European Commission

VCA4D
VALUE CHAIN ANALYSIS FOR DEVELOPMENT

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# Analysis of the groundnuts value chain in Niger

Value chain analyses assist in informing policy dialogue and investment operations. They help the understanding of how agricultural, aquaculture and fisheries development fits within market dynamics. They permit an assessment of the value chains' impact on smallholders, businesses, society, and environment.

The European Commission has developed a standardised methodological framework for analysis (https://capacity4dev.europa.eu/projects/value-chain-analysis-for-development-vca4d/info_en). It aims to understand to what extent the value chain allows for inclusive economic growth and whether it is both socially and environmentally sustainable.

## Value chain context

Groundnuts are among the most important cash crops in Niger, with annual production growing steadily, positioning the country as the 9th largest producer in West Africa. The Maradi and Zinder regions represent the main production areas (accounting for over 87% of national production).

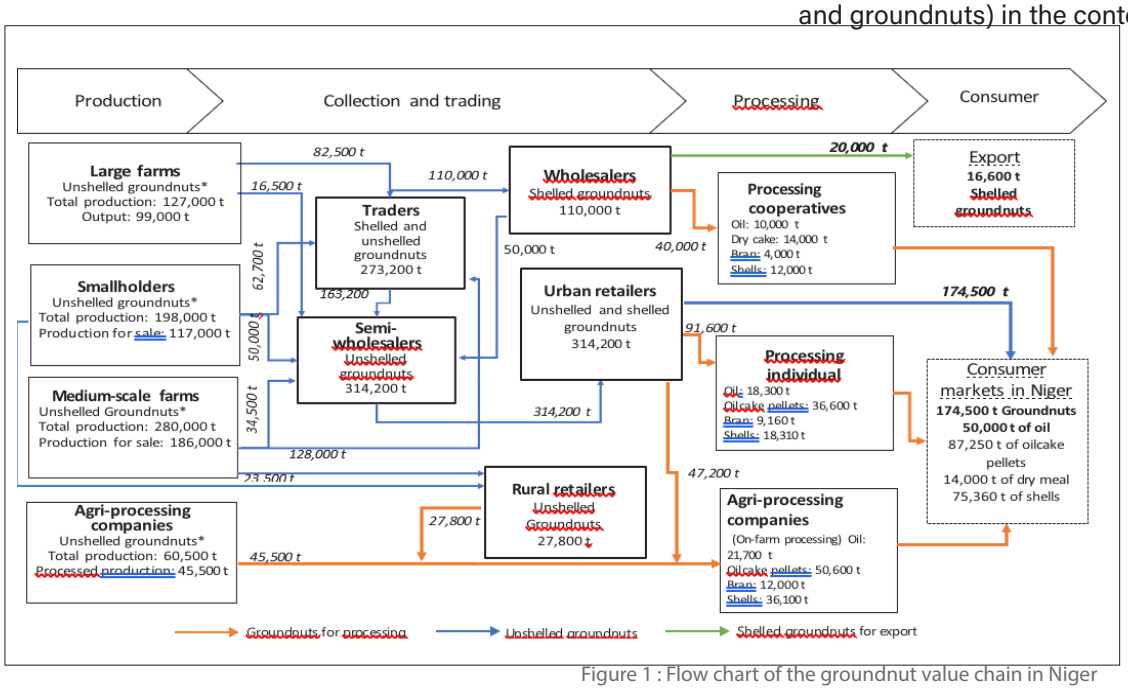


Figure 1 : Flow chart of the groundnut value chain in Niger

The production and processing of its by-products are significant sources of income and employment and contribute to household food security. However, the groundnut value chain (VC) faces certain challenges: demographic pressure on fallow periods and areas; climate variability and droughts; limited exports due to a lack of capital; limited access to finance and training for VC stakeholders; limited processing capacity; low social capital; and a lack of structured governance.

The vast majority of groundnut production is destined for artisanal processing. However, the practice of mixing different groundnut varieties at the producer level creates quality-related challenges for processors requiring specific product attributes.
EU intervention

## Intervention de l'UE

The European Union (EU), within the context of the 2021–2027 National Indicative Programme (NIP), has identified green economic growth as one of its priority areas. Within this framework, a project to support the development of plant protein value chains (cowpeas and groundnuts) in the context of the Great Green Wall (GGW) in Agadez and Maradi has been formulated, in line with the joint African Union–EU initiative on nutrition. In Niger, this project will focus particularly on the sustainable and resilient development of these crops, with a special emphasis on nutrition and soil restoration. An action plan (3N Initiative 'Nigeriens Feed Nigeriens' (Act III) has been launched for the period 2021–2026.

