



SMALLHOLDER
AND AGRI-SME FINANCE
AND INVESTMENT NETWORK



SCOPING ANALYSIS

WORKING PAPER

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SAHEL

INVESTMENT OPPORTUNITIES
IN FIVE AGRICULTURAL
VALUE CHAINS



SMALLHOLDER
AND AGRI-SME FINANCE
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INVESTMENT PROSPECTUS

SAHEL: NIGER, BURKINA FASO & SENEGAL

INVESTMENT OPPORTUNITIES IN FIVE AGRICULTURAL VALUE CHAINS

November 2020

Author

classM
Local issues. Business solutions.

Table of contents

List of acronyms.....	4
Executive Summary	5
1. Introduction to the scoping analysis.....	7
1.1 Objectives.....	7
1.2 Focus of the study	7
1.3 Mapping of SAFIN partners interventions	8
2. Onions value chain [Niger focus].....	10
2.1 Main production zones in the region	10
2.2 Economic trends.....	10
2.3 Sector mapping.....	11
2.4 Key governmental institutions and programs.....	14
2.5 Donor programs and initiatives	15
2.6 Financial sector.....	16
2.7 Specific opportunities for investment and financial solutions.....	17
3. Indigenous cereals value chain [Niger focus].....	19
3.1 Main production zones in the region	19
3.2 Economic trends.....	20
3.3 Sector mapping.....	20
3.4 Key governmental institutions and programs.....	23
3.5 Donor programs and initiatives	23
3.6 Financial sector.....	23
3.7 Specific opportunities for investment and financial solutions	24
4. Mango value chain [Senegal focus]	25
4.1 Main production zones in the region	25
4.2 Economic trends.....	26
4.3 Sector mapping.....	27
4.4 Key governmental institutions and programs in Senegal.....	29
4.5 Donor programs and initiatives	30
4.6 Financial sector.....	30
4.7 Specific opportunities for financial support.....	31
5. Market gardening [Burkina Faso focus]	33
5.1 Main production zones.....	33
5.2 Economic trends	33
5.3 Sector mapping.....	34
5.4 Key government institutions and programs in Burkina Faso	36
5.5 Donor programs and initiatives	37
5.6 Financial sector.....	38
5.7 Specific opportunities for financial support.....	38

6. Maize value chain (Burkina Faso focus)	40
6.1 Main production zones.....	40
6.2 Economic trends.....	40
6.3 Sector mapping.....	41
6.4 Key government institutions and programs in Burkina Faso	44
6.5 Donor programs and initiatives	44
6.6 Financial sector.....	44
6.7 Specific opportunities for financial support.....	45
7. Sources	46
8. Appendices	48
8.1 SAFIN partners contacted for the study.....	48

Table of figures

Figure 1: Selected value chains.....	7
Figure 2: Onion production and consumption basins in West Africa (RONGEAD, 2014)	11
Figure 3: Costs and added value of the stored organic onion (adapted from Adam, 2019)	12
Figure 4: The onion value chain in Niger	13
Figure 5: Production of fonio, millets and sorghum in Senegal, Niger and Burkina Faso, in tons (FAOSTAT, 2020)...	19
Figure 6: Main sorghum, millets and cotton production zones in West Africa (Elbehri, 2013).....	20
Figure 7: Mango production in Senegal (T/year) – (FAOSTAT, 2020).....	25
Figure 8: Main areas of mango production (ASEPEX, 2016)	26
Figure 9: Distribution of the added value in the mango value chain in Burkina Faso (EC, 2018).....	27
Figure 10: Mango value chain: opportunity for SME support	31
Figure 11: Market gardening value chain	35
Figure 12: Maize production areas, in hectares (FAOSTAT, 2020).....	40
Figure 13: Maize production in Burkina Faso, Niger and Senegal, in tons (FAOSTAT, 2020)	41
Figure 14: Cotton and maize production areas in the West and Central African regions (Kaminski, 2013).....	42
Figure 15: Synthetic view of the maize value chain.....	43

List of acronyms

AECID	Agencia Española de Cooperación Internacional para el Desarrollo
AFD	Agence française de développement
AfDB	African Development Bank
AGRA	Alliance for a Green Revolution in Africa
EC DEVCO	Direction générale de la coopération internationale et du développement
ECOWAS	Economic Community of West African States
FAO	Food and Agriculture Organization of the United Nations
FCFA*	Franc de la Communauté financière africaine
GDP	Gross Domestic Product
I&P	Investisseurs et Partenaires
IDLO	International Development Law Organization
IF	Intervention Fund
ITC	International Trade Center
MFI	Microfinance institutions
n.d.	No publishing date available
SAFIN	Smallholder and Agri-SME Finance and Investment Network
SDG	Sustainable Development Goals
SME**	Small and Medium-sized Enterprise
VC	Value Chain
WB	World Bank
WFP	World Food Programme

(*) Applied exchange rate in this report is 1 Franc CFA = 0,0015 Euro

(**) In this report, the term “SMEs” refers to small and medium-sized companies. The main definition criteria include:

- Staff headcount (more than 1 staff);
- Purpose (profit-driven entities); and
- Type of activities (entities contributing economically to the agricultural ecosystems).

Micro enterprises such as farming households are not treated as SMEs in this report.

“SMEs” refers both to registered companies and companies that are not registered and belong to the informal sector.

Executive Summary

This report, commissioned by SAFIN, is a **scoping analysis covering 5 value chains in Burkina Faso, Niger and Senegal**. The scoping analysis is the first step of a two-phase learning approach, aiming to provide a thorough understanding of agricultural value chains and to identify agri-SME investment opportunities that require innovative financial solutions, the development of which could be supported by SAFIN partners. The selected value chains are onions, indigenous cereals, mangoes, market gardening and maize.

Onions are a key agricultural food commodity in West Africa and contribute directly to the food security of rural households. Onions cultivated in Niger are sold on regional markets and exported to neighboring countries. The value chain is characterized by numerous smallholders selling their produce to a few traders who control the collection, transport and wholesale marketing of onions. Lack of storage facilities, poor access to market information and post-harvest losses are some of the main challenges in the value chain. The analysis suggests two main opportunities for SAFIN partners. First, **contract farming** could create stronger market linkages and thus facilitate the commercialization of smallholder production. Secondly, **supporting investment in storage facilities** could enable producers to improve the marketing of their products.

Indigenous cereals are a key component of Nigerien farmers' dietary habits and rural markets are the primary outlets for these cereals. Numerous intermediaries are involved from primary producers to final consumers, leading to inefficiencies along the value chain. One key challenge for the development of the value chain is how to better link supply from family farming to urban and peri-urban demand. Another challenge is the strong information asymmetries between traders, who dominate regional networks and have their own information networks, and cooperatives and processing SMEs. In this context, there is a rationale for **investing in processing activities** to increase value addition in the value chain, create stronger outlets for producers and tap into urban demand for processed cereal products.

Mango production in Senegal consists of the so-called "local varieties" and "export varieties". Overall, less than 20% of the production is exported, while the rest is either sold on local markets, self-consumed by producers or wasted. There is a key challenge to add value to national production through conditioning of fresh mangoes for export and processing of mangoes to produce aseptic processed pulp or other fruit-based processed food items. The relevant section in this report outlines the opportunity to **invest in SMEs' agro-industrial processing capacities**. This opportunity could increase value addition locally and help agri-SMEs become more financially viable.

Market gardening in irrigated perimeters has significantly expanded since the 1990s. In Burkina Faso, irrigated vegetables such as tomatoes, onions and cabbage are either consumed locally or sold in urban markets. Purchase of inputs is key for farmers, yet they often lack financial means to invest in seeds and fertilizers. The opportunity consists in **targeting input providers and giving them the financial and technical capacity to increase farmers' access to inputs**. Through a mix of financing and technical assistance, input providers could implement a savings model for farmers. There is potential for financial innovation, to create a model where farmers have a saving mechanism enabling them to access adequate seeds and inputs.

The maize value chain in Burkina Faso is deeply intertwined with cotton farming. Produce is either consumed directly by households or sold to collectors, processed and sold in local markets. The study identifies bottlenecks related to fluctuating and opaque pricing, poor productivity, inadequately structured cooperatives and quality issues. The report draws attention to the need to assess the typology of agri-traders, to understand their funding requirements, and to identify the best means for establishing sustainable commercial relationships between agri-traders and producers.

From a regional perspective, many value chains assessed in this report are embedded in regional trade flows. This is especially the case for onion farming, where agri-traders play a key role in buying, collecting and transporting onions from Niger to other neighboring countries. However, the study does not identify any clear opportunities where investment and/or financing solutions targeting a given value chain would lead to transformative change affecting the Sahelian region, beyond the country where the investment and/or financing solution is applied. This is mainly explained by the fact that production and value addition activities that are performed in the region for the five value chains under review tend to be conducted in the same country.

1. Introduction to the scoping analysis

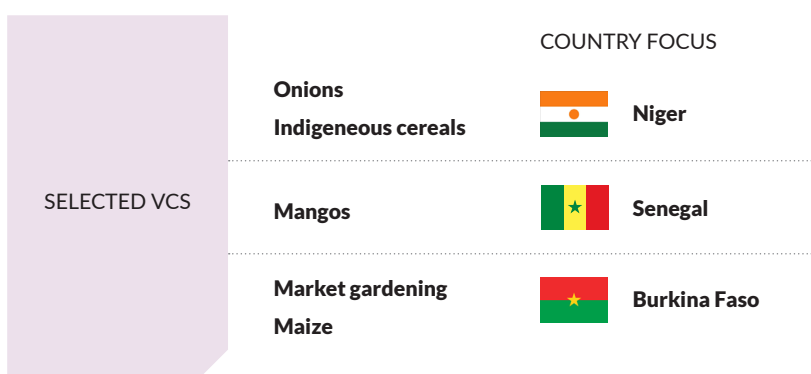
1.1 Objectives

The study provides a value chain analysis of selected food systems with the aim of identifying areas with high potential for collaborative action by SAFIN partners, where new financing solutions may play a key enabling role and that are currently poorly addressed by the market or by institutional actors.

1.2 Focus of the study

The study focuses on the Sahel region, with three key countries targeted: **Senegal, Burkina Faso, and Niger**. Five agricultural value chains are covered in the scoping analysis, each of which is analyzed within a national context, but with a transnational trade perspective. This approach allows us to draw lessons that can be applied to the whole region. The value chain were selected following a preliminary analysis based on a number of specific criteria (see below), which yielded the following results:

Figure 1: Selected value chains



The value chains were assessed using 8 key selection criteria, including:

- **Political importance** (i.e. alignment with public policies and targets);
- **Smallholder participation** in the value chain;
- **Agri-SME density** and potential for growth;
- **Processing or transformation** of raw products in the value chain (i.e. potential for local value addition);
- **Contribution to food security** (i.e. nutritional value and inclusion in dietary habits);
- **Regional trade / multi-country interest**, including outlets for agricultural production, go-to-market routes, and transnational food trade flows;
- **Interest of SAFIN members** in terms of current or likely future sectorial priorities; and
- **Market trends and potential for impact** (i.e. global trends, ecosystem dynamics and obstacles to development).

Other criteria were included in the pre-selection process, such as “alignment with SDGs” and “job creation”.

1.3 Mapping of SAFIN partners interventions

This section introduces the main activities and programs of SAFIN partners active in any or all of the 3 countries of focus for the present report. To avoid any duplication, all country or value chain specific programs or initiatives will be covered in the relevant value chain section below (Sections 2 - 6).

Name of institution	Experience and priorities
Grow Africa	<p>Grow Africa works to increase private sector investment in agriculture and accelerate the execution and impact of investment commitments, by:</p> <ul style="list-style-type: none"> • Developing a shared platform with all actors of the value chain; • Organizing working groups to analyse the main value chain issues and identify solutions; and • Assessing business opportunities with a clear focus on developing a regional understanding of the value chain. <p>Ongoing programs target East African potato, horticulture in Rwanda, mangoes in Burkina Faso, cassava in Ghana and Nigeria, pineapple in Benin and rice in ECOWAS countries.</p>
International Trade Center (ITC)	<p>ITC aims to develop inclusive and sustainable agribusiness value chains, by:</p> <ul style="list-style-type: none"> • Designing value chain roadmaps and action plans; • Prioritizing potential markets and identifying product diversification opportunities; • Building strategic value chain alliances and fostering public-private partnerships and investment to unlock inclusive growth; and • Developing sustainable agribusiness value chains and optimizing competitiveness.
Agence française de développement (AFD)	<p>AFD works on agricultural value chains at all levels to promote inclusive and sustainable rural development and to ensure food security. AFD provides support to farmers to improve the management of their production and to strengthen the economic sustainability of local value chains.</p> <p>Three operational priorities are inscribed in AFD's framework of intervention:</p> <ol style="list-style-type: none"> 1. Increasing economic activity and employment opportunities for young people. 2. Responding to broader demographic challenges. 3. Contributing to balanced territorial development and food security. <p>Significant grant funding is available to support the development of agricultural value chains. Interventions usually target a broad spectrum of sectors rather than a single value chain.</p>
European Commission (DEVCO)	<p>In Sahel, the European Commission supported the Global Alliance for Resilience Initiative (AGIR), which aims at achieving 'zero hunger' in the Sahel region by 2032, by strengthening agricultural productivity through better farming methods, and improving the social protection system for vulnerable communities and households, among other activities.</p> <p>In Burkina Faso, DG DEVCO conducted a study on the mango value chain (published in March 2018) to inform policy and investment decisions, as well as to understand the value chain's impact from a social and environmental perspective. In Senegal, DEVCO worked on the mango value chain through a program focusing on pest infestations with AFD. This regional program is currently led by AFD and ECOWAS under the name SYRIMAO.</p>
OikoCredit	<p>In the Sahel region, OikoCredit works with MFIs that on-lend to entrepreneurs. It provides technical assistance to certain MFIs that finance producer organizations, such as the Banque Sahélo-Saharienne pour l'Investissement et le Commerce (BSIC), which works with diverse clients ranging from individuals to SMEs and large enterprises in Niger.</p>

