Mapping millet value chain in Fatick, Senegal

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Fatick department's millet value chain :

10% of national production (102 000 metric tons)

78% of cultivated land of departement

" Promoting local cereals remains an ambitious challenge but will strengthen Senegal's food sovereignty "

Momar Talla Seck
(Director of ISRA)

Map 1. The ALL is located in Fatick Department, situated in West Central Senegal

1. Introduction

Senegal's agricultural policy, over the past 50 years, is characterised by the development of a series of responses to exogenous shocks, in particular climate change and economic, health and geopolitical crises.

At the end of the 1980s, faced with the effects of the current climate crisis, the country adopted a food security strategy based on the principle of competitive advantage. Agricultural policies have focused on cash crops such as groundnuts, where the country has a competitive commercial edge, to the detriment of food crops such as millet, which is the staple food of the country's food systems. In this respect, the country relies more heavily on rice imports to cover the low productivity of local cereals.

As a result, food systems are increasingly dependent on the international market and the socio-political and environmental stability of exporting countries.

Shaken by climate change, the 2008 economic crisis, the Covid 2019 pandemic and the Russian-Ukrainian conflict, all of which have led to a tightening of the global market, the vulnerability of food systems has been demonstrated. The central part of the country, including the Fatick region, which also produces groundnuts in rotation with millet, is one of the area most vulnerable to these external shocks. To build food systems that are resilient in the face of shocks, Senegal has defined a new agricultural policy based on the reference framework of the Senegal Emerging Plan (PSE) to 2035, together with the PSE-Green for the promotion of agro-ecology. This food sovereignty agricultural policy puts local cereals, including millet, back at the centre of interventions, with the aim of achieving self-sufficiency.

In support of public policies to respond to shocks, civil society, in partnership with technical extension services, public universities and national and international research services, has institutionalised a drive for agro-ecological transition in Senegal known as Dynamique pour la transition agro-écologique au Sénégal (Dytaes).

The Fatick region, with its high level of vulnerability to external shocks, has attracted the attention of research and development projects, which have worked hard with civil society, local elected representatives and territorial authorities to co-develop adaptation strategies and technologies, informed by a visioning process and agro-ecologically sensitive development scenarios. Capitalising on this potential has encouraged the development of a local agro-ecological transition dynamic (Dytael) to localise and operationalise the Dytaes.

To achieve this, the Fatick Dyatel, in collaboration with ISRA, CIRAD and the One CGIAR agroecological initiative, plans to build resilient local food systems based on local livelihoods, in particular the production of millet. These resources, millet, form buoyant and inclusive value chains, with women playing an active role in the processing and marketing links. They are also attracting the interest of agri-food companies such as the Mamel Jaboot to set up in the area, which represents a job niche for young people.

However, these sovereignty policies focus more on the production link, with performance indicators geared towards productivity and yields. As a result, despite the significant progress made in recent years, very little attention is paid to adding value to millet in public interventions, which significantly reduces the potential impact that this sector could have on wealth and job creation.

With a view to enabling this value chain to play a key role in the creation of wealth, jobs and conditions of socio-economic stability in the terroirs, this study aims to analyse the millet value chain in order to identify the obstacles and action levers for the co-design of a sustainable value chain that is sensitive to the principle of agroecology in the Fatick region.

2. Methodology

The analysis has ben done in a participatory manner through the Value Chain Analysis (VCA) approach. It has be done with key stakeholders, the Dyatel, who can share relevant knowledge on the structure of value chains, product flows, types of actors, end markets, input and service delivery mechanism, governance and business environment.

To mobilize these stakeholders, a series of individual consultations and multi-stakeholder information consolidation and validation workshops has benn co-organized with them. This information has been supplemented by secondary data on local statistics (area, production, prices, practices, volumes traded, etc.). This will be done at two levels:

