

REPUBLIQUE DU SENEGAL

Un Peuple- Un But- Une Foi

MINISTERE DE L'AGRICULTURE

PROGRAMME NATIONAL D'AUTOSUFFISANCE EN RIZ



Stratégie Nationale de Développement de la Riziculture

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List of abbreviations

WARDA: West Africa Rice Development Association (Rice Centre in West Africa)

RAC: Rural Agricultural Council

NFALN: National Fund for Agricultural Loans

PSEF: Price Stabilization and Equalization Fund

RC: Rural Community

SDPR: Strategic Document for Poverty Reduction

NFAAR: National Fund for Agricultural and Agri food Research

PPG: Power Pump Group

GAOFA: Grand Agricultural Offensive for Food and Abundance

WAG: Women Advancement Group

NIP: National Institute of Pedology

ISRA: Senegalese Institute for Agricultural Research

IFT: Institute for Food Technology

LAFPO: Law on Agro-Forestry and Pastoral Orientation

PPAD: Policy Paper on Agricultural Development

PPID: Policy Paper on Institutional Development

OMVS: Senegal River Development Organization

OMVG: Organization for the Development of the River Gambia

NOCD: National Office for Cooperation and Development Assistance

PO: Producer Organization

SAPAS: Structural Adjustment Program for the Agricultural Sector

GDP: Gross Domestic Product

NPSR: National Program for Self Sufficiency in Rice

SAED: National Corporation for Development and Utilization of the Senegal and Falamé River Valley Delta

AGS: Accelerated Growth Strategy

NSDR: National Strategy for the Development of Rice growing

DFS: Decentralized Financial System

SRP: Poverty Reduction Strategy

SRV: Senegal River Valley

Summary

Rice occupies a select place in the eating habits of the Senegalese. The country's national meal is Rice with fish or thiébou-djène. Population increase coupled with growing urbanization has significantly increased consumer demand for this food commodity, forcing Senegal to resort to massive importations. With an annual consumption of 74kg per head, Senegal is among the largest consumers of rice in West Africa.

Indeed, if the visible consumption of rice in Senegal stood at 400 000 tons in 1995, it rose to 800 000 tons in 2007, costing 106 billion FCFA in net imports. Rice alone accounts for 16% of the country's balance of trade with this deficit steadily increasing because national production is growing more slowly than consumption of which it covers only 20%.

Faced with a global scenario marked by rising prices for agricultural commodities, the Government of Senegal has made food sufficiency a major target. It is with this perspective that the Head of State launched in April 2008 the Grand Offensive in Agriculture for Food and Abundance, a vast emergency and strategic program aimed at increasing agricultural production to guarantee food security and abundance.

Subsequently, a target of producing 1,000,000 tons of competitive white rice that meets the taste and demands of consumers by 2012 was given to the National Program for Self Sufficiency in Rice (NPSR) to cover the needs of Senegal. Besides food self sufficiency, the creation of an enabling environment for the involvement of the private sector constitutes a major challenge for economic growth and poverty eradication.

To meet this objective, while bearing in mind the uncertainties of the international rice market as well as Senegal's exceptional endowment of natural resources (plentiful water supply, land conducive to rice farming, favorable weather enabling two crops to be grown per year), the Government of Senegal developed a National Strategy for the Development of Rice Growing (NSDR).

In fact, taking into account the potential for different rice growing areas and faced

with identifiable problems, specific strategies were developed for each area or type of rice growing and applied to the following components:

- Land planning;
- Supply of irrigation equipment;
- Funding of production, production and post-harvest equipment
- Marketing

Rice growing, whether rainfed or irrigated is a national issue and arouses growing interest among producers in spite of difficult market conditions. Today, rice growing brings together professional groups (unions, federations, industry), different actors (producer organizations, research and advisory institutions, service providers, processors, traders...) capable of driving the sector's development.

The first season (off season and rainy season 2008) of the introduction of the National Program for Self sufficiency in Rice (NPSR) within the Grand Agricultural Offensive for Food and Abundance (GAOFA) gave an unprecedented total production of 500,000 tons of paddy rice, representing 94% of the fixed target for the first year.

Such a major contribution helped improve rice self sufficiency, which rose from 19% to 40%.

With an estimated budget of 174 billion FCFA for the next three years (2009 to 2011) the movement towards rice self sufficiency, as outlined in the following steps, will give Senegal — a major consumer of rice — the status of 'rice producing country' and satisfy its home demand in rice by 2012.

