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MINISTRY OF AGRICULTURE, LIVESTOCK AND FISHERIES

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PLANNING AND FORECASTING OFFICE

***NATIONAL RICE DEVELOPMENT
STRATEGY FOR BENIN***

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ACRONYMS AND ABBREVIATIONS

ANASEB	: Benin National Association of Seed Producers
BRS	: Regional Bank of Solidarity
CAADP	: Comprehensive Africa Agriculture Development Programme
CAP	: common agricultural policy
CBF	: Lowland Unit (of the DGR)
CCRB	: Benin Rice Farmers' Consultative Council
CeRPA	: Regional Centre for Agricultural Promotion
CLCAM	: Local Mutual Agricultural Credit Fund
CREP	: Rural Savings and Lending Bank
DAGRI	: Agriculture Directorate
DGR	: Rural Engineering Directorate
DPP	: Planning and Forecasting Directorate
DPQC	: Directorate for Promotion and Quality Control of Agricultural Produce
ECOWAP	: Agricultural Policy of the Economic Community of West African States
FAO	: Food and Agriculture Organisation of the United Nations
GDP	: gross domestic product
IITA	: International Institute of Tropical Agriculture
INRAB	: Benin National Institute of Agricultural Research
INSAE	: National Institute of Statistics and Economic Analysis
ISFM	: integrated soil fertility management
MAEP	: Ministry of Agriculture, Livestock and Fisheries
NEPAD	: New Partnership for African Development
NERICA	: New Rice for Africa
NGO	: non-governmental organisation
NRDS	: National Rice Development Strategy
OBAR	: Benin Office of Rural Planning
OSD	: Strategic Directions for Development
PACER	: Rural Economic Growth Support Programme
PADER	: Rural Development Support Programme
PAMRAD	: Atacora and Donga Rural Community Support Project
PDC	: Communal Development Plan
PDRN	: NERICA Rice Dissemination Project
PFR	: Rural Land Plan
ProCGRN	: Natural Resource Management and Conservation Programme
PSAIA	: Food Security through Intensive Agriculture Project
PSRSA	: Strategic Plan to Revitalise the Agriculture Sector
PUASA	: Food Security Emergency Support Programme
ROPPA	: Network of Farmers' and Agricultural Producers' Organisations of West Africa
SADEVO	: Ouémé Valley Irrigated Agriculture Development Company
SCRP	: Growth Strategy for Poverty Reduction
SONIAH	: National Irrigation and Water Improvement Company
TFP	: technical and financial partners
UEMOA	: West African Economic and Monetary Union (WAEMU)

SUMMARY

The Government of Benin has chosen to pursue economic growth through diversification of the country's agricultural sectors. This option has been written into both the Strategic Development Directions (OSD, 2006–2011) and into the Growth Strategy for Poverty Reduction (SCRIP, 2009–2011) that highlight the pivotal role of the agriculture sector in the fight against poverty. The Strategic Plan to Revitalise the Agriculture Sector (PSRSA, 2009–2015), which makes the promotion of product chains a major axis for intervention, incorporates the development of 13 promising sectors, including that of rice because of its socio-economic and dietary importance.

Benin has great potential to promote expansion of rice farming thanks to its supply of irrigable land (322 000 ha, of which only 10% are used in practice), its surface water and underground water resources, and the availability of research-proven technologies. Furthermore, there is an active culture of producer organisation, developing public-private sector partnership, clear political will, and the involvement of technical and financial partners in activities to promote the sector.

However, there are major constraints limiting development of the rice sector, including biotic and abiotic stresses, the isolation of the production zones, the absence of tailored credit, a lack of equipment and suitable implements, and a lack of particular quality inputs.

Benin's National Rice Development Strategy (NRDS) has taken account of these constraints and opportunities in its vision: ***“By 2018 Benin will produce an average of at least 385 000 tonnes of milled rice each year to meet the population's needs with the eventual aim of commercial disposal of any surplus”***. The overall objective of the NRDS is to **increase rice production from the 2007 figure of 72 960 tonnes equivalent in paddy rice to 385 000 tonnes annually of milled rice by 2015 at the latest**. More specifically, it proposes: (i) adopting rice varieties better suited to local conditions, (ii) enabling access to good quality inputs, (iii) supporting producers in the development of rice-growing areas, (iv) creating the necessary downstream post-harvest conditions that will give improved quality local rice a bigger market share.

Eight strategic areas of intervention have been agreed: (i) available and affordable quality rice seed; (ii) available and affordable specific fertilizers, pesticides and herbicides; (iii) Storage, conservation, processing and marketing efforts with rice; (iv) a working water control system for rice production; (v) access to both farming equipment and its maintenance; (vi) access to technical innovations and professional know-how; (vii) access to tailored agricultural credit and finance; and (viii) access to land. A project governance framework involving all State and non-State stakeholders will be used to implement these strategic directions.

I – INTRODUCTION

About 48% of Benin's active population works in the agricultural sector, which contributes more than 36% of the Gross Domestic Product (GDP). It supplies more than 80% of the country's official exports income, with 40% coming from growing cotton. But, this crop has suffered from poor performance in recent years, partly because of the lower world price for cotton and partly because of falling production. This has contributed to a drastic decrease in economic growth from 6.6% in 2002 to 3% in 2005 with resulting negative consequences for public finances and compromising efforts to fight poverty (INSAE 2005).

Highly diversified production self-sufficiency in sorghum, maize, rice, etc., which covers more than 85% of national food needs, is threatened by the vagaries of the weather with resulting impacts on food insecurity.

Rice is a familiar product worldwide. It is the second most-cultivated cereal (149 000 000 ha) and comes after wheat and maize as the world's third most (380 000 000 tonnes) consumed and exported cereal. However, in Africa rice comes after millet/sorghum and maize. Continuously rising internal demand means that African countries must resort to imports. In 2006 imports of rice by countries in sub-Saharan Africa were around 9 000 000 tonnes at a cost of USD 2 billion. This level of imports at current prices would cost more than USD 5 billion. (INSAE National Accounts Compilation 2006–2007).

Population food habits in Benin have changed so that rice, which was once considered a special treat on feast days is now eaten daily in both rural and urban areas. As a result, rice consumption per head has risen from 25 to 30 kg/year, or in total from 175 000 to 210 000 tonnes per year (DPP/MAEP 2009).

Despite tripling national production over the last 10 years thanks to Government efforts through the Food Security Emergency Support Programme and through research and development, no more than 47% at most of consumption needs are covered. This means that rice imports are needed to cover the shortfall in national food needs with a resulting outflow of foreign currency exchange.

For the sake of safeguarding foreign exchange reserves, to progressively reduce the economy's vulnerability to external shocks and to ensure food security, the Government has chosen to diversify agriculture by writing the rice sector into the priorities of its Strategic Plan to Revitalise the Agriculture Sector (PSRSA).

II – STATE OF THE NATIONAL RICE SECTOR

2.1. Rice's position in national policies

Policies to promote rice farming in Benin have undergone a number of revisions since independence. It is therefore thanks to the technical and financial support of the Food and Agriculture Organisation of the United Nations that the Benin Government has developed since 1997 a National Plan to Revitalise Rice Production.

The Strategic Development Directions (2006–2011) and the SCRP (2009–2011) are standards of reference for the PSRSA which dovetail perfectly into the development initiatives to which Benin has acceded in global and regional plans, in particular the Common Agricultural Policy of the West African Economic and Monetary Union (CAP/UEMOA) and the Comprehensive Africa Agricultural Development Programme of the New Partnership for African Development (CAADP/NEPAD).