Name of institution	Experience and priorities
Food and Agriculture Organization (FAO)	<p>FAO's priorities in the region are to ensure that farmers are provided with time-critical inputs, including seeds and fertilizers, for off-season vegetable production, as well as for irrigated crops such as cereals, pulses and tubers.</p> <p>FAO manages a Sustainable Food Value Chain knowledge platform, which supported a value chain study on onions in Senegal (2018)¹, and a technical note on the maize sector in Burkina Faso (2019)².</p> <p>FAO is in the process of implementing the Hand-in-Hand initiative, an evidence-based, country-led and country-owned initiative that aims to accelerate agricultural transformation and sustainable rural development. The initiative prioritizes countries and territories within countries where poverty and hunger are most concentrated or where national capacities are most limited owing to history, conflict or natural disasters. Burkina Faso and Niger are both priority countries, although only the former had confirmed participation by August 2020.</p>
Alliance for a Green Revolution in Africa (AGRA)	<p>AGRA has worked in Burkina Faso since 2006, covering 5 regions with a focus on 4 value chains (maize, rice, sorghum and niebe) and investments (US\$21.5 million to date) in input and output markets systems development, innovative finance, research capacity building, and policy and advocacy (AGRA is not currently active in Senegal or Niger). AGRA supports the implementation of consortiums that bring together NGOs, public authorities, and private companies.</p>
The World Food Programme (WFP)	<p>WFP sources sorghum in Niger and some maize in Burkina Faso. As the organization evaluates the impact of its activities on local value chains it sources from, it has considered engaging in innovative investment/financing activities that could improve their sustainable development.</p>

1 David-Benz H. et Seck A. 2018. Améliorer la qualité de l'oignon au Sénégal - Contractualisation et autres mesures transversales. Rapport d'analyse de politique, SAPAA (projet de Suivi et Analyse des Politiques Agricoles et Alimentaires). Rome, FAO. (<http://www.fao.org/publications/card/en/c/18488FR>)

2 FAO, PAM et FIDA. 2019. Analyse des pertes alimentaires : causes et solutions – Études de cas sur le sorgho, le maïs, le niébé au Burkina Faso. Rome, FAO, PAM et FIDA. (<http://www.fao.org/3/ca3464fr/CA3464FR.pdf>)

2. Onions value chain [Niger focus]

2.1 Main production zones in the region

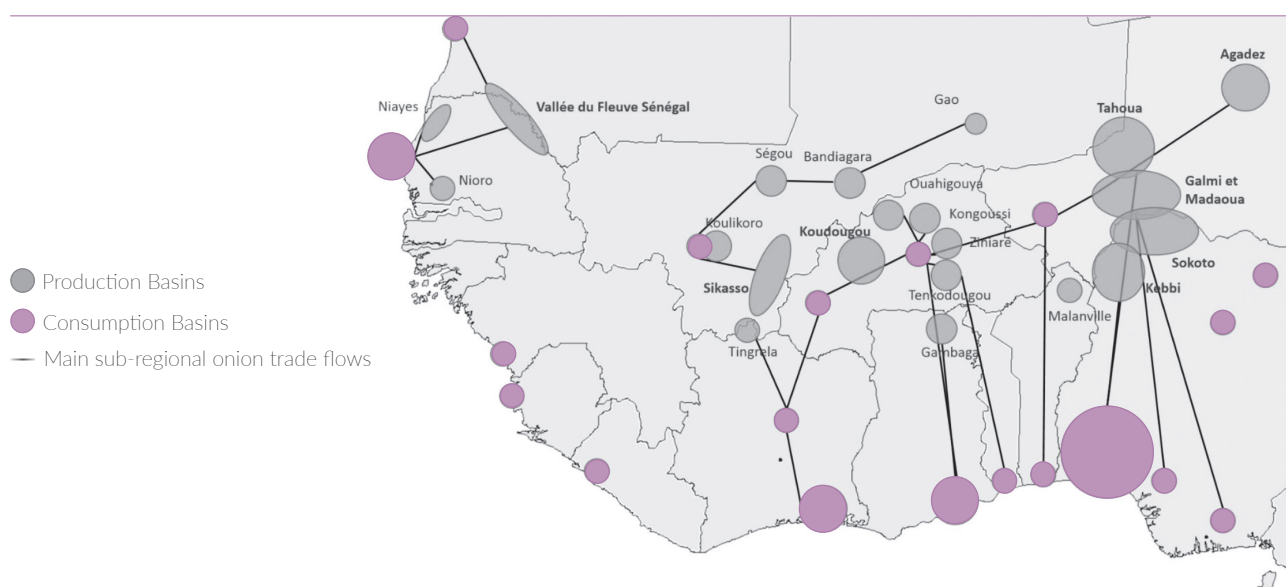
- **Niger is the first onions producer in the region.** Onions are cultivated in almost all regions of the country. The Tahoua region is the largest producer, with two annual harvests: one rain-fed crop is produced during the rainy season and one irrigated crop during the dry season. “Violet de Galmi” is Niger’s most famous variety; it is well known in West African markets, due to its color and spicy flavor. Estimates regarding production volumes vary significantly depending on sources and years. Estimates of annual production range from **600,000 to 1,400,000 tons**, putting Niger at the top among onion producers in West Africa.
- **Burkina Faso is the second producer of onions in the region**, with 200,000 to 400,000 tons per year, depending on sources (*caution is advised regarding data accuracy*³), most of which is produced in the country’s Northern Region.
- **Senegal produces on average 250,000 tons annually**⁴. Onion production has grown significantly since the mid-2000s, fueled by partial bans on imports and growing national demand. There are two main production regions:
 1. **The Niayes region**, where market gardening is well-developed and onions are manually irrigated (except for larger farms where drip irrigation is used).
 2. **The river valley** (Département de Podor, Guiers lake area) where onion farming is practiced on irrigated perimeters.

2.2 Economic trends

Onion farming plays a key role for smallholders, as onion revenues are a primary resource for household subsistence, social spending (e.g. covering the cost of weddings) and livestock purchases. In regions where onion farming is widespread (see section 2.1), **the onion sector contributes significantly to food security**, as onions account for 10 to 25% of vegetable consumption in West Africa (Tarchiani, 2013). More than 1 million Nigeriens depend directly or indirectly on the onion value chain (IED, 2014). It is important to note that a large portion of such actors operates in the informal sector. Onion farming also contributes to **mitigating rural exodus** in large production basins.

Nigerien onions are exported to West African countries, especially Côte d’Ivoire, Ghana, Togo, Nigeria, and Benin, but reliable data on trade flows is unavailable. Burkina Faso is also an exporter of onions to neighbouring countries (see Figure 2 below). The main competitor to regional onion production is European onion production, particularly imports from the Netherlands.

Figure 2: Onion production and consumption basins in West Africa (RONGEAD, 2014)



2.3 Sector mapping

PRODUCTION

There is a wide production base composed of smallholder farmers: **average onion farm size is relatively small (1,200 m²) and average yield is estimated at 20 tons per hectare (CRA, 2017).**

Access to productive seeds is challenging for onion farmers. Most of them produce their own onion seeds based on their personal expertise. The purchase of onion seeds is rare although they are available in some markets (A. Mallam, 2019). High quality seeds are expensive, representing on average 16% of production costs. High quality seeds not only allow for better yields, but also longer conservation of dried onions.

Irrigation plays an important role in onion farming. Farmers use traditional wells and, in some cases, modern wells and boreholes. Water management is a key issue. In urban and peri-urban agricultural areas, wastewater is sometimes used for irrigation, with the risk of harvesting products containing significant quantities of toxic elements, particularly heavy metals (Adam, 2019).

Fertilizer use remains low. When it is used, it often combines manure and imported chemical fertilizer, which are marketed in privately owned supply centers through formal and informal channels. According to the *Investment Plan* of the *3N Initiative* (see section 2.4), yield increase can reach 57% when onion farmers use appropriate fertilizer.

Harvest and conservation are key entry points for value addition in the value chain. Depending on the time of the year, harvested onions are either marketed directly to wholesalers or stored for sale at higher prices when there are lower volumes available on the market. This also gives farmers leverage when negotiating with traders: if farmers deem that farmgate prices are too low, they can store their produce and sell to other traders at a later date. More than 95% of storage capacity is constituted by traditional facilities (“rudus”) that are not adapted for long-term conservation (RECA, 2014). In Senegal, up to 30% of onion production is sold post-harvest⁵.

5 Source: direct interview with Grow Africa, 02/09/2020

Improving the conservation of onions can benefit farmers financially by reducing losses and improving farmgate prices. Research conducted by INRAN suggests that for 1 kg of onion from the Torodi region sold at its highest price during the month of September, storage accounts for 44% of total added value (Adam, 2019) – see Figure 3 below.

Figure 3: Costs and added value of the stored organic onion (adapted from Adam, 2019)



TRADE

There are numerous commercial operators between the initial purchase at farmgate and the end consumers, including buyers, village intermediaries and aggregators, transporters, foreign traders, wholesalers, retailers, etc. **These actors are mostly informal** and state intervention is low. These operators are united by diverse ties, such as aid, usury, family or social obligation, etc. (FAO, n.d.)

In the Sahel region, **the value chain is controlled by a small number of large Nigerien traders**, often located in Abidjan, who supervise the distribution of onions. These key players are able to buy, collect, transport and sell the bulk of onion production. They keep themselves informed about the evolution of demand and prices in different markets in the sub-region. These wholesalers and traders represent most of the SMEs in the onion value chain and there is therefore a strong rationale for engaging with them. Figure 4 below describes the main actors of the value chain. Recent reports do not identify precisely who these traders are, which calls for additional local research in Niger and neighboring countries.

Typology of actors in agricultural value chains in Niger

A recent World Bank study on agribusiness (WB, 2019) reveals different types of players in the agri-food sector in the country, which can be categorized into three segments:

1. **Medium-sized agri-food enterprises:** there are nine medium-sized enterprises with annual revenues going from US\$1 million up to US\$23 million, and with a number of employees ranging from 15 to 150. These medium-sized enterprises are active in commercial farming and trading of onions, horticulture products, poultry, and the processing of wheat and dairy products. They sell mostly on the local market through distributors and retailers. Very few are active on regional or international markets.
2. **Small enterprises** (about 14 enterprises) and traders with annual revenues of less than US\$1 million. Enterprises in this segment are involved in the processing of different agri-food products (onions, tomatoes, meat, cereals, etc.), and sell mainly on local markets to wholesalers, usually directly in stores and sometimes regionally.
3. The third segment includes:
 - I. more than **50 women associations** involved in grinding and processing fruit, cereals, and dairy products;
 - II. about 8,500 **farmer cooperatives** who sell the surplus of their production in the market and more recently started processing; and
 - III. **enterprises providing support services** to farmers and SMEs in the agri-food sector. SMEs are mostly concentrated in urban areas while farmer cooperatives are located in rural areas.

The third segment struggles with limited access to finance, which is reflected in the lack of access to modern equipment, poor transportation facilities, lack of storage capacity, and lack of adequate packaging. High taxation practices discourage informal enterprises from legal registration. In addition, women in the agri-food sector are constrained by their limited mobility and lack of access to finance (particularly due to lack of collateral). Despite these challenges, there are opportunities for contract farming, especially in the dairy, meat, and onion industries between agribusinesses and small-scale farmers or producers.

(adapted from: World Bank, 2019)

Figure 4: The onion value chain in Niger



2.4 Key governmental institutions and programs

The main institutions and authorities playing an active role in the development of the onions value chain are listed in the table below:

Institution	Role and objectives
Ministry of Agriculture and Livestock (Ministère de l'Agriculture et de l'Élevage)	Oversees the implementation of the national policy on agriculture and livestock and food security. Key operational departments for the development of the onion value chain include the <i>Directorate General of Agriculture, the Directorate of Plant Protection, and the Directorate General of Rural Engineering</i> .
Ministry of Planning (Ministère du Plan)	Oversees forecasting, developing, and monitoring the implementation of the government's economic and social development strategy. Responsible for: <ul style="list-style-type: none"> • Promotion of rural development; • Mobilization of foreign direct investment; and • Land use planning and promotion of community ownership of grassroots development actions.
Office of the High Commissioner for the 3N Initiative	Implements the strategic objectives of the 3N Initiative ("les Nigériens Nourrissent les Nigériens"), which includes: <ul style="list-style-type: none"> • Protecting the people of Niger from hunger; • Increasing local food production; • Increasing income generated from farming activities; and • Developing resilience against food crises and climate disasters.
National Network of Agricultural Chambers of Niger (Réseau national des Chambres d'Agriculture - RECA)	Aims to improve the flow of information in the onion value chain (e.g. sharing information on prices and stocks).
The National Institute of Agronomic Research of Niger (Institut National de la Recherche Agronomique du Niger - INRAN)	The Institute's main mission consists in: <ul style="list-style-type: none"> • Ensuring a quality seed production; • Contributing to the establishment of a dynamic and sustainable seed sector in Niger; • Producing and distributing pre-basic⁶ and basic seeds of high-performance varieties resulting from research; • Supervising farmers and private companies and strengthening the capacity of private seed actors; and • Contributing to the establishment of seed legislation.
Information Points for villagers (Points d'Information Villageois PIV)	Operate as regional information centers set up by the RECA for stakeholders in the onion value chain, with the objective of improving transparency by collecting, processing and disseminating market information to all actors nation-wide.

