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## Report on Rice Innovation Platform in Mali

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## **Context and Justification**

The agricultural sector is the driving force behind the economies of countries in West and Central Africa. Providing the bulk of export earnings, the sector employs nearly 70% of the working population. Despite the existing potentialities, the sector is not able to occupy its rightful place in the development of the countries in the region. For several reasons, agriculture especially the family type of farming has difficulties to intensify due to; (i) accessing agricultural inputs (selected seeds, fertilizers, pesticides, etc.), (ii) accessing land, especially for Small farmers and (iii) the inadequate mastery of technical itineraries. Moreover, the policy inherited from colonization led to a prioritization of cash crop farming, to the detriment of subsistence farming. At a time when many countries in West Africa were affected by the food crisis, the development of food crops were at the centre of the debate. At this stage, it is necessary to ensure food production is capable of satisfying the needs of populations. The choice of the rice sector for the zone of West Africa is not fortuitous. Indeed, rice is a staple food for the countries of the zone and the object of a real enthusiasm for the producers in search of substantial revenues. In addition, massive imports of rice to cover high domestic demand mobilize many financial resources, thus burdening the budget of many countries. For the specific case of Mali, rice occupies a place not insignificant in the eating habits of the population, mainly in urban areas. This speculation, cultivated in all regions of the country, is ranked third in terms of production and area sown after Millet and sorghum. Rice alone contributes about 5% to the country's GDP. The natural dispositions enjoyed by the country (30 million hectares of arable land) have enabled it to be self-sufficient in rice and to develop its export (DIAKITE, L. and all, 2014).

Nevertheless, the development of the sector is confronted with certain difficulties (access to land, lack of financing, high export costs, etc.). Moreover, beyond the agro-ecological constraints, the rice sector of Mali suffers from a lack of liaison and coordination between the various sub-sectors. Indeed, if producers have a good organization and have a solid basis for collaboration with the public authorities, it is otherwise a link between them and other players in the sector (processors, distributors, etc.). In Mali, the Agricultural Guidance Act adopted in 2006 (LOA) stipulates a policy to promote the sectors, consultation between the actors of these sectors and the setting up of inter-professions (platforms) to analyse, identify constraints find solutions and also help producers to develop innovative, technical, organizational and institutional skills to ensure they have a decent income from their activities and , to offer a framework for consultation, promotion and strengthening of member organizations and the competitiveness of the sector, World Chessboard

### **Some definitions of keywords**

**Innovation Platform:** According to " Doussouboui, (2010), quoted by Millogo, 2013) "Innovation Platforms provides a framework for consultation among stakeholders in order to understand all the factors affecting the agricultural value chain. These platforms create poles of competitiveness around speculation to improve the value chain. This interact synergy

allows the flow of information, knowledge, services and products among the players involved in this value chain.

**Innovation:** An innovation is defined as the adoption by a significant number of producers in a region, a different way of doing (CIRAD - GRET, 2002).

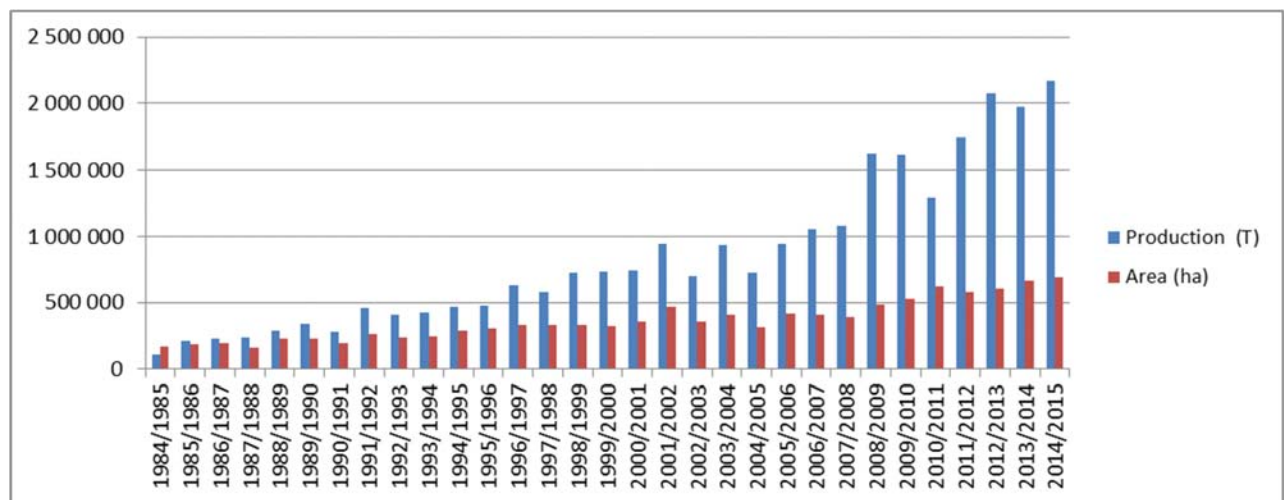
**Agriculture sector:** An agriculture sector means a sequence ordered activities leading to the provision of a market for an industrial or final consumption (Christian Mouilleseaux, Business Economics, 1997).

**Value chain:** A value chain consists of a series of economic activities relating to the supply of a specific product, from conception to consumption.

### Analysis of the evolution of rice production indicators

#### Production, area and yield

Production of rice is carried out in almost all the regions of Mali in different production systems: irrigated system with total control of the water either by gravity or pumping with the PIV, irrigation system in controlled submersion of the water, water system, lowland system (developed and undeveloped) and free submersion system. The data below are averages from all the syntheses of production published by INSTAT. The graph below shows the evolution on thirty years of productions and areas.