- the mapping of actors
- the characterization of value chains

Figure 1. Workshop on mil value chains with Fatick Dytael

3. National situation of the millet value chain in Senegal

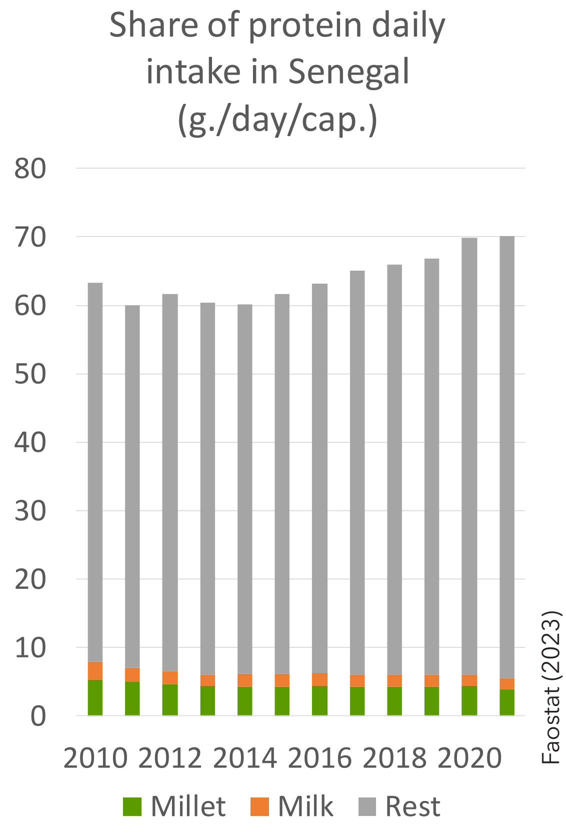
3.1. Consumption

Millet, after rice, is the second most consumed local cereal in Senegal, with an average of 30.2 kg/person/year. Consumption is higher in rural areas, with an average of 53.3 kg/person/year compared with 23.1 kg/person/year.

In rural areas, where consumption is higher, the market is characterised by low added value for millet. The scale of processing is limited mainly to the primary level, with the production of millet flour through mills. For urban consumption, however, processing is much more advanced, with the development of products such as couscous, as well as the raw material for the food industry, which uses it to make enriched flour and packaged milky couscous.

As a result, the most rural regions, such as Fatick, have more developed markets with low added value than those with high added value.

Figure 2. Millet, a nutritious local cereal but locked in diet by national production



3.2. Production

Senegal primarily produces millet and groundnuts, as well as animal products like meat and milk. Local agricultural producers have to contend with international competition, climatic shocks, and resource constraints. Senegal's agricultural products are not only more nutritious than imports but also better aligned with the preferences of local consumers and are produced with sustainability in mind. However, due to population growth and urbanization, there is a need to reevaluate production and marketing methods.

The government's agricultural development policy is described in the Emerging Senegal Plan (PSE) and implemented by the Programme for the Acceleration of the Pace of Senegalese Agriculture (PRACAS).

Each product has its own climatic, technical and commercial constraints. Millet and milk are two products that are emblematic of Senegal's food culture, and even of rural culture, with the integration of agriculture and livestock and the relationship between farmers and breeders.

Figure 3. Millet total production in Senegal since 1961 (tons)

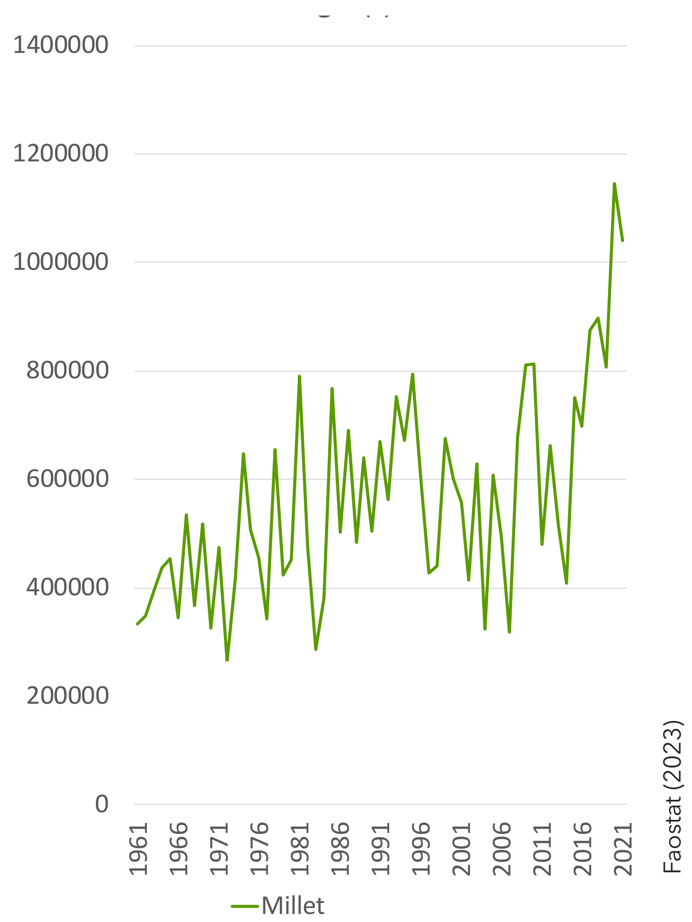
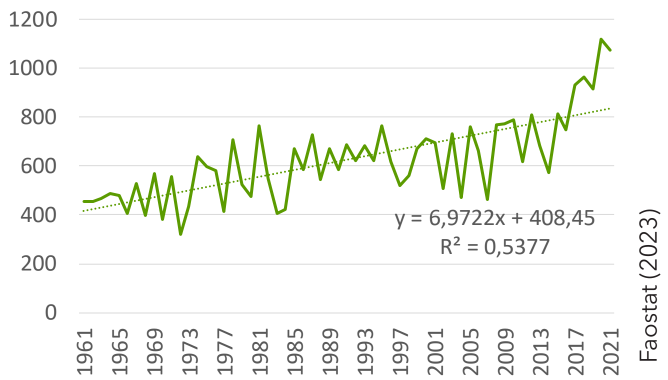


