

Cameroon's Rice Sector Faced with Import Dependency

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Abstract

Rice is a staple food for the Cameroonian population and is the most consumed cereal after maize. The SNDR (National Rice Development Strategy) document shows that despite the scale of investment to absorb domestic demand for rice, Cameroonian production has only been able to satisfy domestic demand to the tune of 20%. The question is therefore to understand the constraints that prevent the development of local rice production to the level of national need. To obtain results, quantitative and qualitative data from secondary sources were used. The rice sector in Cameroon is managed by the state through the Ministry of Agriculture and Rural Development (MINADER). MINADER designs development policies and strategies and coordinates the development of activities in the field. The state implements its policies and strategies through the projects and supervisory structures under its supervision. The sector is organized from the supervisory authority to the consumer. Each actor who intervenes has very specific missions that are transformed into effective activities in the field. The tracing of the evolution of rice production in Cameroon, from the year 2000 to 2018, shows three phases of evolution. The first phase, from 2000 to 2008, can be described as a recovery phase, with a growth rate of 44.84%, at the rate of 5.6% growth per year. The second phase can be described as the take-off phase, which runs from 2008 to 2016 when production peaked. The growth rate during this period was 79.96% at a rate of 10% growth per year. After the take-off phase, there is a decline between 2016 and 2018 at a rate of -12.7%, at a rate of -6.35% per year. It can be seen that the increase in production is evolving at the same rate as the increase in cultivated areas. However, the level of rice production in Cameroon does not essentially depend on the cultivated areas. This suggests that the increase in rice production in Cameroon also depends on the level of local farm yields. The State should, therefore, in addition to the increase in cultivated areas, ac-

centuate its actions in the direction of increasing the yields of local producers.

Keywords

Rice, Sector, Production, Trade Balance, Supervision, Yield

1. Introduction

Rice (*Oryza sativa* L.) is a staple food for the Cameroonian population and is the most consumed cereal after maize (*Zea mays*) [1]. According to the ECAM 3 survey, the average per capita consumption of rice in Cameroon in 2007 was 7709 FCFA on average. This consumption would be 25.7 kg per capita on average. The exploitation of the ECAM 4 database of 2014 reveals a level of expenditure per inhabitant of 10,487 FCFA, corresponding to a consumption per inhabitant and year of 26.2 kg [2]. The level of rice consumption in Cameroon has increased, but the country is highly dependent on external sources for this food, and according to the national strategy document for the development of rice growing in Cameroon, national demand is almost entirely covered by imports [3]. The Council of Ministers of the West Africa Rice Center held in Abuja in September 2007 sounded the alarm by drawing the attention of the international community to the fact that the African continent, although home to only 12% of the world's population, nevertheless absorbs 32% of world rice imports, and is experiencing a high rate of growth in consumption of 4.5% per year. He further informed that in Central Africa, rice imports increased 14-fold between 1961 and 2007, from 32,100 to 470,974 tons, while per capita cereal production declined from 157 to 84.9 kg. The Council called for an urgent special program [1].

Africa imports a third of the world's rice production each year, with almost 20% (5.2 million tons) for West Africa alone. If its domestic production continues to lag behind growing demand, Africa will need an additional 17 million tons of husked rice, worth billions in already scarce foreign exchange. Any increase in the international price of rice will harm food security, especially for poor households who spend a large part (20% to 25%) of their income on food. The governments of West African countries, for the most part, are fully aware of this situation and have therefore put in place policies aimed at mitigating the effects of the increase in world rice prices on their countries [4]. Increasing the productivity of African rice is another strategy for reducing poverty and food insecurity, particularly in West Africa where rice is the fastest-growing staple food crop. Encouraging rice producers to adopt innovative technologies such as the use of high-yielding rice varieties is one way to increase domestic production [4].

The expense of importing rice, which is very high, has a significant impact on

Cameroon's trade balance. The country is relatively self-sufficient in food but imports more than 75% of the rice consumed [5]. The Cameroonian state spends hundreds of billions each year to import rice in order to ensure the food security for population, whose needs are far above the current level of local production [1]. In 2011, for example, the rice imports amounted to 118,582,278,133 CFA francs, which is very high compared to maize imports, which amounted to only 3,719,448,852 CFA francs [1]. This situation contributes to a significant deficit in Cameroon's trade balance, with socio-economic consequence of a loss of foreign currency and eternal food dependence on the outside world [1].

