building for farmer associations, post harvest and, introduction of agricultural equipment so as to allow the increase of cultivated area and yield per unit area and total production as indicated on tables 3and 4.

Table 3. Area for promotion (ha)

	2008-2009	*2009-2010*	*2010-2011*
Intensification	22.000	115.000	210.000
Rain-fed	209.301	121.630	122.422
Total	**231.301**	**236.630**	**332422**

As indicated on table above, from 2008 to 2010, the area under promotion will increase as effort of rehabilitation and operationalization of irrigation schemes. Spill over effects are also anticipated as a result of technology dissemination and experiences gained in the implementation of the Plan.

Data on the table above indicate the importance of irrigation which calls our attention for the need for permanent maintenance and correct management of irrigation systems. Therefore, investment in irrigation must be seen as crucial if increased and sustainable rice production is to be achieved.

Table 4 of expected production (ton)

	2008-2009	*2009-2010*	*2010-2011*
Intensification	53.000	355.000	687.000
Rain-fed	212.098	221.730	244.844
Total	**265.098**	**576.730**	**931.844**

6.2. Technology. The difficulty of accessing markets and credit to purchase inputs (improved seed, fertilizers and mechanization) are key constraints to the adoption of improved technologies to increase productivity. The actions to be undertaken include the expansion of extension services coverage and promotion of use of fertilizers (40% by year 2015) and expansion of use of improved seed to 80% by year 2015. The number of water pumps needed for supplementary irrigation is shown on table 5.

Table 5. Number of water pumps needed for the promotion plan by province (1000 Mt)

	Quantity			*Cost*			
	2008	*2009*	*2010*	*2008*	*2009*	*2010*	*Total*
Maputo	12	25	25	546	1,053	1,053	2,652
Gaza	4	6	10	78	117	195	390
Sofala	11	15	15	429	585	585	1,599
Zambézia	-	-	-	-	-	-	-
Nampula	10	20	20	390	780	780	1,950
C. Delgado	-	-	-	-	-	-	-
Inhambane	5	5	5	195	195	195	585

	Quantity			*Cost*			
	2008	*2009*	*2010*	*2008*	*2009*	*2010*	*Total*
Total	**42**	**71**	**75**	**1,638**	**2,730**	**2,808**	**7,176**

With this promotion program it is expected that beneficiary farmers can rapidly attain yields of 2.5 to 3 ton/ha in rain-fed areas and up to 5-6 ton/ha in irrigated ecosystem. The program is expected to provide a package of 3,000 Mt for the rain-fed ecosystem mainly to purchase inputs. For farmers in irrigated areas credit will be 7,000 Mt for inputs and land preparation. The credit distribution will be based on a voucher system.

The strategy aims at increasing national production of rice from around 200.000 ton, actual production up to **931.844 ton in** the first three years (2008 to 2011) with an estimate cost of **50 million** American dollars in year one, **88 million** dollars for year two and **219 million dollars** for year three.

6.4. Water management. With less than 3% of total rice cultivated area that is irrigated, Mozambique rice production system is heavily dependent on rainfall. This limits the opportunity of increasing crop intensity, controlling weeds, and supporting higher plant growth. The problem of limited irrigated area is aggravated by the numerous inefficiencies in water use, as reflected in largely unutilized irrigation systems already in place, lack of proper drainage resulting in soil salinity, and low capacity in managing and maintenance of existing systems.

The use of milling by-products is limited. Many of the small scale mills do not separate husk and bran. In most milling systems around the world, the bran is used for animal feeding and a well developed milling sector is highly integrated with livestock sector, particularly small livestock. Husk can be used as fuel, for the same milling facility or for other type of operations. In the case of Mozambique, these inter-sectoral linkages are still underdeveloped, and the management of by-products is poor. An improvement of milling technology and upgrade of by-product management may have significant spillover effects on the local economy.

6.5. Post harvest. Post-harvest operations of interest that affect the quality of milled rice include threshing and drying practices. The main competitiveness constraints in the Mozambican milling sector regarding recovery rates revolve around the high percentage of broken grains resulting from outdated and poorly maintained machinery.
Therefore, the government strategy will be to stimulate private investment under the current law on investment for rehabilitation of existing milling factories. As Mozambique does not export rice, current grades and standards for export markets do not affect domestic production. It is worth noting though that most of the exporters of other goods take grades and standards as market requirements, as opposed to, for instance useful tools for product differentiation. There are standards both for regional as well as for global markets. Across countries, standards are in the process of harmonization in accordance with regional trade agreements to facilitate trade.