The National Plan to Revitalise Rice Production (PSRSA) has retained promotion of rice growing among a number of priority sectors for development. With this in mind, the Government has taken several initiatives towards reducing poverty that place particular emphasis on the need to promote diversification of production.

2.2. Consumer preferences and demand forecasts

Rice slipped easily into public eating habits and is slowly changing these. It won its place in households and in institutional food kitchens because it is quick and easy to cook in a number of different ways. Rice consumption in Benin is quite diversified, including boiled rice with a meat sauce or fried fish, meat and rice with or without vegetables (*jolof / riz au gras*), boiled rice with cowpeas (*atassi*) and fried fish, *ablo* rice/maize doughballs, small rice souffles and as a flour (Ouando) for babies. According to a 2003 study, more than 43% of the population eats only imported rice while 37% makes do with local rice. This preference for imported rice is explained by price, constant availability, grain whiteness and the absence of impurities. Out of the two types of local rice – parboiled and non-parboiled – 64% of those questioned in a recent survey strongly favoured parboiled rice. There were several reasons for this preference, primarily taste (31% of respondents), market availability and a relatively low price (around 13%). Parboiled rice is mostly eaten in the northern regions. The comparatively low price makes it accessible for rural consumers. The dynamics of this are all the more important because they place a value on the producer's efforts on the one hand while generating employment and helping to retain the population in rural areas on the other.

The total annual consumption is changing fast, going from 69 206 tonnes in 2003 to 110 812 tonnes in 2010 and likely to reach about 178 000 tonnes in 2018.

Additionally, rice is a strategic product because of its increasing importance not just in the national diet but also in trade with some neighbouring countries (Niger, Nigeria, Togo).

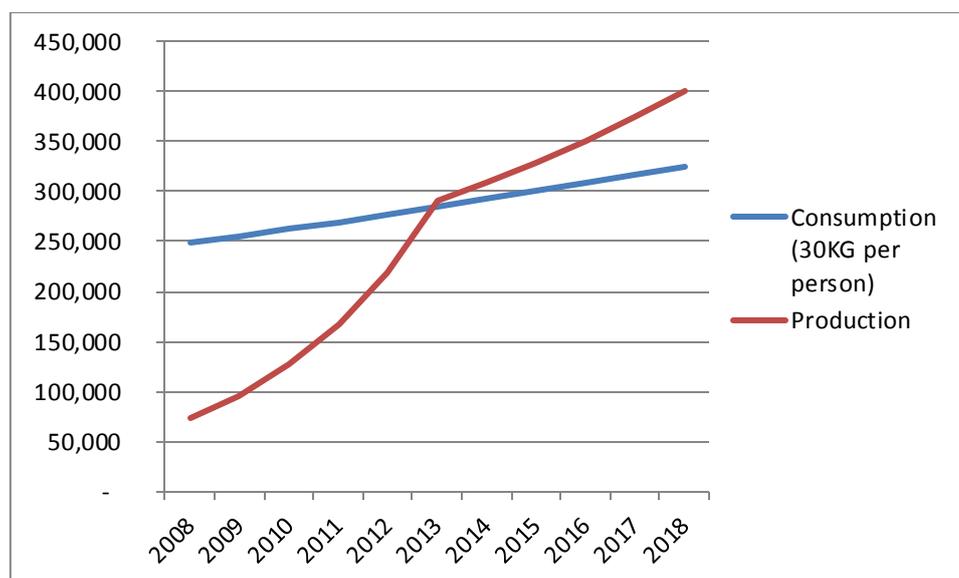


Figure 1: Trends in Benin's production and requirements to 2018

2.3. Stakeholders in the rice sector

The various stakeholders identified at sector level are:

- Farmers (male and female);
- Farmer organisations and their apex organisations;
- Processors (m & f);
- Merchants and business operators;
- Chambers of agriculture;
- Public and private sector advisors;
- Civil society.

Rice production is dominated by small family-size farms alongside which are the irrigation schemes using either full or partial irrigation. Most rice-producing farms are concentrated in the lowland valleys, whether improved or not. Rice is also increasingly cultivated in the upland and in flooding valley bottoms, particularly since the advent of the NERICA varieties. However, it must be noted that the level of organisation of the various stakeholders is still weak.

Breakdown of farmers by cropping system

According to the study report on strengthening the availability and access to statistics on rice (DPP/MAEP, 2009), some 72,400 rice growers are distributed among the ecologies as follows: 8.64% practise irrigation; 13.97% practise a rainfed system with partial irrigation; 22.87% use a strictly rainfed system; and 0.49% use rainfed aquifers, but the majority (53.92%) are in the flooding lowland (inland valley) system.

Farmer organisations

These are made up of regional Unions with a Rice Growers' Consultative Council. Six regional unions are part of the Consultative Council.

The processors

This sub-sector is making marked progress with the establishment of cottage-type processing units – six semi-industrial (8 tonnes/day) and two industrial (150 tonnes/day) units. These processors carry out dehusking or parboiling either in groups or as individuals. The semi-industrial enterprises cover various tasks from dehusking to bagging grain.

The merchants

Most rice merchants in Benin are women who undertake the collection and dispatch of local rice from the sites of production to the places of consumption, and also the delivery of imported rice to its final destinations. However, it has to be underlined that statistics for the other stakeholders in the sector are unavailable, and that there are several type of merchants classified as collecting agents, wholesalers and retailers.

The agricultural councils

The Chambers of Agriculture must become the meeting places for collaboration between the various agricultural stakeholders and oversee the organisation of quality services for the rural and agricultural classes, whether funded through specific parafiscal taxes or by assigned funds from the public purse.

Civil society

This plays a major role in Benin through bringing its capacity and experience to professional agricultural organisations and rural communities from the grass roots up. Civil society organisations oversee the consistent implementation of farming policy and strategy. While the international NGOs have the required capacity for this, the national NGOs remain weak through a lack of technical capacity and financial backers.

2.4. Gender dimension in production, processing and marketing activities

Men and women are both involved in rice farming, whether irrigated or rainfed, and a very significant labour force is required. Benin's rice-growing population totals 72 400, of which 57 196 (79%) are men and 15 204 (21%) are women. This split reflects the still low number of female farmers despite a cropping system for rice growing that requires strong involvement by women, who dominate rice production in the lowland.

Women play a major role at the production level in soil preparation, transplanting, sowing, weeding, harvesting, transport and threshing, contributing 70% of all family labour for rice. Women also

dominate simple processing and marketing of rice. They undertake the marketing of milled rice in the rural and urban markets whereas the male heads of families usually carry out the sale of paddy rice.