6 Pre-basic seed is the progeny of the breeder seed and is usually produced under the supervision of a breeder or his designated agency. This generation is commonly used for crops that have low multiplication ratios and where large quantities of certified seed are required. (<http://www.fao.org/3/y4011eOv.htm>)

Institution	Role and objectives
National Association for Onion Professionals sector of Niger (Association Nationale des Professionnels de la filière Oignon du Niger - ANFO)	Aggregates and mobilizes onion producers.

The onion sector is identified as a key sector for the development of agriculture in public policies and other official documentation. In the 3N Initiative (see above), the onion value chain is cited as one of the key competitive value chains contributing to food security and economic growth.

In the **current overarching development policy** (*Niger 2035, Stratégie de développement durable et croissance inclusive*) adopted in 2017, the long-term objectives are to transform the rural sector by developing irrigated production, intensifying production models, promoting diversification of agriculture and improving agricultural outputs. The **PIMELAN** (Projet Intégré de Modernisation de l'Élevage et de l'Agriculture) was adopted within this framework. Its objectives are to **increase and enhance the productivity and marketing of selected agricultural value chains** – including onions. The main activities supported by the PIMELAN are:

- The creation of services to support agricultural development;
- The support of public and private investment in agricultural value chains; and
- The development of mechanisms to prevent and respond to crises and emergencies in the agricultural sector.

This overarching policy documentation does not provide specific targets on volumes, yields, expected revenue, etc. Consequently, it is difficult to precisely assess advancements made in the onion sector in relation to this project.

2.5 Donor programs and initiatives

There are numerous funding programs implemented by international donors. Most of these target a range of agricultural value chains, which means onions are generally considered alongside other value chains.

In 2020, the **European Commission** launched **INV-NIGER: Innovations for the sustainable intensification of resilient irrigated agricultural systems in the face of climate change in Niger**. This project aims to:

- Build the capacity of institutions involved in research, innovation and water management for agriculture;
- Strengthen multi-scale planning and management of water resources for agriculture; and
- Innovate for the agro-ecological intensification of irrigated agro-systems.

This project is planned to be implemented over a 4 year period (2020-2024) with a budget of €5.2 million, co-funded by the European Commission and the Spanish Agency for International Development Cooperation (AECID).

The **ProDAF** program, funded by OPEC, GEF, the National Government of Niger and the Italian foreign affairs ministry, aims to sustainably increase the income of 240,000 family farms, their resilience to external shocks (including climate change), and their access to local, urban and regional markets. This program targets the regions of Maradi, Tahoua and Zinder. One key objective related to the onions value chain is to increase the gross margin of production activities, from 284'538 FCFA/ha (€434) at project inception to 1.7 million FCFA/ha (€2,600) by the end of project.

In 2017, AFD launched a program called **Promoting rural development** through agriculture, which aims to secure and improve production conditions, as well as to develop the aggregation and marketing of food production. The project supports the investments of local authorities, facilitates access to financial institutions and aims to improve services to agriculture⁷.

The **World Bank** recently launched the **Agricultural and Livestock Transformation Project for Niger**. Its main objective is to increase agriculture productivity and access to markets for small and medium farmers and agri-food SMEs. This €89.2 million project revolves around 4 main components, namely:

- Improving the quality of agriculture support services and policies;
- Increasing investments in agricultural production, processing, and market access;
- Project coordination; and
- Contingent Emergency Response.

The onions value chain is one of the key targeted value chains of this project, where the focus will be on increasing the yield of onions produced by targeted beneficiaries who will benefit from training, support services and financing.

FAO implements the **SAPAA program** that brings together the Government of Niger and producers' organizations to enable the adoption of financing mechanisms for investments in commercialization.

2.6 Financial sector

A mapping of the financial sector in Niger highlights three main types of financing sources:

- Informal (i.e. the primary source of funding); and
- Local financial institutions and microfinance institutions.

INFORMAL SOURCES

The World Bank's Financial Inclusion Index (FINDEX) indicates that only about **1.1 percent of the adult population had access to credit** for farming and for agriculture related businesses in 2017 (WB, 2019). In this context, the most common financing option for farmers is the mobilization of their own savings, or the **mobilization of informal credit** from relatives or other members of their communities. This includes **informal lending from traders**, with reimbursement of loans in kind. This form of funding is generally expensive for farmers - sometimes equal to more than 50 percent of the farm outputs, according to WB estimates (WB, 2019). Yet it represents a reasonable option for farmers that do not have other financing alternatives.

LOCAL FINANCIAL INSTITUTIONS AND MICROFINANCE INSTITUTIONS

Agriculture finance from financial institutions is limited in Niger. The World Bank identifies only five institutions (two banks and three microfinance institutions) that currently provide loans to the agri-food sector (WB, 2019). **Agriculture lending represents about 2% of the total loan portfolio of financial institutions.**

Licensed financial institutions (LFIs) and microfinance institutions (MFIs) active in agriculture financing include:

- ASUSU - www.asusu-sa.com/ (The largest provider of funds to the rural sector);
- Bagri - www.gnprod.com/site/bagri/;
- Ecobank - www.ecobank.com/ne; and
- Société sahélienne de financement (Sahfi).

⁷ AFD, *Promouvoir le développement rural grâce à l'agriculture dans les régions d'Agadez et de Tahoua*, 2017

Most lending instruments are typically short-term, allowing for a cycle of crop production but not for investments. There is no formal equity financing available.

2.7 Specific opportunities for investment and financial solutions

Based on the scoping analysis, the following opportunities could be further assessed in the investment prospectus development process:

Opportunity #1: Contract farming

The onion market is characterized by substantial demand, both at national and regional levels. Onion farmers face numerous challenges, including limited use of adequate inputs, post-harvest losses, poor storage capacity, unreliable/unstable outlets and price variations.

In a value chain where many smallholders sell their production to a limited number of wholesalers and traders, contract farming is an opportunity that could benefit both traders and farmers. Contract farming can be defined as “an agreement between farmers and processing and/or marketing firms for the production and supply of agricultural products under forward agreements, frequently at predetermined prices”⁸. Expected benefits are:

- Ensuring the financing of production activities;
- Facilitating access to quality inputs;
- Guaranteeing producers access to market at a profitable price;
- Guaranteeing traders production volumes and quality during specific periods; and
- Providing access to technical support to better control production and marketing conditions.

Existing funding sources for contract farming are limited, due to:

- Reluctance of LFI and MFI, linked to high perception of risks;
- Trading SMEs do not necessarily have available funding sources to pre-finance seeds and inputs; and
- Lack of knowledge on contract farming and associated benefits.

Opportunity #2: Supporting investment in storage facilities

The period of onion scarcity in the West African market is between November and January. If Nigerian onions are stored for 3 to 4 months, they can be sold at up to 3 times the price set at the peak of the season. Yet, storage capacity is still limited in relation to total production volume and most facilities are inadequately designed (see section 2.3).

In this context, **there is a strong rationale for increasing storage capacity**. There are two main options to achieve this:

1. **Targeting farmers and producer organizations.** These actors could benefit from loans from microfinance institutions (MFIs) or local banks to build and manage storage facilities. However, many factors limit this option, including the poor economic state of Niger’s largest MFI, limited expertise in agricultural credit and limited MFI presence in rural areas. Proper storage of onions can also be challenging.
2. **Warrantage:** This option, also called warehouse receipt system (see box below), could represent a more reliable financing mechanism, where banks are able to secure reliable collateral for lending in the agriculture sector (see box below).

8 <http://www.fao.org/3/y0937e/y0937e02.htm>

Warrantage as a reliable tool for facilitation of credit

Warrantage, also called warehouse receipt system, is a market instrument for access to commercial credit. After the harvest, the borrower deposits the production (with predetermined quality standards) in a community storage site.

A quality control committee then assesses the product in storage and a certificate is presented to the lender. The loan is then granted to the cooperative, set at 75% of the market price prevailing at the time of the harvest. The managers monitor market prices, the quality of the products stored and market supply data to determine the ideal time to sell.

The sales are then used to repay the loan with 30% interest. The cost of storage is deducted as well, and the net proceeds are paid to the producer.

With warrantage, producers can sell their products later in the season and retain ownership of their crops. It is also a way to improve communication and linkages with other actors in the value chain.

Adapted from Elbehri, 2013

Additional opportunities are proposed below, which favor a policy, advocacy or technical assistance approach, and for this reason were not put forward as part of the main opportunities for investment and financial solutions above:

- **Improving circulation of market information** to reduce high transaction costs for producers caused by limited knowledge and understanding of market prices, customer preferences and purchasing conditions.
- **Streamlining product commercialization** to reduce the number of intermediaries, reduce transportation costs, etc.
- **Increasing seed and crop quality**, which is heavily dependent on the ability of public authorities to control imported seeds, monitor existing crops and improve local capacity for crop multiplication.

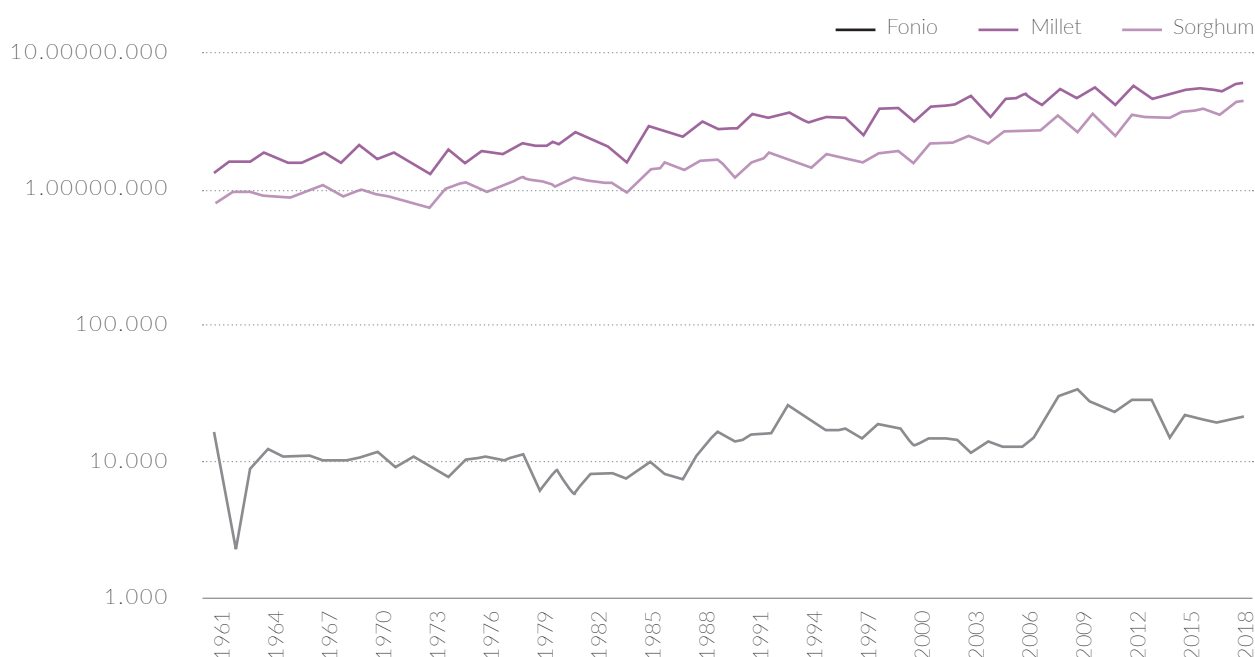
3. Indigenous cereals value chain [Niger focus]

Indigenous cereals, also called indigenous grains or traditional cereals, cover different crops: sorghum, millets⁹, fonio, etc. **Indigenous crops are a key component of Nigerien farmers' dietary habits.** Cereals (local or imported) account for 76% of energy intake for Nigeriens (IED, 2020). Cultivation of indigenous cereals is one of the key agricultural solutions that is promoted to address forage deficit, as well as to increase livestock productivity and producers' income (Abdou, 2017). Indigenous cereals are well suited for climate-smart farming: irrigation needs are low and crops are often drought-resistant.

3.1 Main production zones in the region

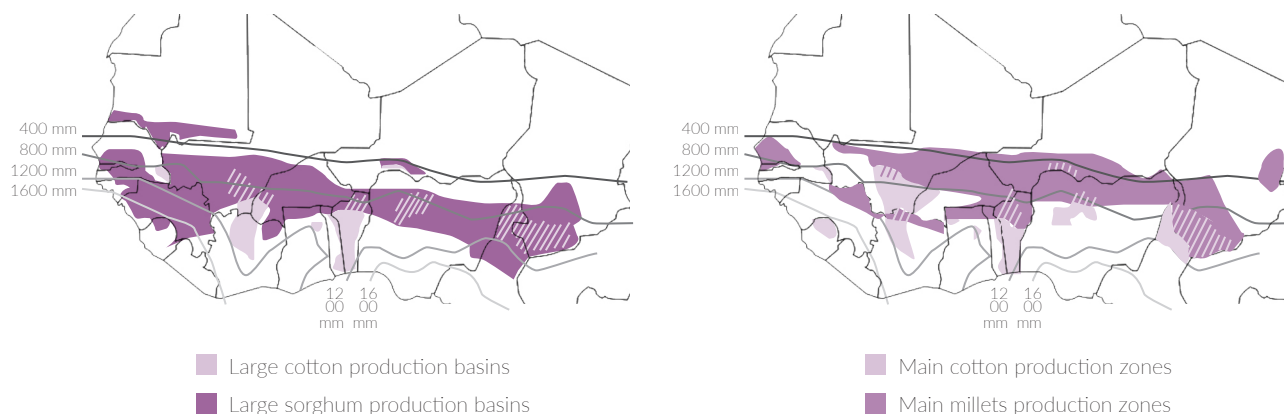
Over the past 20 years, cereal production (all cereals) in West Africa has increased significantly, from 16 million tonnes in 1980 to around 63 million tonnes in 2015 (ROAC, 2016). Meanwhile, production of indigenous cereals (millets, fonio and sorghum) in the three countries covered in the present analysis has been growing since the 1960s, although this trend has flattened in the past decade (see Figure 5: below).