Figure 4. Millet yield total production in Senegal since 1961 (kg/ha)



The total millet production has long remained below 800,000 tonnes, with a rapid increase in the 2010s due to higher yields and cultivated areas. The traditional millet varieties can be classified into three groups: the «Sounas» (early varieties), the «Sanios» (late varieties), and the «Tiotandé» variety specific to the Senegal River valley (floodplain millet). The selected varieties are Souna 3, Thialack 2 and some other type. Early varieties were developed to withstand dry conditions that persisted for decades after the 1970s.

Figure 5. A farmer storing millet before marketing

3.3. Marketing and processing

The millet value chain in Senegal involves various stakeholders, including producers, input suppliers, processors, traders, and consumers. Producers, primarily cultivating millet for subsistence, form the core of the chain. They allocate their production for family consumption, sales, seed stock, processing, and animal feed. A smaller segment of producers adopts a market-oriented approach, often collaborating in groups to boost their collective earnings.

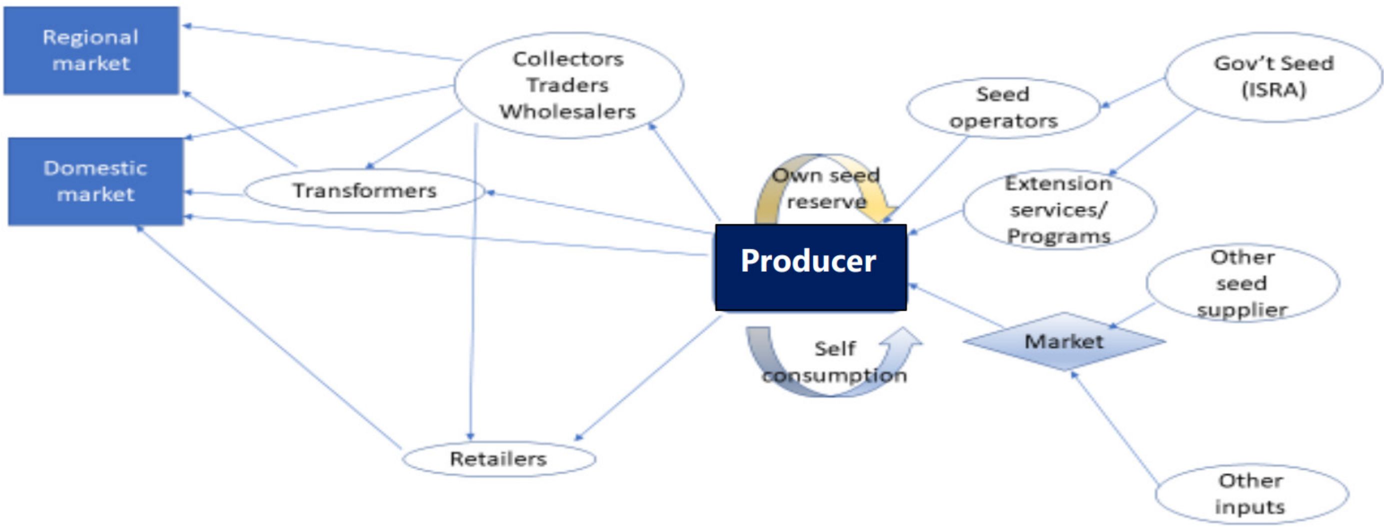
Input suppliers play a vital role, providing seeds, materials, and fertilizers. Seed sources range from private professionals to community organizations, although the distribution of subsidized seeds can be influenced by politics. Materials suppliers offer small-scale equipment, but the high costs can hinder accessibility for millet growers. Fertilizer usage among millet farmers is generally limited, with preference given to locally produced organic alternatives.