# Functional analysis

## Production

In 2022, national groundnut production was estimated at **665,500 tonnes** on a cultivated area of 1 million hectares, mainly in the Zinder and Maradi regions.

Four main types of producers were identified in this VCA (Figure 2) based on the following criteria: cultivated area, farming practices and marketing strategies. **Agro-processors (AP)** (19% of producers), farm using mixed cropping systems, with the millet-groundnut combination being the most common. 80% of their production is processed into oil using traditional methods, whilst the remainder is intended for self-consumption and seed production. **Smallholders (SH)** (43% of producers) and **medium-scale farmers (MSF)** (32% of producers) are characterised by low input use and the intercropping of other crops. 60% and 70% of SH production is sold during harvest time, with the remainder consumed by the farmers themselves. Yields are higher on **large-scale farms (LF)**, where 87% of production is marketed. These farms use improved seeds and employ paid labour. Pure groundnut cropping systems are more common on LF.

| | Agri-processing enterprises (APEs) | Small holders (SH) | Medium-scale farms (MSF) | Large farms (LF) |
|---|---|---|---|---|
| Total farm area (ha) | 0.9 | 1.9 | 4.9 | 15.6 |
| Area covered by groundnuts (ha) | 0.5 | 0.7 | 1.3 | 2.3 |
| Groundnut yield (kg/ha) | 600 | 660 | 620 | 845 |
| Proportion of national production (%) | 9 | 30 | 42 | 19 |
| Proportion of producers (%) | 19 | 43 | 32 | 6 |
| Most commonly adopted crop combinations | Millet-groundnut | Millet/ | Millet sorghum-groundnut-cowpea | - |
| Soil preparation | 500 | 750 | 2000 | 4000 |
| Organic fertiliser application rate (manure) kg/ha | Local | Local | Local/ improved | Improved with seed drill |
| Origin of seeds | 54 | 46 | 60 | 80 |
| Seed quantity (kg/ha) | - | - | Yes | Yes |
| Pesticide treatment | 500 | 750 | 2000 | 4000 |

*Figure 2 : Groundnut production systems in Niger*

## Processing and marketing

Groundnut processing into oil is a well-established activity among women, who operate either individually in artisanal units or collectively in semi-industrial processing facilities (Figure 1). Women often process a portion of their own groundnut harvest for household consumption. However, individual processors in peri-urban areas generally do not own agricultural land and face constraints in accessing essential processing equipment and firewood for roasting the groundnuts.

Processors with modern equipment organise themselves into groups to increase their capacity to invest. This type of small-scale collective semi-industrial processing supplies Danja and the main commercial centres in the Maradi region, as well as several school canteens under the World Food Programme (WFP). At present, this type of initiative is not widespread as it depends on project support.

Groundnut oil and by-products (meal and bran) are most often marketed directly by the processors. The bran and meal from semi-industrial processing are intended for animal feed, whereas the meal from artisanal processing is used for human consumption.

Groundnuts are sold in-shell or shelled. Collectors, generally based in towns, sell groundnuts to semi-wholesalers (in-shell) or to wholesalers (shelled). Semi-wholesalers mainly supply retailers, whilst wholesalers, having greater storage capacity, supply urban and export markets.

Exports are stable in terms of volume and price and are mainly limited to the regional market, particularly Nigeria, Ghana, Benin, Algeria and Burkina Faso. Imports are virtually non-existent and limited to areas bordering Nigeria to compensate for shortages during the lean season (June to August). Despite the proximity to the border of a major consumer market (Nigeria), the groundnut value chain is heavily geared towards domestic consumption.

## Governance of the value chain

Public institutions play a limited role in the governance of the groundnut value chain. The delay in establishing an inter-professional body hinders the smooth flow of information between upstream and downstream actors and limits their participation. Individual initiatives foster the development of informal relationships and give rise to forms of mutual aid and specific organisations. The governance of the value chain relies heavily on local dynamics stemming from farmers' organisations and marketing actors, who act as intermediaries between production and processing

# What is the contribution of the value chain to economic growth?

## Effects on the national economy

For the reference year 2022, the value chain generated **direct value added (VA)** of 218 billion CFA francs (332 million), consisting mainly of net operating profit (NOP) (50%) and wages (45%) (Figure 3). **Indirect VA** (€56 million) relies largely on the knock-on effect of NOP and wages, meaning that suppliers of intermediate consumption contribute indirectly to the national economy mainly through these two items. With a **total VA** of **255 billion CFA francs (€388 million)**, the groundnut sector contributes 3% of the country's GDP. The contribution of agricultural producers in the groundnut sector to agricultural GDP is nearly 9%.

