

— WP3 of the Agroecology Initiative project —

Mapping

the milk value chain in Fatick, Senegal

Sénégal 2024

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INITIATIVE ON
Agroecology



M a p p i n g

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Introduction

The dairy value chain in Fatick is underdeveloped, despite the region's strong potential. Fatick is essentially an agropastoral region, with nearly 68% of households raising cattle and/or goats. The region is unique in that its population is essentially made up of pastoralist and agropastoralist households. According to estimates by the Direction de l'Élevage (DIREL), the region's potential in 2020 was estimated at more than 278,941 head of cattle and almost 431,273 head of goats (Ba, 2023). However, this potential is not being exploited to the full because of an often-restrictive production environment and organisational dysfunctions that the players in the value chain are struggling to resolve.

Moreover, recent developments in the Fatick milk value chain have been marked by new policy directions that have succeeded in integrating local milk collection into the dairy industry (Ba et al., 2021). Renewed interest has thus been shown in the value chain, with greater involvement of research and

development projects and new types of farmer investors. This new dynamic seems to have come at just the right time, as the regional economy is looking for a new lease of life in a context where the agricultural economy has virtually collapsed (Ndao, 2017). Moreover, the development of the dairy value chain is one of the strategic axes of the PES, which focuses on livestock farming as an engine for job creation and for transforming the structure of the economy to ensure the country's food and nutritional security (Magnani 2016).

This study aims to provide an exhaustive mapping of the various players in the region's dairy value chain. The mapping of stakeholders is part of WP3 of the Agro-ecology initiative. The aim of WP3 is to promote business models based on the principles of agroecology. Thus, using mainly secondary data, this work will first describe the national situation of the dairy value chain before characterising the various stakeholders in the dairy value chain in Fatick.



Mapping workshop on the milk value chain

1. Methodology

1.

Methodology

This work is based mainly on secondary data and a workshop with dairy stakeholders in Fatick. As part of the Africa Milk project and a thesis in progress, a number of data were produced on the development of livestock farming systems in Fatick, on the experience of local milk collection by a dairy industry and on the organisation of milk marketing channels in Fatick.

To this end, the 'Atlas of the Fatick dairy basin' (Cf. image 1) resulting from the work of the AfricaMilk project (2018-2022) and published with funding from the Agroecology initiative was very useful.

This publication presents the state of knowledge on the relationship between dairy farmers in Fatick and Kirène, the agro-industry from 2014 until the closure of the centre in 2021. All this information has been used for a detailed study of the organisation of the milk value chain in Fatick.

To supplement this data, a discussion workshop (Cf. image 2) was organised with the various players in the sector, i.e., producers, local authorities and technical services, to take stock of the

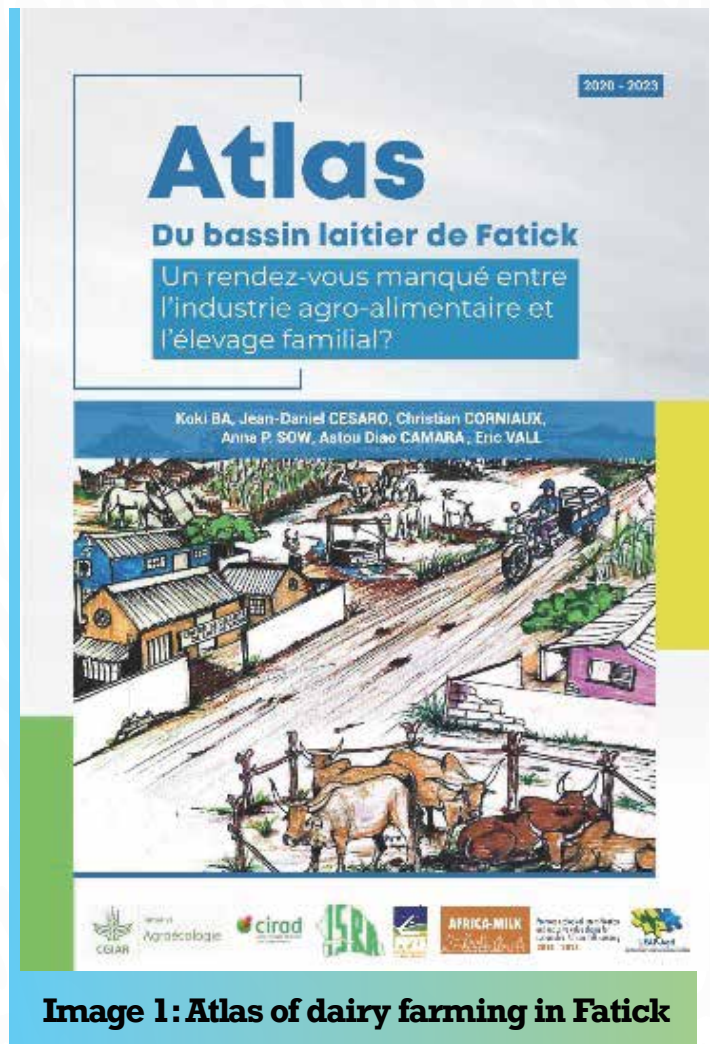


Image 1: Atlas of dairy farming in Fatick

sector since the closure of the Kirène collection centre. The workshop provided an opportunity to reflect on the sector's development prospects, in particular through new business models involving producers, collectors, manufacturers, processors and consumers. This activity is also part of the WP3 Business model of the Agroecology initiative, which aims to define new forms of trade within the milk chain in order to promote the principles of agroecology.



Image 2: Exchange meeting with players in the Fatick milk sector

To carry out an exhaustive analysis of the dairy value chain, additional qualitative and quantitative data were mobilised. On the one hand, documentation was produced on the dairy landscape of Senegal and on the physical, agro-pastoral and economic environment of the Fatick region.

A bibliography was also compiled on the organisational and institutional

dynamics of the dairy value chain in Fatick. Statistical data was also collected on the demographics of the region, changes in cultivated areas, yields of the main crops and the number of livestock in the region.

All this information was very useful in defining how the agropastoral region was built up and the framework in which milk production and marketing activities are carried out.



Mapping

on the milk value chain in Fatick

2. National situation of the milk value chain in Senegal

2. National situation of the milk value chain in Senegal

2.1 Production

Despite a shortfall in milk production, milk is a very strategic consumer commodity for the Senegalese. The national cattle herd is estimated at over 3.5 million head, divided between 3 livestock farming systems: pastoral, agropastoral and intensive. Extensive livestock farming is the main contributor, accounting for 50% of production, semi-intensive for 32% and intensive for 17% (MEPA, 2020).

Despite the implementation of numerous dairy policies aimed at improving production, dairy farming in Senegal is still dependent on the extensive production system. And yet, according to data from the Ministry of

Livestock and Animal Production (MEPA), milk production in Senegal has been growing overall for the past decade. Between 2010 and 2020, milk production rose from 414.9 to 710.5 million litres of milk, an increase of 41.60%.

These increases are partly due to the entry into production of pregnant heifers of purebred dairy breeds under the 2017 and 2018 import programmes of the Association Nationale pour l'Intensification de la Production Laitière (ANIPL) (MEPA, 2019; 2020). The table 1 below shows the growth in milk production in Senegal and the share of imports.

Years	Milk production (millions of liters)	Share of imports (%)	Annual growth in Production (%)
2010	414,9	56,4	-
2011	419,4	56,0	+1,07
2012	486,6	58,5	+13,81
2013	413,5	47,4	-17,68
2014	417,1	47,8	+0,86
2015	384,4	41,1	-8,51
2016	435,7	46,9	+11,77
2017	454,7	46,5	+4,18
2018	555	55,1	+18,07
2019	588,2	55,0	+5,64
2020	710,5	62,3	+17,21

Table 1: National milk production and import share from 2010 to 2020

The continued positive growth in milk production conceals other realities, such as the share of milk and dairy product imports in meeting demand. Production is largely underpinned by imports, which accounted for 62.3% of total production in 2020. Milk is the second most imported food product after rice, with a bill of 60 billion CFA

francs in 2020 (Ferrari, 2017; Ba, 2023). These figures show the weight of the import sector on the growth of national milk production, which remains dependent on imports.