Figure 5: Production of fonio, millets and sorghum in Senegal, Niger and Burkina Faso, in tons (FAOSTAT, 2020)



The sorghum and millets value chains are developed in the cotton and cereal production basins (Elbehri, 2013). Sorghum is generally integrated into traditional mixed systems with cotton and maize, while millets are grown further north, as they are more drought-resistant (see map below).

⁹ Millets usually refers to a group of different cereals, including candle millets, common millets, pearl millets, bird millets, cluster millets, kodo or sword grass, switch grass, eleusine or red millets, Guinea millets, fonio and sorghum (FAO, 2018).

Figure 6: Main sorghum, millets and cotton production zones in West Africa (Elbehri, 2013)

3.2 Economic trends

The demand for food in West Africa is increasingly focused on cereals; the region consumes around 62 to 65 million tons, all cereals combined (ROAC, 2016).

In rural areas, millets remain a key component of the daily diet of families that depend on subsistence farming. **Rural markets are the primary outlets for indigenous crops** such as sorghum and millets: only 20% of locally grown millets and sorghum is sold on urban markets, while the rest is sold locally or self-consumed (Elbehri, 2013).

Urban consumption habits tend to allocate more consumption to imported maize, wheat and rice rather than indigenous crops. Over the last 20 years, **urban consumers have gradually replaced regionally produced cereals with imported wheat and rice**. This phenomenon is fuelled by:

- A growing number of urban poor, who will require large quantities of cheap food, including staples, as well as lower quality imported food; and
- A burgeoning urban middle class who is creating additional demand for a diverse set of higher-value, processed products, with preferences for high-quality imported products (Elbehri, 2013).

Against this background, there is a **challenge to transform and market traditional cereal-based products** that will be adapted to the needs of urban consumers.

3.3 Sector mapping

SEED OPERATORS

Traders are the main providers of seeds in the traditional Nigerien forward contracting model, whereby they are paid for in-kind by the proceeds of harvest. Contracts are traditionally oral and underpinned by pre-existing social ties.

Government-led programs distribute seeds in times of shortage or food crises.

SUPPLIERS OF INPUTS AND MATERIALS

Millet and sorghum producers have difficulties accessing productive inputs because they face liquidity constraints and a lack of available credit options due to low yields, high market and climate shock risks, and high variability in surplus production. **Few specialized input providers are involved.** Most suppliers are retailers specialized in the sale of basic agricultural products in large urban centers. Traditional crops such as millets and sorghum usually consume few inputs. Purchase of fertilizers and phytosanitary treatments represent negligible expenditures in the current farming practices for most farmers (WB, 2009).

Mechanization of agriculture is limited, due primarily to the high cost of equipment, resulting in a small number of distributors active in the region.

PRODUCERS

A number of different production systems for millets and sorghum have been identified in the different agro-ecological zones of the 3 countries:

- Irrigated systems, close to large rivers and irrigation dams;
- Cultivation on riverbanks; and
- Rain-fed agriculture - In Niger, **rain-fed agriculture accounts for 99% of national cereal production** (PARM, 2018).

In addition to food for human consumption, indigenous crops such as millets, fonio and sorghum produce residues that can be used as feed for livestock.

Production yields are generally low (between 0.5 and 1 ton per ha), but can vary according to crops (Elbehri, 2013). Appropriate farming practices and improved varieties could easily double or triple the average yield¹⁰.

There are **numerous issues related to increasing production**, including but not limited to:

- Lack of national and regional standards;
- Limited or no access to commercial infrastructure such as warehouses;
- Significant post-harvest losses;
- Strong price instability; and
- Lack of farmer empowerment/organization through farmer organizations or cooperatives¹¹, seed networks, seed banks, farmer stores, etc.

TRADERS

Agri-traders play a dominant role in the value chain, often described as an oligopoly, which they sustain through access to market information (in a sector marked by price volatility), as well as through farmers reliance on them for the provision of seeds (thereby securing the supply of goods). Farmers generally bear prohibitive costs in this contract farming model (PARM, 2018). Analysis of flows show different marketing routes:

1. Locally, indigenous cereals are consumed directly by smallholder households or sold (mostly informally) to neighboring markets.
2. Regionally, indigenous crops are bought by medium to large agri-traders.
3. Exports outside West Africa are very low and are essentially directed at niche markets (e.g. gluten-free product lines) in the United States and Europe (Andres, 2016).

¹⁰ INRAN's improved crops have produced the following yields (RECCA, 2020): Millets - 2 T/ha; Sorghum - 2-3 T/ha; Maize - 3 T/ha.

¹¹ Indigenous crop producing farmers are generally less involved in cooperatives than farmers cultivating cash crops such as peanuts, cotton or rice (WB, 2009).

Sources of financing for traders of unprocessed millets and sorghum in Senegal

In 2009, the World Bank conducted an assessment of the sources of financing for traders of unprocessed millets and sorghum in Senegal:

- Equity represented on average 65% of resources, drawn largely from income from trading (80%), income from farming (19%) and other activities (1%).
- Credit complemented resources up to an average of 35% according to traders. This credit, for the most part, came from other so-called wholesalers (81% of the credit obtained) and the rest from third parties (relatives, friends, etc.).

Most actors highlighted the scarcity of credit funding from local banks and microfinance institutions.

Source: Adapted from WB, 2009

PROCESSORS AND DISTRIBUTORS

Indigenous crops offers many opportunities for transformation, such as couscous, semolina, broken grains, flours, puffed rice, vermicelli, dried millets paste and cookies (made from millets and sorghum). Every indigenous crop can be used for diverse culinary applications (Ki, 2013), as shown below for fonio:

- Raw fonio (washed, dried and packed without pre-cooking) is mainly used to prepare couscous and porridge for children.
- Pre-cooked fonio (washed, pre-cooked with steam, dried and packaged) is used to prepare couscous and djouka when it is mixed with ground peanuts.
- Raw fonio flour is used to prepare tô (dough), pancakes, cakes, bread and instant drinks.

Two main transformation methods can be identified:

1. **Domestic transformation**, using traditional equipment, meeting the needs of households in rural and urban areas (e.g. in the outskirts of large cities where newcomers from the countryside settle and in medium-sized towns). Domestic transformation primarily involves the processing of semi-finished products (flour, semolina) and finished products (couscous, porridge, etc.).
2. **Industrial transformation** is handled by:
 - **Small-scale, peri-urban/urban processors** who often have limited capacity and poor knowledge on marketing of processed products; and
 - **Large companies** that can process diverse cereals are mostly located in capital cities of West Africa. They operate on diverse food commodities, such as rice, vegetable oil and dry cereals.

There is significant value addition generated through transformation. Prices collected in 2010 show significant price variations at different transformation stages of fonio (Ki, 2013):

- The producers sell the unshelled fonio (fonio paddy) to pile drivers (pileuses) **350 FCFA** per kilo (€0.53);
- The pile drivers sell the crushed fonio (raw and unwashed) to the processors for **600 FCFA** (€0.91);
- The processors sell ready-to-use fonio (washed, pre-cooked or not, dried, packaged) for about **1,000 FCFA per kilo** (€1.52); and
- Distributors then sell the finished products in markets, shops or supermarkets.

3.4 Key governmental institutions and programs

Institutions and authorities overseeing and supporting the indigenous cereals value chain are partly similar to the institutional framework governing the onion value chain (see section 2). Two additional institutions are listed below:

Institution	Role and objectives
National System for the Prevention and Management of Food Crises (Dispositif National de Prévention et de Gestion des crises alimentaires - DNPGCA)	DNPGCA implements the food security policy in Niger. Security reserves are provisioned each year after harvests to be dispensed through targeted free distribution and low-cost sales in needy areas during periods of food deficit.
West African Cereal Network (Réseau ouest africain des céréales - ROAC)	ROAC is a regional institutional structure led by the private sector and supported by national organizations and actors, aiming to act as an effective platform to stimulate the growth of the cereal sector in West Africa.

3.5 Donor programs and initiatives

Donors implement numerous programs (often grant-based) aiming to improve food security, notably through direct or indirect support to the cereals value chain.

- **Intervention Fund (IF):** This is one of two risk management tools of the DNPGCA. The intervention fund is the first level of resources that can be mobilized in the case of either a severe food crisis or of localized crises. The fund pools contributions from multilateral, bilateral and national sources, which serve to mitigate the crisis and act as a relay for development operations. The second tool is the national grain reserves that allows for a national-level response to a major crisis.
- **Pôles ruraux:** Several converging initiatives seek to develop the concept of “Rural Poles”. These initiatives aim both to facilitate the development of market infrastructure, as well as marketing and contracting at the level of farmer cooperatives, by enabling access to finance. In 2014, financing was granted for the regions of Diffa and Zinder (PECEA) by DANIDA, in 2015 by the International Fund for Agricultural Development (IFAD) for the regions of Tahoua, Maradi and Zinder (PRODAF) and in 2016 by AFD for the regions of Agadez, Dosso and Tillabéri (PARM, 2018).
- **SWISSAID program:** This program aims to support farmer initiatives to reconstitute traditional seeds that are highly valued but threatened by genetic erosion and/or disappearance.
- **Projet d'Appui à la Sécurité Alimentaire (PASAM 4):** The project is implemented by AFD and aims to improve food security for vulnerable households and to address environmental degradation.

3.6 Financial sector

As explained in section 2.6, **less than 2% of the adult population in Niger has access to credit for agriculture.** In this context, indigenous crops are **essentially self-financed by producers.**

LFIs and MFIs

LFIs and MFIs are generally reluctant to finance indigenous cereal farming because:

- Demand for credit for indigenous crops (notably millets and sorghum) is “scattered” and most often represents small amounts (Elbehri, 2013);
- Expectations of returns are low, leading to uncertainty regarding the profitability of investments;
- Loan repayment ability is limited, leading to high credit risk – farmers often prioritize household expenses (e.g. weddings, medical expenses, etc.) over loan repayment; and
- Lack of knowledge or expertise in agricultural financing within the financial institutions.

INFORMAL LENDING

Access to financing through non-financial actors is the most widespread credit modality. Generally, traders play a key role, through in-kind lending (e.g. supply of seeds and/or inputs) and through advance harvest purchases at prices that are often much lower than anticipated market prices. Other funding options for smallholders include tontines¹² and sales of goods (PARM, 2018).

3.7 Specific opportunities for investment and financial solutions

The mapping of the indigenous cereals value chain identifies two main bottlenecks that, if adequately addressed, could present an opportunity to unlock the potential of indigenous cereals in West Africa:

- Numerous intermediaries are involved from primary producers to final consumers, creating inefficiencies along the value chain. The opportunity involves **streamlining the supply of cereal production from family farming to urban and peri-urban demand.**
- There are significant **information asymmetries** between traders, who dominate regional networks and have their own information networks, and cooperatives and processing SMEs who aspire to access the regional market but have limited access to information.

From an investor’s perspective, one of the most relevant entry points for addressing these bottlenecks is the **investment in processing activities.** Provision of adequate funding to SMEs described in section 3.3 could help deliver greater volumes to urban markets and thus compete with food imports.

A deeper analysis (in the investment prospectus phase) could focus on **identifying which SMEs in the processing sector are able to increase processing capacities and marketing of indigenous cereals.** The key assessment parameters would include:

- Existing processing capacities, volumes, assets;
- Market share and marketing routes;
- Sourcing methods and partnership;
- Track record and role in the value chain; and
- Strength of management.

The investment prospectus should also include an assessment of the best ways to deliver appropriate funding to processing SMEs (e.g. equity investment, debt funding, guarantees).

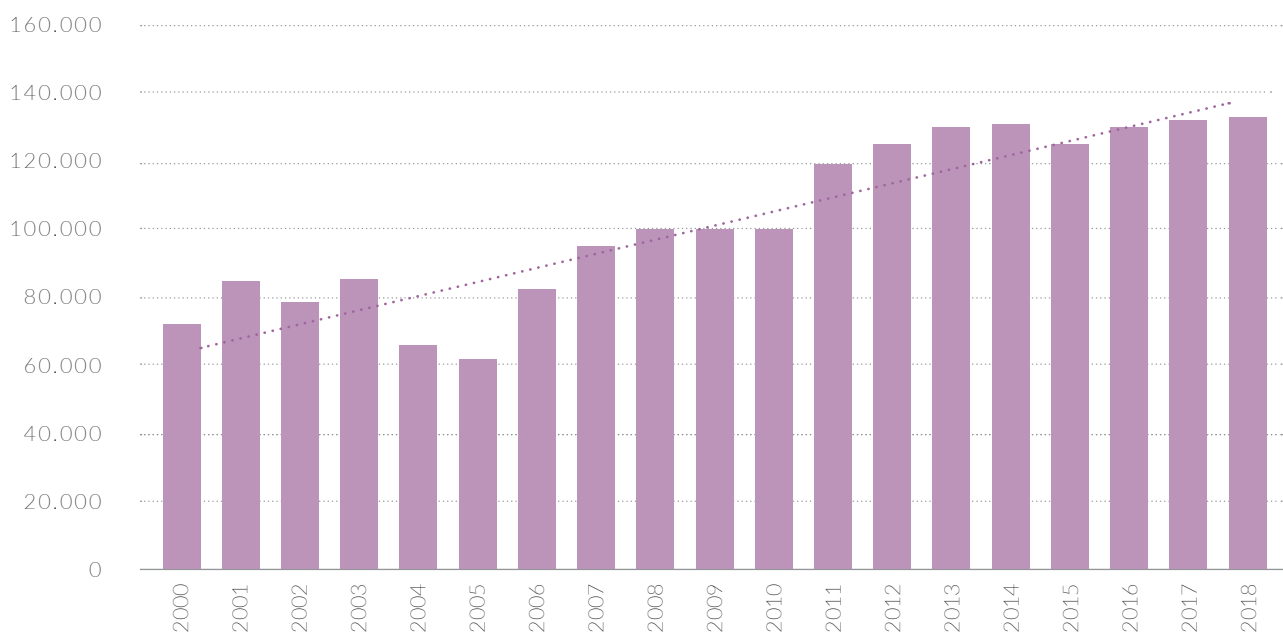
12 The term “tontine” relates to an early system for raising capital in which individuals pay into a common pool of money; they receive dividends based on their share of returns from investments made with the pooled money. (www.investopedia.com)

4. Mango value chain [Senegal focus]

4.1 Main production zones in the region

The country of Senegal has witnessed an increase in mango production over the last 20 years, linked to the planting of new orchards for export varieties in the late 1990s and 2000s, particularly in the Niayes and Central regions. In 2019, mango production in Senegal was ca. 130,000 T.