6.6. Research. The main research activity conducted at the National Institute of Agricultural Research (IIAM) is the collection and preservation of genetic material and

the import and selection of genetic material from abroad. Research is aimed at selecting varieties appropriate for the Mozambican agro ecosystems and testing these varieties with field experimentation.

IIAM research program is currently under-budgeted. In terms of annual budget for rice research it is less than 0.4% of total value of rice production, an amount considered grossly inadequate. As a result, there is very small group of (less than 10) researchers and technicians devoted to rice adaptive and field-based research. The overall budget for agricultural research, equal to about $1.8 million is about 0.3% of total value of production. A commonly referred benchmark for developing countries is a budget around 1 and 2% of the total value of agricultural production; in the case of Mozambique this would translate into an agricultural research budget between $6 and $12 million per year. In the case of rice research, similar calculations would translate in a yearly budget between $300,000 and $600,000.

Mozambique has a Memorandum of Collaboration with the International Rice Research Institute (IRRI) and some contacts with WARDA. It is expected that these initiatives can lead to more comprehensive programs in the future.

6.7. Extension. The National Agricultural Extension System is the system in which all extension providers interact, with MINAG's DNEA and other public extension agencies, NGOs, Private Sector Extension, Producer Organizations and farmer communities themselves.

Extension approach is expected to be based on the agricultural knowledge and information system (AKIS) at both provincial and district level based on interactive learning with a role of the extension officer as facilitator of interactive learning a both horizontal level as well as in the value chain with all relevant actors. The extension officer will be downward accountable to the producer.

The extension service under MINAG had in 2006, 579 extension workers. The qualifications vary from a first degree (4%), diploma (59%), certificate (32%) to others (5%).

6.8. Seed Production. This component comprises the genetic purification and increase in production of seed of improved varieties with participation of IIAM and IRRI under auspices of the Memorandum signed in 2006 between MINAG and IRRI. Estimated amounts of pre basic and basic seed and locations are indicated below.

Year	**Local**	**Area (ha)**	**Quantity (kg)**
Ano 1:	Chókwe	5	10.000
	Quelimane	5	10.000
Ano 2:	Chókwe	250	500.000 (basic)
	Quelimane	250	500.000
Ano3:	Chókwe	500	1.500.000 (certified)

	Quelimane	500	1.500.000
Varieties	Chókwe	ITA 312 e Limpopo/IR64	
	Quelimane	ITA 312, Chupa and C4-63	

6.9. Training for Associations

In view of materialization of promotion activities in a sustainable manner six training modules were prepared targeting farmers and leaders as indicated on table 9.

Table 9. Training modules and their costing (1,000 Mt)

Ecosystem	*Modules*	*Content*	*Cost*
Irrigated	Mod 1-I : General Management — 4 persons	Association Management	21
		Irrigation Management	
		Commercialization	
	Mod 2-I : Irrigation Management — 20 persons	Irrigation Management	72
		Irrigated Rice	
	Mod 3-I : Production Management -10 persons	Association Management	40
		Irrigated Rice	
		Commercialization	
		Storage and Conservation	
Rain-fed	Mod 1-R : General Management — 4 persons	Association Management	21
		Commercialization	
		Storage and Conservation	
	Mod 2-R : water and Soil Management— 20 persons	Water Management	72
		Irrigation	
	Mod 3-R : Production Management -10 persons	Association Management	40
		Rain-fed Rice	
		Commercialization	

Note: These are expected to be 5 days training programs

Table 10 shows the training intensity for the first three years of the program covering about 600 sessions in the seven selected provinces.

Table 10. Training modules and their costing 1,000 Mt)

Province	*Number of Modules*			*Cost*			
	2008	*2009*	*2010*	*2008*	*2009*	*2010*	*Total*
Maputo	12	27	52	529	1,190	2,338	4,057
Gaza	21	33	45	925	1,595	2,265	4,785
Sofala	18	42	81	793	1,921	3,806	6,521
Zambézia	24	36	57	1,454	2,247	3,305	7,007
Nampula	12	20	30	529	937	1,450	2,916

Cabo delgado	6	17	29	264	805	1,500	2,569
Inhambane	6	12	18	264	529	793	1,586
Total	**99**	**187**	**312**	**4,759**	**9,224**	**15,457**	**29,440**

6.10. Equipment for civil engineearing

Current Action Plan envisages the creation of sets/brigades of equipments starting from 2009 in each province to assist in the rehabilitation and construction of infrastructures such as protection dikes, bridges and roads. The number and cost for each brigade is shown on the table 11.