- 2008: 364,000 tons of white rice, representing 535,000 tons of paddy
- 2010: 623,000 tons of white rice, representing 916,320 tons of paddy
- 2012: 1,000,000 tons of white rice, representing 1,500,000 tons of paddy

I. Introduction

Faced with an increasing population and growing urbanization, the Government of Senegal has made increased national agricultural production a major preoccupation.

As a result, with reference to the Law on Agro-Forestry and Pastoral Orientation (LAFPO) and other choices formulated in the Strategic Document on Poverty Reduction (SDPR2) and to those contained in the Accelerated Growth Strategy (AGS), a strategic policy option was taken to ensure food self sufficiency in rice for the country by 2012 through local production.

Using this perspective and based on the potential of different sectors together with the physical, human and technical endowment in different production areas of the country, the Head of State instructed the Ministry of Agriculture to establish and implement appropriate programs.

Against this background the National Program for Self sufficiency in Rice (NPSR), backed up by the National Strategy for the Development of Rice growing (NSDR), was developed.

Visible consumption of rice stood at 400,000 tons in 1995 but it rose to 800,000 tons in 2007, with 106 billion FCFA in net imports. These rice imports account for 16% of the deficit in the balance of trade and this phenomenon seems to increase with time because national production has been progressing at a slower pace than consumption of which it covers only 20%.

It is therefore important to take into account the threats that weigh on international trade which are illustrated by the fact that: (i) only 4 to 7% of world production is traded; (ii) China has become an importer and buyer from Thailand which also supplies 75% of Senegal's needs.

The championing of local rice farming to meet national requirements has therefore become a strategic option for the State, made easier by the uncertainties of the international market for rice and by Senegal's exceptional

potential in the form of natural resources (abundant water, land conducive for rice farming, favorable weather allowing two crops per year).

Attaining self sufficiency in rice constitutes a big step towards food self sufficiency in cereals for the country.

Whether practiced as rainfed or irrigated, rice growing is indeed a national issue that arouses growing interest among producers in spite of the conjunctural difficulties. Many different actors (producer organizations, research and advisory institutions, service providers, processors, traders, etc.) – all of them capable of moving the sector's development forward – are already brought together within professional organizations (unions, federations, industry).

Lending credence to the relevance of the objective is the sector-level evidence of increases in area, yields, production, quality of rice and its competitiveness, especially since the implementation of several State-initiated programs to boost agriculture.

II. Background on rice in Senegal

During the colonial period, the groundnut sector experienced sustained growth thanks to the prevailing opportunities and appropriate infrastructure. This happened to the detriment of subsistence crops so that, especially between the two world wars, recourse to rice imports from Asia became more and more significant.

Rice is traditionally grown in Lower Casamance. During the colonial period, it was used to pay taxes and to support war efforts. It later became one of the criteria for wealth in some Diola circles. However, declining rainfall and the abandonment of rice fields due to the emergence of acidification and soil salinization led to a decline in rainfed rice growing in the lowland areas to the benefit of upland areas.

Over time, the Senegalese have embraced rice consumption to the extent that Senegal is now one of the largest importers of broken rice in West Africa after Nigeria.

The liberalization of rice prices in June 1994 led to the disappearance of the

official network. Reorganization of the rice sector has led to the establishment since 2003 of a new marketing framework, characterized by producer accountability. Indeed, the different actors in marketing are the producers, processors, transporters, middlemen and traders.

2.1 Status of rice in the national agricultural policy

In order to mitigate the negative effects of massive rice imports on the Senegalese economy and to forewarn of hazards in the volatile international rice market as well as to propel socioeconomic development in rice producing areas, the State took up the option of developing rice farming in all its forms (irrigated with total or partial submersion, rainfed in the lowland or upland).

Today, rice growing occupies a select place in national social and economic development strategies such as:

The Accelerated Growth Strategy (AGS) with the Agriculture-Agri-food Industry cluster;

The Grand Agricultural Offensive on Food and Abundance (GAOFA), through the National Program on Self sufficiency in Rice (NPSR), with the aim of producing 100,000 tons of white rice by 2012.

2.2 Justification of the NPSR

To meet its needs, Senegal is forced to resort to increasingly significant rice imports. It consumes mostly broken rice (22% of the world market in broken rice) and is the leading importing country for this commodity.

The strategic option of attaining rice self sufficiency by 2012 follows an analysis of the current supply situation in the country, of its perspectives for likely changes, but above all, of its assets and potential for job and wealth creation linked to the presence of a huge domestic market.

2.3 Typology of actors in the rice sector

Rice production systems in Senegal are largely dominated by small and family-held farms. Besides this family-led agriculture is the emerging commercial

agriculture founded on the logic of investment and profit seeking.