The strategic importance of this cereal largely explains a large number of government interventions in this sector, which explains why this agricultural market is characterized by a large number of distortions, aids, barriers, and subsidies [6]. The development of this sector in Cameroon requires institutional, technical, and financial support to enable producers to increase their production and improve the competitiveness of local rice against imported rice [7]. The Cameroonian government through the Ministry of Agriculture and Rural Development defined in 2009 strategic orientations contained in the national strategy for the development of Cameroonian rice cultivation [7] cited by [8]. These strategic directions are among others: the rehabilitation of irrigated areas; the development of lowlands and floodplains; the introduction of rice cultivation around future dams and the diversification of production systems with particular focus on rain-fed and lowland rice cultivation, particularly in southern areas with high rice-growing potential. The SNDR document shows that despite the scale of investment to meet domestic demand for rice, Cameroon's production has only been able to meet 20% of domestic demand. According to Dorothy Malaa, NERICA project coordinator at IRAD, before 2008 rice produced in Cameroon accounted for less than 15 percent of the national market and today it accounts for more than 30 percent, which shows the progress that has been made. This analysis seeks to understand how support to this sector contributes to the development of rice production in Cameroon. The central question is therefore to know the constraints that prevent the development of local rice production to the level of national need.

This study which the theme focuses on the analysis of the Cameroonian rice sector in the face of import dependence, aims to contribute to Cameroon's food self-sufficiency, by proposing areas of intervention that can effectively boost production and the consumption of local rice to meet the growing demand. It is specifically about:

- 1) Analyze the functional organization of the rice sector;
- 2) Analyze the evolution of local rice production in Cameroon;
- 3) Analyze the evolution of cultivated areas containing rice in Cameroon.

At the end of these analyses, a dependency test between the evolution of the level of rice production and the evolution of cultivated areas allows us to conclude on the importance of certain axes.

2. Methodology

This article is aimed at policy-makers in charge of rice development Cameroon and even in Africa in general. It can also serve as a database for agronomy specialists. To obtain the results, quantitative and qualitative data from secondary sources were used. These data were collected from the Internet, libraries, newspapers, and statistical documents from the Ministry of Agriculture and Rural Development; and also from the National Institute of Statistics (INS). To carry out this study, we extracted from our sources, data summarizing the organization and functioning of the rice sector in Cameroon. We then analyzed the strategies used by the state and its associated structures to support the rice sector. Finally, we evaluated the evolution of local production in relation to the observed evolution of the cultivated areas. For the statistical analysis of the data, the SPSS software and the Excel spreadsheet were used, which allowed us to bring out all the elements that contributed to a good understanding of the data collected. Statistical tests were of great importance in verification of our hypothesis.

3. Results

3.1. Functional Organization of the Rice Sector in Cameroon

In this articulation, the results concern the typology of the actors, the activities of the commodity chain, the functioning of the commodity chain, and the schematization of the commodity chain plan.

3.1.1. Typology of Actors in the Sector

The rice sector in Cameroon is managed by the state, through the Ministry of Agriculture and Rural Development (MINADER). MINADER designs development policies and strategies and coordinates the development of activities in the field. The state implements its policies and strategies, through the projects and the supervisory structures under its supervision. Thus, there is PRODERIP (project for the development of irrigated and rain-fed rice cultivation), and supervisory structures such as SODERIM, SEMRY, UNVDA, PDRM, PADFA, PACA, the project to improve the competitiveness of rice in Central Africa, and MINEPAT. All of these structures work in the field by intervening in various strategic areas including training, production, mechanization, rehabilitation, and development of irrigated areas, and the introduction of rain-fed rice. They support producers, processors, and traders in order to make local rice available in sufficient quantities to meet the growing needs of the population. In summary, the following actors are involved in rice production in Cameroon: MINADER, support structures, producers, processors, and traders.