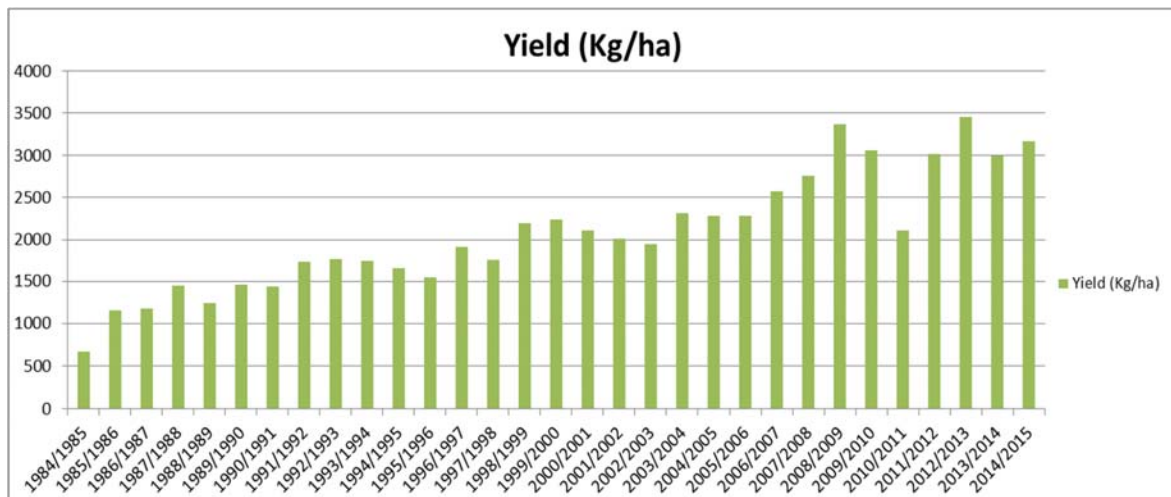


**Figure 1: Evolution of productions and areas from 1985 to 2015**

Source: INSTAT, 2015

In Mali, the production of rice evolved dramatically from 2008/2009, where it was recorded almost 50% increase in production compared to 2007/2008. In 2010/2011, adverse weather conditions linked to rainfall led to a decline in rice production. However, the average rate of output growth over the last seven campaigns studied was approximately 14%. One of the findings of the graph is also the increase in the areas cultivated in rice. The improvement in production indicators can be explained by the support measures implemented by the Government of Mali through the subsidy of inputs (fertilizers and seeds), support / advice with

the recruitment of supervisors, improvement The level of agricultural equipment with post-harvest equipment (mini rice mills, threshing machines, decorticators, etc.). The graph below shows the evolution of paddy rice yields in the different rice systems of Mali.



**Figure 2 : Evolution of rice yields**

Source: INSTAT, 2015

The observation that emerges from the analysis of the above graph is the upward trend in rice yields. But we also note that the peak is in 2008/2009 year of launching the subsidy process of rice production by the state.

### Import and Export

Imported rice in Mali plays a role of stabilizing supply at market and price levels. It levels the variations of the local price during the lean period when its effect is combined with that of the destocking of strategic provisions, notably the National Security Stock (SNS) and the State Intervention Stock (SIE). In doing so, it reduces the price of domestic rice, which is not beneficial to producers. Imports are justified by the negative gap in domestic supply and consumption needs. The largest importers of Malian rice are Guinea, which imports 59.89% of Malian rice exports and Mauritania which imports 26.89% of Malian rice exported. However, some of these countries, such as Senegal, are a major consumer of 'Good Break (GB)' quality rice that Mali does not produce. Côte d'Ivoire in general consumes high-end rice " Long Whitened Whole (LWW) " that Mali does not produce. Mali can thus go in search of rice market by improving productivity, competitiveness, while focusing on the quality of the rice market. The analysis of the dynamics of trade in local rice and imported rice in Mali is done through changes in the origin flows of imported rice from 2006 to 2012 in terms of volume (tonnes) and value (CFA F). It discusses the importance of imports relative to local production and rice availability and imports relative to agricultural GDP and national GDP. The table below shows trends in rice import flows.

Most of the rice imported into Mali comes from Asia, the bulk of which comes from Burma (31.36%), Thailand (20.45%), India (18.89%), Pakistan (18.13%) shows that Mali imports about 78% of its rice from Asia and the other 22% come from other continents including Europe and America. From 2006 to 2012, Mali imported an average of 184 371 tonnes of rice. The volume of imports varies from year to year and should be depend on the level of production. The value of imports is presented in the following table.

**Table 1 : Evolution of importations' value of rice in Mali in 1000 of CFAF**

Country of origin	2006	2007	2008	2009	2010	2011	2012	Means	Percentage by country
Pakistan	2859663	2859663	2859663	2859663	2859663	2859663	2859663	2859663	15,96
India	3768026	3768026	3768026	3768026	3768026	3768026	3768026	3768026	21,02
Burma	5743148	5743148	5743148	5743148	5743148	5743148	5743148	5743148	32,04
Thailand	1779416	1779416	1779416	1779416	1779416	1779416	1779416	1779416	9,93
Vietnam	1244719	1244719	1244719	1244719	1244719	1244719	1244719	1244719	6,94
Singapore	126619	126619	126619	126619	126619	126619	126619	126619	0,71
China	462072	462072	462072	462072	462072	462072	462072	462072	2,58
Japan	1938882	1938882	1938882	1938882	1938882	1938882	1938882	1938882	10,82
Total main country	17922545	17922545	17922545	17922545	17922545	17922545	17922545	17922545	75,46
Others	43034345	10439964	7740284	3892121	3502909	5330525	5597051	5829470	24,24
Total	22225981	28728275	26750984	27180023	24462021	21197213	22257074	24685939	100,00

Source: DIAKITE L., 2014

Commercial imports of rice into Mali are dominated by two or three major importers, accounting for at least 2/3 of total imports each year (Baris and Borgui, 2005). The conditions for competitive markets are thus far from being fulfilled, which has implications in terms of margins and transmission of prices along the chain.

**Table 2 : Importance of importations /national production of rice in percentage**

Designations	2006	2007	2008	2009	2010	2011	2012	2013	Means
National Rice Production (tonnes)	624273	703549,6	1055759,9	698288,45	842499,45	1131956,8	1437748	1437748	991478
White Rice Importation (tonnes)	130360	150250	189460	205000	140860	100000	421554	1674820	154773
Ratio (importation/production) in %	21	21	18	29	17	9	17	9	18

Source: DIAKITE L., 2014

Compared to the national rice production, the value of imports relative to current production is certainly in decline (21% in 2006 against 9% in 2013) but still exist with an average of 18% of national production rice.