There are also two quite distinct types of rice growing: irrigated rice farming in the Senegal River Valley and in the Anambé basin on the one hand, and the traditional or rainfed lowland or upland rice farming in the southern regions of Fatick, Zinguichor, Sédhiou, Kolda, Tambacounda and Kédougou on the other.

The nature of organization and the degree of structuring of the rice sector depend on the agro-ecological area and the system of production. As such, one can distinguish the following activities, divided into seven parts:

- agricultural and agri-food research (ISRA, WARDA, NIP, IFT, Universities): introduction of new varieties, production of pre foundation seeds, soil management, socio economic studies, food promotion, etc.
- provision of inputs, agricultural materials and services: service providers (through crop methods, harvest, shelling and processing), concessionnaires and manufacturers of equipment, suppliers of inputs (seeds, fertilizers and phytosanitary products);
- funding (NFAL and DFS): seasonal loans, credit for equipment and marketing, etc;
- production of paddy (producers) under irrigation and rainfed;
- paddy collection (traders, rice specialists and producers themselves);
- Processing (rice specialists) by industrial rice specialists, small rice mills, village-based husking machines or using simple pounders;
- marketing of white rice (by private actors, rice specialists, farmer organizations and producers).

It should however be noted that this degree of organization is mostly found in the irrigated crop system, and then more frequently in the North of the country than in any other rice producing areas.

In this framework, producers tend to become more and more involved in the processing and marketing of their production. The same applies to some rice specialists who do not confine themselves to one activity of service provision. To maximize returns from their equipment, they acquire paddy for processing or go into rice production on their own account, and do not hesitate to market their production of white rice themselves.

It is possible to see some confusion in the roles of different actors leading to inefficiency. The need for a separation of roles, for professionalization and for improved clarification of the operating environment should drive specialization and separation of roles in production, processing and marketing.

2.3.1 Irrigated rice growing

As far as irrigated rice farming is concerned, the Senegal River Valley, the zone in which the SAED operates is an area relatively well endowed in human and natural resources (water, soil and sun).

The commissioning of the DIAMA and MANANTALI dams has created basic conditions for the development of sustainable and productive irrigated agriculture through the provision of an ample supply of quality water.

As a result, irrigated rice farming occupied 53,279 ha during the 2008 crop year (off season and rainy season) split between the Senegal River Valley (50,469ha) and the Anambé Basin (2,810ha).

This type of rice growing is distinguished by the adoption of an intensive system with total water control and intensive mechanization of the majority of crop and post-harvest operations. Fertilizer and herbicide use is very high. This intensification has led to high returns with an average yield of 6 tons/ha and a high of 13 tons/ha.

Irrigated rice growing contributes 350,000 tons of paddy rice, representing 70% of national production which stood at 500,000 tons in 2008 against an annual average production of 170,000 tons before the advent of GAOFA.

Notwithstanding this performance, irrigated rice farming is experiencing a

number of constraints:

- land problems: access and management
- high costs of development and the depreciation of irrigation equipment;
- servicing and renewal problems for the agricultural machinery stock;
- erratic provision of inputs; shortage, late delivery, distribution problems;
- processing difficulties: functionality of units, suitable equipment to improve quality;
- difficulties in access to loans: conditions, suitability, etc;
- attacks by grain-eating birds causing huge losses;
- marketing difficulties: lack of an organized marketing system.

2. 3. 2 Rainfed rice growing

During the 2008 rainy season, rainfed rice growing occupied 78,000 ha and accounted for 150,000 tons of paddy rice, representing 30% of national production; the average annual production stood at 40,000 tons before GAOFA.

It is practiced in the Casamance natural region (Zinguichor, Sédhiou and Kolda), the Tambacounda, Kédougou, Fatick and Kaolack regions.

Rainfed rice growing is characterized by: (i) post-harvesting and crop operations which are done manually; (ii) low use of inputs; (iii) low yields; and (iv) it is largely practiced by women.

The main constraints are:

- salinization and acidification of soil;
- silting by sand in the lowland;
- shortage of mechanization;
- shortage or even absence of funding and guidance;
- increasingly erratic rains;
- lack of quality seed and responsive varieties.

In these regions, it is the mainly female producers themselves who, in addition to

paddy production do the husking and processing mostly for on-farm consumption. Provision of services such as sale of inputs, processing and marketing are almost nonexistent as distinct segments.

Groundwork is done manually by men in Lower Casamance and by women in Middle Casamance and in the Fatick area. Planting and nursery maintenance, transplanting and all other crop operations up to the post harvest stage are done by women.