3.1.2. Functioning of the Sector

The sector is organized from the supervisory authority to the consumer. Each actor involved has very specific missions that are transformed into effective ac-

tivities in the field. At the head of the chain, MINADER' is responsible for designing the development policy and strategies on which projects and different structures must base their missions and objectives. In the case of rice, these policies and strategies are set out in the National Rice Development Strategy document (NRDS). The National Rice Development Strategy aims to reduce dependence on imported rice for domestic consumption and to improve the production and competitiveness of local rice. To this end, it has the following specific objectives: the promotion of large-scale production of certified rice seeds by the private sector and farmer-controlled seeds through community seed systems; modernization of the production apparatus through small-scale mechanization and efficient use of inputs; organization of the sector through the promotion of producers' organizations and the establishment of multi-actor and multi-institutional platforms; sustainable management of water and land resources by promoting good farming practices; covering national needs and conquering border and regional markets by promoting quality labels; and the promoting employment in rural areas, particularly for women and young people. To achieve these objectives, MINADER relies on its various projects and support structures which carry out concrete actions in the field. We thus have:

PRODERIP: This technical cooperation project, an instrument of the national rice development strategy, is implemented through cooperation between the Japanese International Cooperation Agency (JICA) and the Ministry of Agriculture and Rural Development (MINADER). It aims to increase both the volume of production in the target areas and the number of people who find the rice delicious, by purifying varieties and improving milling techniques. The second phase of the project starts with the aim of increasing the volume of production and the number of rice farmers, including those in the North West region, and improving the quality of rice and boosting sales by improving production and post-harvest techniques. The activities are as follows: seed production, training on production techniques, seed distribution, extension and post-harvest activities, and monitoring of producers. The project, which in its first phase covers the East, Center, and South regions, is also integrating the North West region in its second phase because it has been requested by the UNVDA project for capacity building [9].

SEMRY: SEMRY was created with specific objectives: Firstly, to ensure the ecological security of the populations of the Far North region and to create rice fields, SEMRY intends to stem the exodus of the rural population. Second, to develop a project for the inhabitants of the region, in particular those of the Logone valley, to ensure a basic income. At the national level, SEMRY was supposed to have produced enough rice for Cameroon and thus reduced the massive importation of rice. In Yagoua, SEMRY has four pumping stations to irrigate the rice fields. These stations are along the Logone Dam and water is drawn from the Logone River to help rice farmers. Meanwhile, in Maga, the company built a large reservoir and a gravity-based irrigation system [10].

UNVDA: In 1970, the government, in the wisdom of the times, established Upper Nun Valley Development Authority (UNVDA) in the Ndop region Cameroon. Since its inception, UNVDA has attempted, albeit with great difficulty, to accomplish its stated objectives, which include: introducing new crops and technologies to the region; providing basic ancillary infrastructure, and generally trying to raise the standard of living of the local people. The Ndop region comprises thirteen villages, namely: Bamunka, Babungo, Baba I, Babessi, and Bangolan in the east, Bali Gashu and Bali Gansin in the west; Bamessing and Bamali at the gateway to Bamenda, and to the south, Balikumbat, Bafanji, Balikumbit and Bambalang located near the Nun River. These thirteen villages are in the Ngo-ketunja division of the North West Province of Cameroon. After a period of experimentation, the Society has settled on rice cultivation and recently maize, soybeans, and green beans. Of these four crops, rice has received more attention than the others [11].

PADFA: As part of the PADFA formulation process, the experts had briefly identified a number of obstacles to be removed for a good revival of the sector, as follows: the loss of soil fertility and dependence on mineral fertilizers; extremely difficult tillage in irrigated rice fields (vertisols in northern Cameroon); the low productivity of agricultural work, which remains manual in its entirety; excessive consumption of irrigation water; high level of impurity in paddy; and significant damage caused by birds. The PADFA aims to remove all these bottlenecks identified and which hinder the expected competitiveness of the rice sector with concrete activities covering all the needs expressed by all the stakeholders in the value chain [12]. The program to support the development of agricultural value chains (PADFA) was launched in 2011 with the main objective of reducing poverty in rural areas and improving food security through the sustainable development and competitiveness of the rice (lowland, rain-fed) and onion value chains. The project specifically aims to increase rice and onion production, and improve conservation, processing, and marketing of products. The project was deployed in the four regions of North, Far North, West, and North West and focused its support on the development of lowland village rice cultivation [6].

PDRM: The objective of the Mont Mbappit rural development project is to contribute to reduction of poverty and the improvement of food security for rural populations in the Noun Division while ensuring sustainable management of natural resources. The strategy for implementing the activities is the participatory approach and the contracting of activities to various partners. The project aims to ensure growth and full employment in accordance with the vision set out in the National Growth and Employment Strategy Document (DSCE) to which the community development plans implemented in the framework of decentralization are linked [2].

SODERIM: By imposing their structural adjustment and trade liberalization policies, international financial institutions contributed to the programmed death

of local rice production and the privatization of agricultural development companies. This is how SODERIM ended after the withdrawal of the State.