Financial support for millet production is scarce, and most producers finance their input purchases independently. Traders act as intermediaries connecting producers to consumers, while processors, mainly women-led micro-enterprises, transform millet into various products. Traditional processing methods are prevalent, and semi-industrial or industrial processing is limited. The millet market exhibits dynamism, with multiple millet varieties grown and prices subject to supply and demand fluctuations.

The trading segment involves collectors, semi-wholesalers, and retailers, with prices determined based on product availability. Direct transactions between producers and processors are infrequent, resulting in price variations ranging from 150 to 350 CFA francs per kilogram. Early sales by producers at harvest often lead to lower purchase prices, compounded by the lack of storage facilities. Nonetheless, there is potential for millet value-added products to meet urban demand and contribute to increased production, farmer incomes, and overall food security.

Figure 6. Women looting millet

Figure 6. Senegal millet value chain in Senegal according Kumar S. (2022)



Local cereals : what future ?

Figure 7. ISRA discussion, local cereals versus imported wheat

Experts agree on the need to to support a national wheat production and the urgent need to set up a mechanism for the widespread incorporation of local cereals in bread-making. It is necessary :

- to enhance the value of local cereals local cereals, it is necessary interprofession committed to revitalize these sectors;
- ensure synergy between stakeholders to ensure availability of quality inputs and raw materials, and encourage «local consumption»;
- set up an action plan to lobby at national level to make wheat production in Senegal a reality;
- To avoid hindering the development development of other sectors, precautions will be taken to anticipate any problems of cohabitation (in the cropping calendar as well as in the areas developed).

«The integration of cereals into breadmaking faces a number of bottlenecks:

- insufficient production of local cereals (particularly millet and maize) in terms of both quantity and quality (lack of homogeneity) quality (lack of homogeneity);
- a low level of technical expertise on the part of some bakers to ensure the success of high-quality finished products;
- fluctuating prices for local cereals, despite contracts signed with producers. producers.

M. Amadou Gaye,
Chairman of the Federation of Bakers

«Since 2016, innovations in research and discussions discussions with players in the sector have resulted in the bread made from local cereal flour and wheat flour, called wheat flour called 'pain doolé', which would be more profitable 2.7 times fresher than bread made from 100% wheat flour».

M. Fallou SARR,
ITA Director of External Relations

4. Millet value chain in Fatick

4.1. The main markets

Fatick, a part of the Sine Saloum and former peanut Basin natural region. It covers an area of 6,685 km², or 4% of the national territory.The region is divided into 3 departments: Fatick, Foundiougne and Gossas. A total population of 870,361 (in 2019) with a female population of 50.4%. Population distribution by department: Fatick (47.5%), Foundiougne (39.1%) and Gossas (13.4%). Largely rural population (84.5%) compared with 15.5% urban population. Food-producing agriculture, heavily dependent on rainfall Agriculture employs 90% of the working population. Almost half of the land is arable, i.e. 395,400 hectares.

Main crops grown: millet, groundnuts, maize, sorghum, rice, etc. A crop diversification strategy to cope with climate change Main constraint: increase in saline land affecting 27% of the regional area.

Monthly demand per household for processed millet is FCFA 28,230 and FCFA 8,075 for primary and secondary processing respectively.

The millet value chain in the Fatick region is characterised by the circuits of three main sub-chains, namely:

- **unprocessed raw millet.** The production of unprocessed raw millet, through collectors, supplies raw material to agri-food firms. This market thus connects producers specialising in the production of millet for consumption with the large agri-food firms established in Senegal, such as NESTELE, Mamel Jaboot and CERELEC. It also connects them with the country's major markets, such as the Touba collection area.
- **locally processed millet.** Adding value to millet at local level, mainly managed by women, finds market outlets in supermarkets and shops in major cities such as Dakar. At local level, it also boosts the incorporation of millet into wheat flour for bread production in local bakeries.
- **the seed industry.** Certified seed producers find market outlets in development projects and producer organisations.

Each sub-chain has its own market and also activates specific players, with producer organisations acting as a link between upstream and downstream players.