In Casamance, we can identify two types of rainfed rice growing: lowland and upland. Declining rainfall and poor water control have heightened the insecurity of growing rice and led to falling crop area and production.

2.4 The Gender Issue

Rice growing was for a long time the monopoly of Senegalese men, with the exception of the Casamance natural region where women are the main players. Strategies being introduced to promote the activities of the most disadvantaged populations recognize that poverty is essentially a characteristic of rural areas and that women are most affected. This is how women are becoming more and more involved in local development programs.

In the Senegal River Valley, SAED is striving to strengthen the integration of groups for the promotion of women (GPW) into water management schemes and increase the area used by women to 10%.

The advent of GAOFA, which facilitates access to land and has a pro-women policy, means that female members of organized groups are becoming more and more involved in agricultural activities and especially related activities (production, processing, marketing...).

2.5 Comparative advantages for national rice production

A number of assets give Senegal comparative advantage for rice production:

- Physical geography, it is clear that the natural environment gives

Senegal an obvious advantage compared to many countries, including several exporting countries of which Senegal is a client.

- Social level, rice farming has generated increasing interest among farmers ever since it was introduced. This steady interest cuts across all rice ecosystems and cropping systems irrespective of the status and motivation of the producers, and despite the difficult economic climate;
- agricultural research, there has been a synergy between development organizations leading to, for example, the introduction of germplasm with high yield potential (the SAHEL varieties). Significant growth in productivity has been generated through the dynamism of producers in the Senegal River Valley at different organizational levels (economic organizations, water unions, federations, inter-professional committees, and the National Committee).
- economics, the production cost of local rice has become competitive compared to imported rice, and there is further scope for progress. At the same time, the quality has improved considerably, resulting in increased demand at the national level.

To sum up, what is at stake in relation to self sufficiency in rice is:

- sovereignty and food security;
- reduction of the deficit in the balance of trade;
- economic and social growth.

III. Challenges and Opportunities

The Senegalese State and actors in the rice sector face major challenges in creating an attractive environment to stimulate private sector interest in the development of the rice sector, the production of quality rice, an increase in productivity and rice production aimed at self sufficiency.

The favorable climate for double cropping of rice, the progressive return of donors ready to invest more and more in rice growing and the current state of play of the international rice market are in themselves great opportunities to be seized.

3.1 Potential of rice farming for job and wealth creation

The Senegalese population gets 33% of its protein needs from rice against a

20% maximum ratio at the world scale. Senegal also devotes 10% of its financial resources to buying this commodity.

In 2007, the visible consumption of rice in Senegal stood at 800,000 tons with 106 billion FCFA in net imports. Rice alone accounts for 16% of the deficit in the balance of trade which is increasing at the same time as domestic production is slowing and only covering at most 20% of current requirements. .

If Senegal had been able to produce all the rice it consumed in 2007, the real GDP growth rate would have risen from 5.5% to 8% and the balance of trade deficit would have been reduced to 16%. Moreover, 200,000 jobs would have been created in irrigated areas.

Furthermore, paddy production would have reached 1.2 million tons of paddy, representing 250,000 tons of bran and 1 million tons of straw; enough to feed more than 600,000 head of cattle for six months, without taking into account the current use of rice husks for combustible pellet production to replace charcoal.

3.2 Land tenure system

Land holdings in Senegal fall into three major categories:

1. the national land base which is divided into three zones:
 - urban zones (situated in the areas controlled by communes and urban groupings)
 - classified zones (for forest use and subject to special protection)
 - land zones (used for rural housing, crops and livestock as well as idle land needed for expansion)
2. State property which includes the public and private property of the State
3. Private and individual property.

With regard to national property, the land zones are administered by rural communities, under the supervision of the Administration.

3.3 Cross-border/regional issues

Covering a surface area of 196,722 sq km, Senegal bounds with Mauritania to the North, Mali to the East, both Guinea and Guinea Bissau to the South, and the Atlantic Ocean to the West on a 500-km coastline. The Gambia is landlocked inside Senegal with an access to the Atlantic Ocean.

Senegal enjoys good neighbor relations with the adjacent countries with which it cooperates in projects on regional development, especially in planning and development of river basins; the Senegal River Development Organization and the Organization for the Development of the River Gambia (OMVS and OMVG). Senegal and its neighbors often implement concerted or harmonized strategies in the fight against grain eaters and desert locusts.

3.4 Research/Development

Since independence in 1960, the Government of Senegal has undertaken to put tools in place progressively for its scientific and technological enfranchisement. Senegal today has Research Centres and Institutes in various fields of activity, especially in agriculture and in agri-food. The mechanism has shown numerous results which have contributed to decision making in the development of sectors of the national economy.