Table 11. Composition of one construction brigade

	Quantity	*USD*	*1000 Mt*
Tracks	3	300,000	7,800
Bulldozer D6	2	120,000	3,120
Diguing equipment	1	100,000	2,600
Tractors	2	50,000	1,300
Pick up	2	60,000	1,560
Warehouse	1	100,000	2,600
Total		**730,000**	**18,980**

6.11. Impact of the Action Plan

The impact of the program will come from increased rice production which is expected to be **265.098** tons, whose value is estimated at 50 million USD for 2008/09 and **576.730 ton in 2009/10, 931.844 ton in 2010/11, whose value are estimated in 88 million** and **219 million dollars respectively.**

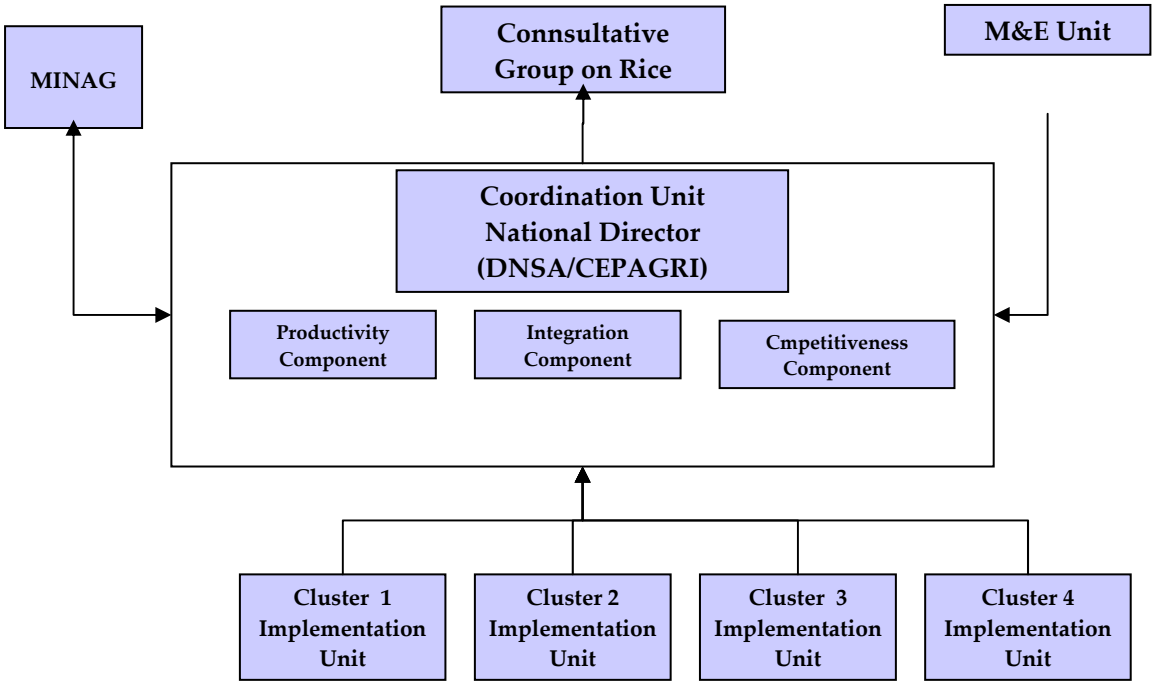
If this can be materialized in the first three years, the objectives of the strategy would be attained leaving for the subsequent periods the effort for consolidation of methodologies and capacities and ensure further expansion perhaps at less intensive burden.

On the other hand this action plan would permit reduction of imports by 25% at the end of three years corresponding to 25 million USD.

6.12. Implementation Mechanism

Figure 1 summarizes the coordination mechanism for the implementation of the Rice Development Strategy.

Figure 1. Institutional Framework



The implementation units by *Cluster* (Figure 2) are essential tools for the support to the Provincial Directorates of Agriculture in the implementation of the Strategy.