The Central Africa Rice Competitiveness Improvement Project (PACRAC): The project is located in Kekem and Tonga (West Region), Wum and Ndop (NorthWest Region), and Garoua (North Region). It intervenes in policy definition, extension and training, production, marketing, post-harvest management, irrigation, credits provision, seed supply and others. Its aim was to improve rural food security and incomes, and reduce dependence on rice imports through innovative interventions that promote the production and competitive marketing of local rice. Activities include: promotion of the use of NERICA and other improved rice varieties and complementary technologies, dissemination, and creation of quality rice processing centers, capacity building and information dissemination, baseline study and impact assessment, project management, and coordination. It started in April 2008 and ended in April 2012 [13].

From what emerges from all the objectives and activities of these projects and support structures, they all directly support producers with a view to improving the quality and quantity of rice produced in Cameroon. This support is provided through training on technical itineraries, the setting up of extension programmes, the supply of seeds, the development of lowlands, the rehabilitation and development of irrigated areas, the supply of inputs, the introduction of mechanization, and the construction of hulling factories. We also note that, despite their very significant hydraulic and land potential, none of these organizations intervene in the Coastal and South West regions. It should be noted that this is an agro-ecological zone with bimodal rainfall, so with the possibility of two crop cycles per year for rain-fed rice; and where large areas of land are easily found in the lowlands, as they are watered by several major rivers.

In addition to these organizations that accompany MINADER towards the implementation of its vision, we also have MINEPAT. Within the framework of the Three-Year Emergency Plan (PLANUT), MINEPAT, through the Directorate General of Planning (DGPAT) and more precisely the Directorate of land management (DAT), is implementing the development of irrigated areas in the Far North and North regions. In the Far North region, and more specifically in the Logone and Chari division, 13,000 ha are being developed. In the North region, PLANUT is developing 1000 ha in Garoua [2]. Along the same lines as the DSNDR, the Ministry of the Economy has set up a plan to revive the rice sector in Cameroon. This plan to revive the rice sector proposed by the Ministry of the Economy between now and 2024, is estimated at 1400 billion FCFA, or nearly 60% of the budget for rice field development. The budget is ambitious. Indeed, it consists of: the establishment of a coordination framework to ensure the synergy of initiatives for the development of the rice sector; the structuring of the sector, in particular, the role of the actors; the availability and accessibility of inputs (improved and adapted seeds); the promotion of the use of good cultural practices; appropriate mechanization, through the strengthening of actors' capacities. Em-

phasis will also be placed on the promotion of primary and secondary processing with an emphasis on compliance with standards and quality. But also the improvement of the regulatory and legal framework and the strengthening of communication around locally produced rice. According to the Minister of Economy, Planning and Territorial Development, Alamine Ousmane Mey, quoted by Dieu-donné Zra (2019) [14]: “The implementation of this plan should, over five years, increase national production to about 1.5 million tonnes of paddy rice (representing 1 million tons of marketable rice). And, increase the level of processing from 65% to 100% and bring Cameroonians to consume rice Made in Cameroon, by 2024”.

All of these organizations work directly or indirectly in the field with the producers who remain the main targets of all the above strategies. We therefore have a sector that is organized as shown in **Figure 1**.