They also reveal the fragility of local production systems in responding to the ever-increasing national demand for milk.

2.2 Consumption

The consumption of milk and dairy products has been growing in Senegal since independence. In fact, current consumption is 4 to 5 times higher than in the post-independence period (Ferrari, 2017). As a result, Senegal is now the 5th highest milk-consuming country in ECOWAS (Broutin et al., 2018). The increase in the consumption of milk and dairy products is mainly due to the urbanisation of Senegalese cities. The urban phenomenon has effectively introduced new eating habits such as coffee with milk for breakfast in the morning (Ndoye, 2001).

In response, supply has increased and diversified with the proliferation of milk powder-based dairy products, encouraged by an incentive-based

customs policy taxing milk powder at just 5% (Broutin et al., 2005). As a result, the Senegalese population's per capita milk consumption has improved significantly. Between 1980 and 2002, per capita consumption rose from 16.5 kg to 21.7 kg of milk (Dièye, 2006) and from 29 litres to 30.2 litres between 2016 and 2017, an increase of 1.2 litres (MEPA, 2018).

However, it is worth pointing out that dairy consumption is higher in cities than in rural areas. Moreover, Dakar is the country's largest consumer market because of the size of its population (nearly 4 million inhabitants), household purchasing power (55% of the wage bill) and absorbs 40% of marketed dairy products (Mankor, 2001; Broutin et al., 2018).

2.3 Dairy industrialisation built around milk powder

Dairy industrialisation in Senegal has been made possible by industrial firms using mainly imported milk powder. Milk powder is the main raw material for processing and repackaging into various dairy products (fermented milk, yoghurt, skimmed milk, butter, etc.). The explosion in milk powder imports has also led to a boom in industrial milk powder processing units in urban areas. Dairy manufacturers have set up in cities, particularly in the capital, to gain access to raw materials (milk powder) and to position themselves close to consumers (Dia, 2009; Corniaux, 2015; Ferrari, 2017).

Industrialisation has therefore been made possible by opening up sub-regional markets to imports of cheap milk powder since the 2000s. And more recently, the raw materials used have been even cheaper, being blends of skimmed milk and vegetable fat powder (Corniaux, 2020).

Meanwhile, most dairy units wishing to process local milk face enormous difficulties in obtaining the necessary quantities. These constraints include problems of under-equipment, energy management and, above all, a

shortage of milk for processing. The great paradox lies in the existence of a surplus of milk supply during the rainy season and a drastic drop in production during the dry season (Broutin et al., 2018).

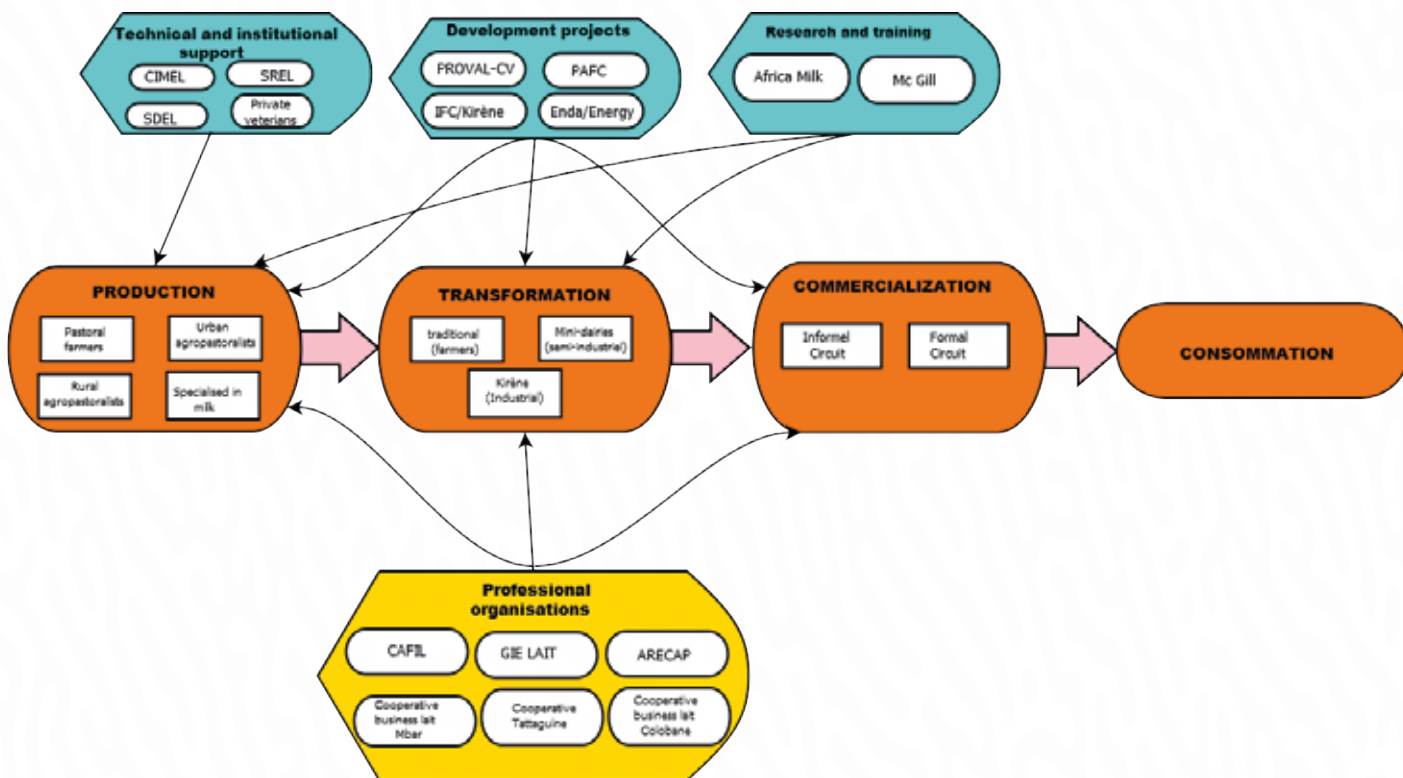
The viability of local milk collection systems is undermined above all by the seasonality of production and irregular supply. In addition, farmers' recourse to the informal marketing market, which offers more advantageous prices, means that the difficulties faced by local milk collection and processing units persist (Tournaire, 2019).

Finally, the seasonal nature of milk production in Senegal, combined with an unviable collection and processing system, means that the local industry is struggling to emerge. As a result, consumption is largely supported by imports. This situation means that the country is heavily dependent on international markets, and poses a major challenge for public policy: how can the import bill be reduced and local milk production developed? The repeated failures of attempts to industrialise the local sector bear witness to the entrenchment of traditional milk production and marketing practices in Senegal.

They also show that the real industrial and economic market for milk may be powdered milk. However, the study by Christian Corniaux, François Vatin and Véronique Ancey (2010) predicted that the future of the industrialisation of the milk sector in Senegal would involve a

mixed model in which milk powder is combined with local milk. This model has been tried out in recent years by dairy manufacturers such as Laiterie du Berger (LDB) and Kirène. The mixed model seems to offer hope for the emergence of Senegalese dairy farming.