2.5. Comparative advantage of rice production

Rice is grown under different cultivation systems:

- as monoculture in the large irrigation schemes where annual double-cropping is a common practice (Malanville, Koussin-Lélé)
- in multi-annual cropping such as oil palm, banana and some subsistence crops such as cassava, maize and vegetables where rice is sometimes intercropped, grown in rotation or as a catch crop (South and Centre)
- at the foot of yam hills or after other crops such as cowpea; rice is very often followed in the inland valleys (Atacora and Collines) by market-garden crops such as pepper, okra, tomato or green vegetables

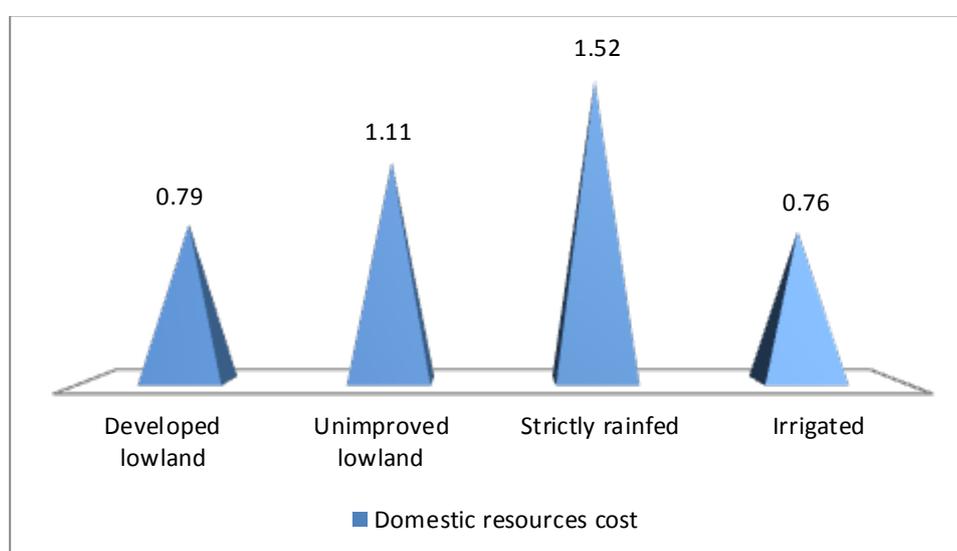


Figure 2: Comparative system analysis in terms of Domestic Resource Cost (CRI)

The ratio between the domestic resource cost of an improved lowland system and that of simple irrigated rice growing is less than 1.0, that is to say these systems produce an added value of one dollar by using local resources with a value of less than a dollar. In other words, these systems have a comparative advantage over importing rice; allowing foreign exchange savings to be made or simply boosting collective wealth.

On the other hand, the internal resource cost of strict rainfed systems and of non-improved lowland are greater than 1.0, so it follows that the cost in domestic resources (in Fcfa) needed for production in these two systems is greater than the added social value. In these systems one dollar of added value requires the use of resources costing more than US\$ 1 so there is a loss to collective wealth and these systems do not allow exchange savings. They have no comparative advantage in rice production for competing against rice imported into Benin.

The irrigated and developed lowland systems, unlike the rainfed and non-improved lowland systems, show a positive profit for the community on account of market imbalance and/or economic policies. Furthermore, an analysis of average production costs by region shows that the systems in the Central (52 Fcfa/kg) and the South (85 Fcfa/kg) are most favourable because they offer production costs well below the national average production cost of close to 104 Fcfa/kg for rice paddy.

Other comparative advantages are:

- strong Government commitment to promoting the rice sector;
- potential demand in internal and external markets ; technical progress (especially availability of husbandry guidelines);
- potential for rice production in lowlands that are already developed or being developed, as well as in the watersheds of Benin's hydrologic system which has a surface reserve of 13.106 billion cubic metres of water and 1.870 billion cubic metres of underground water that could be used for rice growing;
- current importance of the rice sector in the fight against food insecurity;
- possibility of getting short- to medium-term results (3–5 years); AfricaRice research results in Benin, and affordable improved technologies and extension support;
- development of professional bodies: Regional Ricegrowers' Unions and their apex body (CCR-B)
- involvement of communities at the grass roots level through the devolved local governance they have been given under decentralisation legislation (the Commune Development Plan).

III –CHALLENGES AND OPPORTUNITIES FOR THE RICE SECTOR

3.1. Benin's rice potential

Benin has up to 205 000 ha of lowlands to which can be added more than 110 000 ha of land that could be irrigated (Table 1). Scarcely 10% of this potential is currently exploited for rice.

Table 1. Regional breakdown of Benin's lowland rice potential

Department	Estimated useable land (ha)
Atacora – Donga	56 000
Borgou - Alibori	33 000
Zou – Collines	65 000
Mono – Couffo	17 000
Ouémé – Plateau	19 000
Atlantique	15 000
Total	205 000

Source: *FAO/NEPAD (2005)*

Bringing these resources into play would contribute to improving the lives of households, increase the smallholders' incomes and increase GDP.

3.2. Land tenure

Land management in Benin is notable for having modern laws to govern land running alongside a system based on traditional customs. This is not a situation designed for resolving serious problems (soil fertility management, adopting new recommended technologies) for agricultural producers and is a serious obstacle to promoting investment in agriculture.

The trend towards non-farming owners hoarding vast areas of agricultural land is a major issue. Likewise, expanding unrestricted urbanisation is leading to the progressive disappearance of agricultural land and pastures in favour of dwellings.

The State has taken corrective steps and succeeded in the adoption of the 2007-03 legislation of October 16 2007 introducing a rural land tenure system in the Benin Republic. The first regulations under this law, which created the Rural Land Tenure Plan (PFR) as the main tool for securitisation of land in the rural areas, have been adopted and others are being prepared.

3.3. Social issues

The development of rice growing has stimulated the interest of both producers and consumers, resulting in annual consumption going from 2.9 kg per head in 1965 to 15 kg/head in 1994 and today to 25–30 kg per head. The forward progress in rice growing and processing creates employment and in turn reduces the rural exodus.

Moreover, the women cultivating rice in Benin say their sources of income have diversified and incomes improved sufficiently to enable them to pay for schooling their children.

Rice has no particular status in the behaviours and customs of Benin. While it was only eaten in the 1960s and 1970s during feasts or other events, rice has today entered the eating habits of all social and occupational sectors. It is eaten every day throughout the country, making it a major staple food and stimulating huge imports because the most has not yet been made of all the available resources for its production.

3.4. Regional and cross-border issues

Rice's growing importance in national consumption and in trade with neighbouring countries (Niger, Nigeria and Togo) has turned it into a strategic product.

The Benin authorities have been aware of the need to promote rice growing since the 1960s. It often appeared in social and economic development plans stating categorically that Benin “could produce rice at home not only to meet its own consumption needs but also some of the needs of its neighbours, particularly Nigeria”. The limiting factors to this have for a long time been the availability and effective use of high-performance varieties as well as difficulties with post-harvest activities (threshing, husking, etc.)

Membership of ECOWAS and the recent presence of AfricaRice in the country for several years offers Benin new opportunities to increase its rice production and improve its competitiveness with a view to satisfying internal requirements and possibly exporting any surpluses.

3.5. Lessons learned from earlier rice research and development

National research has developed technology packages (high-performance varieties, fertiliser, farm machinery) to take rice yield from 1.5 tonnes/hectare to 8 t/ha, but rice production has nevertheless not been able to cover the needs of the population. This is partly due to the fact that producers have not always followed technical guidelines well.

Non-application and non-adoption of technology packages can be explained by the lack of synergy between research and extension on the one hand and insufficient technical trainers on the other. What is more, two technical and economic reference documents have been developed and circulated to accompany sector development. The impact of these documents on improving the know-how of the stakeholders in the sector is now being evaluated.

Those remaining actions to be taken are related, on the one hand, to strengthening the scientific capacity of researchers, the technical capacity of extension agents and producers, and on the other to

strengthening institutional capacity and the means to increase Benin's rice production and make it competitive.

3.6. Institutional and human capacity

A number of stakeholders, such as the State, professional farming organisations, decentralised cooperatives, chambers of agriculture, the private sector and technical and financial partners, are engaged in the agriculture sector.