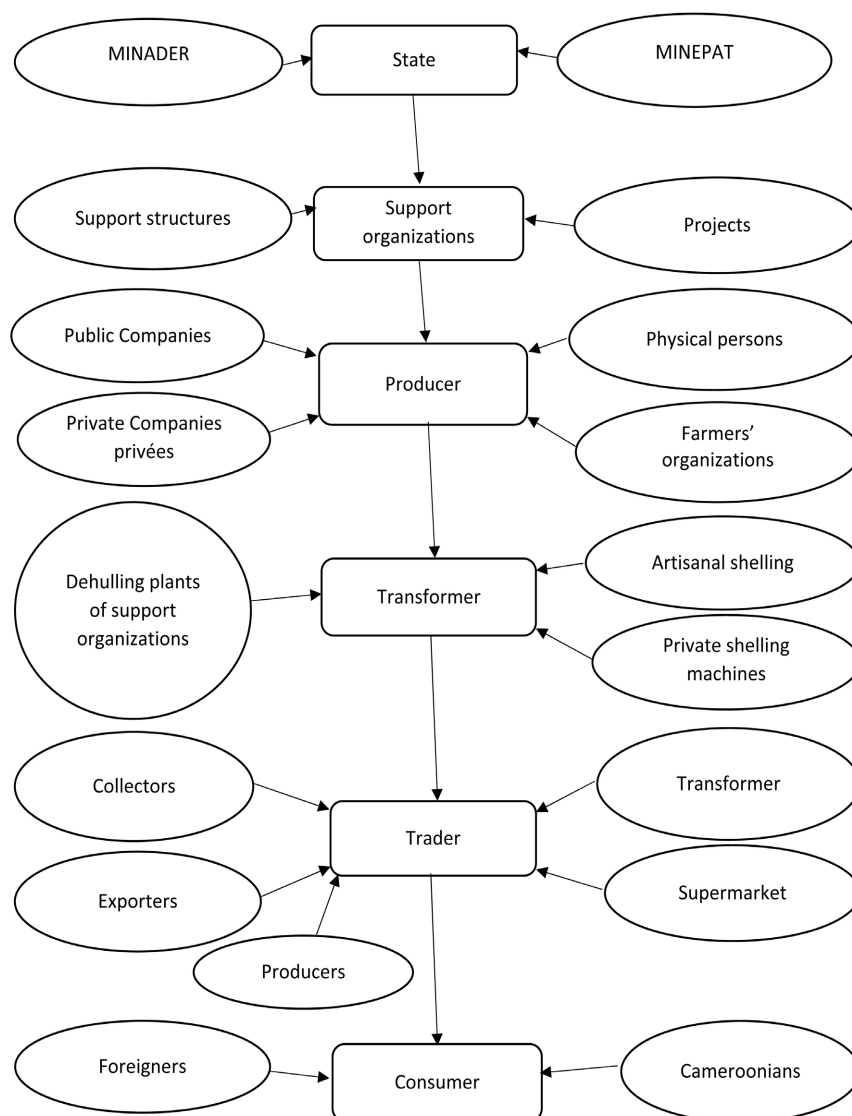


Figure 1. The rice sector in Cameroon.

Figure 1 shows how the rice sector is configured in Cameroon. Indeed, we can see that the state acts at the base through its branches, namely: MINADER and MINEPAT. The latter defines the development policy of the sector and provides support to the accompanying organizations, which are the projects and the accompanying structures. The latter act on producers who are farmers' organizations, individuals, private companies, and public companies. These different producers supply their production, which is paddy, to processors, which are: the hulling factories run by support organizations, private hullers, and some producers who hull in an artisanal way. All these processors, therefore make milled rice available to the consumer through traders who are: collectors, exporters, producers, processors, and supermarkets. We have Cameroonian consumers and foreign consumers.

3.1.3. Effectiveness of Supports

According to the PRODERIP activity report (2020), rice producers are unable to produce continuously. Only 27% of the producers managed to repeat the crop two (2) times in five (5) years, and only 15% continue with their self-produced seed and do not depend on the seed provided by the project. The producers monitored by the project have achieved a yield for irrigated rice and lowlands that ranges from 5.8 t/ha (Local 2 variety) to 7.2 t/ha (Tox 2 variety), for an average yield of 5 tons/ha. This yield is an improvement compared to the 4 t/ha assessed by MINEPAT (2020); but remains slightly lower than the optimal yield estimated by the project at 6 t/ha for Local 2 and 7.5 t/ha for Tox 2. As regards rainfed rice, producers are left by 1.2 t/ha to 2 t/ha, which is a very important step forward, although the optimum yield is situated at 3 t/ha.

Speaking of quality, the problem arises at the level of the presence of stones and paddy grains in the milled rice. PRODERIP therefore notes that the problem lies in the UNVDA shelling system, which is made of stone. It therefore installs improved husking systems, including one in Nkolbisson-Yaoundé, which helps to completely eliminate the presence of stones and reduce the number of paddy grains per kg of rice to 1.3 grains. **Figure 2** shows images of rice (grade I) packaging by PRODERIP in collaboration with UNVDA.



Figure 2. Image of rice packaging, grade I.

Figure 3 shows images of rice (grade II) packaging by PRODERIP in collaboration with UNVDA.