Figure 8. Millet processing in Fatick

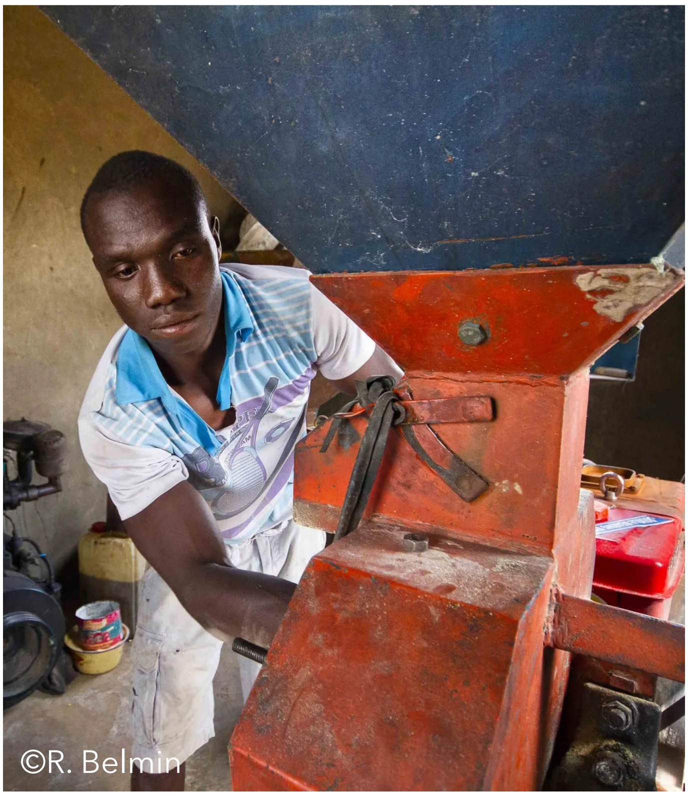
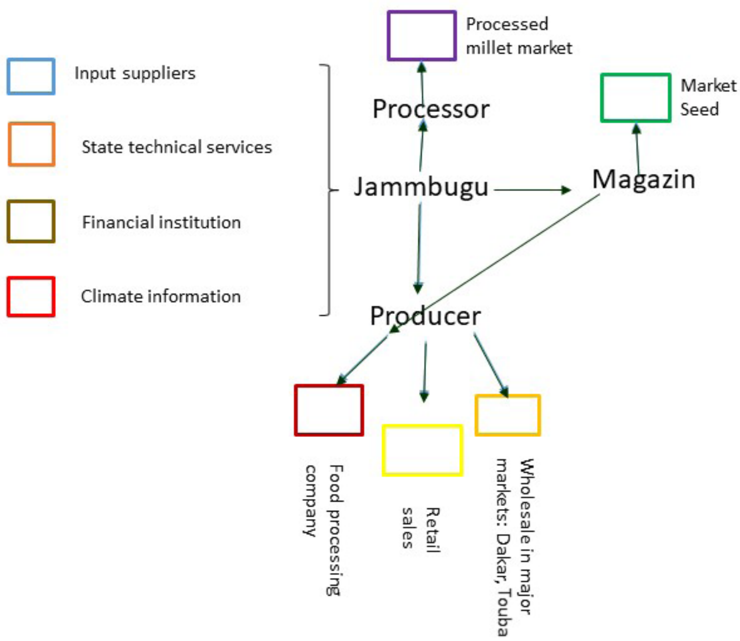