For rice growing, they are:

- germplasm with high yield potential (SAHEL varieties, NERICA) introduced with the support of WARDA

- cropping systems geared towards intensification, and the socioeconomic studies conducted by ISRA

 - management and preservation of soil fertility by the NIP

 - added value conversion of agricultural products for food by IFT

The National Fund for Agricultural and Agri-food Research (NFAAR) was set up to fund activities in research-development and for disseminating research findings by creating synergy in the institutions involved.

3.5 Institutional changes

At the institutional level, the Senegalese Authorities have taken a series of steps to accompany sustainable development of agriculture by conferring a central role to farmer organizations:

- 1979: the high level of producer debt led to the dissolution of NOCDA which had been charged with funding for inputs and agricultural equipment;
- 1980: Abolition of the agricultural program;
- 1984: adoption and creation of the New Agricultural Policy (NAP) aimed at the disengagement of the State from training organizations, reforms in the cooperative movement as well as the accountability of the rural areas;
- 1994: implementation of the Structural Adjustment Program for the Agricultural Sector (SAPAS) for the withdrawal of the State from production marketing responsibilities, processing and commercialization of agricultural production, the organization and adjustment of agricultural commodity chains, as well as market liberalization;
- 1995: development and adoption of the Policy Paper on Agricultural Development (PPAD) reaffirming the willingness of the State to transfer marketing responsibilities to the private sector represented by the PO through their private organizations and operators;
- 1997: implementation of a program to boost the agricultural sector
- 1998: adoption and implementation of the Policy Paper on Institutional Development (PPID) which restructured the Ministry of Agriculture to adapt it to the commitments taken by PPAD
- 1999: development and implementation of the Policy Paper on Decentralized Rural Development (PPDRD) to involve local authorities in carrying out programs defined by the sector
- 2001: adoption and implementation of the Strategy Document for Poverty Reduction (SDPR).

- 2004: Adoption of the Law on Agro-Forestry and Pastoral Orientation (LAFPO) which defines the general provisions and the principal directions for sustainable rural development of the agricultural, forestry and pastoral sectors over the next 20 years within a perspective of economic growth and poverty eradication.

IV. National Strategy for the development of rice growing

During the President's Council of 4 March 2005, the Head of State set the target of 1 million tons of white rice in the National Program for Self sufficiency in Rice (NPSR) by 2012. At the same time he also presented the guidelines and necessary directives for the whole set of actors.

In his policy statement on 17 September 2007, the Prime Minister clearly announced the intention of the Government to boost rice farming with the aim of attaining a production target of 50,000 tons of white rice by 2010.

To achieve this vision, the Head of State, and the Ministry of Agriculture developed a national strategy for development of rice growing (NSDR). Taking into account the potential for different rice producing areas and the identified problems, specific strategies were also developed for each area or type of rice growing and applied via the following components:

- Land management
- Irrigation equipment and supplies
- Funding of production, equipment for production and for post-harvest tasks
- Marketing.

4.1 Objectives

The objectives of the National Strategy for the Development of Rice growing (NSDR) are both quantitative and qualitative:

quantitative for addressing imports according to a well defined schedule

designed to ensure food security;

qualitative to meet the tastes and demands of consumers and also to meet criteria for competitiveness.

4.1.1 Quantitative Objectives

The main objective of the strategy is to lift national rice production to 1,000,000 tons, that is the equivalent of 1,500,000 tons of paddy by 2012 in order to meet the needs of a population estimated at 13.5 million people. The contribution expected from irrigated rice cultivation to attain this objective is 800,000 tons with rainfed rice contributing 200,000 tons of white rice.

Reaching this objective will be step-by-step process as outlined in table 1 below.

Table 1: Steps towards attaining rice self sufficiency

Année	Irrigué							Pluvial		Total (Irrigué + pluvial)	
	Vallée du Fleuve Sénégal			Anambé		Total irrigué		Superf. (Ha)	Prod. (T)	Superf. (Ha)	Prod. (T)
	Superf. (Ha)	Rdmt (T/Ha)	Prod. (T)	Superf. (Ha)	Prod. (T)	Superf. (Ha)	Prod. (T)				
2008	55 000	6,2	341 000	7 500	34 000	62 500	375 000	80 000	160 000	142 500	535 000
2010	105 720	6,2	655 464	9 500	35 856	115 220	691 320	90 000	225 000	205 220	916 320
2 012	175 580	6,2	1 088 596	20 500	87 884	196 080	1 176 480	131 000	327 500	327 080	1 503 980

2008: 364,000 tons of white rice, representing 535,000 tons of paddy

2010: 623,000 tons of white rice, representing 916,320 tons of paddy

2012: 1,000,000 tons of white rice, representing 1,500,000 tons of paddy

4.1.2. Qualitative Objectives

In order to meet consumer demand and ensure production flow under the best conditions, quality labeling will be sought through:

- homogenous broken and whole rice in sufficient quantities according to the market and throughout the year;
- competitive rice due to good quality, competitive prices compared to imported rice and giving a financial return for all the actors in the sector.