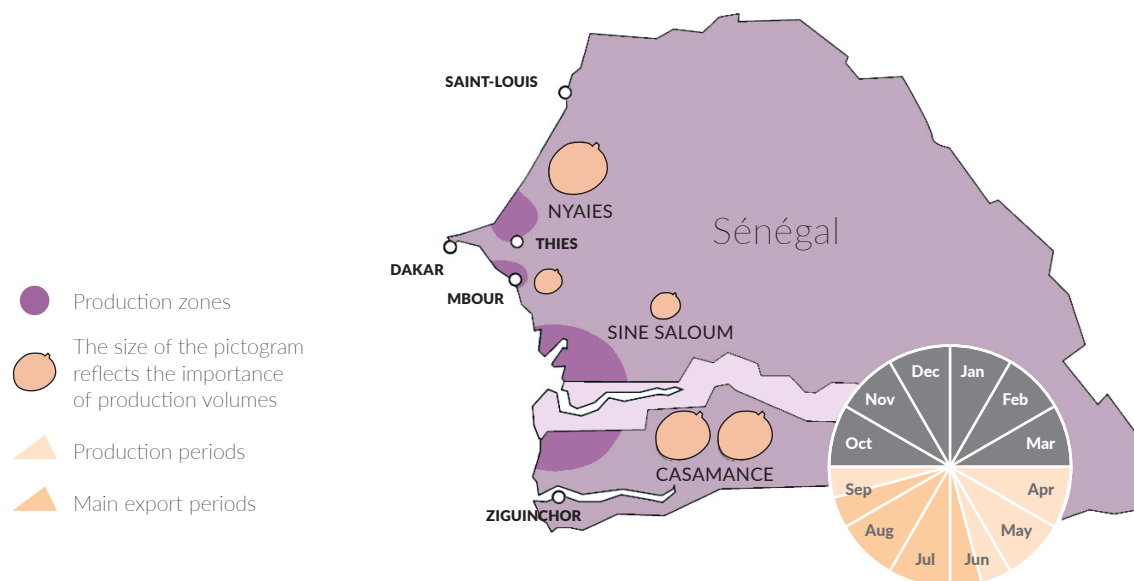
Figure 7: Mango production in Senegal (Tons/year) - (FAOSTAT, 2020)



The mango production period runs from April to September, the longest in West Africa. Three regions produce mangoes:

- Casamance starts the season in April/May;
- The Central / Sine Saloum region enters production around the same period; and
- Les Niayes produces from June to September.

Figure 8: Main areas of mango production (ASEPEX, 2016)



Senegal produces several varieties of mangoes:

- Export varieties found in all regions: mainly Kent, but also Keitt; and
- So-called “local” varieties: Boukodiekhil, Greffal, Diegbougatt, Sewe in the Niayes and the Centre, and Diourou, Papaya, Peche and Sierra Leone in Casamance.

4.2 Economic trends

Senegal exported over 18,000 T of mangoes in 2019. This volume has been multiplied by 20 since the early 2000s (ASEPEX, 2016). 80% of mangoes exported from Senegal are sold in Europe (mainly the Netherlands, France, and the United Kingdom); the rest are exported to the sub-regions (Mauritania, Morocco, and Ghana) and to the Arabian Peninsula.

In **Burkina Faso**, exports to the European market include 4000 T of fresh mango by boat, 400 T by plane, 500 T of mango puree, and 1900 T of dried mango. Production volumes outside of export flows to Europe are uncertain and not well documented. The total value added within the country’s borders amounts to 30 billion FCFA (€46 million), of which 26 billion FCFA (€40 million) is direct value addition and 4 billion FCFA (€6 million) is attributed to spillover effects in the national economy (e.g. transportation, packaging, etc.). This added value contributes to 0.5% of Burkina Faso’s GDP (EC, 2018).

Niger plays a smaller role in the international mango trade (but limited reliable data is available).

Assessments of the value chains in the three targeted countries show that **less than 20% of production is exported**¹³. The remaining production is either sold on local markets, self-consumed by producers or wasted. There is a clear challenge to add value to national production through conservation, processing and the identification of new outlets (see section 4.3 below).

13 This is based on the following sources:

- Commodafrica, (quoting the Senegalese Agriculture and Rural Equipment Ministry), 2018;
- CORAF, Burkina Faso : Les exportations de mangues repartent en hausse grâce à la recherche, 2019.

4.3 Sector mapping

PRODUCERS

Mango farmers in Senegal operate on two main types of mango orchards:

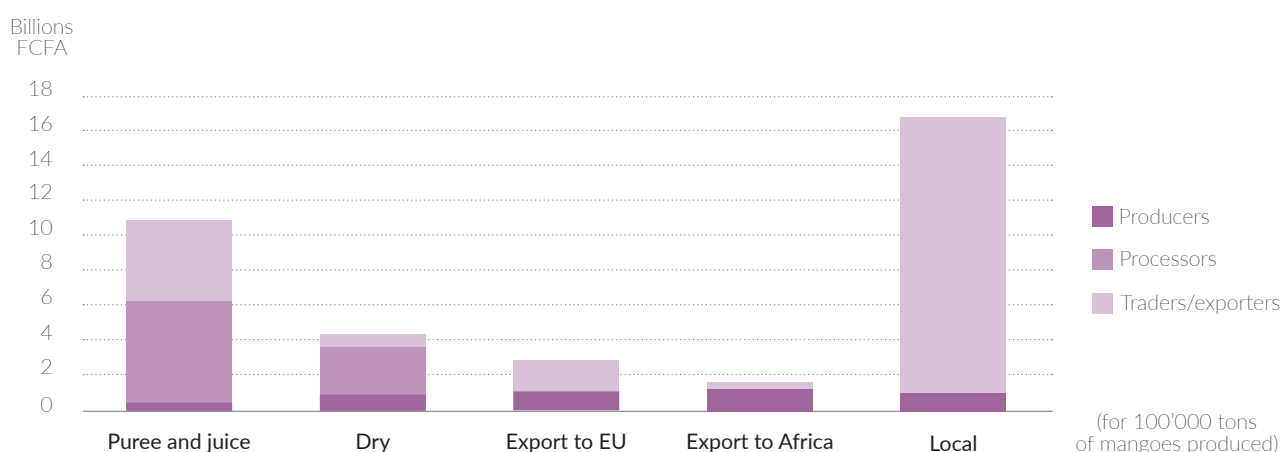
- **Large scale/commercial orchards:** these are plantations of several tens of hectares, exclusively of the Kent variety, with high planting densities (> 450 plants/ha), precise technical standards applied (size, quantity and type of inputs in fertilizers and treatments, mechanized weeding, etc.), and generally drip irrigation systems. Yields can reach more than 20T/ha. These plantations are owned by private companies and all their production is exported. There are relatively few plantations of this type, and all of them are in the Niayes or Central region.
- **Village orchards:** these orchards, which range in size from 1 to 10 ha, are owned by small planters. They are not irrigated and use almost no inputs. Pruning is often poorly practiced, leaving the trees too high and partially unusable. Plantation densities are relatively low, and yields are well below those obtained on industrial plantations.

Irrigation remains marginal in the Niayes and central regions and almost non-existent in Casamance, where rainfall is higher.

The purchase price of mangoes is set directly between off-takers and producers for each production period. The price fluctuates during this period: it is higher at the beginning and then decreases during the season. Exporters who work with village producers generally set a price per kilo of mango or per crate, while local wholesalers (called Bana-Bana) offer a fixed purchase price for the harvest of an orchard.

A large majority of mango orchard owners do not know the structure of mango production prices and do not have the knowledge or information needed to influence prices. Due to the imbalance between supply and demand, guaranteed payments and non-selective levies are sufficient to induce smallholders to accept the prices imposed by buyers. Breaking down prices at different stages of the value chain confirms that mango farmers only benefit from a small fraction of mango revenues, as shown in Figure 9 below.

Figure 9: Distribution of the added value in the mango value chain in Burkina Faso (EC, 2018)



OTHER PROFESSIONAL ACTORS IN THE VALUE CHAIN

The value chain is characterized by a number of different actors:

- **Numerous producer organizations** bring together small growers, often covering several crops besides mangoes. There are some more structured initiatives, such as the start-up Casamango, which promotes the Casamance mango on local markets.
- **Buyers-wholesalers or Bana-Bana:** these traders offer growers a fixed purchase price to harvest their orchard. They then sell the harvest on local markets. The lumpsum price offered is generally much lower than the selling price of mangoes for export. However, these wholesalers buy all varieties of mangoes and are quite lenient on quality standards.
- **Forwarding agents:** in charge of settling the administrative procedures for export, they act as intermediaries between the administrative authorities and the exporters.
- **Processing plants:** there are a few mango processing plants in Senegal. Lack of funding sources, absence of know-how in management and processing techniques are the main constraints to the development of SMEs (CBI, 2019). To be profitable, a medium sized factory should be able to process about 4,000 tons of mango per season, which requires significant investment capacity (Ecowas, 2016). The seasonality of mango production requires processing facilities to adapt to other crops in order to maximize the use of assets. In Burkina Faso for instance, five mango processing companies also process other crops (cashew nuts, dehydrated coconuts, dried citrus fruits, dried ginger). There are artisanal mango drying workshops, especially in Casamance. The most important industrial actors are:
 - The Zena Exotic Fruit company, which produces jams, juices and nectars using local fruits, including mangoes; and
 - The Kirène/SIAGRO group, with its Presseja juice brand, which has attempted to launch a local mango supply chain in 2017. However, this initiative was put on hold after the company lost the license for the Minute-Maid brand (The Coca-Cola Company).
- **Exporting companies using packaging infrastructures for export:** most exporting companies obtain their supplies from industrial plantations, which they often own themselves. But some agri-SMEs are active in the small producer sector and often face challenges financing their purchases, leading them to pre-finance their buying programs through negotiations with their clients in order to get the required credits. This often makes them vulnerable to these clients and can weaken their marketing capacity. Most of the packaging stations are in the Niayes or in the department of Thies, near the export port of Dakar. There are also public packing stations managed by ASEPEX and leased to the private sector, such as the Feltiplex infrastructure, whose construction was partly financed by a World Bank program.

According to an assessment of the value chain conducted by the European Commission in Burkina Faso, **post-harvest losses represent between 5% and 15% of total production volumes** (EC, 2018).

4.4 Key governmental institutions and programs in Senegal

MAIN INSTITUTIONS

Institution	Role and objectives
Ministry of Agriculture, Plant Protection Directorate (La Direction de la Protection des Végétaux - DPV)	Supervises mango export activities on a yearly basis and draws up a report at the end of the season. The official start and end date of the season is based on the monitoring carried out by DPV inspectors.
Interprofession of mango actors in Senegal (Interprofession des acteurs de la mangue au Sénégal - IAMS)	IAMS was created at the end of 2010 and is made up of three entities: exporters/logisticians, producers and processors. An action plan was developed at its launch, but its activities remain limited to date.
Senegalese Export Promotion Agency (Agence Sénégalaise de Promotion des Exportations - ASEPEX)	Oversees and supports the mango export sector. Publishes an annual mango export guide.
Senegalese Standardization Agency (Association Sénégalaise de Normalisation - ASN)	ASN overseas standardization and certification for Senegal.
Origins Senegal Foundation (Fondation origine Sénégal)	Aims to foster public-private partnerships and strategic collaborations between actors. The Foundation manages IFLEXis (Information on Export Fruits and Vegetables), a technical, strategic and commercial monitoring system intended for the various actors involved along the supply chains of the agricultural export and import-substitution sectors in Senegal.

MAIN PROGRAMS SUPPORTING THE DEVELOPMENT OF THE MANGO VALUE CHAIN

Project for the improvement of the competitiveness of the Senegalese mango (Projet d'Amélioration de la Compétitivité de la Mangue Sénégalaise – PACMS) was launched in 2015. With an initial budget of €2.2 million, it aims to improve the competitiveness of Senegal's mango exports and to professionalize its players. The project is implemented by six national entities including the Institute of Food Technology (Institut de Technologie Alimentaire - ITA), the Senegalese Standardization Agency (ASN), the Senegalese Export Promotion Agency (ASEPEX), the Plant Protection Directorate (DPV), the Horticulture Directorate (Direction de l'Horticulture - DHORT) and the International Trade Centre (ITC). For example, the project co-finances the publication of guides on good practices, survey missions, and the supervision of campaigns.

In 2018, APIX, the Senegalese national agency for the promotion of investment and public works (Agence nationale pour la promotion des investissements et des grands travaux) and the International Finance Corporation (IFC) signed a Memorandum of Understanding to launch a **project to support agribusiness, focusing on the mango sector in Casamance**. The objective is to “generate FCFA 10.5 billion (€16 million) investment in the mango sector, to contribute significantly to increasing the income of small producers and to fuel massive job creation” (IFC, 2018).