Through the Ministry of Agriculture, Livestock and Fisheries (MAEP), the State concentrates on its official functions relative to its role in coordination, regulation, facilitation, oversight and control, and to the supply of related public goods and services. It is responsible for formulating policy and strategies in the agriculture sector, and works with the different actors in the sector to ensure the delivery follow-up to Government agricultural policy. At regional level the Regional Centres for Promoting Agriculture (CeRPA) are designed as crossover points for grass-roots-level development activities.

The Benin National Institute for Agricultural Research (INRAB), the national university faculties, the centres and schools of agricultural training, the NGOs allied with research, as well as the locally-based international research centres (IITA, Bioversity and AfricaRice) are the bodies with the greater human and institutional capacities in terms of promoting rice farming.

The burgeoning professional agricultural organisations in the various sub-sectors, the NGO/platforms, the finance institutions and decentralised credit networks are asserting themselves more and more as stakeholders that cannot be ignored in the joint management of the agriculture sector.

Either through individual operators or different professional associations, the private sector is playing an important role in the agriculture support sub-sector (inputs supply, providing agriculture equipment, marketing; exports, service provision, etc.).

Public-Private partnership seems like a new concept in the agricultural arena although it is indispensable to developing the agriculture sector. In terms of farming sector revival, public-private partnership is concretised in the 'value-added chain' approach with its focus on promoting priority sectors and certain related cross-cutting activities.

At the decentralised community level, the prerogatives granted by the legislation on decentralisation form an important strength, notably concerning area management. At this level, the communes must complete the efforts of the centralised power in terms of safeguarding and improving agricultural land.

The chambers of agriculture network completes this institutional framework with a kickstart of dynamism to drive partnership and offer smallfarming communities a shoulder to lean on.

Technical and financial partners (TFP), as well as bilateral and multilateral cooperation, contribute significantly to developing the agriculture sector in general, and the rice sector in particular, through the financial aids and techniques brought to many Government, NGO and private sector projects.

The increasing TFP willingness to take part in joint activities and undertake formal dialogue with the Benin authorities and other sector stakeholders in line with the Paris Declaration makes it easier to coordinate interventions by development partners and the Government.

IV – SECTOR PRIORITY AREAS

4.1. Zone classification in terms of production potential

In terms of the lowlands' potential for development under rice cultivation, Table 1 shows that the departments of Zou and Collines come top, followed by the Atacora and Donga departments. Next up are, respectively, the departments of Borgou/Alibori, Ouémé/Plateau, Mono/Couffo and Atlantique.

However, statistics gathered between 1997 and 2007 on the total area down to rice give top places to the departments of Atacora (28.37%), Alibori (21%), Collines (20.3%), Borgou (10.2%) and Donga (9.2%).

4.2. Opportunities and ecological constraints for production systems

The ecological challenges vary from one system to another. They comprise:

For the strictly rainfed system: (i) degraded soils with low fertility, (ii) degenerated varieties, (iii) heavy weed infestations, (iv) climate deterioration.

In the rainfed lowland: (i) soil fertility dropping year on year, (ii) water control too low for intensification, (iii) isolation of the farms from the markets, (iv) strong pressure from weeds, insects, termites and several other pests, (v) climate deterioration.

In the irrigated system: (i) difficulties in irrigating some plots (higher-level plots), (ii) flooding of certain schemes preventing double-cropping (schemes without dykes), (iii) excessive cold from December to January or February disrupting off-season cropping (northern zone) followed by excessive heat in the dry season (March–April). These challenges could be relieved thanks to the existing opportunities offered in the country by its water and land resources.

Surface water resources are estimated at 13.106 billion cubic metres while underground water is put at 1.87 billion cu m. As far as land resources are concerned, 322 000 ha could be irrigated, of which 117 000 ha are floodplains and valleys and 205 000 ha are lowland. Only 10% of the land that is potentially irrigable has been exploited to date. On top of all this potential there still remains the possibility of producing rainfed rice including NERICA varieties on the upland plateaus.

Improved and affordable technologies are available to use the additional land areas. These include improved varieties with high yield potential: BERIS21, BL19, IR841, TOX4008, INARIS88, NERICA-L20, NERICA-L14, NERICA1, NERICA2 and NERICA4. Fertiliser rates have been developed for the different agro-ecological zones. In the south, a 200 kg ha⁻¹ rate of the cotton blend NPKSB (14-23-14-5-1) can be used at sowing with a further 75 kg ha⁻¹ of urea at stem elongation. In the north, simple fertilisers are used at sowing: 90 kg ha⁻¹ of TSP (triple superphosphate) + 50 kg ha⁻¹ of KCl (muriate of potash) + 30 kg ha⁻¹ of urea, with a further 100 kg ha⁻¹ of urea 45 days after sowing. Recently, a specific fertiliser for use on rice has been evaluated and introduced for the south and the north; this rice blend comprises 15N-20 P₂O₅-15K₂O-5S-3.5MgO(S)-0.5Zn(S) at a rate of 200 kg ha⁻¹ at sowing, with a further urea application at 75 kg ha⁻¹ at stem elongation.

The Government and the technical and financial partners underpin promotion of rice growing.

4.3. Identification of policy challenges/opportunities

The policy challenges tower above the mobilisation of the financial resources needed to realise the huge potential referred to above. The necessity of promoting rice growing has been evident since the 1960s, and many actions have been taken: setting up now defunct rice companies (SADEVO, SONIAH, OBAR); establishment of an agency to promote the lowlands (CBF/DGR) and frameworks for concerted action on rice; revitalising professional groups (CCRB and ANASEB); implementing numerous projects to develop rice farming (FAFA, PAMRAD, PAFIRIZ, etc.); and affirmation of Government willingness in every policy document (SCRIP, OSD, PSRSA).

The present challenges consist of (i) achieving self-sufficiency with the intention of reversing the continual upward trend in imports; (ii) exporting surplus grain to neighbouring countries; and (iii)

improving farmers' income. The persistent food crisis coupled with the financial crisis represents an opportunity that has made the Government of Benin hold on to rice as a strategic crop for achieving food security.

V – VISION AND SCOPE OF THE NDRS

5.1. Objectives and expected results

The vision in the Strategic Plan to Revitalise the Agricultural Sector is: **“To make Benin by 2015 a dynamic agricultural power that is competitive, attractive, environmentally respectful, and wealth generating in response to the population’s social and economic development needs”**.

The objective of the NRDS flowing from this vision is that from 2018, **Benin will be able to produce enough quality milled rice to satisfy its own population’s needs, increase stakeholders’ incomes and release surpluses for export.**

Attaining this objective will take Benin’s rice production from 109 000 tonnes of paddy in 2008 to 600 000 tonnes of paddy (equivalent to 385 000 tonnes of milled rice) from 2015 onwards.

Specifically, it means: (i) adopting rice varieties that are better adapted to local conditions, (ii) facilitating access to good quality inputs, (iii) helping producers to upgrade rice growing areas, (iv) creating the necessary post-harvest conditions downstream from production to ensure a much greater market share for local rice with better sales quality.

The expected results are: (i) improved access for producers to fertilisers and pesticides, (ii) improved access to good quality seed, (iii) improved processing and storage for rice products, and (iv) the isolation of production zones is ended and marketing infrastructure improved.

To achieve the fixed production target, the following forecasts have been made (Tables 2–4). A critical mass of human capital capable of transforming this vision into reality is also foreseen (Table 5).