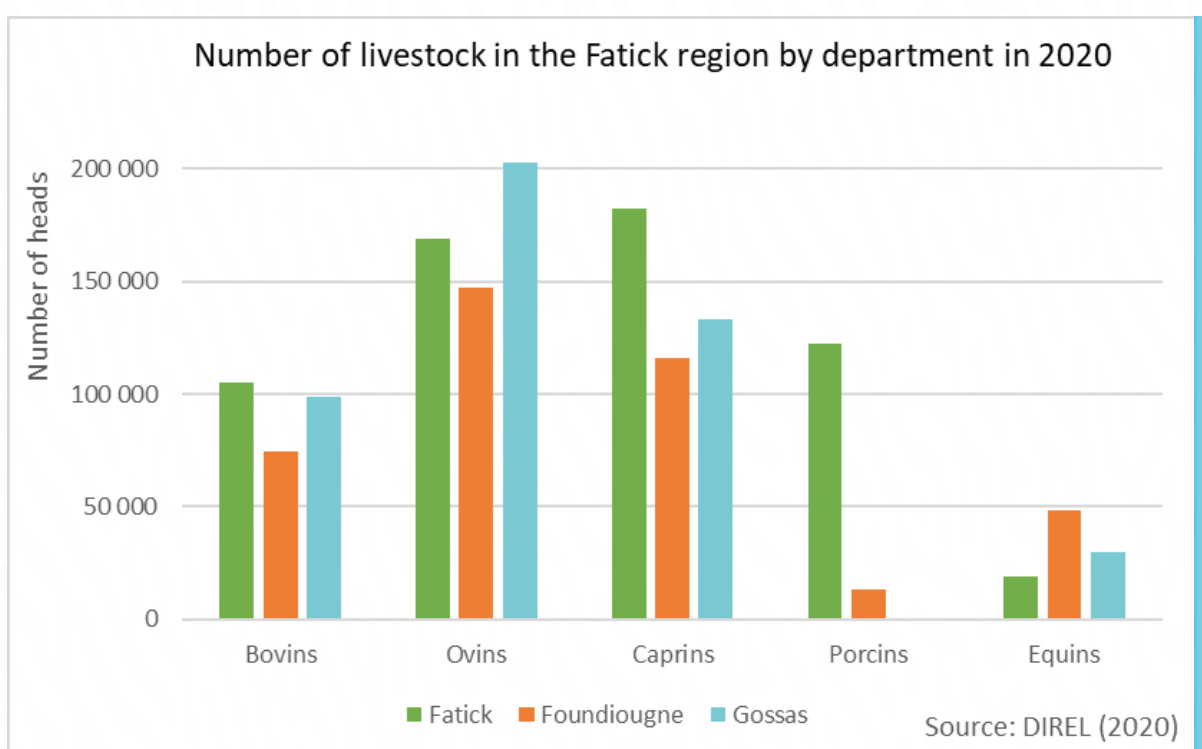
3. Milk value chain in Fatick



3.1 Diverse regional livestock potential, but constrained by the availability of production resources

Livestock farming practised in transhumance and/or on a sedentary basis in towns and village terroirs is a very important activity in the Fatick region. It contributes significantly to people's food security and the fight against poverty (ANSD, 2018). It is an important source of income and contributes to household nutritional intake. Its importance is underlined by the results of the 2013 ANSD census, in which 39,538 of the 58,454 households surveyed practised livestock farming, or 67.6% at regional level (compared with 28.2% of households at national level) (ANSD, 2015). The Fatick region has good conditions for livestock farming, such as significant agricultural residues, some pasture in saline areas, natural pastoral pools and hardy breeds

(Ba et al., 2023). The region's livestock population is highly diversified, with small ruminants predominating. The graphic 1 below shows the distribution of livestock by species and by department of the region in 2020. The department of Fatick accounts for 40.2% of livestock, while the departments of Gossas and Foundiougne account for 31.5% and 28.3% respectively. Small ruminants (sheep and goats) alone account for 63% of the region's total livestock numbers, with cattle coming in a distant 2nd at 18.4%. The importance of small ruminant farming can be explained by the region's constraints (in terms of space and fodder availability) and by its ability to respond to the social needs of vulnerable groups (CSE, 2015).



Graphic 1: Breakdown of animal numbers by species and departement in 2020

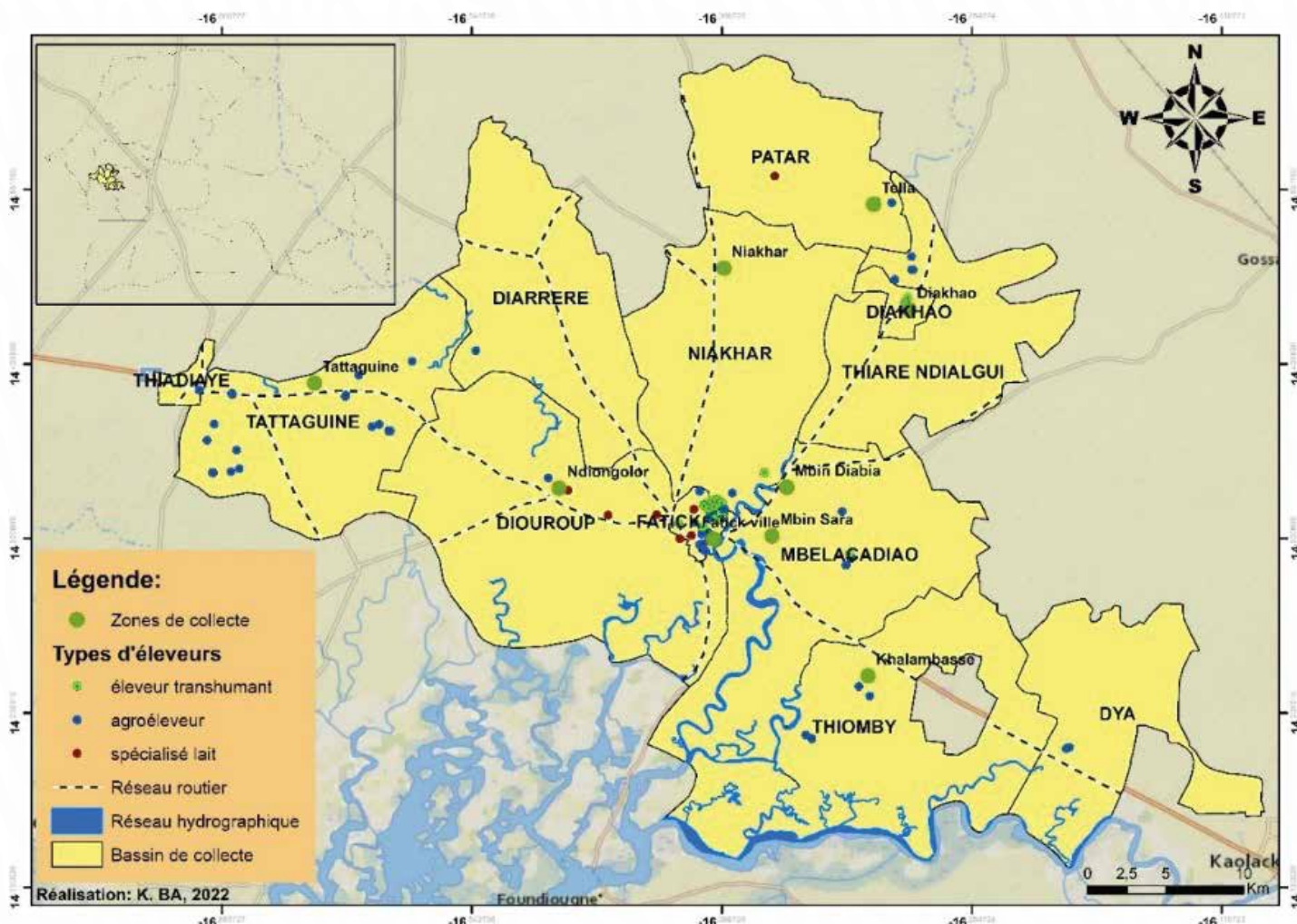
Fatick's longstanding agro-pastoral tradition and the strong presence of pastoralism make it one of the country's major cattle-breeding areas. However, it is groundnuts that have turned Fatick into an area known as the Groundnut Basin. Groundnut cultivation, introduced in colonial times, was the driving force behind the region's development until the crisis of the 1970s (Diallo, 2010). With climate change, groundnut cultivation moved south of the country to the rainier 'Terres Neuves', plunging Fatick into a socio-economic stagnation that had been latent for several decades. In response, farmers have adopted a two-pronged strategy of extending the area under cultivation and diversifying crops and activities (Ndiaye, 2006). It is in this context that farmers have given greater importance to livestock and milk production, which has gone from being a simple self-consumed product to a means of diversifying income

(Ba et al., 2021). As a result, a local milk market has developed in the town, run by both pastoralists and agro-pastoralists, which satisfies daily milk consumption. There is therefore a dairy tradition in Fatick, but unlike in other areas, it was not really developed before the arrival of Kirène; it remained small-scale and restricted to the local market (Sow, 2020). Yet there is real production potential, as only the Kirène collection basin has a large dairy herd estimated at 4,273 cows (Ba et al., 2023). However, this potential is struggling to develop, as the salinisation of the land, combined with the expansion of farmland, leaves little space for grazing livestock. This situation has led to transhumance of the herd, as there are no longer sufficient food resources (water and fodder) in the area. Feeding is therefore a major challenge that affects both milk production volumes and farm economics (Ba et al., 2021).