Several areas of intervention are planned, including:

- Providing advice to stakeholders in the sector;
- Strengthening links between small mango producers and market operators by creating clusters in the value chain;
- Providing support to companies offering post-harvest and logistics services; and
- Promoting private investment in the mango industry.

4.5 Donor programs and initiatives

Numerous donor-funded programs and projects target the mango value chain:

- In Casamance, the **Agropole Sud project** is funded by the **African Development Bank (AfDB)** to the tune of €43.1 million and is implemented by the government with the support of the United Nations Industrial Development Organization (UNIDO). It aims to set up a business ecosystem that is conducive to the development of agribusiness. It supports the construction of agro-industrial platforms (storage, pre-processing, packaging, processing, etc.) with 3 regional modules in Bignona, Sédhiou and Kolda, and 5 service aggregation poles. The mango sector is particularly targeted by this project.
- **IFC provided €5.6 million in financing to the Kirene company**, a major Senegalese agro industrial company, to streamline its processing and warehousing capacity and increase its sourcing from the local smallholder mango supply chain. Associated technical assistance was provided by IFC to support Senegal's farmers, smallholders, collectors, transporters and farmer organizations through job creation and increased income. Over 500 smallholder mango farmers were expected to be reached by Kirene through Agrofruits, the fully owned subsidiary of Kirene that sources local mangoes and processes them into mango pulp. As the majority of the mangoes sourced by Agrofruits are not suitable for sale in the export or local market, the company is tapping a supply that would otherwise go to waste¹⁴. In 2018, IFC signed a framework agreement with the Government to increase investments in the mango value chain in Senegal.
- **AFD and ECOWAS implement the SYRIMAO program**. This program aims to fight the fruit fly, a parasite that is decimating mango crops in West Africa. This regional program was initiated by DEVCO.

4.6 Financial sector

SELF-FINANCING

Most farmers in Senegal tend to **rely only on their own resources to fund their agricultural activities**. Indeed, 85% to 90% of the financing of productive activities in the agro-sylvo-pastoral and fisheries sector is from smallholders' own resources (CRES, 2018).

LFIs and MFIs

An assessment conducted in 2019 by CBI suggests that **SME funding by LFIs is limited**. The main reasons for this include:

- Financial institution's lack of knowledge and expertise regarding the mango value chain (Ecowas, 2016);
- High interest rates;
- Collateral requirements;
- Long-term loans for larger investments needed to upgrade processing facilities are especially hard to secure;
- Banking products not adapted to the agricultural processing sector; and
- Weak promotion policies by governments.

¹⁴ See: <https://www.gafspfund.org/projects/supporting-smallholder-mango-and-milk-supply-chain-development-senegal>

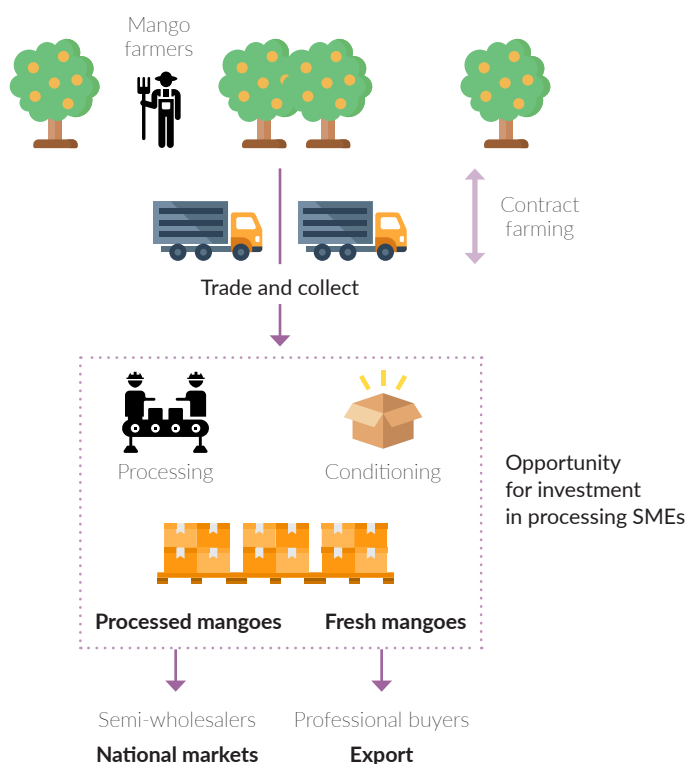
The largest local financial institution active in agricultural financing is the **Caisse Nationale de Crédit Agricole du Sénégal (CNCAS)**, which relies almost exclusively on subsidized seasonal loans (at a rate of 7.5% for final beneficiaries). These credits account for the majority of CNCAS's outstanding loans (60%) and loan portfolio income (64%) (USAID, 2019). However, due to a lack of access to financial resources at adequate cost, CNCAS was not in a position to offer its farmer clients products with longer maturities that would address the modernization and sustainable development needs of farms. Such long term lending would be required to significantly build up farmer resilience. But this issue was resolved in 2016, when AFD extended a €15.3 million credit line to the CNCAS specifically for the purpose of supporting longer-term loans (AFD, 2016).

4.7 Specific opportunities for financial support

From a value chain perspective, the main opportunity in the mango value chain is to **invest in SMEs' agro-industrial processing capacities**. There is a strong rationale for:

- Improving the conditioning of fresh mangoes for export, thus reducing post-harvest waste. Post-harvest conditioning covers different activities, including trimming (cutting the fruits' stem), delatexing (removing fresh latex from the fruit), sorting, grading and packaging. The key challenge is that the cost of equipment needed to improve conditioning, generally over €1 million, is far greater than the size and debt capacity of most SMEs.
- Tapping into the potential of existing national production that cannot be exported as fresh mangoes (mostly "local varieties" - see section 4.1). Production of sanitized processed pulp from dry mangoes has the largest export marketing potential, as it can be used for fruit-based processed food (juice, ice creams, baby food, etc.). It addresses a crucial bottleneck in the value chain, as described in previous sections and summarized in the scheme below.

Figure 10: Mango value chain: opportunity for SME support



There is an opportunity to address the two approaches stated above. In this context, adopting an adequate funding approach will be crucial for the development of SMEs and requires:

- **Adapting funding terms and conditions**, such as:
 - Collateral requirements, as many SMEs often lack proper collateral for access to credit. Guarantees could play a relevant role in that respect.
 - Other financial parameters: tenor (> 5 years), funding size (€1 to 3 million), etc.
- **Complementing the provision of funding with capacity building for SMEs**, who often have a poor understanding of bank funding or equity financing (CBI, 2019), or little assets to offer as collateral.
- **Selecting SMEs who can leverage an existing network of smallholders and have a proven track record in sourcing mangoes and other local food crops**, which would enable them to use their processing facilities for other crops between mango seasons.
- Targeting areas where mango production is under-utilized (e.g. Casamance).

5. Market gardening [Burkina Faso focus]

In the following value chain analysis, market gardening refers to irrigated vegetable and fruit production widely practiced by smallholders in Burkina Faso, Senegal and Niger.

5.1 Main production zones

The main vegetable production areas of Burkina Faso are:

- The Hauts-Bassins region, around Bobo-Dioulasso and Banfora (especially for fruits). Lemourou, the Bobo market supported by the World Bank and managed by local authorities, is the largest fruit and vegetable market in Burkina Faso. It is a place of sale and exchange between farmgate buyers and wholesalers in Ouagadougou and the sub-region.
- The Mouhoun River Valley, in the West (Koudougou, Réo) and in the northern region (Kaya, Yako, Ouahigouya), is particularly important for vegetable production.
- The center of the country (Kadiogo region, the peri-urban belt of Ouagadougou, and as far as Bagré).

Many farmers are located around dams and agro-industrial areas equipped with water infrastructure developed by the State.

In Niger, the peri-urban and urban market gardening production has increased along the Niger River. Yet, there is still potential for the development of market gardening production that would lead to a reduction in the import of vegetables from Ghana, Nigeria, Burkina Faso and Benin (Andres, 2011).

Senegal market gardening production is concentrated mainly in the Niayes coastal strip and in the Senegal River valley. The Niayes area (from Dakar to Saint-Louis), which is credited with more than 60% of the harvest, provides onions, potatoes, carrots, green cabbage, cherry and table tomatoes, eggplants, lettuce and chilli pepper, while the River valley is specialized in the production of industrial tomatoes, onions and sweet potatoes (FAO, n.d.).

5.2 Economic trends

Since the 1990s, irrigated vegetable production has significantly expanded in Burkina Faso – largely led by farmers investing in irrigation with no financial or technical support. The demand for market gardening products is primarily led by the growing local consumption of fresh fruits and vegetables.

The current dynamism of the market gardening sector in Burkina Faso is also reflected in the improved yields of vegetable crops: + 17% over the last 10 years (FAOSTAT). This makes the country a major supplier of market gardening products in the sub-region, particularly to Côte d'Ivoire and Ghana, taking advantage of the seasonal differences.

5.3 Sector mapping

INPUT SUPPLIERS

To minimize losses due to pests and diseases, farmers use synthetic pesticides, while ignoring integrated pest management practices. Misuse of pesticides is common and has negative consequences for farmers' health and the environment (Békouanan, 2018). Burkina Faso does not have a mineral fertilizer production plant or a plant to produce phytosanitary products. **Almost all agricultural inputs are imported by private operators.** Companies importing agricultural inputs distribute them through their network of resellers, or directly to producer organizations or large farms (see below).

PRODUCTION

A study conducted in 2019 covering 300 market gardeners in the Bobo-Dioulasso region identified the following dominant crops: cabbage (88% of farmers), tomato (61%), eggplant (51%), bell pepper (42%), green beans (38%) and lettuce (31%). There is a greater diversity of species grown in urban areas (26) compared to semi-urban (16) and rural (19) areas. On average, there are 5 different species per producer (Ouédraogo, 2019).

Based on the last census of the value chain, conducted by the Ministry of Agriculture (2011/2012), three profiles of farms can be identified:

- **Individual family farms:** A farmer cultivates with his/her family on a small plot (0.05 to 0.25 ha). These farms represent 90% of market gardening farms. Only surpluses are sold to wholesalers, who often come directly to collect the products from the fields. There is no mechanization or irrigation system. Production stops when groundwater reserves are exhausted, around February/March. **These subsistence farmers have low incomes and have difficulties obtaining inputs due to lack of capital, absence of tangible assets, etc.**
- **Producer groups:** Several producers group together in order to have more leverage with wholesalers and to be able to respond to large orders, often with part of the contract pre-financed by the customer and a purchase price set in a pre-sales contract.
- **Semi-intensive to intensive farming:** These farms can reach several hectares and are more professionalized. It is often an entrepreneurial farmer who grows commercial products to meet orders. These farms employ seasonal workers. They are often equipped with motor pumps for irrigation and may use a tractor for tillage.

Peri-urban production is often well-integrated into a commercial circuit to supply city markets. As a result, peri-urban farms are generally more structured than those in rural areas.

Inputs purchases represent the bulk of operational costs in market gardening: gas for the motorized pump, phytosanitary inputs, organic manure and seeds. A recent study estimated that farmers dedicate between 17% and 98% of their budget to inputs. Half of the farmers dedicate 60% of their budget to the purchase of inputs (Gross, 2018).

Farmers face difficulties in marketing their products: the main issues are, in order of importance (Ministère de l'Agriculture et de Sécurité alimentaire du Burkina Faso, 2014):

- Low sales price of market gardening products;
- Lack of buyers; and
- Distance from markets.

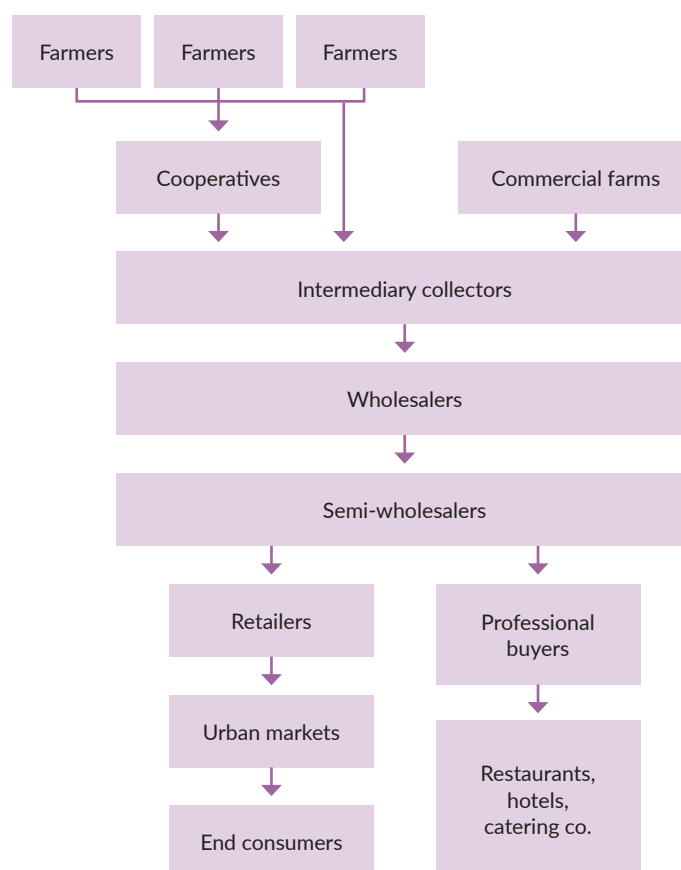
TRADE AND DISTRIBUTION

Marketing of market garden products is, in most cases, carried out by several actors between farm and final consumer:

- **The products are collected directly from the producers** using trucks with loading capacities of several tons or using small vehicles in villages and small towns. Some producers form groups to sell their goods.
- The trucks transport products on behalf of **wholesalers to wholesale markets**. These markets are often located on the outskirts of large cities or at major road intersections.
- Wholesale markets are the source of supply for **semi-wholesalers** who resell to retailers who eventually market the products in urban markets to final consumers. Occasionally, retailers may purchase directly from wholesale markets.
- **Professional buyers** (processing industry, hotel and restaurant suppliers) often buy from semi-wholesalers or wholesalers, but sometimes also directly from producers.