Mali's rice is exported mainly to the neighbouring countries of Mali. The quantities exported are low because they are not commercial exports of rice but rather cross-border trade in border services, notably Customs and the plant protection service at all border crossings. The finding is different from Algeria where, where rice exports are not registered at all. Rice exporters are

timid. In fact, the export volume of rice may be larger than the quantities in the table below through uncontrolled exports

**Table 3 : Evolution of rice exportation from 2007 to 2012 in tonnes**

Country	2007	2008	2009	2010	2011	2012	Means	Percentage by country
Ivory Coast						25	25	1,05
Burkina Faso						26	26	1,09
Mauritania	226	140	627	62	62	346	244	10,23
Guinea		250	2832		1880	1836	113	47,53
Senegal						945	945	39,64
Niger				62		3	11	0,45
<b>Total</b>	<b>226</b>	<b>390</b>	<b>3459</b>	<b>124</b>	<b>1942</b>	<b>3181</b>	<b>2384</b>	<b>100</b>

Source: *DIAKITE L., 2014*

According to the data analysed, rice is exported to six neighbouring countries of Mali. The finding is that exports of rice done to Burkina Faso, Côte d'Ivoire and Niger are very low. It should be noted that recorded exports represent only a trend across the officially recorded data. There are several flows that are not recorded considering the borders of Mali or with the neighbouring countries.

**Table 4 : Evolution of the ratio exported rice / national production from 2007 to 2012 in percentage**

Country	2007	2008	2009	2010	2011	2012	Means
Total rice exported (T)	226	390	3459	124	1942	3181	2384
Production (T)	1082384	1607647	1950805	2308233	1741473	1914867	1767568
Ratio exported rice/ national production (%)	0,021	0,024	0,177	0,005	0,112	0,166	0,135

Source: *DIAKITE L., 2014*

The observation that emerges from the analysis in the table above is that the quantity of Malian rice exported is very low from year to year. It accounts to about 0.14% of local rice production.

The largest importers of Malian rice are Guinea, which imports 59.89% of Malian rice exports and Mauritania, which accounts for 26.89% and Senegal 11.69%.

Despite these data, it should be recalled that Senegal is rather a major consumer of 'Bon Brisure (GB)' quality rice that Mali does not produce. Similarly, Côte d'Ivoire in general consumes rice of high-end "Long Whitened Whole (LWW)" that Mali does not produce.

Mali can thus go in search of rice market by improving productivity, competitiveness, while focusing on the quality of the rice market. Rice market research in the sub-region, Africa and other continents should be one of the current priorities for the development of Malian rice cultivation. This Market research should be done concurrently with improving the quality of market rice produced in order to meet consumer preferences.

### **Consumption**

Rice plays a central role in the eating habits of the population, mainly in urban areas. In urban households, an average of more than 60 kg of rice is consumed per person per year. In terms of volume, rice remains second only to millet, which is the main cereal produced and consumed, and behind sorghum in rural areas (COULIBALY, Y., 2014). The increase in rice consumption has been spectacular. Rice consumption has increased from 48 kg/person/year in 2003/2004 to 72 kg/person/year in 2013-2014 (DIARRA, A. C., 2016)

### **Importance of rice in the Malian economy**

Rice alone accounts for about 5% of the country's GDP, about 220 billion CFA (Strategic Framework for Growth and Reduction of Poverty (2012-2017 CSCRP)). It ranks well behind livestock and its share in national added value increases with the increase in trade flows to urban areas. It is considered as a strategic product in Mali. Mali has considerable rice potential. Areas suitable for irrigation amount to 2200000 ha of which 418,313. ha (19%) are managed, Mali has made tremendous progress in rice production since the food crisis 2007/08 and has a large rice self-sufficiency capacity (93%) in 2014 (DIAKITÉ L., 2014). It is also the second producer of rice in West Africa after Nigeria with a production of 2451 000T (2015-2016 campaign). Indeed, rice is produced in almost all parts of Mali with very different cropping systems: storm, flood free, controlled flooding, and total control.

The typology of rice cultivation is done in different ways, either by the size of the hydro-agricultural development or the level of control of the water. Rice production modes encountered in Mali can be classified by broad types: The traditional rice farming of deep flood (or deep immersion) rice in the central Niger Delta, rice cultivation in the lowlands and floodplains in the southern part of the country and in particular in the Sikasso region and Rainfed rice production. Often shallows are developed to improve water availability by reducing fluctuations;

- The rice cultivation on hydro-agricultural schemes which, according to the degree of control of the water, groups rice cultivation under controlled flooding, especially in the regions of Ségou and Mopti and rice cultivation in total control of water in the rice fields of the Office du Niger, The facilities of Sélingué, Baguinéda and the small irrigated perimeters along the rivers Niger and Senegal.



The largest region of rice production in Mali is the Ségou region, which produces more than half of the country's rice production. The region of Ségou dominates very widely with between 25% and 32% of the area cultivated annually and between 50% and 63% of the national paddy production with the Office du Niger and the Office Rice Segou. It is followed by the Mopti Region whose contribution to local production varies between 15 and 20%. The region of Sikasso is the third region of the country in the production of rice with a share varying from 10 to 15%. This region is followed by those of Timbuktu and GAO.

Thus, Office du Niger rice sector is the flagship of the Malian rice. It produces on its own 40% of the national production and gives on average the best yield 5.75t / ha against 1.44t / ha in controlled submersion, 4.19t / ha for the Small Village Perimeter Irrigation (PPIV) and 1, 25t / ha for the traditional sector. The Office du Niger (ON) occupies a dominant position in national production, with 77% of the areas under total control of water and 43% of the total paddy production. The rehabilitation of the Office du Niger and the extension of areas under total control or controlled flooding have resulted in a significant increase in paddy production from 214 000 tonnes for the 85/86 marketing year about 1018 778 tonnes for the 2006/2007 marketing year. Several elements testify to the good health of the ON rice sector, in particular:

- A good financial return for most producers;
- Reduced processing costs;
- An efficient marketing system, with a reduction in long-term margins and a dampening effect on consumer prices.