3.2 Diverse dairy farming systems in Fatick

The livestock farmers of Fatick do not form a homogenous, uniform category, sharing a common set of practices and interests. There are different profiles in the Fatick region, with varied life paths, contrasting strategies and priorities, in a context where the search for economic diversification in dairy farming meets interests guided mainly by social or cultural aspirations.

This diversity is a source of excitement, but is also seen as a constraint on the structuring of an industrial dairy industry. Pastoralists and urban agropastoralists are mainly concentrated in towns. Rural agropastoralists are based in rural areas. Dairy specialists are spread around the outskirts of towns and in rural areas (Cf. map 1).



Map 1: Spatial distribution of livestock breeder types in the Fatick collection basin

3.2.1 Pastoral farmers

They are mainly Fulani herders for whom livestock farming is the main, if not the only, activity. They all come from Welloumbel in the Dahra department (north-central Senegal). Before the droughts of the 1970s and 1980s, they used to come to the Fatick area on transhumance at the end of the harvests, marking the start of the grazing of crop residues, and stayed until the first rains came. Their presence in Fatick was

justified in particular by the availability of resources (water and pasture) and the exchange of organic manure in return for cereals and crop residues with farmers in the region. However, the scarcity of food resources has led them to settle permanently in the town, mostly on the outskirts to avoid the nuisance (noise and smell) associated with the presence of the animals.

The bush herd is driven in transhumance almost all year round, and a few dairy cows (five on average) are kept in town (Cf. image 3). These productive cows are grazed during the day on the outskirts of the town and return in the evening to be supplemented with concentrates. They are milked morning and evening. Average daily production varies between one and two litres per cow. This low production is explained by the exclusive use of local breeds, in particular the Gobra zebu. On these family farms, the head of the family looks after the herd and his sons drive the cattle on transhumance and to pasture. They occasionally engage in other

activities such as cattle trading. The women are responsible for milking, marketing the milk and managing the income from the milk.



Image 3: Park of a pastor's dairy nucleus in the heart of the town of Fatick

3.2.2 Agropastoralists

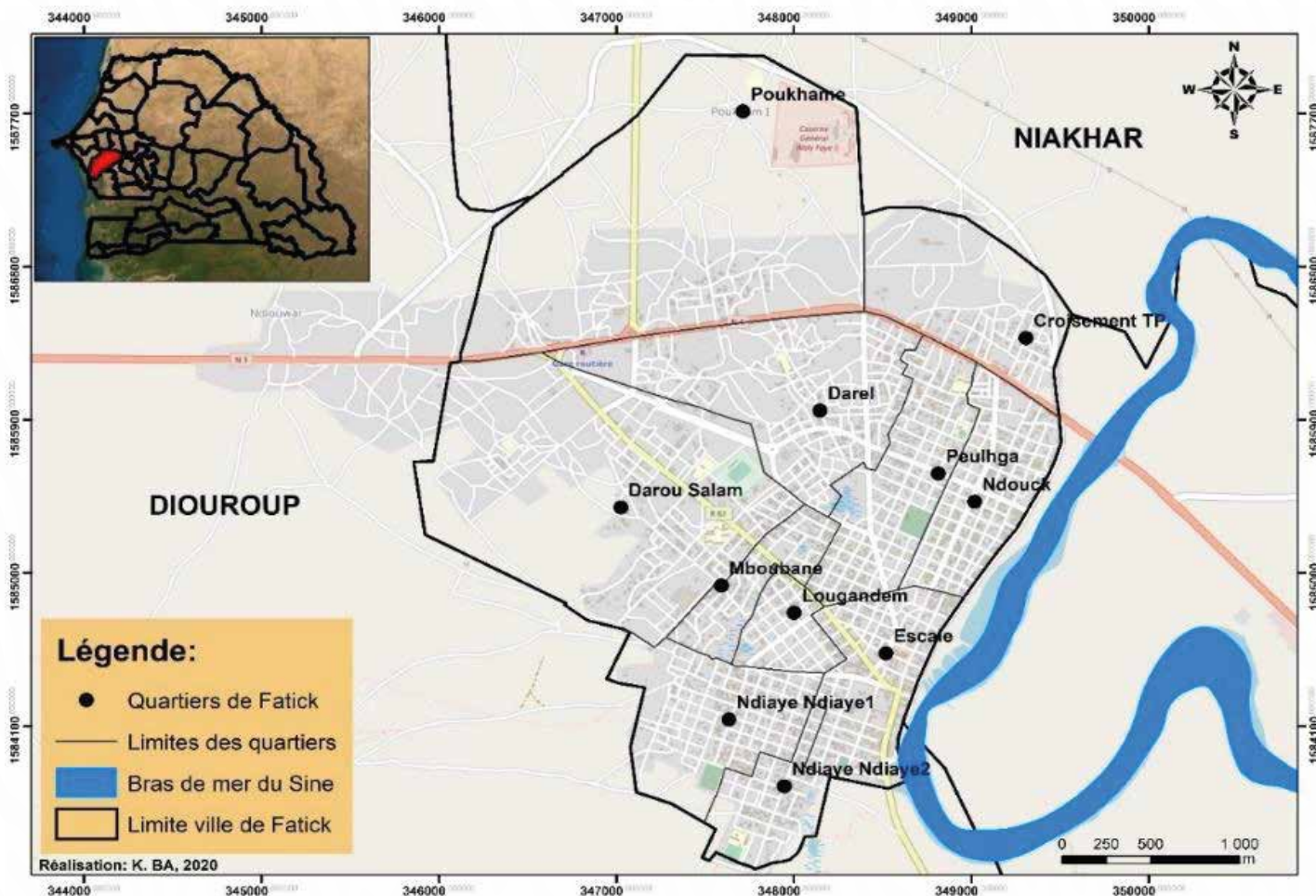
This livestock farming system is mainly adopted by the Serer people, for whom agriculture and livestock farming are complementary activities, with the addition

of organic manure to crop land. Two types of agropastoralists have been identified: urban dwellers, located mainly in the town of Fatick, and rural dwellers in the villages.

3.2.2.1 Urban agropastoralists

Urban agropastoralists from the Fatick region are mainly of the Serer ethnic group. They are scattered across various districts of the town, with a slight concentration in the south (particularly in the Ndiaye-Ndiaye Serer district) (Cf. map 2). Farming and livestock rearing are agricultural practices inherited from their parents. Few of them had a herd of cattle. They

did, however, welcome the herds of pastoralists into their fields for organic manuring. Subsequently, the income from surplus yields was invested in the purchase of cattle and entrusted to the pastoralists. This is how they gradually built up a herd of cattle. The herd was family-run and settled to fertilise the crop land, and the milk was intended for family consumption.



Map 2: Location of districts in the town of Fatick

The socio-professional category of urban agropastoralists in Fatick is mainly made up of civil servants (working or retired) and shopkeepers. They practise subsistence farming (millet and groundnuts) on small areas (between 2 and 3 ha) on the outskirts of the town. Crop residues (groundnut haulms, cereal straws, millet stalks and cowpea haulms) are used to feed the livestock.

The herd is small (from 2 to 15 head) because of spatial constraints, privatisation of the herd after inheritance and difficulties in finding labour. On the other hand, the herd is run collectively, often by family members or neighbours, each with two or three animals. The breeds used are mainly local and mixed. Some of the urban agropastoralists employ shepherds to take the animals to the pastures on the outskirts of the town during the day and park them in the fields in the evening (Cf. image 4).

Shepherds also milk the milking cows. Production cows are generally kept in semi-stable or permanent housing (especially crossbred cows) and receive supplementary concentrates to improve their production capacity. Average daily milk production varies widely, from 4 to

30 litres. Income from milk is managed exclusively by the men, even though the women sell the milk at home. This income is mainly used to feed and maintain the herd, pay the shepherds and meet the family's needs.