Figure 9. Various markets in the millet value chain in Fatick



4.2. Key players and governance

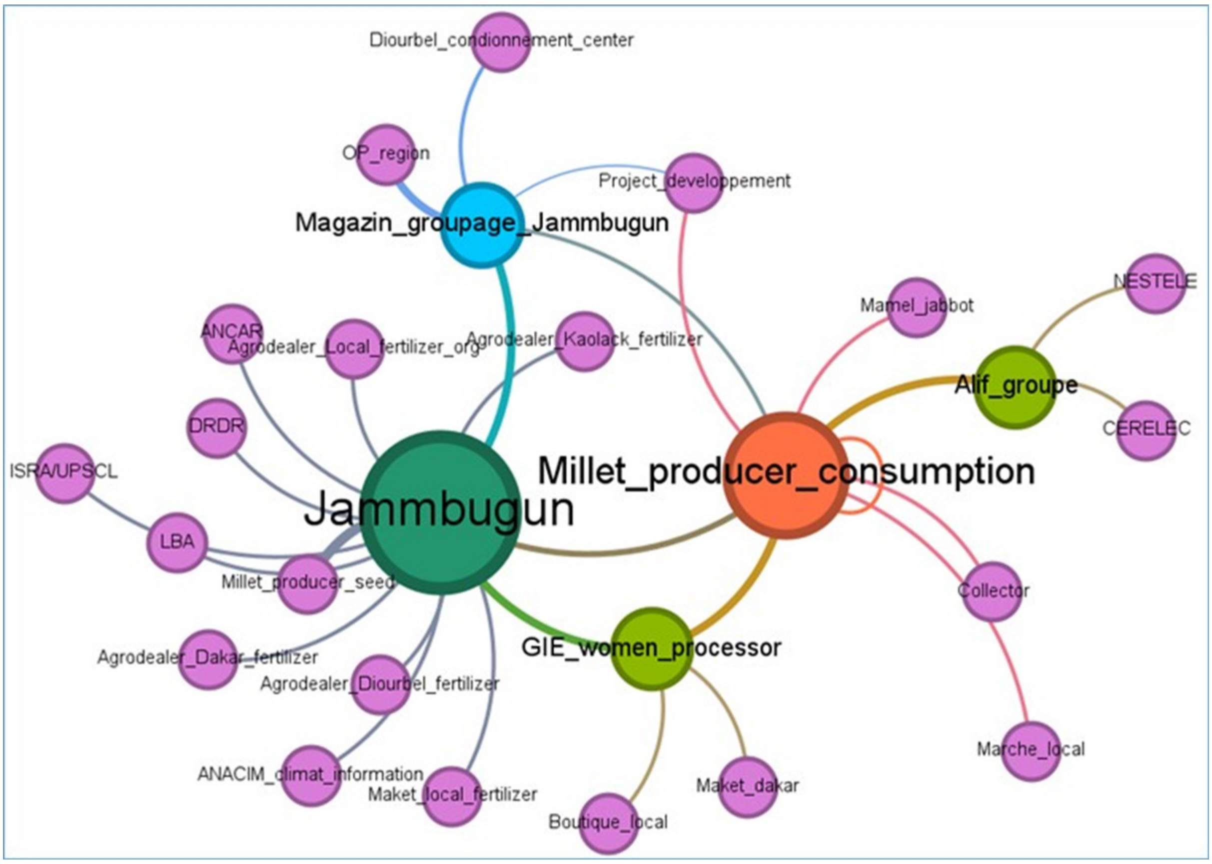
The value chain is made up of five key players: producer organisations (POs), producers, processors and collectors, including PO grouping centres.

Producer organisations are responsible for the governance of the value chain. They act as the interface between producers and upstream and downstream players, in particular input suppliers and collectors. They also act as an interface between producers and financial institutions, and technical services for the dissemination of good agricultural practices (climatic information, controls, certification, etc.). POs also represent and lobby producers and processors in their dealings with technical and financial partners.

In addition to intermediation, POs help producers to develop self-financing mechanisms and anticipate input supply through their grouping shop & input subsidies. This is an indirect financing system. Every year, the government subsidises organic and mineral fertilisers by at least 50%.

Figure 10. Jammbugun Bakery mixes wheat and local cereals in Fatick

Figure 11. ZOOM on the Jammbugun (Dytael) producer organization network



4.3. Financing mechanism for millet production

Through the PO interface, millet production is financed from three sources:

- o self-financing. Also after the harvest, around 200 kg/ha are stored and secured in the PO's grouping shops to finance the following season;
- o campaign credit from financing institutions. This financing system is much more concerned with seed production. The credit is guaranteed by the payment vouchers and the credibility of the POs;
- o input subsidies. This is an indirect financing system. Every year, the government subsidises organic and mineral fertilisers by at least 50%.

Figure 12. Discussion of women cooperative

4.4. Climatic and external shocks, a factor in price trends

The dynamics of millet prices are positively correlated with changes in the prices of fertilisers and rice, the main staple cereal in Senegal and Fatick, which is also a substitute product.

Rice and fertilisers are under the influence of the world market, which has been tested by combined climatic, health and geopolitical shocks since 2020.