4.2. Irrigated rice growing

The main strategic areas requiring attention in the irrigated rice cultivation sector are management works (rehabilitation, recovery and creation), obtaining agricultural equipment for post-harvest and irrigation (power plant, tractors, combine harvesters, rice processing plants, etc.) as well as marketing and access to funding.

4.2.1 Repair and construction of new facilities

Senegal has attained satisfactory yields of more than 6 t/ha against a world average of 4 t/ha in irrigated rice growing. The remaining challenges are to increase the rice area and improve on the quality to make local rice more competitive.

It is therefore necessary to:

- recover the 22,000 ha formerly used but abandoned towards the end of the 1990s in the SRV, on top of the 13,000 ha brought back into use in 2008 to give 43,000 ha usable in 2009;

- restore 4200 ha in the Anambé Basin;

- obtain a cropping intensity ratio of 1.5;

- continue managed scheme development as shown in table 3:

Table 3: Schedule of rehabilitation and creation of managed schemes

Year	Area	Unit price	Total cost (FCFA)
SENEGAL RIVER VALLEY(SRV)			
Reconstruction			
2008	15 000	300 000	4 500 000 000
Rehabilitation			
2009	20 000	600 000	12 000 000 000
NEW DEVELOPMENTS (55 720 ha)			
2010	15 720	3 000 000	47 160 000 000
2011	20 000	3 000 000	60 000 000 000
2012	20 000	3 000 000	60 000 000 000
Total SRV	90 720		183 660 000 000

ANAMBE			
ON-GOING DEVELOPMENTS			
2008	820	Secured Funding	
Reconstruction			
2009	4 180	Annual maintenance	362 000
000			
NEW DEVELOPMENTS (10 000 ha)			
2010	2 000	3 000 000	6 000 000 000
2011	4 000	3 000 000	12 000 000 000
2012	4 000	3 000 000	12 000 000 000
Total ANAMBE	15 000		30 362 000 000
Total works	(SRV + ANAMBE):	105	
	720 ha		214 022 000 000

To achieve the objective of 1 million tons of white rice, planted area to rice will have to reach 130,720 ha, out of which 115,720 will be in the Senegal River Valley and 15,000 ha in the Anambé Basin by 2012.

4.2.2. Supply of agricultural equipment

The poor level of mechanization is at the root of the weakness in cropping intensity and the failure to respect the crop calendar. Moreover, improvement in the quality of rice depends on the installation of equipment for sorting, sizing and bleaching in certain processing units.

Levels of grain damage and the milling rate are correlated. During and after harvest, the overexposure of paddy to the sun or rain because of a lack of harvesting equipment or sound storage means that product arriving at the mill is unsuitable for obtaining white quality rice.

The related strategies are:

- increasing use of the ASI threshing machine in accordance with the equipment program for rural areas;
- championing partial mechanization of harvesting with the introduction of the experimental motor mower (ISA);
- servicing and increasing the current tractor stock;
- equipment in additional irrigation material;

- increasing the stock of combine harvesters.

4.2.3. Supply of processing equipment

The production goals must be accompanied by a program to strengthen processing units:

- the rehabilitation of abandoned rice mills according to need in the production areas;
- establishment of additional sorting, sizing and bleaching equipment with the aim of introducing quality labeling;
- building new rice mills in deprived areas
- facilitating access to loans to benefit rice specialists.

4.3 Rainfed rice growing

Considering its socioeconomic importance, rainfed rice farming has received very little support. Its practice faces enormous challenges and its sustainability is under threat. To make it play a full role in clearing the cereal deficit, the strategic axes retained within the framework of the NSDR revolve around the following points:

- fight against salinity and silting up of the lowland;
- developing an appropriate intermediate mechanization policy ;
- championing the use of fertilizers;
- reinforcing training;
- introduction of responsive varieties;
- development and protection of crop areas within the framework of preservation and management of resources
- setting up appropriate funding mechanisms(micro credit)
- rehabilitation of the ISRA station at Djibélor in the south of the country (in Zinguichor region)

4.4 Marketing

The rapid increase in rice production, especially in the Senegal River Valley has

led to the urgent need for better organization of marketing. Producers are no longer able to produce and at the same time market their products, all the more so because the aim of increasing cropping intensity requires a speedier settlement of seasonal loans given by the NFAL. Consequently, it will be necessary for the producer to move his production as fast as possible.