Image 4: Cow supplemented during evening milking on an urban agropastoral farm in Fatick ville

3.2.2.2 Rural agropastoralists

Rural agropastoralists also belong to the Serer ethnic group. Agriculture and livestock farming have long been complementary. They practise rain-fed agriculture, which is mainly subsistence farming (millet, groundnuts, cowpeas, etc.). Cattle were sedentary, since their primary function was to fertilise crop land. They were therefore kept on fallow land during the cropping season, driven to pasture near the village and on harvested land during the dry season. Milk production lasted only during the winter months and was exclusively for self-consumption. However, these farming practices were transformed by the droughts of the 1970s

and 1980s. The scarcity of food resources and the fall in yields resulted in the extension of cultivated land and the consequent shrinkage of grazing areas, forcing farmers to send their cattle on transhumance. The herd is family-run. Their primary function is still to fertilise the land. The area currently farmed varies between 1 and 20 hectares. They also make greater use of mineral fertilisers to improve yields. Harvests are primarily for family consumption, and only surpluses (particularly groundnuts) are sold. Crop residues are stored until the lean season to feed the herd (Cf. image 5).



Image 5: Agricultural residues for animal feed

The workforce is mainly family-based, but salaried labour is often used to maintain the herd. Other activities include fattening, livestock trading and milk production. The latter activity is increasingly practised by agropastoral households following the establishment of the Kirène milk collection centre. Rural agropastoralists have seen the value of investing in this activity, as they now have access to the milk market through Kirène, even though agricultural yields are constantly falling. The collection industry has

transformed rural agropastoralists' relationship with milk: from a residual self-consumption product to a regular source of income. The breeds used for milk production are generally cross-breeds. They are kept in semi-stable conditions and supplemented with concentrated feed. Average daily production, which varies from 4 to 20 litres of milk, is mainly sold at the Kirène collection centre. Income from milk is used primarily to maintain the herd and secondarily to meet a few family expenses.



Image 6 : Cows housed in a crop field on a rural agro-pastoral farm in Fatick

3.2.3 Specialist dairy farmers

Dairy specialists are a socio-professional category made up of active or retired senior civil servants and major retailers. They have invested in intensive dairy production for two main reasons. Firstly, public policy aimed at developing the dairy industry through the ANIPL programme to import pregnant heifers was a major incentive. Secondly, the presence of the Kirène collection centre provides a secure outlet for milk production. These intensive dairy farms are entirely focused on production objectives, and their characteristics are very different from those of other farms. Located on the outskirts of the town and in rural areas, they occupy areas of between 2 and 5 hectares.

The herds are mainly made up of European dairy breeds (Holstein, Montbéliarde, Normande, Jersey, etc.), with a few mixed breeds. Artificial insemination is the most

common method of reproduction. The small size of the herd (8 to 20 head per farm) means that it can be kept in permanent stalls (Cf. image 7). Pure breeds are fed concentrates and roughage, while mixed breeds are often grazed during the day and supplemented with concentrates in the evening. Farmers who specialise in dairy often have other agricultural activities such as subsistence farming, where crop residues are used as feed for the livestock, and rely on paid labour (particularly for herd maintenance and milk production). Depending on the farm, average daily production varies between 15 and 70 litres of milk, sold primarily at the Kirène collection centre. However, some producers close to the town sell a small amount on the parallel market. All income from milk is reinvested in the farm (cattle feed, wages, etc.).



Image 7: Exotic dairy breeds in permanent housing on a dairy farm in Fatick

4. Dairy processors in the Fatick region

4.1 Small-scale processing

Artisanal milk processing in Fatick is characterised by a low level of processing. Farmers' production and marketing conditions do not allow them to offer a wide range of processed dairy products. In fact, small-scale processing is practically carried out on an individual basis, using small quantities of milk. Curdled milk is the only processed product offered on the local market. It is a dairy product that has undergone natural fermentation thanks to the action of lactic bacteria.

This dairy product is marketed and consumed by households themselves, as an accompaniment to coucous or cereal-based porridge, thiakry. Its marketing is generally associated with the sale of fresh milk. Among Fulani women, curd and fresh milk account for 87% of total sales. These women prefer to sell curdled milk because it is cheaper to process, and therefore yields higher profits. This dairy product is repackaged in several types of pots (Cf. image 8) to facilitate retail sales.



Image 8: Different curd packaging pots in Fatick

Unlike pastoralists, urban agropastoralists do little artisanal processing of curdled milk. They prefer to market fresh milk, which accounts for 80% of their sales. Fermentation only takes place in exceptional cases when fresh milk is in short supply. This is due to the consumption habits of their customers, who are used to eating couscous with fresh milk every evening (Ba, 2023).

The fact that artisanal processing in Fatick is limited to curdled milk can also be explained by irregular milk production.

4.2 Semi-industrial processing

The main players in semi-industrial processing in Fatick are processing units, village groups and individual processors. In the Fatick region, processing of the goat value chain is more developed than the beef value chain. On the one hand, this is due to the many training courses offered by the PAFC (Programme d'Amélioration de la Filière Caprine) to women on goat milk processing techniques. In fact, 53% of these women use the new milk processing techniques. The boom in goat's milk processing in Fatick is also due to the establishment of several processing units (Diassé, 2020).

The various partners in the goat industry development project have financed projects to build departmental cheese dairies and processing units. These facilities are equipped with all the

The seasonal nature of production, combined with small quantities of milk, means that it is not possible to offer a wide range of dairy products. Milk supply is already struggling to meet demand on a regular basis, especially during the dry season when production shortfalls are more recurrent. In other words, processing dairy products implies a production surplus, but the individual processing practised by farmers does not allow them to mobilise large volumes and does not ensure a diversified range of dairy products.

equipment needed for processing (refrigerators, gas bottles, draining tables, moulds, pots, thermometers, ladles, etc.). Processing units have been set up in Diossong, Colobane and Sap (Cf. image 9). Two mini-dairies have also been built at Djilor Dental and at the Centre d'Impulsion pour la Modernisation de l'Élevage (CIMEL) in Niakhar. All these processing units were built and supported as part of the partnership with ARECAP (Association Régionale des Éleveurs Caprins). These units are managed and operated by groups of women, who are organised into several goat industry development groups. An analysis of goat milk processing activities shows a diversity of products. The three main products derived from goat's milk processing are yoghurt, cheese and soap (Gillerot, 2018).



Image 9 : Sapp dairy, Foundiougne departement - (Source: PAFC, 2021)

Yoghurt is a milk product that has undergone pasteurisation and the addition of lactic ferments. Yoghurt, which is processed mainly by individual processors and village groups, is processed on a regular daily or weekly basis. This rhythm is based on the milking period applied by the farmers, resulting in seasonal variations in processing activities, with the quantities of processed products dependent on the vagaries of milk production and the volume of goat's milk available.

On average, between 1 and 6 litres of yoghurt are processed per day during the milking period. However, goat's milk may be supplemented with cow's milk.

Cheese is a product that has undergone pasteurisation and fermentation, to which rennet has been added. After coagulation, the product is drained and pressed. The cheese, produced by individual processors and processing units, is mainly made to order.

These orders come from tourist site operators, politicians and partners at irregular intervals. However, orders for tourist sites are concentrated during the tourist season from December to February. The individual processors also have customers, private individuals in Dakar, to whom they supply cheese up to twice a month. Depending on the customer, orders vary between 10 and 30 crottins produced over 4 days.

The soap is a craft product made from goat's milk, peanut oil, bicarbonate of soda and water. A few drops of lavender essential oil, a product imported from France by the partners, may be added for a more delicate scent. Soap is produced sporadically, on average every 2 weeks, by the units, individual processors and village

groups. As soap storage is not a constraint, large quantities of soap are produced, around 30 units, and stored in village concessions or shops. Local demand is high, as soap is a primary utility product with health benefits, particularly during the rainy season (Gillerot, 2018; Diassé, 2020).