Figure 13. Factor in price trends of millet in Senegal

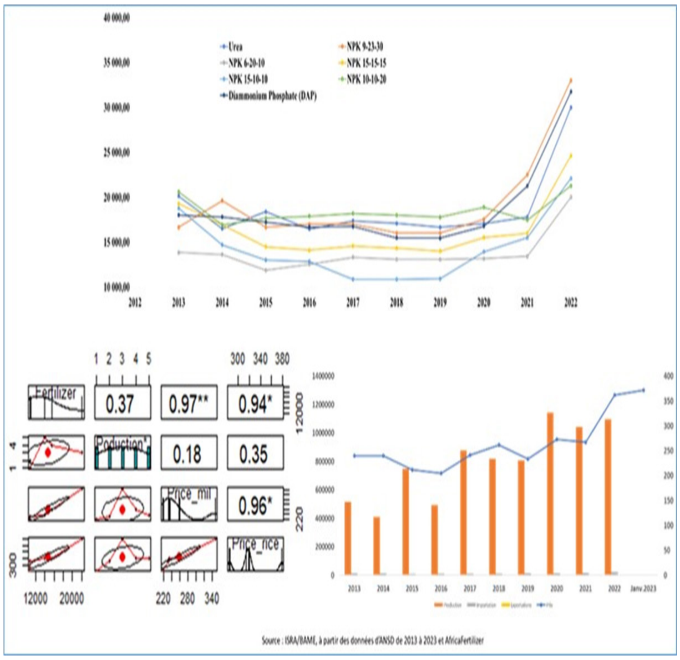
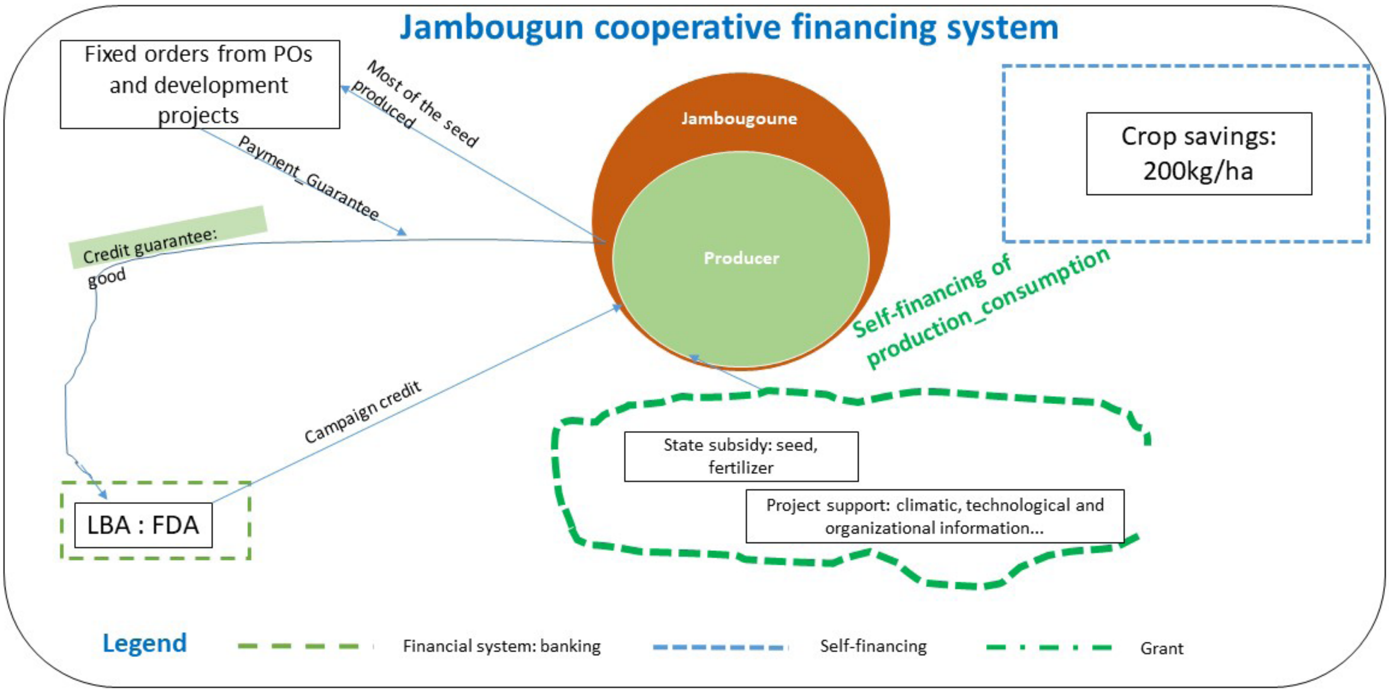


Figure 14. Financing mechanism for millet production



4.5. A new market opportunity

In parallel with the objectives of food sovereignty, Senegal aims to develop an agro-industrial zoning policy known as the agropole, the main objective of which is to increase the added value of agricultural products and reduce dependence on imports of agri-food products through sustainable and inclusive industrialisation.