It is also intended to encourage the creation of private professional agencies charged with buying, processing and selling white rice. These agencies could then service contracts for paddy processing with owners of rice mills and extend their activities to other rice producing areas in the country.

4.5 Long-term production price target

Beyond reducing prices for local rice on the national market to benefit the consumer, subsidies are aimed at increasing profit margins for producers. Subsidies have led to a considerable drop in production costs and to the improvement of earnings for producers, thereby rendering the rice chain more attractive for the private sector.

This means that growers with production costs below 100 FCFA sell paddy rice at 150 FCFA/kg. As for sale prices of local white rice, these vary between 240 F and 400 FCFA/kg (Table 4).

Table 4: Range of market prices for local rice from June 2008 to January 2009

MOIS	REGIONS										
	<i>Dakar</i>	<i>Thiès</i>	<i>Diourbel</i>	<i>Louga</i>	<i>St-Louis</i>	<i>Matam</i>	<i>Fatick</i>	<i>Kaolack</i>	<i>Tamba</i>	<i>Kolda</i>	<i>Ziguinchor</i>
Juin-Janv 09	250-400	300-375	290-400	275-410	240-400	350-400		300-385	375-400	-	-

4.6 Support measures

To facilitate the achievement of fixed targets, the following support measures were taken:

- pursuance of input subsidy policy ;

- development of an improved seed policy ;
- support for promoting by-products for the manufacture of animal feeds (straw and bran) and the production of energy (chaff)
- facilitation of access to credit: appropriate mechanism for the acquisition of agricultural equipment and the construction of irrigation infrastructure;
- removal of seasonal loans;
- the fight against airborne pests by:
 - intervening between 1 October and 15 December to protect winter season rice;
 - resumption of operations from 15 January to safeguard post-flood cultivation and to prevent the multiplication of pests;
 - a June 1 start to operations for protection of dry off-season rice growing
 - strengthening of cooperation with neighboring countries in the fight against grasshoppers.

4.7 Funding of production

The availability of inputs and their affordability by producers are indispensable to the success of the program. Based on projections for sown areas for the next three years, the demand for seasonal loans is indicated in table 5:

Table 5: Changes in cropping land per year and demand for seasonal loans

Year	Irrigated (ha)	Rainfed (ha)	Loan needs (millions F CFA)
2 009	87 500	80 000	19 500
2 010	109 720	90 000	24 194
2 011	130 000	100 000	31 000

4.8 Governance of the NSDR

The importance of the NSDR, the diversity of agro-ecological zones and systems of agricultural production, and the multiplicity of actors involved require an original steering strategy for implementation.

It will therefore give special weight to an integrated approach, accountability and evaluation which will translate into joint action between the concerned players and the accountability of each in according to their position and their weight in regard to the operations of the sector. Annual evaluation will be used as a timely way to correct any straying off-course or dysfunction.

This integration will promote partnership within the entire circle of groups of actors in the sector: producers, processors, traders, agricultural service providers, public and private agencies for agricultural advice, research, equipment for rural areas, and communication professionals.

The institutionalization of a National Rice Event could provide an umbrella for joint action and exchange to ensure monitoring, evaluation and implementation of the Program.

V Program budget

The program budget for the next three years is estimated at 173,800 billion FCFA distributed as follows (table 6):

Table 6: Program budget (millions FCFA)

Spending areas	2009	2010	2011	Total
Land development	12 362	53 160	72 000	137 522
Inputs subsidies/plant health products	8 063	10 478	14 800	33 341
Rehabilitation ISRA/Djibélor	915		-	915
Deployment of marketing agencies	PM	PM	PM	PM
Support for mechanization	2 000	-	-	2 000
Total	23 340	63 638	86 800	173 778