Image 10: Dairy products made by ARECAP in Fatick

4.3 Industrial processing

Ever since it was founded, the Kirène Group's vision has been to diversify its range of dairy products in order to better capture market opportunities. Its involvement in the collection of local milk in the Fatick basin is part of this

approach. Kirène is a food company founded in 2001 by Société Sénégalaise Industrielle Agroalimentaire (SIAGRO). It is located south-east of Dakar in Diass, in the Thiès region, next to the new Blaise Diagne international airport (Ba, 2023).

In 2009, the Group entered the dairy sector under the Candia Grandlait franchise. Kirène initially specialised in the manufacture and marketing of Ultra High Temperature (UHT) milk, reconstituted from imported milk powder. The company then decided to incorporate local milk into its production process. It was the first company in Senegal to offer sterilised UHT milk, with a processing capacity of 10,000 litres per day (Magnani, 2016). It was against this backdrop that it began collecting local milk from national producers, in particular the intensive peri-urban farms in Dakar. In 2015, Kirène plans to diversify its sources of supply of local milk, increasing its

partnerships with farmers in the Fatick collection basin. Eventually, SIAGRO hopes to achieve a volume of between 15% and 20% of milk collected locally. In its early days of milk processing, the company marketed UHT milk in 1-litre cartons and 100-ml cartons, using Tetra Pak technology (see image). To better meet the demands of a fast-growing urban market, Kirène has developed products in several formats to suit local tastes and purchasing power. New Candia ranges are being produced, including 500 ml UHT milk with new packaging and flavoured milk (Tournaire, 2019; Ba, 2023).



Image 11: The different Kirène dairy products

5 Milk marketing channels in Fatick

5.1 Informal marketing circuit

Milk is a staple food in pastoral and agro-pastoral households. Among both Fulani and Serer, it is regularly consumed in the form of fresh products, curdled with millet porridge. As a result, milk has always been a product of an economy based on self-consumption and local exchanges between neighbours (Ndiaye, 2006). 1 to 2 litres of milk are enough for the family's daily consumption; if there is any milk left over, it is either sold in town to a familiar clientele for 500 to 600 francs a litre, or distributed or even sold in rural areas between neighbours. And the arrival of the collection centre has not changed this behaviour in town: most urban suppliers have always preferred to sell on the informal market, which Kirène does not understand (Tournaire, 2019).

Local milk is generally sold over short distances and distribution channels very rarely go beyond the local market. In towns, the informal milk marketing market is mainly made up of two players, Peul women sellers and urban Serer agropastoralists. Admittedly, they use different marketing methods. However, the rationale behind milk

marketing is virtually the same. For the Fulani women, marketing takes place for the most part during the day in customers' homes. The main marketing method is door-to-door sales to their loyal customers, at workplaces or gathering places. Peul women go to their customers on foot, carrying buckets of milk on their heads, and they criss-cross the various streets of the town (Cf. image 12). The central market is where all the cow's milk sellers converge. They go there every day for two main reasons: to make their purchases or to sell their unsold milk. For urban agropastoralists, the most common marketing methods are door-to-door sales and order delivery. Overall, the daily milk sales of these agropastoralists are higher than those of Fulani pastoralist women. The former sell an average of 10.5 litres of milk a day, while the latter sell an average of 3.3 litres a day (Ba, 2023).



Image 12: Fulani women selling milk in the streets of the town of Fatick

Goat's milk yoghurt is also marketed locally as a substitute for cow's milk, with the emphasis on the nutritional qualities of goat's milk. As for the other dairy products (soap, yoghurt and

cheese), marketing strategies are twofold and vary according to the type of consumer targeted. On the one hand, the marketing of soap, for example, is based on easy access for the consumer: low prices and door-to-door sales. Local consumers do not require packaging or promotion, and are familiar with the product and its quality because of their proximity to the processing site. Similarly, goat's milk yoghurt is marketed locally as a substitute for cow's milk, with the emphasis on the nutritional qualities of goat's milk. On the other hand, the marketing of cheese, soap and yoghurt focuses on promoting Fatick's goat products and terroir to outside consumers. These products generally target a tourist audience or a financially well-off urban public (Gillerot, 2018).

5.2 Formal marketing channel

The formal milk marketing circuit in Fatick is structured around the Kirène collection centre (Cf. image 13). The Kirène company had drawn up a verbal contract with the dairy farmers of Fatick on the conditions for collecting and marketing milk. The focal point of the partnership is that the milk is accepted and collected after passing the alcohol quality test. The purchase price per

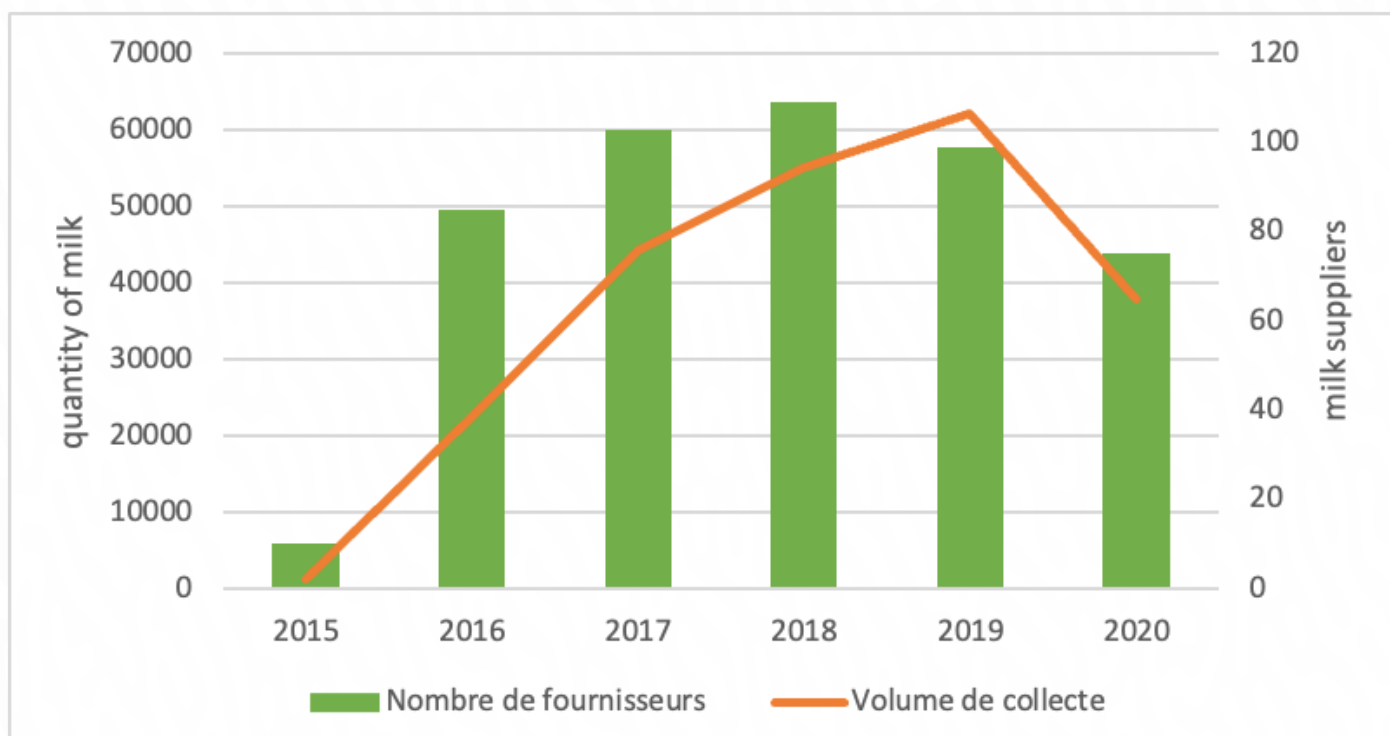
litre of milk was initially set at 300 CFA francs, but was quickly increased to 350 CFA francs. Payment for the volume of milk supplied by farmers is organised on a four-weekly basis. Between 2015 and 2020, 485 supplying farmers sold 223,019 litres of milk to the Kirène collection centre, representing a turnover of nearly CFAF 78 million.