In addition, rice is the main irrigated crop during the rainy season with 115,000 (90%) being irrigated and farms that practice traditional rice farming is about 55,000.

The development of production is linked to the development of irrigation. The potential irrigable land in the country is estimated at over 2 million hectares of which about half is in the Niger Valley. The existing infrastructure of the Niger Office alone could irrigate around 160 000 ha.

Rice production has been increasing in Mali since the mid-1980s as a result of investment efforts and reforms undertaken in the management of hydro-agricultural developments. However, the main constraints to the development of rice in the country is the lack of adequate incentives and land tenure, the high cost of irrigation schemes, the limited financial resources of the State, bad maintenance of the tertiary network by the beneficiaries, in particular the drainage systems in several production zones. This leads to the long-term annihilation of investment efforts and the proliferation of wild rhizome rice in the controlled flood traps and in the lowlands (SPC, 2001).

According to Trade Mali study (Diarra, 2004), , ON rice has a strong comparative advantage in the production and marketing of rice on its national territory, except on the markets of Kayes (on the Dakar / Bamako axis) and Sikasso (on the Abidjan or Tema / Bamako route, by direct route or via Bobo Dioulasso in Burkina). "The lack of comparative advantage in these two

national markets is explained by the relatively high transport costs due to their remoteness from the ON production areas.

Like other countries in the West African region, Mali is subject to recurring shocks affecting agricultural production and food security. The role of the market is predominant in food crises in the importing country of rice such as Mali. In order to prevent and better manage these food crises, the State of the region has adopted instruments to facilitate the analysis, response and coordination of initiatives in the field of food security. In addition, many experts predict a growing tension for supply to West African countries. Various reasons are put forward:

- The narrowness of the international rice market, only 6.5% of world production (compared with 12% for maize and 18% for wheat);
- The structural increase in needs in the main producing countries of Asia and Latin America;
- The current limits on the margins of output growth in these countries;
- The reduction of countries' capacity to import rice with the worsening poverty and
- The potential changes in the current international trade in rice trade with a shift towards more buoyant markets currently protected, to the detriment of those in West Africa, if trade negotiations within the WTO Opening of agricultural markets.

Despite the increase in production, Mali is not a net exporter of rice. Cross-border trade is the main source of rice exports. There is no organised export of rice. Current exports are informal trade. The border trade of rice is mainly with Mauritania. This is due to the proximity of this country with the main production area that is the Office du Niger in Mali. But also with a local production valued at 93% of national consumption, Mali continues to import an average of 184.300T.

#### **Main frameworks for the rice sector**

The main frameworks for the rice sector are the Office du Niger (ON), the Office Riz Ségou (ORS) Office Riz Mopti (ORM), the Office of the Irrigated Perimeter Baguinéda (OPIB) and the Office of Rural Development Sélingué (ODRS)

- The Office du Niger (ON)  
The Office of Niger is at the heart of the country's rice development policy. It was created in 1932 and located in the western part of the central delta of the Niger River, called Delta Dead. This former perimeter is in the region of Ségou, 350 km from Bamako, the capital of Mali. This perimeter has evolved considerably over the past 20 years and is the site of many stakes, diversification project.
- The Office rice Ségou : (ORS)  
The Office is responsible for proposing and implementing all the programs contributing to the promotion of the rice sector through actions aimed at integrated rural development in its zone of intervention located in the Ségou and Barouéli cercles. The ORS manages rice-growing land with an estimated potential area of about 34 000 ha, of which just over 80% was harvested in 1998.
- The Office Mopti rice : (ORM)

Like the ORS, the Mopti rice operation was transformed in 1991 into a public administrative institution (EPA) with legal personality and financial autonomy. Organized on the same model as the ORS, the ORM also encourages the development of PPIVs offering the possibility of double annual cultivation. The ORM provides on the basis of Land Management plan contract rice with an area of about 14.000 ha in controlled submersion.

- **The Office of the Irrigated Perimeter of Baguinéda (OPIB)**

The OPIB is in the town of Baguinéda, 30 km from Bamako. The scope covers 3.000 ha of alluvial terraces on the 4.500 ha that make up the valley.

- **The Office of Rural Development Sélingué (ODRS)**

The area of intervention of the ODRS covers an area of about 440.000 hectares extending from the Guinean border to the confluence Sankarani -Niger to Kourouba. The Maninkoura plain of a projected fitted net area of 1.094 ha, is located on the left bank of Sankarani before its confluence with the Niger, 40 km downstream of the dam Sélingué.

Other stakeholders In the framework of the liberalization of the sector, Village Associations (AV) were created in the mid-1980s in all rice-producing areas to participate, as intermediary structures, in the management of supplies with input credits, ploughing oxen, cultivation tools and mechanical threshing machines. BNDA which has existed since 1988 also aids in the financing of campaign expenses and equipment, still via AV. Many credit unions have also emerged in rice-growing areas.

It should also be mentioned among the stakeholders in the sector, women. They play a very important role in rice production, contributing mainly to transplanting, weeding and winnowing activities. However, they have little involvement in VAs and when they do, they are rarely consulted when making decisions. Measures taken by the ON to address this problem includes the allocating land to women (156 ha for the plan period contract), facilitating their access to credit, organizing training them in processing and preserving market gardening products and, taking initiatives that taking into account the Gender and Development approach. For instance, the ON grants operating permits regardless of sex.

### **The major stages of rice policy in Mali from 1980 to the present**

Economic liberalism advocated by the Malian authorities at the beginning of the 80s has had a positive effect on the rice sector. Measures to liberalize the rice market, coupled with the ON efforts to intensify paddy farming and the rehabilitation of hydro-agricultural infrastructure, have contributed to increased rice production and productivity levels. The following steps trace the outline of this rice policy beginning from early economic reforms in 1980 to the present.

#### **Period from 1980 to the end of 1993**

At the end of the 1970s, the ON was in crisis notably the continuous degradation of the water network, fall in yields, farmers in difficulty, declining peasant population, institutional problems, lack of representative peasant organizations (Anneke Slob, 2002). Considering these difficulties, the Malian government in 1978 sought financial support from its development partners (World Bank and some bilateral partners such as China, the Netherlands, France and Germany) to rehabilitate the Irrigated perimeters of Office du Niger.