In addition to improving yields, UNVDA has developed as part of its activities, 2532 ha of rice fields in the Ndop area, thus contributing to the increase in cultivated areas. Within the framework of the Three-Year Emergency Plan (PLANUT), MINEPAT, through the General Directorate of Planning (DGPAT) and more specifically the Directorate for Territorial Development (DAT) implements the development of irrigated perimeters in the Far North and North regions. In the Far North region, and more specifically in the Logone and Chari department, 13,000 ha are being developed. This work began in 2017 and its progress at this date is around 15%. The development works face two major difficulties. The first is that this work can only be carried out over four months of the year. Indeed, in the rainy season, the tracks are not passable. The second is related to the non-payment of company statements on time, resulting in difficulties in mobilizing equipment and personnel. Of the 13,000 ha, 10,000 ha are developed in partnership with an Indian operator. This partnership covers the development itself, the development, the setting up of a hulling unit, the construction of a cogeneration plant powered by rice straw, as well as technical assistance for three months on sowing, plowing and harvesting phases. In the northern region, PLANUT is developing 1000 ha in Garoua. Over the period 2015-2019, the Emergency Flood Control Project (PULCI) financed by the World Bank has made it possible to rehabilitate 7500 ha of SEMRY, including 4000 ha in Maga and 3500 ha in Yagoua. A second phase of this project is planned around the year 2022 and will make it possible to develop an additional 12,000 ha. In addition, financing is being negotiated with the World Bank with a view to developing 11,000 ha in the Lagdo area [2].



Figure 3. Image of rice packaging, grade II.

3.2. Local Rice Production

3.2.1. Evolution of Local Rice Production in Cameroon

With regard to local rice production in Cameroon, our research has enabled us to obtain the data as summarized in **Table 1**. Indeed we are looking at the evolution of Cameroonian production from the year 2000, to the present day. Unfortunately, we were unable to obtain reliable information on production for the years 2011, 2012, 2013, 2014, 2019, 2020, and 2021. However, a careful analysis of the data obtained allowed us to obtain very interesting results.

Figure 2 shows the evolution of rice production in Cameroon, from the year 2000 to 2018, three phases of evolution can be observed. The first phase, from 2000 to 2008, can be described as a recovery phase, with a growth rate of 44.84%, at the rate of a rate of 5.6% growth per year. The second phase can be described as the take-off phase, which runs from 2008 to 2016, when production is peaked. The growth rate during this period was 79.96% at a rate of 10% growth per year. After the take-off phase, there is a decline between 2016 and 2018 at a rate of -12.7%, at a rate of -6.35% per year.

Table 1 led to **Figure 4**, which shows us the different phases of the evolution of local rice production in Cameroon.

3.2.2. The Increase in Cultivated Areas

With regard to the increase in cultivated areas, we were able to obtain data from 2014 to 2018 as presented in **Table 2**.

Combining these data with the production trend data gives **Figure 5**.

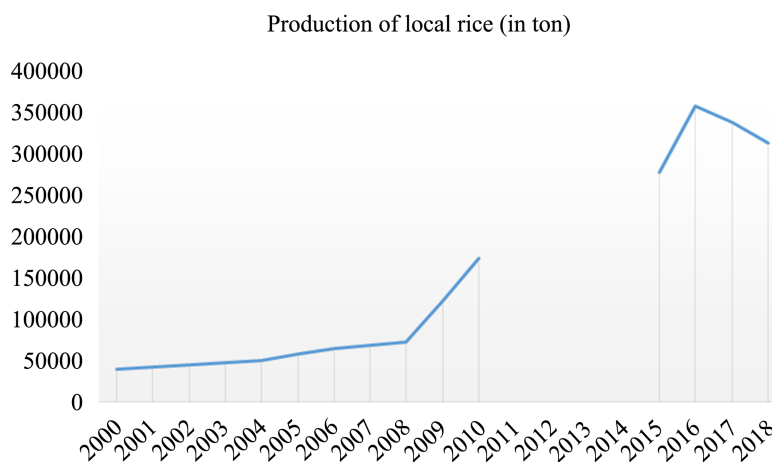


Figure 4. Evolution of local rice production in Cameroon.

Table 1. Evolution of local rice production in Cameroon (in tons).

Years	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2016	2017	2018
Production of local rice (in tons)	39,721	42,065	44,546	47,175	49,958	58,360	64,525	68,267	72,009	123,211	174,000	278,281	359,320	339,076	313,678

Source: MINADER, 2009. INS, 2019.