In the central zone, the agropole covers the regions of Kaolack, Kaffrine and Diourbel, as well as Fatick, where the industrial modules will be developed. The region will thus be one of the business incubator zones offering facilities and support services for agro-industrial value chains in order to promote commercial agriculture and strengthen the competitiveness of local agricultural businesses and their products on national and international markets. The agro-industrial zone will thus rely on the dominant agricultural sectors, such as millet and maize, as the main sources of raw materials.

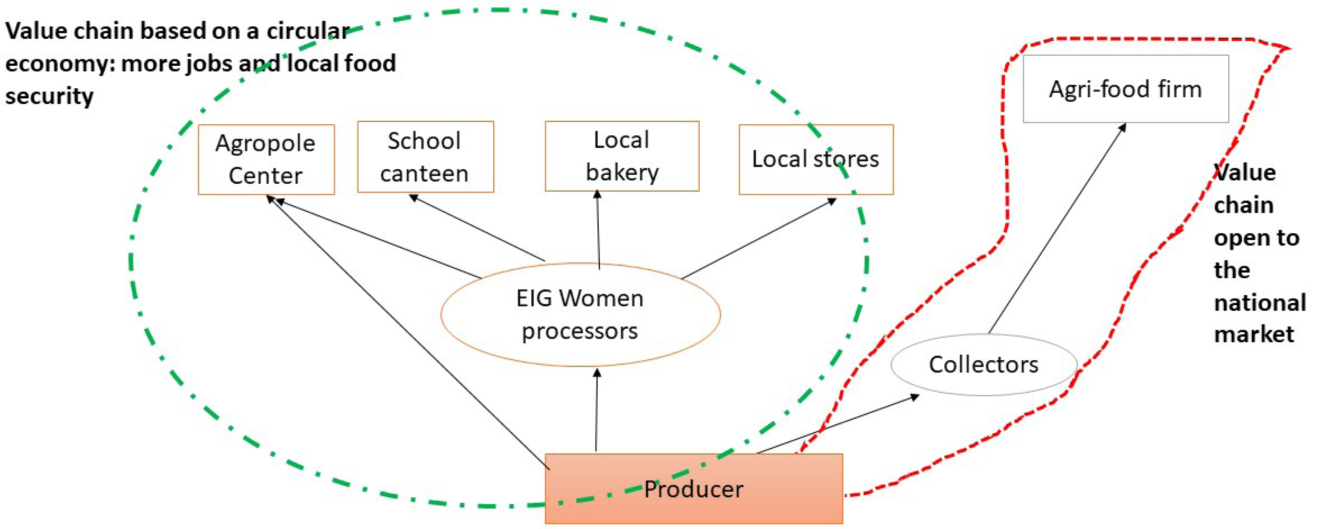
In addition to this large-scale market, development partners such as the HUMUNDI organisation are supporting the development of school canteens in rural areas, with a cereal-based diet including millet. UMUNDI is open to working with Dyatel to develop processing and enriched flour based on locally produced millet.

Figure 14. School meals : a new market opportunity

4.5. Business model opportunities

Looking at the value sub-chains and the new market opportunities, five business model possibilities emerge for the millet value chain. The first four are based on a circular economy, with the creation of added value (processing, packaging, etc.) at local level. Women's processing organisations should be the hub of these market-driven value chains, in this case the agropole, school canteens, bakeries and local shops. The fifth value chain is based on a more open economy, with products sold as raw materials to agri-food firms.

Figure 15. Local food system for local millet production and processing



Conclusion

The value of the value chain increases from rural to urban consumption. This underpins the low value-added of millet in production areas, resulting in a low impact of the value chain on job and wealth creation.

However, the value added in production areas, although low, is ensured by women who, with the new market opportunities that are emerging, will be able to play a key role in the development of inclusive, sustainable value chains that provide jobs, especially for young people.

In this respect, it will be necessary to develop prototypes of profitable, profitable and applicable business models.

To do this, it will be necessary to go beyond mapping and carry out an analysis of the economic, environmental and social sustainability of each business model prototype with a view to choosing the most profitable for the local economy and food systems.

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