As a prerequisite for their support, most donors imposed far-reaching reforms. Thus, in 1982, a three-phase recovery plan was adopted: These were the Consolidation of existing facilities rehabilitation of lockers and extension of facilities to new areas.

The ARPON project funded by the Netherlands started rehabilitations in 1982 in the area of Niono. The project was dubbed *Improvement of Rice Farmers in the Niger Office*. The project targeted rice farmers and not the institution of ON. The objective was to improve the living conditions of farmers by giving them free access to productive assets and lucrative post-harvest activities. With this project, more than 18,000 ha were rehabilitated between 1990 and 2000, and part of the locker M'Bewani was arranged in 1997 (Sjoerd Zanen, Aly Diallo, 2002).

Following the liberalization of the marketing of paddy and the transfer of threshing activity to farmers' organizations, the Netherlands introduced the first Votex Ricefan threshers in 1984 with a donation of 430 machines. These small threshers processed increasing quantities of paddy. Production increased from 20,000 tonnes in 1983/84 to 80,000 tonnes in 1990/91 and almost by 450,000 tonnes of paddy in the first eight years. The introduction of these threshers enabled the producers to be structured around a profitable economic activity, generating significant revenues for associations; 305 million CFA francs for the first eight campaigns. Jobs have been created locally, generating 762 million to pay CFA francs over the same period (Ab Wanders, Jean-Philippe Tonneau, 2004).

Launched in 1986, the Retail Project of the French Development Fund, named after the primary irrigation channel serving the area, was concerned both the redevelopment of land, their development, the organization of Research and development, and institutional support for the NWT. The project has continued in various forms to lead to service centers, which now offer farmers management advice.

The first phase of the project (1986-1989) focused on the redevelopment of 1,450 ha of rice fields in the old Retail locker with an area of 3,500 ha. The other parts of the trap were incorporated into the following phases of the project, in order to obtain a good control of the water surface, which is essential for the success of irrigation and therefore for intensification (Guy François et al., 2002).

Both projects (ARPON and RETAIL) led to intensification of rice cultivation in the NWA, as it was the main objective, but the degree of intensification was ".Whereas ARPON objective was to improve, RETAIL sought to intensify. In both cases, trap rehabilitation was necessary to ensure water control and meet the needs of an intensive crop. The intensive rice cultivation practiced today is based on transplanting, the use of high yielding varieties, the supply of chemical fertilizers and double cropping. Animal traction was considered an asset to be preserved to limit costs (Jean-Yves Jamin, Yacouba Coulibaly, 2002).

Besides ARPON and RETAIL, two other partners made it possible to redevelop the plots at the Office du Niger: This is the European Development Fund (EDF) and the World Bank. At the end of 1994/95, the four projects were accounting for 18.830 hectares redeveloped (about 40% of harvested areas) 59% for the project ARPON (11.300 ha), 16% for the World Bank (3.000 ha), 13% RETAIL (2.400 ha) and 11% for the EDF (2.100 ha), (Barry et al, 1998).

These rehabilitation operations were accompanied by the extension of new production techniques, such as systematic transplanting, use of short straw and non-photosensitive straw (BG 90-2) and high fertilizer doses, and implantation post-harvest techniques (harvesters and shellers of ARPON project) (Barry et al, 1998).

The reforms combined with the redevelopment of the perimeters and the intensification of rice cultivation have had a significant impact on farmers' strategies, productivity levels and incomes. According to Oumar Tall (2002), the early rehabilitation in 1982 to restructure the ON 1994 paddy yields have tripled. This success, due in part to the rehabilitation of the perimeters, prompted the ON and its financial partners to continue the redevelopment.

As major dates of the rice policy from 1980 to the end of 1993, the following points should be noted:

1984: Liberalization of the marketing of paddy, abolition of the economic police and creation of the first Village Associations (AV)

1985: Abolition of the input credit granted by the ON and creation of the Fund of Agricultural Inputs (FIA)

1988 Partial liberalization of prices with maintenance of a minimum price guaranteed by public rice mills

1990: Total liberalization of paddy prices

1992 : FIA Dissolution and creation of Village Development Fund (FDV) for seasonal credit and for AV input supply.

### **1994 period to the present day**

The devaluation of the CFA Franc reached in January 1994 generated both high hopes and fears for the actors in the rice sector. With this economic measure of the Member States of the Economic and Monetary Union of West Africa (UEMOA), rice ON has become more competitive in domestic markets against imports from the Asia. But cons, it caused a higher cost of imported inputs, especially fertilizer.

After the devaluation of the CFA, the Government of Mali has continued its reforms to further liberalize the economy. The withdrawal of the state of the agricultural sector like other sectors of the economy has been the watchword of the various structural adjustment programs. Thus, from 1994 to today, the intervention of the Malian government in the grain sector focuses on:

- The production of public goods required for the performance of the actors of the activities (transport and communications infrastructure, agricultural research, agricultural extension market information, legislation on standards of quality) ;
- The regulation of economic activity (fixing of duties and taxes on imports, setting the level of fees for irrigation schemes, defining the rights and obligations of private actors ;
- The signing of an agreement - Plan Niger Office / State which defines the land management arrangements with incentives for private investment (CISSE Amadou et al).

With the signing of the agreement plan, the Niger Office was restructured in 1994 to become a public institution of industrial and commercial (EPIC). This restructuring aimed at greater liberalization of the economy and the transfer of responsibility from the state to private players by refocusing the Office du Niger missions which are:

- As part of the enhancement and development of the Central Delta of the Niger River:
  - Water management
  - Maintenance of facilities.
- As part of the public service concession contract
  - the delegated project for studies and works control
  - maintenance of primary infrastructure
  - land stewardship
  - Rural Advisory and assistance to operators of developed land supply, agricultural inputs and equipment.

The decree stewardship N ° 96-188 / P-RM 1996 defines the main water management rules and land specifying particular land status and in particular establishing joint committees of management to involve farmers in decision-making in these areas (Office du Niger, 2003).