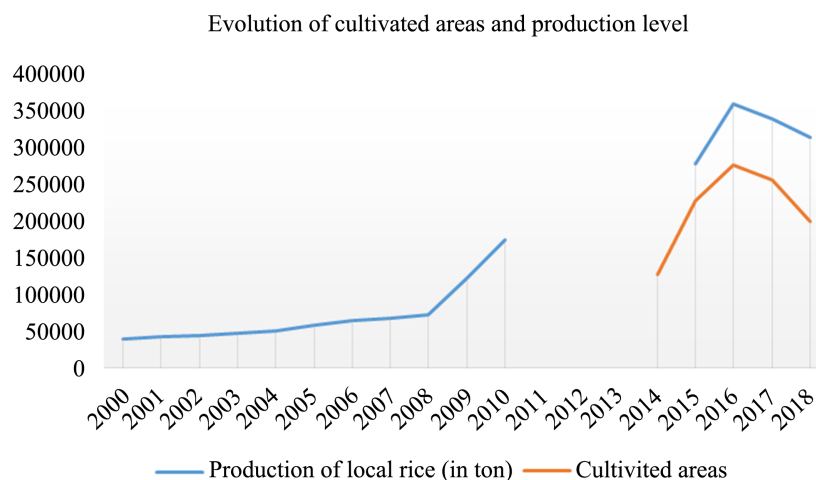


Figure 5. Increase in area cultivated and rice production.

Table 2. Evolution of cultivated areas.

Years	2014	2015	2016	2017	2018
Cultivated area (in hectares)	126,901	226,779	276,175	256,087	198,855

By observing these curves, we see that the increase in production evolves at the same pace as the increase in cultivated areas, which would mean that the decline in production from 2016 to 2018 is due to the decline in cultivated areas. This leads us to believe that the level of local rice production depends on the level of cultivated area. Hence the independence test is performed below.

The hypothesis H_0 = the level of rice production is independent of the cultivated areas.

And the alternative hypothesis H_a = the level of rice production depends mainly on the area cultivated.

The result of the SPSS test is the probability $P = 0.213 = 21.3\%$. This is greater than 10%, implying that the results are not significant at 10%. Thus, the alternative hypothesis is rejected, and we can conclude that the level of rice production in Cameroon does not depend essentially on the area cultivated.

4. Discussions

In Cameroon, four major periods characterize the history of agricultural policies: the period of five-year development plans (1960-1986), the period of the beginning of the economic crisis (1986-1990), the New Agricultural Policy (1990-1998), and Agricultural Policy-New Challenges (since 1999) [6]. The new policy implemented in 1999 led to the revival of local rice production in 2000. The strategic axes are among others: the rehabilitation of irrigated perimeters; the development of lowlands and floodplains; the introduction of rice cultivation around future dams and the diversification of production systems with particular emphasis on rain-fed and lowland rice cultivation, especially in southern areas with high rice

potential [11]. To achieve its objectives, the State intervenes through projects and support structures that directly accompany producers in order to improve the quality and quantity of rice produced in Cameroon. This support is provided through training on technical itineraries, the setting up of extension programs, the supply of seeds, the development of lowlands, the rehabilitation and development of irrigated areas, the supply of inputs, the introduction of mechanization, and the construction of hulling plants. Most of these actions contributed to the increase in cultivated areas, and cultivated areas were increased by 5.5 times between 2009 and 2017, from 49,012 ha in 2009 to 270,000 ha in 2017 [2]. This period corresponds to the take-off phase of rice production, at the end of which we also recorded an increase in production of 79.96% at a rate of 10% per year. This take-off can be explained by the fact that, in the aftermath of the so-called hunger riots of 2008, the State had to take important measures to boost rice production in Cameroon, which allowed for the creation of PRODERIP, for example, which favors the introduction and penetration of rain-fed rice.

The fact that the level of rice production evolves at the same pace as that of cultivated area led us to believe that the increase in production depends essentially on the increase in cultivated areas. The test of independence led us to conclude that the level of rice production in Cameroon does not depend essentially on the cultivated area, but has an important influence on the level of this production. In the same vein, MINEPAT (2020) states that the increase in Cameroonian production is therefore more attributable to the increase in area than to the increase in yield. This suggests that the increase in rice production in Cameroon also depends on the level of local farm yields. According to the online journal *Business in Cameroon* (2013), trial results have shown that in many parts of the country, paddy yields can reach 8 - 10 tons/hectare, with the possibility growing more than one crop per year in some areas. Unfortunately, Cameroon has relatively modest yields. In 2017, FAO statistics show 1.3 tons per hectare, while the highest yields in the world are observed in the United States of America (8.4 tons), China (6.9 tons), and Vietnam (5.5 tons). As confirmed by MINADER (2009), enormous efforts are being made to raise the level of national rice production, and to satisfy local needs without being dependent on imports; however, these efforts are still insufficient given the fact that more than half of the rice consumed in Cameroon still comes from imports. The State should, therefore, in addition to the increase in the area under cultivation, accentuate its actions to increase the yields of local producers.