Table 2. **Forecast of seed and fertiliser needs**

Year	Area (ha)	Seed requirement (tonnes)	Fertiliser needs (tonnes)
2008	33 000	2000	9100
2013	117 027	7000	32 200
2018	138 391	8300	38 100

Table 3. Paddy rice production and yield targets by ecological zone

Year	Rainfed rice			Lowland rice			Irrigated rice			Total or Average		
	Area (ha)	Yield (t/ha)	Production (tonnes)	Area (ha)	Yield (t/ha)	Production (tonnes)	Area (ha)	Yield (t/ha)	Production (tonnes)	Area (ha)	Yield (t/ha)	Production (tonnes)
2008	10 500	2.0	21 000	21 420	3.5	75 000	3 100	4.5	14 000	33 000	3.3	109 000
2013	52 200	2.5	130 500	53 167	4.5	239 250	11 660	5.5	65 235	117 027	3.8	435 000
2018	70 000	3.0	210 000	54 545	5.5	300 000	13 846	6.5	90 000	138 391	4.3	600 000

Table 4. Production requirements based on consumption

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Population	8 286 070	8 517 338	8751388	8 989 896	9 232 925	9 479 184	9 732 163	9 997 845	10 270 606	10 553 341	10 825 798
Requirement 25 kg/hd/yr	207 152	212 933	218 785	224 747	230 823	236 980	243 304	249 946	256 765	263 834	270 645
Requirement 30 kg/hd/yr	248 582	255 520	262 542	269 697	276 988	284 376	291 965	299 935	308 118	316 600	324 774
Production	72 667	95 840	126 404	166 714	219 880	290 000	309 265	329 809	351 718	375 083	400 000
Balance @ 25 kg	-134 485	-117 093	-92 381	-58 033	-10 943	53 020	65 961	79 863	94 953	111 250	129 355
Balance @ 30 kg	-175 915	-159 680	-136 138	-102 983	-57 108	5 624	17 300	29 874	43 600	58 483	75 226
	National requirements covered by imports					Reserve stocks established				Reserve stocks and exports established	

Table 5. **Human capital needs (researchers, technicians, extension agents)**

Year	Agricultural researchers with a PhD or other post-graduate qualification			Research technicians			Agricultural extension agents		
	<i>Total</i>	<i>Rice specialists (full-time)*</i>	<i>Rice specialists (part-time)*</i>	<i>Total</i>	<i>Rice specialists (full-time)*</i>	<i>Rice specialists (part-time)*</i>	<i>Total</i>	<i>Rice specialists (full-time)*</i>	<i>Rice specialists (part-time)*</i>
2008	20	5	15	25	3	22	500	-	500
2013	40	10	30	70	30	40	600	100	500
2018	50	15	35	90	40	50	750	150	600

*for each specific zone,if possible

These forecasts take into account the current yields and production. Full implementation of the agricultural mechanisation programme, action relating to water control, the new approach to extension and other crosscutting activities, coupled with good organisation of the various stakeholders and their endorsements will make it easy to reach the projected production levels for paddy rice.

The illustration below shows Benin will be self-sufficient in rice from 2013 onwards. From 2014 it will be possible to build reserve stocks over the following three years, with a surplus available for export to the sub-region from 2017.

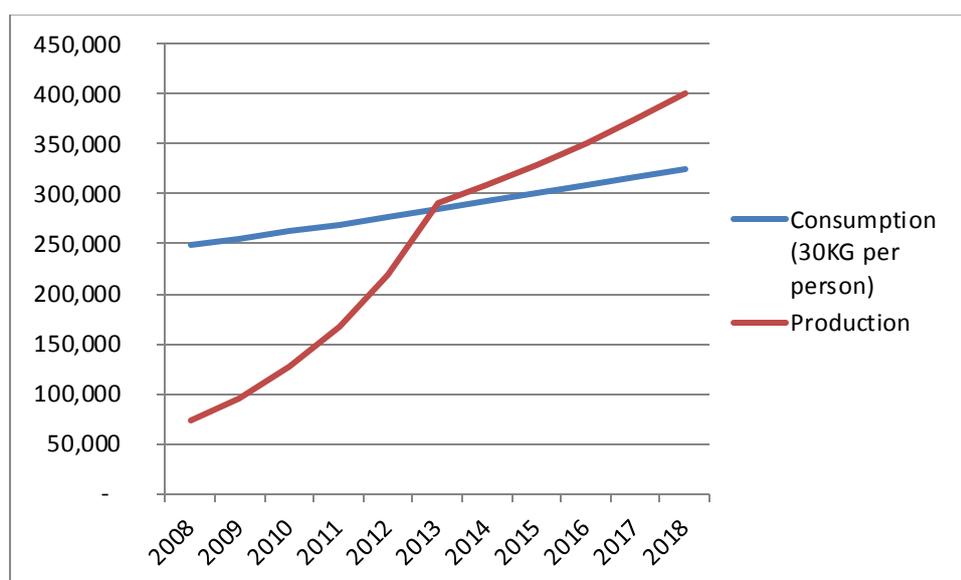


Figure 3. Trends in production and requirements to 2018

5.2. Consumer price forecast

The price charged on different markets is a function of rice quality, the level of broken grains, of packaging, the type of customer and the method of buying or selling. Therefore, imported rice often varies very little in price from day to day. Over all markets, the average price of imported rice over the last five years was around 390 Fcfa/kg, this price having changed very little between 2005 and 2007 (less than 5%). The food crisis resulted in the price of one kilogramme of rice increasing from 346 Fcfa/kg in 2007 to 444 Fcfa in 2008 – a rise in real terms of 28.32%. This price growth was maintained through to 2009.

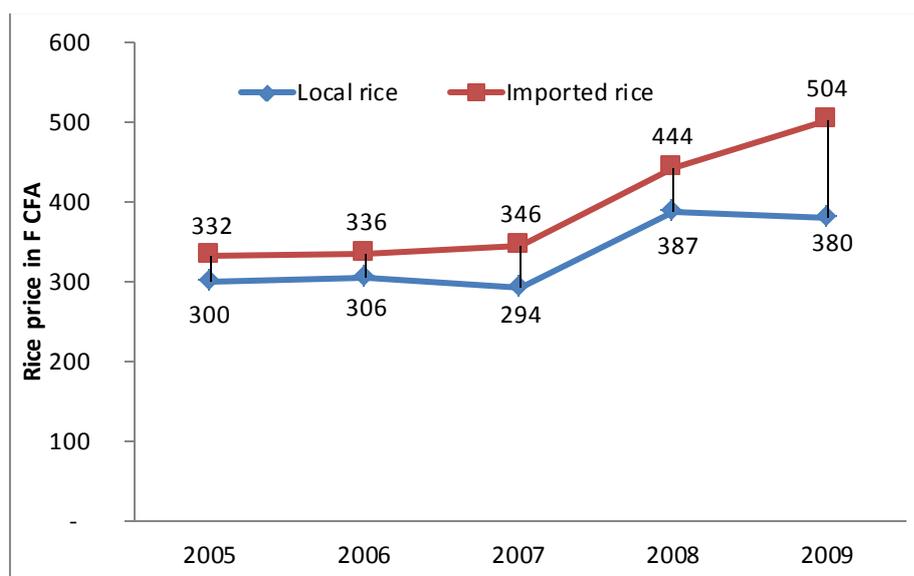


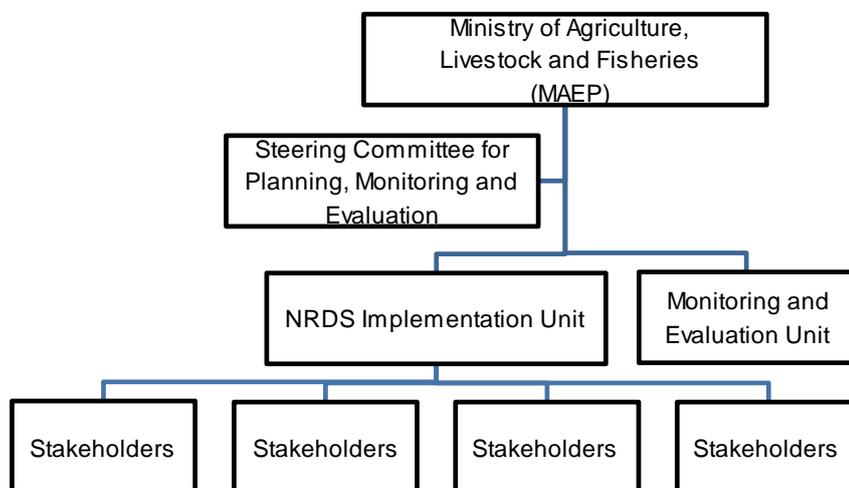
Figure 4. Changes in rice price in Benin