With the decree of management, consultation between the ON and operators is organized through three types of joint committees: the Joint Committee of Land Management, the joint committee of management of maintenance funds of the secondary hydraulic network and the committee Joint diverter. In addition, a general delegate and two deputy delegates, elected by the operators involved in key management and control bodies of ON. All this reflects the will of shared management responsibilities between the ON and operators (Yaya Diarra and Mamadou Sanogo K., 2002).

After 1994, projects were initiated to continue the redevelopment of the plots. The different phases of ARPON RETAIL and projects have helped rehabilitate 24.290 ha of 54.124 ha operated in 1995.

To increase the area managed, new strategies are being tested. Hence the idea of the participation of beneficiaries in investments on new land, especially in the M'Béwani project, where the physical and financial participation is requested. Begun on the perimeter M'Bewani, this approach has allowed the development of approximately 7.000 ha, with lower costs for the state

Participatory development is carried out with a producer organization from one or several villages. This may be of producers living in the perimeter already developed and who wish to increase their land capital or producers of the dewatered area subject to strong climatic hazards. The level of beneficiary participation arrangements is negotiated with the lender. This participation typically provides clearing, excavation and backfill setting sprinklers and sprinkler drains, digging ditches and levelling a summary. It represents on average 20% of the total cost. The beneficiaries have a choice of running themselves the work or pay the monetary equivalent (Yacouba DISSA COUJALY and 2002).

Still undeveloped, the promotion component of private irrigation agro-industrial operations program is an important step to facilitate the installation of private investors in ON area. Under the National Rural Infrastructure Programme (PNIR), a test set up perimeters in leasing is expected (Yacouba DISSA COUIALY and 2002).

To support these initiatives, Sustainable Economic Growth Program of USAID, ON and the Fédération des Caisses Rurales Mutualistes du Delta (FCRMD) entered into an agreement dated 15 March 2000 for the establishment of a promotion of private irrigation loan program. The funds were housed at the FCRMD who played the role of financial institution. The goal of the program was to promote greater access to small and medium sized food companies to bank financing for tertiary planning of plots. This was made possible through a fund to provide 80% of the capital of loans to companies involved in irrigated crop production in ON area

The loan term was 5 years with a one year and an interest rate of 9%. Companies should be holding, in advance, of a land allocation letter or a lease granted by the ON. The borrowers themselves pay the costs of creating the loan file and feasibility study. The technical dossier evaluation was performed by ON in collaboration with USAID, even if ultimately it was up to the FCRMD to choose its customers based on its own financial evaluation criteria. Once funded, companies receiving assistance in technical management and marketing offered by the project Agro Enterprise Centre (CAE) / Chemonics International, contractor of USAID Mali.

This program funded by USAID helped to develop approximately 1,000 hectares distributed among several farms whose size varies between 5 and 50 ha. However, non-strict application of texts for the granting of loans by the FCRMD caused high rates of loan defaults and suddenly the suspension currently funding by USAID.

After this support to the promotion of private irrigation in ON area, USAID, through its Sustainable Growth program, has signed a letter of financial execution with ON for land development dominated by the diverter KL4 Niono in the production area. The financing agreement, signed on 20 August 2002 amounted to 740 million CFA francs, or US \$ 1,193,548. After this project, the development of this long diverter 5.7 Km should allow the irrigation of 960 hectares approximately. It is planned to book the 1/3 plot arranged for the installation of private investors in rice (Hamady N'DJIM, 2004).

Outside the redevelopment efforts and increased area through the development of new land reforms were undertaken in the two other segments of the rice industry. Thus, liberalization of marketing and processing segments of paddy was effective in 1995 with the closing of public industrial mills which were later sold to the Company of Rizeries of Mali (SERIMA) in 1997. As the sector taxation policy, reforms have occurred from 1994 to import and export both for rice than for inputs (fertilizers in particular). This is as it has been decided to reduce import taxes on rice between 1994 and 1998 (from 46% in 1994, it was reduced to 11% in 1995 with a cyclical reduction to 6% from July to September 1996), (Dramane MARIKO et al, 1999) . Current tax rules in line with those of WAEMU are governed by the Common External Tariff (CET).

The evolution is characterized by the standardization of the nomenclature and rates of admission. Indeed, there is more to the Import Tax Law (DFI), Fee for Service Statistics and Counterparty. Tax on Value Added (VAT) is currently 18% over the whole of the Union; it is increased in the case of Mali 8 points from its 1998 level.

In conclusion, the ON restructuring policy and new measures since 1994 have the following results:

- Stimulating production by providing farmers the incentives needed by liberalizing prices and trade and improved land tenure security
- Strengthening and improving the ON capabilities to efficiently manage irrigation infrastructure, including limiting the essential missions, developing partnership relationships between operators, the state and the ON strengthening skills producers, extension agents and financial management;
- Adoption of the principles and establishing sustainable irrigation development mechanisms: renovation of basic infrastructure, participation and accountability of operators in the management and maintenance of facilities (Oumar TALL, 2003).

As regards the level of productivity (yield), the comparison between the periods before and after devaluation indicates an increase of 27% over the whole of the ON area, due primarily to the following factors:

- Increasing doses of chemical fertilizer (urea and DAP);
- Redevelopment parcels, transplanting and better maintenance of plots and crops.

ON the producers have thus reacted positively to the reform measures made by doubling their production. The growth was mainly due to increased yields. The technique of transplanting has been widely adopted. At ON, the percentage of rice acreage planted has evolved from 4% in 1987/88 to 97% in 1999/00. Besides the enhancement of fertilizer, it should be noted that changing the broadcast seeding to transplanting is accompanied by a 30% decrease in seed doses. Nearly twenty varieties of rice are regularly requested and produced by the seed service and seed producers (Adama Coulibaly, 2002).

### **Rice trade in Mali**

Generally, in Mali, the actors in trade flows of food are numerous and interact or acting in the sector with a direct or indirect action according to the nature and extent of their activities. At present, there are three (3) categories of stakeholders in the rice marketing: direct private operators, indirect private operators, public operators.

#### **Direct private operators**

Producers, traders, transporters, processors and consumers operate directly in the pipeline.