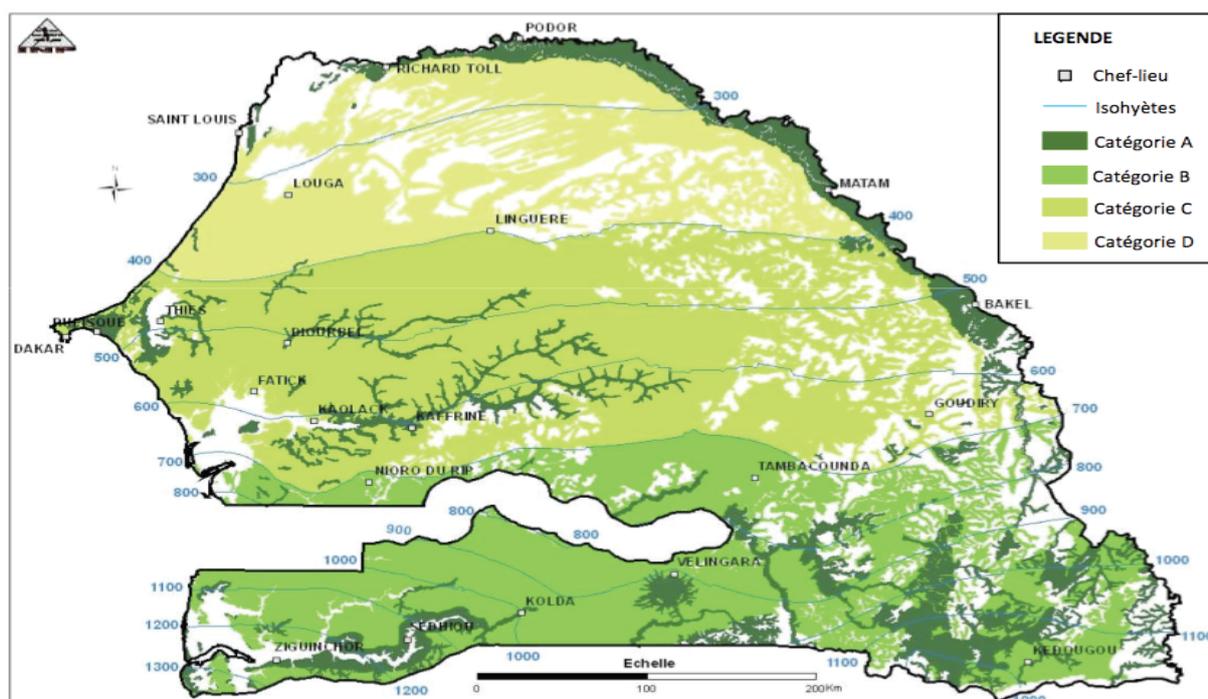
VI Conclusions

The first cropping year (off season and rainy season 2008) of the National Program for Self sufficiency in Rice (NPSR) within the context of the Grand Agricultural Offensive for Food and Abundance (GAOFA) produced a record total production of 500,000 tons of paddy rice, accounting for 94% of the target during the first year.

This production has contributed to the increase in the rate of self sufficiency in rice in Senegal which has grown from 19% to 40%. Such progress towards self sufficiency in rice means that Senegal, a major consumer of rice, will gain the status of a rice producing country able to meet its own needs by 2012.

Appendices

Appendix 1: Senegal by zones



- Category 'A' including fertile lands with access to water resources for irrigation (surface and underground water).
- Category 'B' higher rainfall at 700 mm per year: land has no water stress.
- Category 'C' rainfall between 400 and 700 mm per year: land exposed to water stress.
- Category 'D' rainfall below 400 mm per year: land subjected to serious water constraints.

7.1. Changes in the differential between production and consumption of white rice in China

CHINA BECOMES AN IMPORTER

Year	Production	Consumption	Differential
1998/99	139.1	133.57	5.53
1999/00	138.94	133.76	5.18
2000/01	131.54	134.36	-2.82
2001/02	124.31	134.58	-10.27
2002/03	122.18	134.8	-12.62
2003/04	115	135	-20

7.2. Share of China and Thailand in world production and marketing of white rice

	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04
World Production	394.96	408.7	397.98	398.44	378.24	390.22
	139.1	138.94	131.54	124.31	122.18	115
China	35.22%	34.00%	33.05%	31.20%	32.30%	29.47%
	15.17	15.95	17.05	17.5	17.2	17.58
Thailand	3.84%	3.90%	4.28%	4.39%	4.55%	4.51%
World demand	387.15	397.73	397.19	410.41	408.01	412.47
	133.57	133.76	134.36	134.58	134.8	135
China	34.50%	33.63%	33.83%	32.79%	33.04%	32.73%
	8.83	8.98	9.35	9.93	10.12	10.26
Thailand	2.28%	2.26%	2.35%	2.42%	2.48%	2.49%

7.3. Changes in Senegalese imports of white rice

Year	2008	2010	2013	2015
Imports	728 000	765 000	824 000	865 000

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