The price of local rice is often fixed by haggling, i.e. after discussion. Fluctuations in the price of local rice are explained 90% of the time by changes in the price of imported rice. Thus, the price obtained by rural businesses depends on the price of imported rice. The rice price has risen and fallen sharply but the drop in price by 1.81% since the 2008 crisis is noteworthy. Taking into account all the anticipated actions to increase local production, the average price up to 2018 will be lower than that in 2008. Measures must be taken to bring down the costs of production in a way that benefits both the producer and the consumer.

5.3. NRDS governance

Because of the rice sector's strategic nature, an NRDS Steering Committee will be set up, comprising representatives of all the known stakeholders: male/female producers and producer groups; producer organisations and their apex bodies; male/female processors; traders and business operators; chambers of agriculture; CCIB; TFPs; public sector and private advisory services; civil society; processors' associations; carriers' associations; input suppliers; wholesalers; support organisations; financial institutions; and the coordinators of projects with strengthened institutional machinery. This committee will be chaired by the coordinator of the Agriculture Development Programme in line with the programme framework for implementation of the PSRSA. It will be backed up by a monitoring and evaluation unit. The strategy will be implemented across the projects and programmes being carried out by the State, professional agricultural organisations and private economic operators with support from technical and financial partners. Figure 5 shows the governance units for the NRDS.

The functional relationships between the different stakeholders working in the rice sector are illustrated in the figure in annex.

Figure 5: Governance of NRDS in Benin

5.4. Government commitment in finance and human resources

The State contribution to agricultural funding within the national budget is around 5% today against the 10% recommended by the African Heads of State Conference at Maputo in 2003. External resources to complement the State contribution to the rice sector are mobilised by the Ministry of Agriculture through projects and programmes such as the PDRN in 2005, the PUASA and the PSAIA in 2007, the PADER in 2007, and the PACER in 2010.

A specific fund will also be set up to finance promotion of the rice sector and will be augmented by resources from the implementation of the PNIA as well as those derived from taxes levied on rice imports.

As far as human resources are concerned, the Government went ahead in 2007 with the recruitment of about 2000 trainers for farmers. Implementation of the National Agricultural Investment Plan will considerably improve the State contribution to funding agriculture and the rice sector in particular.

5.5. National stakeholders and links to cross-border/regional initiatives and partnership strengthening

The different actors identified at the sector level are: male/female farmers and farmer groups; farmer organisations and their apex bodies; male/female processors; traders and business operators; chambers of agriculture; CCIB; TFPs; public sector and private advisory services; civil society; processors' associations; carriers' associations; input suppliers and wholesalers; support organisations; financial institutions and project coordinators.

A total of 65 000 agricultural enterprises are involved in cultivating rice, including rainfed upland rice on 30 000 holdings. They are organised at the village level into groups of farmers and at the departmental level into Regional Unions of producers. These unions are members at the national level of the National Chamber of Agriculture and of the PNOPPA (National Platform for Smallholders' and Agricultural Producers' Organisations). There is also a national association of Beninois seed producers.

Mapping out a flow diagram shows that there are no obvious links between such main stakeholders as the inputs distributors and rice farmers. This explains the difficulties that producers have in obtaining inputs, particularly fertiliser, for rice growing in Benin. While the product is available, it costs 50% more than similar inputs for cotton. Furthermore, the links between producers and downstream stakeholders are either very tentative or non-existent, demonstrating the difficulties associated with processing or marketing rice grown in Benin.

The multitude of stakeholders at the meso- and macro-levels shows the importance of the sector and its interest to those facilitating agricultural sector development in Benin. But the weak or missing synergy between the various field interventions has to be recognised as an impediment to getting expected performance and effectiveness from the means being deployed.

5.6. Main interventions

5.6.1. Technological innovation

It is a question of strengthening the financial, human and hardware capacity of the Benin National Institute for Agricultural Research (INRAB), the Regional Centres for Promoting Agriculture (CeRPA) and the rice-oriented Technical Directorates with the aim of generating and diffusing innovations and technologies tailored to farmers' requirements and the strategies of other stakeholders in the rice sector.

5.6.2. Policies

Bold agricultural policies will be introduced to improve access by producers to farming inputs (quality seed, fertilisers and pesticides) through the provision of low-interest loans. A mechanism will be needed for a funding policy for the professional inputs traders to underpin the production, import and distribution of agricultural inputs. Establishment of the National Agricultural Development Bank should be speeded up on the one hand, and micro-finance lenders encouraged to reduce interest rates on the other hand to make it easier for stakeholders to get credit.

The State will pursue its policy of moderate and degressive subsidies for agricultural inputs and equipment for the rice sector, and will consider support for the agricultural private sector.

5.6.3. Markets

It is important to develop a coherent rice import strategy that favours marketing local rice. The State must introduce a transparent pricing policy that encourages and dynamises national production by guaranteeing producers a good share of the returns.

5.6.4. Capacity building

To make the strategy work, strong emphasis must be given to retraining and setting young people up in farming generally but in the rice sector, in particular. Establishment of agricultural irrigation schemes will create new jobs, considerably reducing the rural exodus, which only seems to benefit

motorcycle taxis at present. Particular emphasis will be given to capacity building of the various private and public stakeholders. The focus will be on mentoring and training those in rural areas to guarantee increasing agricultural productivity.

VI – STRATEGIC DIRECTIONS FOR RICE DEVELOPMENT

6.1. Making good quality rice seed available and affordable

A seed policy in perfect tune with the national agricultural policy was adopted in 2005.

Rice development in Benin depends on a dual system of seed provision by rice growers: a traditional system and a modern system.

But seed production is undergoing a complete overhaul to comply with WAEMU legislation, in the light of which various authorities and fundamental tools have been introduced:

- National Seed and Plants Committee (CNSP): a collaborative body for putting the State's seed policy in place
- National Seed Plan (PNS): master plan for establishing the national policy
- Seeds and Plants Service (SSP): a coordination unit for formulating and overseeing the execution of Government directives (DAGRI)
- National Laboratory for Analysis and Certification of Seeds and Plants (LACS): official service for control and certification of seeds and plants (DPQC), and
- Species and Varieties Catalogue: official register of varieties for extension (INRAB).

Looking ahead to 2018 production the long-term forecast is to increase production of competitive rice by at least 385 000 tonnes from 8 300 tonnes of quality rice seed. Basic seed has until now been produced and made available by research scientists (INRAB and AfricaRice). Commercial certified seed is currently produced by small farmers trained by projects that have been running for several years (notably PDRN, PADER and PSAIA). State bodies such as DAGRI and DPQC intervene respectively, in monitoring seed health and in testing for seed certification.