Not all of the above intermediaries are systematically involved along the marketing chain, but there are generally at least one **or two intermediaries between the producer and the final consumer** (see Figure 11 below).

Figure 11: Market gardening value chain



There are significant price variations for market gardening products related to:

- **Season:** Vegetable production is at its highest during the dry season from December to March. It is during this period that prices are at their lowest. During the winter, a season when farmers focus more on cash or cereal crops, prices are generally 30% to 50% higher, depending on the products.
- **Type of agriculture:** Organic agriculture and agroecology are growing practices in the country, especially in the urban peripheries, fuelled by growing demand for better quality products and sold at a 10% to 30% premium.

5.4 Key government institutions and programs in Burkina Faso

Institution	Role and objectives
Ministry of Agriculture and Hydraulic installations (Ministère de l'agriculture et des aménagements hydro-agricoles)	Oversees and organizes the market gardening sector. National priorities are: <ol style="list-style-type: none"> increasing productivity, increasing the rate of marketing of products, and increasing the share of processed agricultural products The priority national value chains are: maize, rice, sorghum, millets, cotton, sesame, cowpea, groundnut, fruits and vegetables.
General Directorate for the Promotion of the Rural Economy (Direction générale de la promotion de l'économie rurale - DGPER)	This entity, under the umbrella of the Ministry of Agriculture and Hydraulic installations, oversees the implementation of policies related to the development of agriculture.
Institute for Environment and Agricultural Research & Institute for Research in Applied Sciences and Technology (Institut pour l'environnement et la recherche agricole - INERA - et Institut de Recherche en Sciences Appliquées et Technologie - IRSAT)	Both entities are responsible for fostering Burkina Faso's agricultural research.
National Center of Specialization in Fruits and Vegetables (Centre National de Spécialisation en Fruits et Légumes - CNS-FL)	Brings together researchers from INERA and IRSAT. Focuses particularly on the fruit and vegetable value chains.
National Seed Service (Service National des Semences - SNS)	Body in charge of quality control, inspection and certification of seeds of improved varieties. Its main activities are: <ul style="list-style-type: none"> • Supervision and inspection of seed multiplication plots; • Sampling, testing and certification of seed of improved varieties; and • Training.

Different policies and strategies underpin the development of agricultural value chains in Burkina Faso (IFAD, 2019), including:

- **National Plan for Economic and Social Development** (*Plan National de Développement Économique et Social - PNDES*) **2016-2020** aims to structurally transform the Burkinabe economy for strong, sustainable, resilient and inclusive growth. IFAD's country strategic opportunities program (COSOP) 2019-2024 supports the Sector Policy on Agro-Sylvo-Pastoral Production (PS-PASP) 2017-2026 that was adopted to operationalize the PNDES in agriculture.
- **National Rural Sector Program** (*Programme National du Secteur Rural PNSR II*) **2016-2020** aims to guarantee food and nutrition security through sustainable development of more market-oriented, productive and resilient agro-sylvo-pastoral, fishing and wild game sectors.
- **National Food and Nutrition Security Policy** (*Politique Nationale de Sécurité Alimentaire et Nutritionnelle 2018-2027 - PNSAN*) aims to eradicate hunger and promote integrated development. It has been introduced to guarantee equitable access by all people at all times to sufficient quantities of food and a balanced and healthy diet.

According to the World Bank, “the legal texts governing the sector’s regulatory framework are not always adequate, and those existing are often insufficiently used or enforced”. The means and capacity of intervention of state services are limited - including in planning and programming, statistical services, monitoring and evaluation, and information systems (WB, 2019). IFAD also stresses that public procurement procedures and difficulties mobilizing counterpart funds represent real institutional constraints (IFAD, 2019).

5.5 Donor programs and initiatives

Most **donor-funded programs aim to improve food security**. Many ongoing projects and initiatives address different issues of climate resilience, agricultural productivity and rural infrastructure. The following programs include the market gardening value chain as one of the targeted sectors of intervention.

- **Agricultural Value Chains Promotion Project** (*Projet d'Appui aux Filières Agricoles - PAFA-4R*), funded by the Burkinabe State and IFAD. Its objective is to contribute to poverty reduction and stimulate economic growth in the Boucle du Mouhoun, Cascades, Hauts-Bassins and Southwest regions. The PAFA-4R is expected to, among other things, develop 2,000 ha of lowlands, establish 200 fish ponds associated with market gardens, build 350 storage and conservation facilities and 750 market access sub-projects in the rice, cowpea, market gardening and fish farming sectors. The project will also create 500 ha of market gardening perimeters and rehabilitate 208 km of rural tracks.
- **Léraba Plain Management and Development Project** (*Projet d'Aménagement et de Valorisation de la Plaine de la Léraba - PAVAL*) aims to contribute to the achievement of food and nutritional security in the Cascades region through increased productivity and production. Funding is provided by the Burkinabe state, as well as AfDB and IFAD. PAVAL is expected to develop a 1,000 ha perimeter, consolidate the 410 ha of existing irrigated perimeters and increase food production to 7,500 tons per year, among others.
- AFD implements the Food Security Project in the East (**Projet de Sécurité Alimentaire dans l'Est - PSAE** (2017-2022)). It aims to improve food security through:
 - The construction of rural infrastructures to optimize crop production conditions and costs (irrigated areas, wells, storage buildings);
 - Capacity building and training of producers and farmers to increase productivity; and
 - The sustainable management of resources.

5.6 Financial sector

LOCAL FINANCIAL INSTITUTIONS

Commercial lending for agriculture is limited. The AfDB underlines that “access to agricultural financing remains a real handicap” in the country (AfDB, 2018). There are 13 banks and 4 financial institutions in Burkina Faso, yet financing for agriculture accounts for less than 3.5% of bank financing. One MFI, Réseau des caisses populaires du Burkina (RCPB), accounts for more than 73% of clients and over 70% of deposits. The three largest banks in Burkina Faso are regional players: Coris Bank, EcoBank and Bank of Africa (IFC, 2019).

Limited bank intervention in the agricultural sector (with the exception of cotton) is caused by high perceived risk, but also lack of control over the value chain. Most operators can “neither offer adequate guarantees nor control the storage and marketing schedule for their products” (AfDB, 2018). Limited access to bank financing is also linked to the lack of property titles (RVO, 2019).

5.7 Specific opportunities for financial support

The assessment of the value chain shows that most “sizeable” SMEs of the market gardening sector are active on the following segments:

- **Distribution of seeds and agricultural inputs;** and
- **Trade and wholesale** of fresh fruits and vegetables.

Opportunity #1: Facilitating farmers’ access to seeds and inputs

As described in section 5.3, lack of cash and savings is a characteristic of smallholders that creates significant challenges for access to inputs (seeds, fertilizer, phytosanitary products, equipment). Consequently, most farmers are unable to bring their production to scale and to increase revenues from market gardening. The opportunity consists in targeting input providers and giving them the financial and technical capacity to increase farmers’ access to inputs. Through a mix of financing and technical assistance, input providers could implement a savings model for farmers (see the example of myAgro below).

Spotlight on myAgro



MyAgro is active in Senegal, Mali and Tanzania. Founded in 2011, the company offers a savings model for farmers who struggle to finance the purchase of agricultural inputs. myAgro’s model is based on the following approach:

1. myAgro’s mobile layaway platform allows farmers to use their mobile phones to purchase seeds and fertilizer in small increments.
2. After 6-8 months of paying little-by-little, myAgro delivers the inputs directly to the farmers, right in time for planting season.
3. myAgro provides agricultural training to all farmers who invested in myAgro packages, sharing harvest-improving agricultural techniques tailored to specific regions and crops.

The savings-based payment model for seeds, fertilizer and training has worked to date with a total of over 45,000 farmers.

Source: myAGRO, 2020

Opportunity #2: Investing in traders and wholesalers of fresh fruits and vegetables

These SMEs are the main outlet for market gardening products. They can be a recipient of commercial financing since they often have a proven commercial track record, existing means of transportation and a network of farmers. Yet, they often lack formal collateral to access sources of financing. Providing a combination of loans, equity and associated technical assistance could bring the following benefits to farmers:

- **Create conditions for the development of contract farming agreements**, thus building more long-term relationships between farmers and traders;
- **Create more reliable outlets for farmers** who face difficulties marketing their products;
- Establish more efficient marketing routes between farmers and end consumers; and
- **Reduce waste in the value chain** by improving collection, transportation and storage conditions.

6. Maize value chain (Burkina Faso focus)

6.1 Main production zones

In **Burkina Faso**, the main production regions are the Hauts-Bassins (613,587 tons in 2017/18), the Boucle du Mouhoun (193,857 tons), the Cascades (156,792 tons) and the Center-West (145,303 tons). The other regions have produced less than 100,000 tons during the past season (Sango, 2018). The preponderance of the Hauts Bassins in maize production is explained by the fact that it is the main cotton-producing region. Maize and cotton farming are deeply intertwined (see section 6.3).

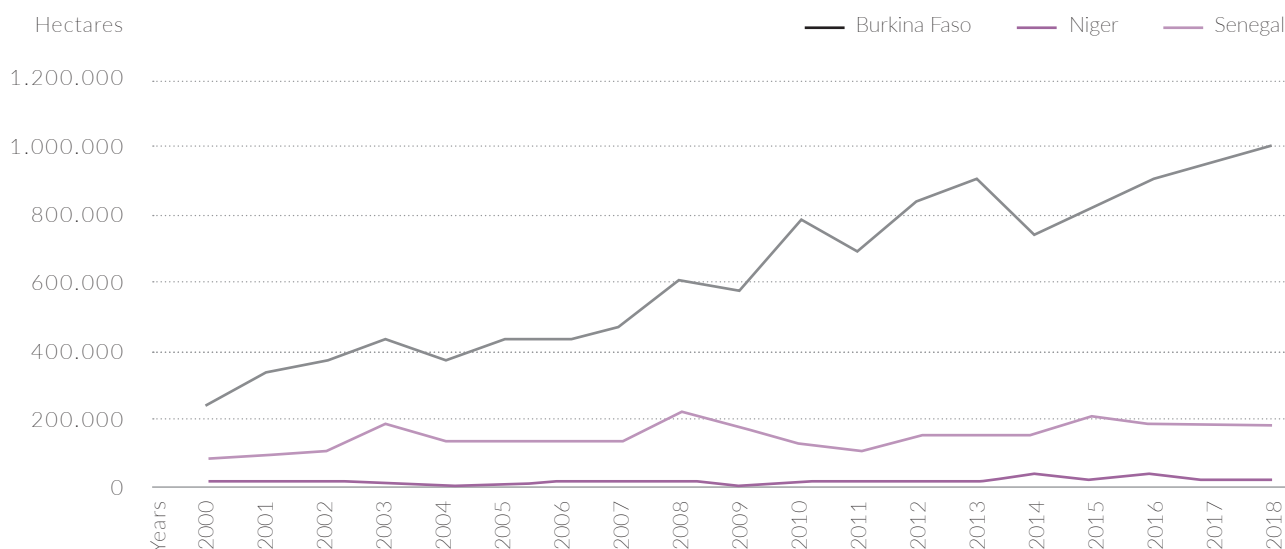
Niger's maize production is very low, national consumption is mainly ensured by imports from Benin and Nigeria. Maize transits through border markets before supplying western towns, including Niamey. (RECA, n.d.).

In **Niger**, maize cultivation is mainly performed in the regions of **Tambacounda, Kolda and Kaolack**. Imports are still high (FCFA 12 billion in 2009 - €18 million), particularly to meet animal feed needs.

6.2 Economic trends

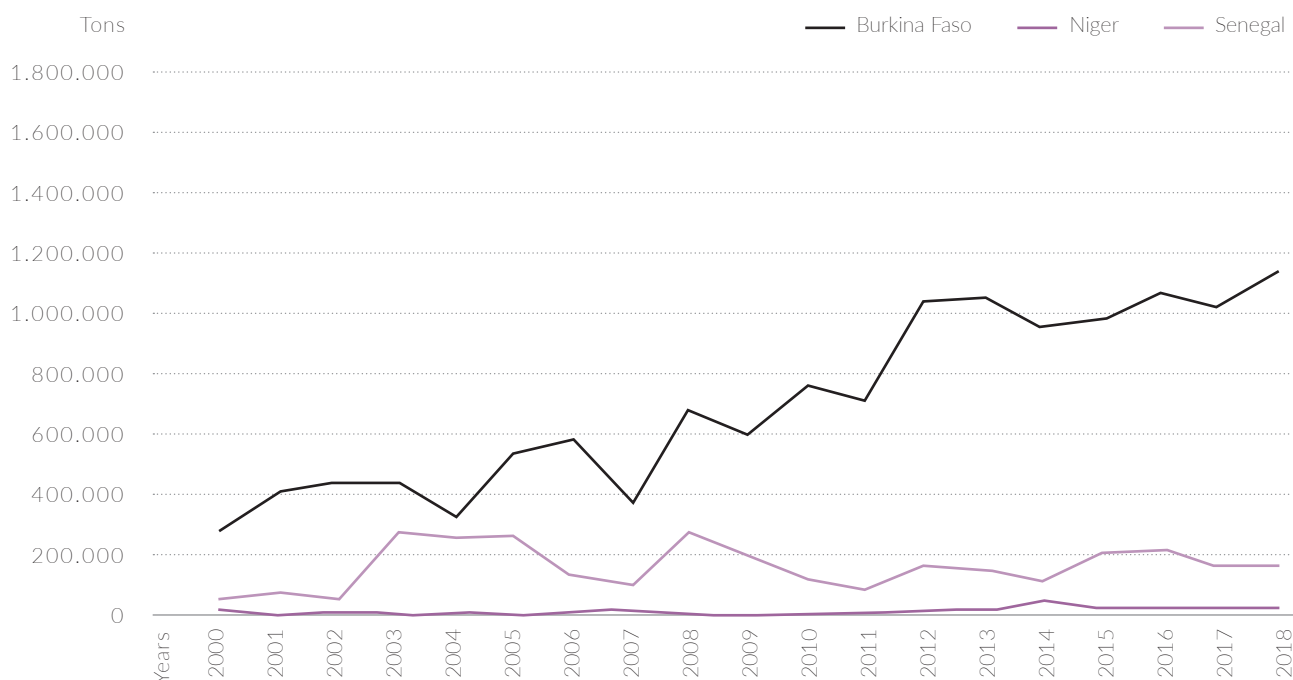
Maize is the most traded cereal in West Africa, with transaction volumes representing more than 65% of the total volume of all traded cereals (PREFAP, 2016). Over the last two decades, the size of maize production areas in Burkina Faso has increased sharply, while it has remained limited in Niger and Senegal (see Figure 12 below). This increase in Burkina Faso is mostly due to the rise in cotton farming and to governmental support programs.