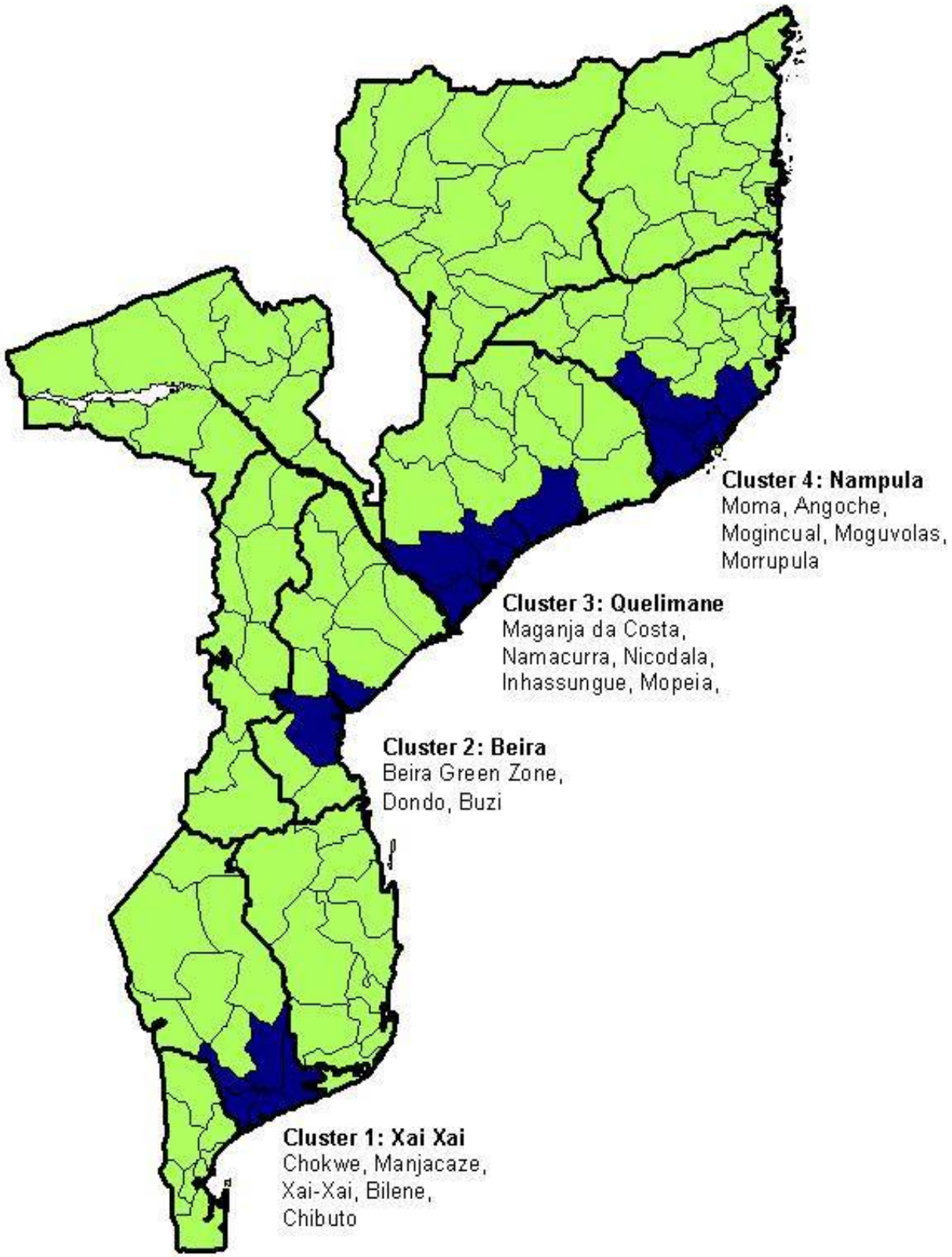
It is expected that in each province there should be a Coordinating Group for each *Cluster, to be chaired by the* Provincial Director of Agriculture, composed by representatives of following sectors:

a. Public Sector (DPA, DPIC, DPOPH, DPF, SDAE´s);
b. Banks
c. Rice Produceres
d. Private Sector (inputs, agro-industry, service providers in areas of mechanization, traders)
e. ONG's

Main duties for the Implementation Units include:

i. Support farmers in the districts in designing business plans;
ii. Conceptualize and establish *Voucher schemes for credit*
iii. Support public extension in planning and implementation of technical assistance to farmers;
iv. Program and execute capacity building activities for farmer associations;
v. Support and monitor the activities of the Rice Coordination Group in the *Cluster*.

Figure 2. Implementation units



Conclusion

To ensure the development of rice strategy, the coordination mechanisms need to be put in place and strengthened. The general objective of import substitution is often called for to motivate these interventions. At the same time, there are various efforts to promote private sector, attract foreign investors, distribute seeds, and improve water control and irrigation system. All efforts should be conducted in the same direction based on a thorough review of the rice sector from a national perspective rather than the interests of few stakeholders in a specific province.