There is no existing infrastructure for storing seed: cold chambers or conditioning and conservation equipment. Existing cold rooms are poorly equipped.

The positive action needed to guarantee availability and access to quality seed can be summed up as follows:

- Capacity building of research to carry out variety improvement and production of breeder's seed and foundation seed
- Capacity building of seed multipliers to enable production and marketing of certified seed
- Construction of seed stores
- Capacity building of quality control bodies
- Equipping cold rooms

6.2. Making fertilisers, pesticides and specific herbicides available and affordable

Inputs are essential to agricultural production, but their specific and limited uses make them difficult to obtain. Outwith the cotton sector for which there is organised distribution, provision of inputs for other crops is not easy. Most are imported chemical products that are not commonly used because of their cost. This means that the inputs package designed for cotton is used with urea on rice.

Input use is greater than in the past now that producers can obtain credit through most projects and programmes (PAMRAD, ProCGRN, PUASA and PDRN). However, input provision is often delayed at enormous inconvenience to producers, some of whom obtain supplies at exorbitant cost from the private sector.

With the coming of these projects and programmes, the Government has placed more importance on using inputs with staple crops (particularly maize and rice) by introducing and subsidising packages for these crops. Herbicide use on rice is also being seen more frequently. The large-scale businesses also favour inputs, and input stores are slowly being found everywhere in the main production zones. The apex organisations for farmers' groups are playing their part in consolidating the purchasing requirements for agricultural inputs.

There are continual calls for sustainable improvement of access and availability of inputs and their intensified use. This will be tackled by:

- Supporting research into tuned technical packages for fertilising and phytosanitary treatment
- The professionalisation of distributors through training and structuring
- The introduction of a network for local distribution of inputs
- Introduction of favourable conditions for access to inputs loans.

6.3 Rice processing and marketing

It is generally recognised that post-harvest activities such as well-executed processing and marketing contribute to expanding production and, in turn, to food security and extra income for producers. Any improvement in the quality of local rice assumes a combination of actions at the production, storage and processing levels backed up by research and advice/training organisations. The processing sub-sector has a key role to play in the improvement of rice's competitiveness. High levels of broken grains and impurities, together with the failure to package the finished product, are the main processing and marketing problems in Benin.

Despite Government efforts to put infrastructure (two rice mills, each with a capacity of 150 tonnes per day) in place to process and produce milled rice, the strategy will have to look at strengthening two other major activities, i.e. parboiling and husking rice. Parboiled and milled rice are the two products that are wanted in the markets in the sub-region as much as in the country itself. Parboiled rice has a strong following and is able to satisfy a particular market segment enabling this pre-cooked rice to compete with imported product.

As well as the first two rice mills, it is also necessary to think smaller-scale so, to get processing closer to the production zones, intermediate rice mills are needed. These mini-rice-mills will have a low throughput but will be equipped with calibration equipment; packaging must also be designed to make rice products competitive.

Since parboiling is largely carried out by women, they need to have high performance parboiling equipment at their disposal, and the establishment of mini-rice-mills and husking plants needs to be encouraged depending on the scale of the larger areas of rice production.

There will also be the question of supervising the calibration and good presentation of rice on the market. The NRDS will therefore contribute to encouraging trade between surplus and deficit areas, to better organisation of farmers into groups that defend their interests, to enabling economies of scale and to obtaining more remunerative prices while substantially lowering transaction costs (transport, storage and handling). The NRDS will also help put lines of credit in place for marketing to help improve farmers' capacity to attract high bids and avoid forced sales of their products. It will also be able to help traders develop export strategies for staple products and set up an information system tailored to stakeholders in the rice sector. The promotion of local rice will thus be assured by improving its competitiveness at prices that incentivise the different actors.

Furthermore, access to the different national and international rice markets is limited by the isolation of the production zones, the impracticality of many tracks – particularly in the rainy season – the absence of warehousing and organised markets.

Thus, the NRDS must support activities to end isolation, build storage buildings and sales infrastructure, and organise the actors in the rice sector.

6.4 Water control for practical rice production

To date, the conversion level of the potential hydroagricultural complex available still remains very low and only focused on less than 10% of that potential. In addition the land equipped for irrigation also includes very degraded schemes, even some that are perhaps abandoned. The strategy will, therefore, focus both on activities to renovate the former schemes and to realise new developments with greater attention to private irrigation schemes.

Renovation activities will focus on rehabilitation of previously developed schemes by carrying out repairs to the dykes, the hydraulic works and their accessories (channels, valves, specialised parts etc.) through to scouring the outlets.

This establishment of new developments must be enough to produce an increase in the exploitation level of the potential hydroagricultural complex from 10% to 25% by 2018. The activities in the newly improved areas will, among other things, aim to diversify and intensify rice production, improve productivity, and promote the formation of associations of water users that can manage the facilities effectively. It will include the process of small-scale irrigation development in a participatory approach – overreachingly respectful of integrated water resources management (IWRM) and of the gender approach – to establish a typology for water control and minimum technical standards for control for each agro-ecological zone.

6.5 Access to and maintenance of agricultural equipment

Rice growing is carried out on land that is particularly heavy and difficult to work by hand. Statistics for the mechanisation of rice production show that in 2005 land preparation was carried out 84% manually, 12% by powered machines and 4% by draught animals. In general terms, small traditional tools are commonest but mean backbreaking work, consume time and energy, and reduce the competitiveness of growing rice.

With this in mind the strategy being brought in foresees the progressive development of mechanisation, passing from animal draught cultivation in all regions through an intermediate stage to total mechanisation. It will mean underpinning the acquisition of soil-working equipment and the creation of centres for training, study and experimenting with agricultural machinery.

Losses during and after harvest must also be wiped out by post-harvest technology that mechanises harvesting, threshing and drying. Suitable equipment will include medium and high-capacity machines that take account of the type of rice growing and the incomes of the producers.

6.6 Access to technical innovation and professional know-how

6.6.1 Technology generation and transfer to farmers

The NARS provide a synergy of activities between the researchers, the extension agents, the farmers and other sector actors by means of Regional Committees for Research and Development (CRRD). It will be the task of the NRDS to:

- build on the achievements of research to improve the knowledge and know-how of the players in the sector
- strengthen the research bodies' financial and material capabilities to generate technological innovations relating to rice varietal improvement, and to develop technical specifications for fertilisers and phytosanitary treatments, etc.)
- strengthen the extension services' financial and material capabilities, and those of services organising producers, so that newly-generated technologies can be disseminated and then adopted by the producers
- promote the dissemination and distribution of NERICAs and other improved rice varieties.

6.6.2 Preservation and diffusion of genetic resources

INRAB has a Phylogenetic Resources Programme that characterises and conserves the germplasm of existing crop plants, and in the case of rice this is carried out at two levels. The most important examples are maintained *in situ* by being grown in the field. The remainder are maintained *ex situ* in cold rooms. The NRDS-related activities comprise support for the phylogenetic resources programme by strengthening the capacity of those centres undertaking resources conservation.

Many of the accessions maintained in these living collections are varieties bred by INRAB or introduced from the CGIAR (AfricaRice, IRRI, CIAT, etc.). Official transfers of plant material between Benin and the rest of the world through international networks will be strengthened.

6.6.3 Soil fertility management

Due to the paramount importance of soil fertility issues for yield, particular emphasis when promoting rice will be placed on the adoption and implementation of an operational plan to make technologies for sustainable soil fertility management available to farmers. An integrated approach will be adopted to correct the generalized decline in the soil fertility of the various rice systems. The activities will focus, among others, on:

- development and diffusion of integrated soil fertility management (ISFM) technologies that respect the environment
- capacity building farmers through training in the use of ISFM technologies
- developing rice-based systems.