5. Conclusion

The rice sector in Cameroon is managed by the state, through the Ministry of Agriculture and Rural Development (MINADER). The sector is organized from the supervisory authority to the consumer. Each actor involved has specific missions that are transformed into effective activities in the field. The figure showing the evolution of rice production in Cameroon from the year 2000 to 2018,

shows three phases. The first phase, from 2000 to 2008, can be described as a recovery phase, with a growth rate of 44.84%, at the rate of 5.6% per year. The second phase can be described as the take-off phase, which runs from 2008 to 2016, when the production is peaked. The growth rate during this period was 79.96% at a rate of 10% growth per year. After the take-off phase, there is a decline between 2016 and 2018 at a rate of -12.7%, or -6.35% per year. It can be seen that the increase in production evolves at the same pace as the increase in cultivated area. However, the level of rice production in Cameroon does not essentially depend on the area cultivated. This suggests that the increase in rice production in Cameroon also depends on the level of yields of local farms. In addition to the increasing the area under cultivation, the state should therefore increase its efforts to increase yields of local producers.

6. Recommendation

Following our results and the observations made, we can recommend to the state, through MINADER, to set up a real national program for the development of rice cultivation in Cameroon; and ensure the coordination of actions carried out by the multiple supervisory structures and projects, to develop a policy to produce a sufficient quantity of quality seeds on a permanent basis, to finance as a priority the development and rehabilitation of rice fields, to multiply the construction of rice husking factories throughout the territory.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] FAO (2011) La statistique mondiale de l'alimentation 2010-2011. <https://www.fao.org>
- [2] MINEPAT (2020) Quelle politique rizicole pour l'émergence du Cameroun en 2035? Note d'analyse prospective cellule de la prospective économique. Note n°004/2020. 27 p.
- [3] SNDR (2009) Le document de stratégie nationale de développement de la riziculture au Cameroun. République du Cameroun, mouture III.
- [4] BAD (2014) Projet multinational de diffusion du riz NERICA. Améliorer la production nationale, améliorer la sécurité alimentaire.
- [5] Achancho, V. (2013) Revue et analyse des stratégies nationales d'investissements et

- des politiques agricoles en Afrique du Centre: Cas du Cameroun. In: Elbehri, A., Ed., *Reconstruire le potentiel alimentaire de l'Afrique de l'Ouest*, FAO/FIDA, Rome, 125-159.
- [6] IRAD (2013) Projet c2d-riz/IRAD: Augmentation de la productivité du riz et dissémination des semences améliorées. IRAD, Yaoundé.
- [7] IRAD (2008) Deuxième rapport sur l'état des ressources phylogénétiques pour l'alimentation et l'agriculture au Cameroun.
- [8] Folefack Pampidou, D. (2014) Booster la production locale du riz pour le renforcement de la sécurité alimentaire au Nord Cameroun. *Journal of Applied Biosciences*, **82**, 7449-7459. <https://doi.org/10.4314/jab.v82i1.5>
- [9] Ngwa, A.C. (2003) Development Authorities as Agents of Socio-Economic Change: An Historical Assessment of the Upper Nun Valley Development Authority (UNVDA) in the Ndop Region of Cameroon, 1970-1995. *Nordic Journal of African Studies*, **12**, 220-237.
- [10] Business in Cameroon (2013) Solving Rice Equation. N°10.
- [11] Mougol Moluh, S.E. (2012) 16 milliards de F CFA pour le financement de la 2ème phase du Projet de Développement Rural (Cameroun Link-26.03.2012).
- [12] PADFA (2019) Projet d'Appui au Développement des Filières Agricoles—Phase II Document de Conception de Projet.
- [13] RiceForAfrica (2022) Amélioration de la compétitivité du riz en Afrique Central. Fiche d'information concernant projet/programme riz dans le premier groupe de pays CARD.
- [14] Dieudonné, Z. (2019) Filière riz: Le Cameroun veut produire 1.5 million de tonnes.