Figure 12: Maize production areas, in hectares (FAOSTAT, 2020)



According to FAOSTAT, **average yields for maize in the three countries is 1.5 tons/ha**. Productivity of maize farming remained flat over the past two decades, except for Niger where yields were extremely low at the beginning of the 2000s (around 0.5 tons/ha.). Burkina Faso is the main maize producing country with 1.7 million tons in 2018, followed by Senegal (0.3 million tons) and Niger (0.03 million tons).

Figure 13: Maize production in Burkina Faso, Niger and Senegal, in tons (FAOSTAT, 2020)



6.3 Sector mapping

INPUT PROVIDERS

In Burkina Faso, as in other countries of the sub-region, there are **two seed production models** (Compaore, 2020):

- The **peasant seed system**, which produces so-called “farmer seeds” or “traditional” seeds; and
- The “**conventional**” or “**formal**” seed sector, which produces “improved seeds” but is not yet very industrialized.

In the framework of programs aiming to promote agricultural production (e.g. for the cotton sector), the government subsidizes part of the inputs to facilitate access to producers, and contracts are awarded through calls for tenders. Cotton credits (mineral fertilizers, in particular) are often diverted to maize (FAO, 2013).

As explained in section 5.3, Burkina Faso does not have an industrial-scale mineral fertilizer production plant or one for the production of phytosanitary products. Almost all agricultural inputs are imported by private operators.

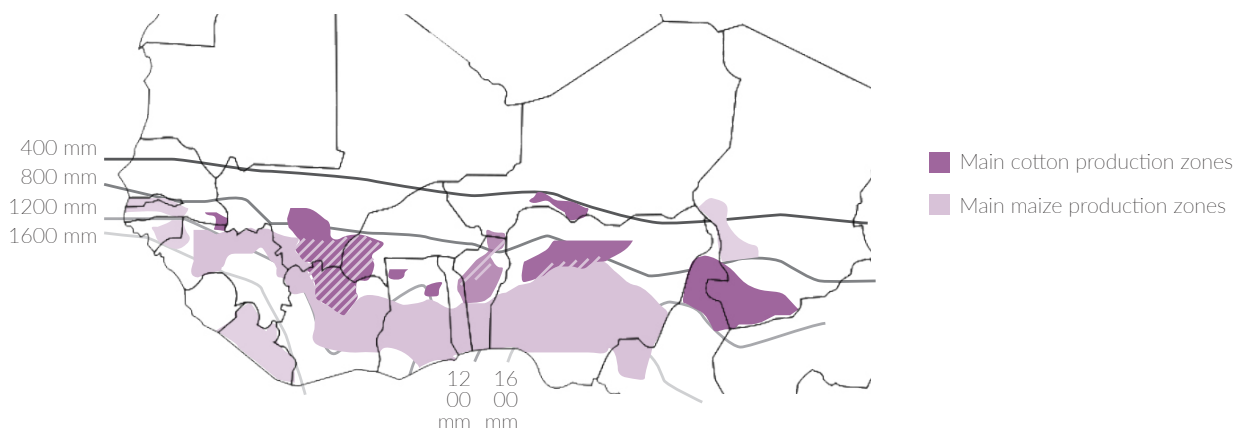
PRODUCTION

Farmers in Burkina Faso grow maize for self-consumption, but also for sale. Typically, **farmers rotate cultivation of cotton and maize**. Maize also shares the use of inputs provided on credit for cotton cultivation (especially fertilizers). Cotton and maize rotations bring several agronomic benefits, as well as complementarities that include:

- Improvement of the soil fertility; and
- Better allocation of labor between the two crops during the season. Cotton requires soil preparation and fertilizer application at an early stage, while maize employs most of the labor later in the rainy season. The same pattern applies to labor management during harvest (cotton is harvested earlier than cereals and other crops) (Kaminski, 2013).

Rainfed cultivation is by far the most prevalent in Burkina Faso. Rainfed maize farming in Burkina Faso produces low yields, while under irrigated cultivation average yields can reach 3.7 tons per hectare (FAO, 2013).

Figure 14: Cotton and maize production areas in the West and Central African regions (Kaminski, 2013)



Price changes during the year pose challenges to farmers. They are particularly high during the off-season, generally between May (start of the rainy season), and October (end of the agricultural season). This is a crucial difference with the cotton value chain, where prices are set by the government. Farmers often lack access to information regarding pricing.

The quality of products is unreliable and is highly dependent on post-harvest capacities. Overall, the prevalence of fungi (aflatoxins) is high, both in production and conservation. This issue is detrimental to the sale of maize locally (e.g. for milling and brewing) and for export, as well as for purchases by WFP.

Cooperatives are often poorly structured and lack financial and technical means to provide significant benefits to their members.

TRADERS AND WHOLESALERS

Agri traders are the main source of funding in the value chain. They fund collectors and agree on farmgate prices based on export and urban market prices. **Traders are active in the training of producers, the pre-financing of seeds and inputs, and the purchase of produce.** Examples of SMEs include (Sango, 2018):

- NAFASO SA, which supports a network of 1,200 maize producers through the provision of improved seeds at affordable prices, and sows about 883 hectares of maize seeds. The company invests about FCFA 75 million per year (€114,000) for the pre-financing of fertilizers and FCFA 875 million (€1.3 million) for the purchase of maize seeds, according to Abdoulaye Sawadogo, president of NAFASO SA.
- EPC-SAC mobilizes more than FCFA 2 million (€3,000) per year for the purchase of seeds, FCFA 10 million (€15,000) for the supply of inputs to producers, and FCFA 60 million (€91,000) for the purchase of maize production.

PROCESSORS

Processors include:

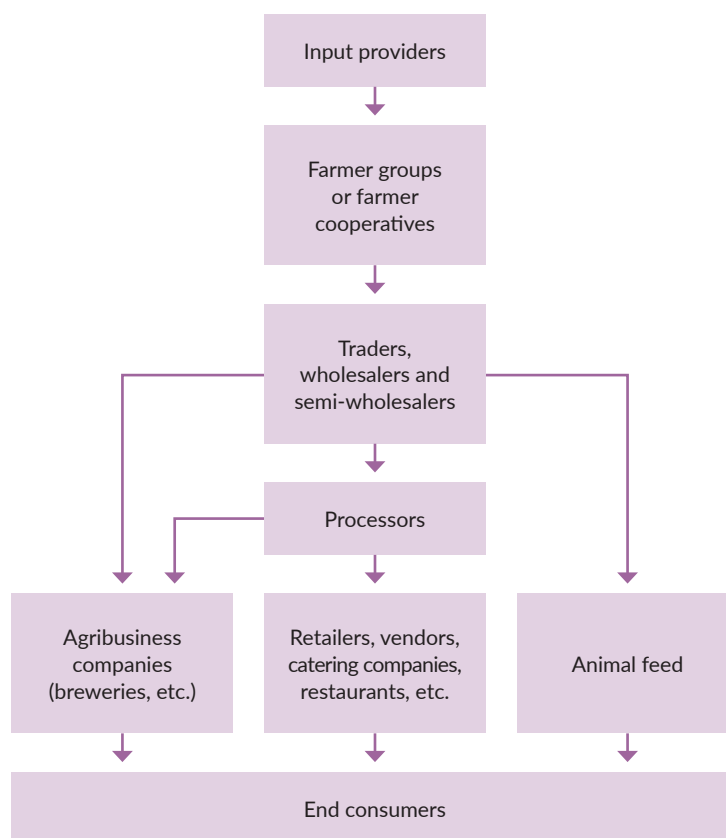
- **Large industrial and semi-industrial processing units** in the cities of Ouagadougou, Bobo-Dioulasso, Ouahigouya, Dédougou, Fada N'gourma and Banfora (e.g. MDS, SOFAB-SA);
- **Intermediate processing units**, often informal, with fluctuating sourcing volumes (these actors are less well documented in existing reports and require further assessment); and
- **Numerous small grinders**, especially in urban centers.

DISTRIBUTION AND CONSUMPTION

The domestic food market consists of two main uses for maize:

- **Maize plays a key role in local dietary habits:**
 - Fresh maize is eaten grilled or boiled
 - It can be transformed into flour by households or by processing units for couscous or biscuits. The General Directorate for the Promotion of the Rural Economy has identified 160 maize processing units throughout the country.
- **Crushed grains are also used as animal feed** (e.g. in chicken or fish farming). Although most maize varieties cultivated in Burkina Faso are for human consumption, demand for processing into animal feed is expected to increase significantly in the future (IFC, 2018).

Figure 15: Synthetic view of the maize value chain



6.4 Key government institutions and programs in Burkina Faso

(Same as 5.4 above)

6.5 Donor programs and initiatives

Donors implement diverse programs aimed at strengthening the maize value chain in Burkina Faso, among other value chains (see section 5.5), including:

- **PACTE** (*Projet d'agriculture contractuelle et de transition écologique - 2019-2023*), funded by AFD, aims to increase agricultural productivity and modernize agri-food chains through agro-ecological intensification and contract farming. It also aims to facilitate market access for cooperatives and professionalize value chain actors. The project supports public purchasers, agro-industrial processors, financial institutions and development actors. It connects buyers with producers, helps elaborate quality charters, and supports the development of a national contract-farming policy. Maize is one of the value chains targeted by the project (others include rice, soy, sesame, milk, peanut, etc.)
- **WFP** aims to develop local food supply to ensure food security in the region and works with maize farmers and cooperatives through guaranteed contracts.
- In 2019 the **World Bank** launched the **Agriculture resilience and competitiveness project**, which aims to catalyse investment to increase agricultural productivity and market access for small producers and small and medium agribusiness entrepreneurs for selected values chains in the Project Areas.
- **AfDB** is implementing the **Project for establishing an Agribusiness Bank**, which aims to improve access to agricultural financing by establishing an agribusiness bank known as the Agricultural Bank of Burkina Faso (Banque Agricole du Faso - BADF).
- **FAO** supports the strengthening of knowledge and capacity to control the fall armyworm in the maize value chain.

6.6 Financial sector

Overall, **sources of funding are mostly mobilised by actors in the value chain** – i.e. as producers' self-financing and in-kind financing from traders (see example below). These flows are often informal and based on existing social, cultural and historical ties between actors.

Commercial banks hardly finance actors in the maize value chain because of the high perceived risk in relation to the agriculture sector (particularly rainfed cereals). Banks such as ECOBANK and the Bank of Africa (BOA) grant credit to actors at annual interest rates between 9 and 10%. MFIs apply higher rates of around 12.5% per year. Collateral requirements are beyond the reach of certain categories of small producers (PREFAP, 2016) and loan terms and sizes are most often inadequate (IFC, 2019). There is a crucial need to train bank staff on agriculture financing.

6.7 Specific opportunities for financial support

The most pressing challenges in the maize value chain are upstream, including fluctuating and opaque prices, poor productivity, inadequately structured cooperatives, quality issues (aflatoxins), etc. Numerous donor-funded or state-run initiative aim to support the sector.

From a production perspective, it seems relevant to further assess the producer organizations' needs for capacity building and technical assistance across diverse issues, including:

- Yields and farming techniques;
- Access to seeds, inputs and farming equipment;
- Post-harvest treatment, storage and processing; and
- Structuring of cooperatives (processes, management tools, etc.)

From an SME perspective, the most sensible approach consists in working with agri-traders to address these issues. At this stage of the assessment, there is no definitive suggestion regarding the best means to engage from a financial perspective. The investment prospectus phase could focus on the following elements:

1. Categorizing the typology of agri-traders and assessing their funding needs.
2. Identifying the best means for establishing sustainable commercial relationships between agri-traders and producers, to achieve the following results:
 - a. More reliable sales outlets for farmers and better understanding of pricing;
 - b. Guaranteeing better quality for agri-traders and better visibility on volumes;
 - c. Improving productivity through access to adapted inputs, relevant financial instruments and technical assistance; and
 - d. Improving post-harvest capacities for adequate conservation and processing of maize.

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8. Appendices

8.1 SAFIN partners contacted for the study

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IDLO	David Tanenbaum Alessandra Mistura	Email
AGRA	Raoul Ouedraogo	Interview completed
WFP	Nyasha Mtengwa - Raphael LEAO	Sent



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