6.6.4 Extension and advisory services

Mentoring approaches must no longer be confined to strict targets of increasing productivity, but should develop farming advice that integrates aspects of sustainable management of the farming operation and access to markets. Drawing on lessons from past experience, the NRDS should aim to improve rice production performance and create conditions to ensure the sector's competitiveness through using appropriate farm technologies. This must be done through developing and publishing technical economic reference publications and data sheets, documents, banners and posters.

6.6.5 Organising producers, processors and traders

Rice producers are organized and structured at various levels from the village up to the national or even sub-regional levels. And, you will still find independent farmers among them. The organization of rice farmers in groups facilitates their access to certain services and benefits (credit, training, provision of labour services, etc.).

Rice processors and traders do not, at this time, have the same level of organization as at the farmer level.

It falls within the framework of the NRDS to build the organizational, technical and financial capacity of producers, processors and traders.

6.7 Access to credit and tailored agricultural finance

Funding for rice growing remains a central concern. It is crosscutting throughout the value chain for the whole sector (production, conservation, processing, transport, marketing, etc.).

The existing state of funding for the rice sector is exemplified by the following difficulties:

- a mismatch of the sector's costs of capital with its internal efficiency, which has resulted in payment difficulties for loans and debt hanging over producers
- the remoteness of financial services from the beneficiaries and the restrictive formalities for gaining access to credit
- a mismatch of credit to needs (whether in-kind or as cash) for the promotion of the sector.

The NRDS Framework emphasises sustainable access to credit and funding for rice growing. Participation by the private sector is indispensable since it is above all a question of helping rice growers access existing micro finance (BRS, CLCAM, CREP, etc.) through the establishment of guarantee bonds.

Management mechanisms involving the professional organizations of all links in the sector are a sufficient guarantee for better financial management. To do this the NRDS will need to consider a capacity-building programme in financial management for stakeholders in the sector.

6.8 Land access

The PFR leads to rural land certificates being granted to confirmed owners. The rural land certificate then becomes the essential element that contributes to the creation of contracts granting access to land, so emphasis will be placed on mobilizing resources necessary for a rapid expansion of PFR, with priority given to regions with high rice-producing potential and

a high prevalence of land conflicts. Using rural land certificates issued by the PFR as guarantees for agricultural credit will be encouraged.

Synergies will be developed between the decentralized territorial communities, the administration and all other bodies with a specific jurisdiction in regard to land tenure so that rules for managing natural resources can be defined.

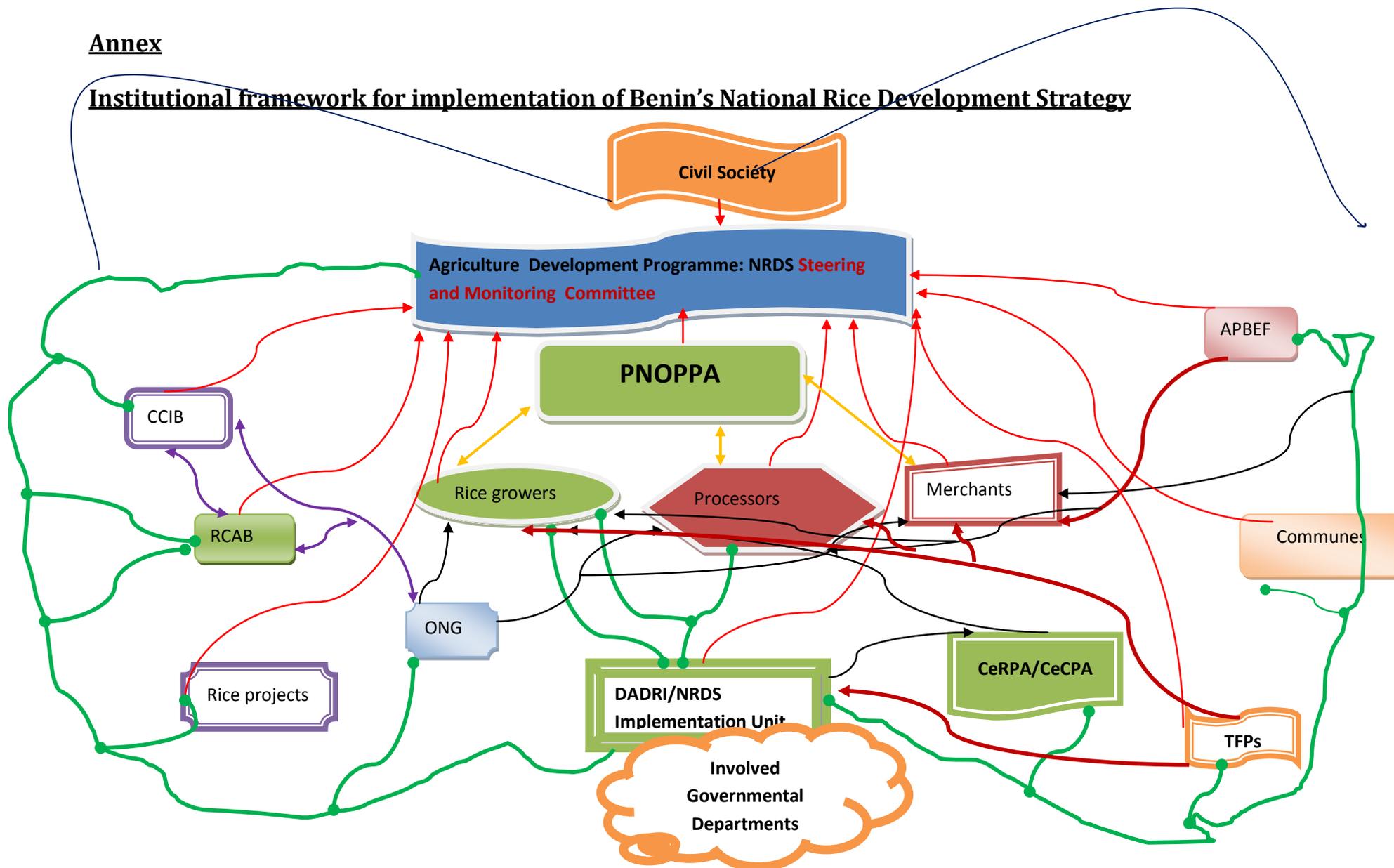
VII - CONCLUSION

The promotion of the rice sector is part of the priorities for agricultural policy in Benin. The initiative by the Coalition for African Rice Development dovetails perfectly with the objectives of the PSRSA, the development of which were drawn from the Strategic Directions for Development (OSD), the common agricultural policy of WAEMU (CAP/WAEMU), the common agricultural policy of the Economic Community of West African States (ECOWAS) and the Comprehensive Africa Agriculture Development Programme of the New Partnership for African Development (CAADP/NEPAD).

Because of the importance of rice in the diet of the people of Benin this initiative will help to achieve the first objective of the Millennium Development Goals (MDG), namely to eliminate extreme poverty and hunger by achieving self-sufficiency in rice.

Annex

Institutional framework for implementation of Benin's National Rice Development Strategy



Caption

Stakeholders' consultative framework: 

Monitoring: 

Finance for sector stakeholders: 

Collaboration: 

Support advice for beneficiaries: 

Collaboration between the grassroots and the apex organisations: 

Public checks on agricultural policies: 