#### **The producers**

They are the first responders in the rice supply chain nationwide. Indeed, after storing the portion of their production for family consumption, producers are at the weekly markets to sell



the surplus. It is this amount that will be the first food intake for cities. It is at this level of the chain that starts the food supply of domestic rice production to consumption centers. In these markets, prices are variable and are often formed during negotiations between producers-sellers and buyers. In this context the remunerative prices are stimulating factor of the entire procurement process in urban centers.

### **Traders**

The category of traders consists of many operators whose roles are well defined theoretically, even these roles often overlap on the ground in terms of market opportunities.

### **Collectors**

The collectors are the second link in the rice supply chain locally produced. They are very active and have good knowledge of the terrain and producers, hold the best information on quality, quantities, and product prices. They work mostly on behalf of wholesalers and semi-wholesalers who provide them with the financial resources to purchase. But often, even with their very limited financial strength, the collectors can also act on their own behalf.

The privileged place of purchase collectors remains different weekly providers rice markets is the place par excellence to trade with farmers from various villages ; Moreover, it is possible to see some of these traders move from village to village to buy the product. It is noted that more and more, particularly in the Office du Niger in Segou, this collector function can be performed by Professional Agricultural Organisations (AV and other POs) who are involved in this activity. At resale, the collector acting for its own account, many ways to sell the collected products: it may have for customers both wholesalers' urban markets and retailers.

### **Wholesalers**

These are the traders of the towns and large rural centres that operate groupage, storage and resale of husked rice collected from producers. They act in the marketing channel within their financial means (wholesalers or semi-wholesalers) and generally have storage facilities in urban centres around the collection area and the rural marketplaces. Some of them (always according to the financial means) can be means of transport owners (vans, trucks of 10 tons, etc.). Very commonly, wholesalers do not specialize in a single cereal product; they are, for the most multi-grain products to minimize financial risks.

### **Importers**

The State of Mali, through its specialized body, the Office of Food Products of Mali (OPAM), or through donations and / or international food aid, has long been the main operator of the grain imports including rice. Taking advantage of trade liberalization measures in connection with the Structural Adjustment Programme, several private operators today to participate in this activity. Note that rice importers in Mali are not as Malian traders. Because of trade liberalism, importers from Asia, for example, are also involved in the marketing of local products. In the proper procurement strategy of the country, the Government whenever necessary tries to gain traders exemption from duties and taxes on the importation of rice. The decision of the State is

accompanied by a set of specifications that establishes the conditions for import, distribution and development to final consumption.

Furthermore, lively informal channels through private operators have always ensured importing significant quantities of rice from neighbouring countries, even at the time OPAM still had a monopoly on grain imports. The amounts of grain moving through these circuits are not encrypted because, precisely, they are informal. Importers ensure other hand, the import of other foodstuffs such as sugar, flour, oil, dairy products and canned. They have an important financial surface and can benefit from bank loan since they justify enough collateral to offer to financial institutions. Very generally, they organize the transport and storage in city centres and are, usually, storage shop owners and some have their own transport truck.

### **Retailers**

There is a specialized category called retailer in resale retail offer which suits fractional consumer demand so that the quantities are measured using local measurement units (at or below the kg) or conventional unit that is the kilogram. These retail dealers have extremely limited financial resources and suppliers for collectors, semi-wholesalers' cities or wholesalers.

### **Carriers**

Carriers have a very important role in transporting rice production areas to consumption areas. Indeed, except for importers and some wholesalers, traders do not have their own transportation.

In the area of transportation, we can distinguish the category of owners' carriers and trucks the category of "tenants" or "touts". These are often former drivers with much experience and knowledge about the realities of the profession but who do not own vehicles. The "tenant" leases the truck to the owner and then manages his way all the time that lasts rent.

### **Consumers**

Consumers are the last speakers of food chains. It is for them that is set up this chain of stakeholders, from producer to retailer. The satisfaction of their needs is the ultimate goal of the existence of food supply and distribution channels and systems. Without them, these systems have no reason to exist. Their role is important to indicate to players that precede what they want products in quantities in prices, infrastructure, etc. The constraints felt by consumers must, through their behaviour, reverberate throughout the industry to the producer. However, downtown, these consumers are increasing because the diversity of income promotes a diverse product demand.

### **Indirect private operators**

The banks involved in the supply to cities in an indirect way, by financing the activities of the different actors. Their role is fairly limited, however, because most finance large importers traders of grains and other foodstuffs. They very rarely provide financing to IPOs and other actors of the marketing and when that happens, it is often with credit lines from donors or

governments credits set up to encourage the marketing. They can also grant loans on their own funds but using the guarantee fund set up by the donors.

To overcome this deficiency, some projects involved in the fields of production and marketing of agricultural products, set up their own credit cell which provides loans at preferential rates. Non-Governmental Organizations (NGOs) as Green Africa also directly involved in the marketing of cereals including rice. AMASSA Afrique Verte provides mostly technical support, logistics and financial (but more limited quantity) and is closer to the private and associative operators. The number or the importance of public agencies involved in food marketing is different in different countries.

The Commerce Department is deeply involved in imports, local marketing and distribution of food. The Directorate National Trade and Competition is the body responsible for the development of import programs and the delivery of programs based on these licenses. It even monitors the prices and Fraud in the context of competition law.

The Ministry of Economy and Finance is in direct contact with donors PAS. As such, he controls the implementation of the measures advocated by PAS (privatization, liberalization, devaluation, the public service restructuring, etc.). This is also the Ministry of Finance that are determined the nature and rates of taxes applicable to the food trade activities and the level of subsidies granted to importers.

National Directorate of Customs is a service attached to the Ministry of Economy and Finance, which remains an active link in the trade of Mali. The Malian customs have a strategic function in that they constitute the main source of financing the national budget. Customs duties are also often used as import monitoring tools by setting fluctuating tax rates depending on the quantities produced in the country.

In Mali, several international agencies (UNDP, UNCTAD, WFP, FAO, etc.) involved in the framework of projects to support the production and marketing of products. This participation takes several forms: technical, logistical support, and supervision of cadres of Ministries, organization and support of farmers' organizations, implementation of marketing credits, setting up cereal banks, import and distribution of aid food, etc.