Image 13: Kirène milk collection centre in Fatick



From 2015 to 2019, the volumes of milk marketed in the formal channel rose steadily. In 2015, the formal channel got off to a slow start, with 10 supplying farmers selling 1,084 litres to the Kirène collection centre. The centre's first suppliers were mainly heads of farmers' groups, who wanted to encourage other farmers to join the centre. Between 2016 and 2017, the number of supplying farmers rose from 85 to 103, and the volumes marketed

increased from 22,517 to 44,239 litres of milk. The increase in the number of suppliers and the quantities of milk marketed can be explained by Kirène's support services. From 2016 onwards, Kirène granted feed on credit to supplying farmers and subsidised artificial insemination programmes. Between 2018 and 2019, the collection system appears to be undergoing a shift towards greater specialisation on dairy farms: volumes collected continue to rise (from 55,180 to 62,119 litres), while the number of suppliers is falling, from 109 to 99 farmers. Fewer farmers are producing and selling more milk to the Kirène centre. This indicates a strong dependence on intensive livestock farmers and/or rural agropastoralists who deliver all their milk in the absence of any other outlet. In 2020, the volume of milk collected by the centre fell for the first time, with 75 supplying farmers selling 37,880 litres of milk. The covid 19 crisis had a significant impact on the formal milk marketing market in Fatick, as the centre suspended collection for a fortnight (Ba et al., 2021).



Graphic 2: Growth in volumes of milk collected and the number of suppliers in the Fatick basin from 2015 to 2020

Since 2021, the dairy industry in Fatick has been faced with the end of formal milk collection. Farmers decided to sell their milk informally outside the cold chain, or to consume their own production. However, they have taken a number of steps to deal with the collapse of the milk collection industry and revive the sector. With the construction of two new collection centres, managed by the farmers' cooperatives, a new stage in the development of the sector has begun. This section looks at the different business models that these cooperatives intend to put in place.

The question of the purchase price of milk and the commercial relationship between cooperatives and the downstream end of the sector divides the cooperatives. For the Fatick cooperative, the collection centre can be likened to a mini-dairy. The farmers want to sell directly to consumers. For the moment, they have no estimate of the daily

volume needed to operate a collection and processing centre, or at least to pay for the use of this infrastructure. For peri-urban farmers, the collection centre may not be a good solution, as the purchase price will be too low compared with direct sales. It will therefore be necessary to collect from farmers who do not have the opportunity to sell at high prices. This raises the question of how to win the loyalty of producers. That's why the Fatick collection centre wants to set up support services to help future supplying farmers. The cooperative's managers are in the process of identifying the needs of breeders so that their expectations can be better met. They would like to develop a feed manufacturing workshop and animal health support to build loyalty among farmers.

As for the Tattaguine cooperative, the collection centre will initially give priority to selling milk to the Kirène dairy manufacturer. The village of Tattaguine and the market linked to the national road will not be able to absorb the production. New outlets need to be found, either with Kirène or with other dairies. On the other hand, milk that is rejected by dairies because of the alcohol test can be transformed into curd and sold on the informal market. The question arises as to the capacity of farmers to manage so many different channels in their processing unit, in order to separate the milk and manage them simultaneously. Based on their experience in Kirène, farmers are expecting to collect 6,000

litres a month, or 50 to 100 litres a day, to start with. However, they have no idea what equipment PROVALE-CV will make available. The strategy of the Tattaguine cooperative seems to be clear: the main outlet is the industrial Kirène and the informal market is considered to be a secondary circuit.

The main activity of WP3 in 2024 is to support the cooperatives in developing a business plan for the collection centres, bearing in mind that the Fatick cooperative wants to process and sell locally (Fatick collection centre), while the Tattaguine cooperative wants to work again with the Kirène company and add value locally to the milk not wanted by the agri-food industry.

6 Support and development players in the Fatick milk sector

6.1 Technical and institutional support

The public technical services in the Fatick region consist of 3 Departmental Veterinary Services Institutions (IDSV) under the supervision of a Regional Veterinary Services Institution (IRSV) (ANSD, 2021). As the technical arm of the MEPA, the IDSVs and IRSV are responsible for implementing the State's policy guidelines for developing livestock farming in Fatick. The decentralised livestock services are supposed to support livestock farmers in their production activities, disseminate livestock farming practices and support development players. However, apart from mass vaccination campaigns for livestock (see image), slaughter controls and the distribution of cattle feed during the OSB period (Opération Sauvegarde du Bétail), these deconcentrated services have not been involved in any other activities.

Private practitioners are essentially made up of 3 Veterinary Doctors (DV), 4 Livestock Works Engineers (ITE) and 9 Livestock Technical Agents (ATE) (SREL, 2018). These private practitioners are very active in the sector, as farmers regularly call on them for advice, care and artificial insemination operations. Veterinary practices also supply dairy farmers with medicines.

However, the resources made available to the public support services are insufficient to



Image 14 : Livestock vaccination campaign in Fatick

develop the region's dairy sector. In addition, the technical services are understaffed, as there has been no change in veterinary service staff between 2018 and 2019 (ANSD, 2021).

As a result, dairy farmers in Fatick are struggling to gain regular access to quality technical services. They frequently resort to 'muddling through' to maintain their dairy herds, which requires skills they do not have (Ba et al., 2021).

The technical organisation of the sector is weak, as technical support is not yet available to provide regular assistance to dairy farms. In short, dairy farmers in Fatick are facing real difficulties in developing milk production due to a lack of technical support.

6.2 Research and development projects

The Africa Milk and Mc Geel projects focus on research and training for farmers. Africa Milk is a research project that supports the co-design and implementation of technical and organisational innovations to increase and secure fresh milk supplies for dairies that have chosen to rely on local milk production. At the request of the two cooperatives in Fatick, the Africa Milk project, in partnership with ISRA, organised several training sessions on the basics of feeding a dairy herd. An initial workshop was held to train farmers in techniques for treating straw with urea. The farmers took an active part in the exercise through a demonstration session on a farm (Cf. image 15).

This was followed by a second training session in which 17 farmers selected by the

cooperative offices took part. The training was divided into two sessions: a theoretical session on the feed requirements of local, crossbred and exotic cows, and a practical session on the manufacture of multi-nutritional blocks. Finally, a third activity was carried out by Africa Milk to test a rationing tool with a view to securing local milk supplies. The 'JANDE' tool adjusts feed to the nutritional needs of cows and evaluates costs and margins.

The tool was tested on 67 lactating cows on 20 pilot farms in the Fatick collection basin. The results of the test were encouraging, as they enabled recommendations to be made for readjusting expenditure on cow feed (Ba et al., 2023).



Image 15 : Training session on cow feeding by Africa Milk

Since 2019, McGill University has conducted several research studies in the Fatick region as part of the Food Security: Adapted Agriculture (SAGA) project, coordinated by the FAO. The project's research activities have made it possible to identify a number of avenues for reflection on the capacity-building needs of players in the livestock sector. The research results showed that the problem of food and prolonged drought remain the major challenges for livestock farmers in the region. It was against this backdrop that McGill University decided to strengthen the adaptive capacities of producers in the Fatick region by training farmers in animal feed production and management strategies and in dairy product hygiene and marketing (Kuhn et al., 2021). These training sessions enabled farmers to develop their knowledge and skills in effective models for the production, conservation and management of animal feed and the marketing of dairy products.

The IFC-Kirène and PAFC projects focused their activities on providing technical and organisational support to dairy farmers in the Fatick region. In order to manage its activities in Fatick, the Kirène consortium has formed partnerships with a number of different organisations and projects, some of which work for Kirène and others with Kirène. The IFC project is Kirène's main partner: it has helped train the cooperatives and is working with AIF to help them become more structured and attractive. AIF deals more specifically

with communication plans and helps with internal organisation. SENSE, for its part, is helping Kirène at centre level by delegating a veterinarian to accompany the breeders. However, the lack of coordination between the various projects has often resulted in farmers misunderstanding each other's motivations and actions (Sow, 2020).