### **Rice innovation platforms in Mali**

In general, rice innovation platforms have (i) a thriving life as having the financial and technical support of several partners and serving as umbrella for op with permit growing rice (ii) a hope short life because they were created as part of a project and at the end of it and the lack of other partners they stopped working.

### **Operating platforms**

General way, the operation of rice platforms is managed by a general assembly, a board of directors and a supervisory committee. A small office is selected by a meeting to expedite everyday instances.

### **Communication strategy**

For proper functionality of innovation platforms, communication plays a key role. It relies on a cell or animation committee comprised of key stakeholders who support the collection and dissemination of information within the group. Communication channels used are:

- The organization of regular meetings of information, discussion and decision-making
- The organization of meetings of refunds whenever a member of the platform part in events outside the group (training, study tour, meeting etc.);
- The organization of open days and guided tours
- News radio and telephone calls

**Identification of platforms in novation of the rice sector in Mali:**

NOT	platform name	Location	Region	Product / target activity
1	Riz étuvé	Rice pole Zangaradougou	Sikasso	parboiled rice market, national and international (Burkina and Guinea)
2	Bas-fond	Bamadougou	Sikasso	Rice lowland local, national and international (Togo, Ghana, Burkina)
3	Bas-fond	Doumanaba	Sikasso	Rice lowland local, national and international (Togo, Ghana, Burkina)
4	Plateforme " Riz blanc"	Kourimari (Diabaly)	Niono	White Rice local, national and international (Mauritania and Senegal)
5	Waati Yélèma	Sériwala	Niono	White Rice local, national and international
6	GOPON (Groupement d'Organisation Paysanne des Producteurs de l'Office du Niger)	Niono	Niono	White Rice local, national and international
7	SIGUIDJA	Soke	Niono	White Rice local, national and international
8	PNPR-M (Plateforme Nationale des	San, Niono, Segou and Bla	Kayes, Segou, Koulikoro, Gao Sikasso,	White Rice local, national and international

	Producteurs de Riz du Mali)		Mopti and Timbuktu	
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**Presentation rice of platforms in Mali**

- *Waati yelema* is a platform created in 2014 with the support of IER officials in the village of KM 30 Sériwala. The platform has had 20 members since its creation., the office is composed of a president, a vice-president, secretary general, treasurer, and organizer functions with training its rice cultivation technique members. Waati yelema has sources of income contributions from its members (200F every Friday) and membership fees (1000 CFA F). The activities of the platform focused on the training of its members by taking Rice 0.10 hectare in plots of 5 members to make the test plots; this training period focused on a crop year (June-November).

The budget allocated for this purpose has been fully supported by the project Communication within Waati yelema was made during meetings. However, Waati yelema has stopped functioning due to lack of financial and technical support.

External opportunities for the platform is to have partners that could subsidize fertilizer and provide seeds with good qualities. Waati yelema plans to conduct other activities as fattening, poultry and fish in addition to rice.

- *GOPON (Grouping Peasant Organizations of Producer of the Office du Niger)*: Create since 2009, it is composed of 11 umbrellas under which we find different actors (producers of inputs, seed and union suppliers). Over the years this innovation has increased, the office hosts a President, a Vice President, Treasurer, Secretary General, an organizer of external relations. It sources come from the annual contributions (20 000f), withdrawals from the marketed rice (10%) and membership fees (35 000f). The elements of the action plan focused on visiting days and consultation frameworks; The activities concerned on the training involves production costs, a marketing plan and make sensitization. As investment plan, GOPON provides for the acquisition of a seat equipped aves permanent staff; The means of communication is through meetings, days of sensitization and news radio. The difficulties are material and lack of training of actors in leadership and advocacy; prospects are those considered to cover the entire area of the Office du Niger and work to be at the center of major decisions. Supervision of extension agents could be the threat that can cause failure of GOPON departure differences of vision ; for external opportunities, GOPON wishes establish relations with the World Bank.

- *SIGUIDJA*: This is a platform implementation in 2014 through the project of climate change IER in the town of Soke. Its actors are from other rice producers, rice seed, rice processorsIt has a total of 26members.

Sigidja works by training its members in good rice farming technique, tree planting and rice marketing. The organisational structure is made of of a president, a treasurer, an organizer and facilitator.

Siguidja generates income as contributions from its members (500F), which are paid monthly and at meetings of trade. Its investment plan includes the acquisition of a récipicé Its prospects are considered to have a seat suitable for the office. However, Siguidja platform became inactive when the project came to an end. Its major challenge is the lack of partners It seeks partnership opportunities with new projects.

- *PRPR (Platform Regional of Rice Producers)*: This is the regional hub of Segou, founded in 2008 it is made up of 4 bases (San, Niono, Segou and Bla) which consist of producers, traders, processors and seed. With an increase of members of its creation to the present, PRPR works through a board of directors, a general meeting ; his office is composed of a President, a Vice President, a Secretary, a Treasurer, a monitoring committee. The sources of income of the PRPR come from its donors (EU, World Bank), Annual contributions and membership fees are (100.000 CFAF) (50.000 CFAF) respectively. The activities have focused among other things on structuring op, capacity building and sectoral meeting that the budget allocated to this latter activity is 100.000 CFAF. The platform communicates through meetings and phone calls; The challenges faced are delay in the payments and lack of transport to the platform. As envisaged by PNPR prospects, there is the acquisition of a production unit (store, mini rice mill) for opportunities. The innovation needs technical partners to mechanize rice cultivation and develop more plots.

The National Platform of Rice Producers of Mali (PNPR) is an agricultural professional organization associative character. It brings together seven regional representations called (Regional Platforms of Rice Producers) with more than 300 basis rice organizations of different size and type (federation, cooperative unions, groups, cooperatives, associations, unions, etc.). The aim of the platform is on the one hand, to work to ensure the rice farmers of Mali earn a decent income from their business and also provide a framework for consultation, promotion and capacity building of organizations members for their greater participation in defining and implementing sustainable development actions, including offering for rice farming community in Mali and a better living environment favorable to their development. The national platform of rice farmers wants to be the reference framework for consultation of the rice farmers' organizations, by becoming more involved in the process of defining rural development policies in general and rice, at the national, sub regional and international.

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