PAFC is a development programme implemented by FRESYCA (Fédération Régionale des Syndicats Caprins de Poitou-Charentes-Vendée) since 2006 as part of decentralised cooperation between the regions of Poitou-Charentes in France and Fatick in Senegal. The overall aim of the programme is to combat poverty, particularly among women and young people in the Fatick region, by working in 3 main areas: improving goat farming, adding value to goat products and organising and structuring the goat industry. In 2010,

ARECAF was set up with financial and technical support from PDIF and PAFC to provide organisational support for the goat industry. ARECAF has set up 60 individual goat farms and 3 processing units (Gillerot, 2018; Diassé, 2020). However, despite the PAFC's many achievements, there is still room for improvement, as there is still a low proportion of goat farmers who have switched to a mixed farming system. The PAFC is also expected to run more awareness-raising campaigns to remove taboos about the processing and consumption of goat's milk.

The achievements of the PROVAL-CV and ENDA ENERGIE projects focus more on the construction of collection centres, processing units and technical and organisational support for livestock farmers in Fatick. The PROVAL CV programme financed the construction of two collection centres in Fatick and Tattaguine. At the same time, the PROVAL project is also planning training sessions for beneficiaries on milk processing and cattle fattening techniques. Members of the two cooperatives have also received training in dairy processing techniques.

The project is also committed to supporting and accompanying the cooperatives so that they can obtain a manufacturing and marketing authorisation (FRA) so that farmers can label their products.

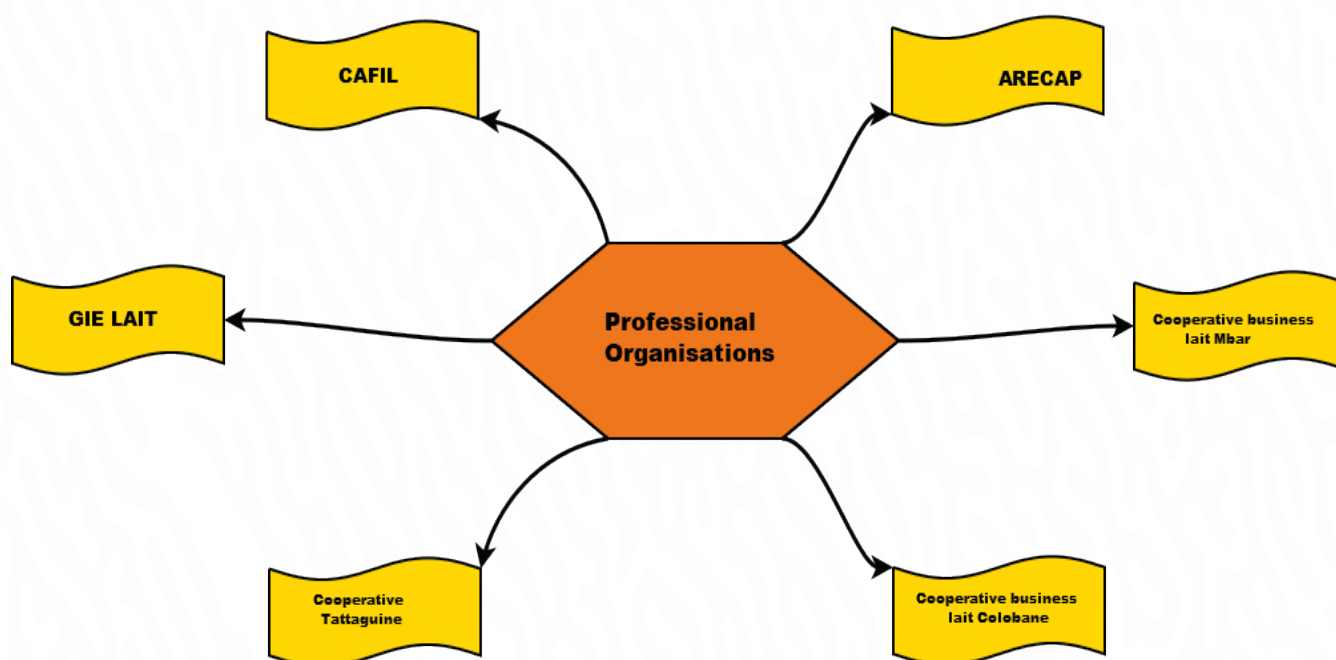
ENDA/ENERGIE's activities in the Fatick region are funded by the German cooperation agency GIZ, which works on agricultural value chains and solar energy. The aim of the project is to strengthen the resilience of small-scale milk producers through entrepreneurship and access to sustainable energy. Specifically, the aim is to organise the collection network, professionalise dairy farmers' activities, find a market for milk, and train stakeholders in organisational dynamics and milk processing and marketing.

To do this, the NGO ENDA has developed a collection centre in the Gossas area, where it collects around 150 litres a day,

with a storage capacity of 600 litres. In terms of technical support, around a hundred women have received training in fodder production and milk processing techniques. In terms of organisation, the ENDA project has set up two dairy cooperatives and eight MSEs, which have now been transformed into micro-enterprises.

All in all, over the past 3 years, the Fatick dairy industry has acquired several production, processing and marketing tools. However, developing a sector based on collection centres managed by farmers represents a major organisational challenge that cooperatives and MSEs must meet.

6.3 Professional organisations



Graphic 3: Scheme of professional organisations in Fatick

Farmers in Fatick have a number of professional organisations (cooperatives, economic interest groups, ARECAP, etc.) that provide forums for dialogue and pooling of activities. However, they are generally not very dynamic and lack the support they need to better guide and boost the dairy sector (ARD, 2019). Although there are many such organisations, they are relatively weak.

In the department of Fatick, the IFC/Kirène project created the Fatick and Tattaguine dairy cooperatives. The Business Milk cooperatives of Mbar and Colobane were also set up with support from Enda/Energie in the department of Gossas. These cooperatives meet from time to time with their members to discuss their problems. Despite this, they still lack structure and responsibility. In addition, there are a number of dairy farmers who are not interested in joining the cooperatives because they offer few

services to their members. Indeed, due to a lack of resources, cooperatives are unable to build a shop to stock livestock feed. They also very rarely offer subsidy programmes for artificial insemination. Nevertheless, during the covid period, the Tattaguine cooperative organised an insemination operation for its members' cows: 32 head were inseminated (Anna Sow, 2020). In addition, the dairy cooperatives were created recently and are still in the process of being structured. They are young and do not currently have sufficient resources to fully cover the costs associated with their operation.

In short, the existence of a multitude of professional organisations in the milk value chain in Fatick makes it difficult for the players to understand each other. These different organisations are poorly organised, and coordination is therefore needed if the milk value chain is to emerge.

The Association des Eleveurs de Métisses (ASEM) is another example of a farmers' organisation, which is trying to develop production chains. In the long term, the association's members want to develop the production of animal products and, in particular, to help reduce the milk deficit.

To achieve this, they are focusing their activities mainly on insemination programmes and group purchases of cattle feed. The group of milk producers and processors in the Fatick department is also part of the same dynamic. Its aim is to develop the department's milk industry by encouraging its members to step up milk production. However, one of the major constraints faced by breeders is the lack of training and the low level of technical skills required to handle mixed-breed cattle properly (Ndiaye, 2006).

The organisational dynamic of the goat dairy sector seems to be more structured thanks to the creation of a single unit that brings together all the organisations. The Regional Association of Goat Breeders (ARECAP) is made up of 134 village goat groups, a cooperative and 31 individual breeders. ARECAP receives technical and financial support for its activities from its main partners: MEPA, ISRA, ITA, PAFC and ANPDI.

The association offers support

services to its members, providing all new members with batches of medicines. It also uses its own funds to organise training sessions on first aid for livestock and dairy processing techniques. As for the facilitators, they are responsible for running activities in the groups to improve their organisation and operation. ARECAP also organises an annual deworming campaign, combined with vaccination of goats against plague and pasteurellosis.

The health of the goats is monitored by the PAFC's technical advisers. However, ARECAP is no longer able to offer all the support services to its members because its partners have reduced their funding. For example, the association is in danger of suspending the health monitoring service because one of its strategic partners has considerably reduced its subsidies. In other words, the sustainability of support services is now uncertain, as ARECAP's activities depend largely on external funding (ARECAP, 2023).

So the challenge facing the Association is to work on the organisational and, above all, financial sustainability of the structure. This explains why the association's board is currently engaged in discussions that should lead to a strategic plan for ARECAP's autonomy.





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