The **77% integration rate** shows that the value of Groundnut processing remains largely within the national economy. As for the trade balance, it shows a deficit of 39 billion CFA francs (€59.4 million) due to the low export value of the VC (€10.6 million) compared to its imports of chemical inputs and packaging (€70 million). The impact of the VC on public finances is positive at 7.5 billion CFA francs (€11.4 million), as the VC contributes to the state budget through taxes without receiving any subsidies.

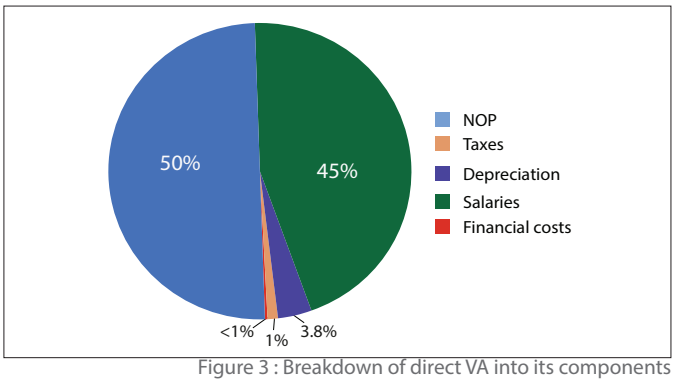


Figure 3 : Breakdown of direct VA into its components

## Viability of the players

The VC's activities are profitable, as all stakeholders have a positive net profit (Figure 4). Smallholders (SH) have a higher return on turnover due to very low production costs (mainly linked to the purchase of fertilisers). Processors also enjoy significant profitability thanks to the value added from processing groundnuts into oil and its by-products. Medium-sized enterprises (MSEs) and large enterprises (LEs) have higher production costs (fertiliser, improved seeds, equipment, salaried labour), with LEs having the highest depreciation costs. Revenues are higher for downstream operators, particularly for wholesalers and group-based processors. Although it is an attractive activity, marketing remains less profitable, especially for collectors and semi-wholesalers as their profitability is affected by storage and transport costs incurred to minimise losses.

| Type of operator | Annual net operating profit* (NOP) | Return on turn-over* * (ROT) (%) |
|---|---|---|
| Agri-processing company (AT) | 100 443 FCFA (153 €) | 22 |
| Small-holders (SH) | 65 899 FCFA (100 €) | 28 |
| Medium-scale farm (MSF) | 43 851 FCFA (67 €) | 10 |
| Large-scale farm (LF) | 165 387 FCFA (252 €) | 15 |
| Individual trans-former | 1 979 043 FCFA (3016 €) | 19 |
| Group trans-former | 11 247 926 FCFA (17 146 €) | 21 |
| Collector | 77 998 FCFA (119 €) | 3 |
| Semi-wholesaler | 1 335 094 FCFA (2035 €) | 1 |
| Wholesaler | 52 134 968 FCFA (79 474 €) | 9 |
| Urban retailer | 232 160 FCFA (353 €) | 6 |
| Rural retailer | 388 783 FCFA (592 €) | 11 |
| Détaillant rural | 418 100 FCFA (640 €) | 19 |

Figure 4: Profitability for individual actors in the groundnut value chain
*Net operating profit (NOP): Net income of the actor minus depreciation
**Return on turnover (ROT): Net operating profit/ Value of production

## Viability in the international economy

A **Nominal Protection Coefficient (NPC)** of 1 means that the VC allows for the same remuneration as it would at the international price, making it competitive in the international market.

The **Domestic Resource Ratio (DRC)** of 0.4 (less than 1) demonstrates the VC's sound viability in the international economy: the value of domestic factors consumed by the VC's activities is less than the economic wealth they generate.

## Comparison of sub-chains

Of the three sub-chains (SC) analysed (groundnuts for the domestic market, groundnuts for the export market, and groundnuts processed into oil), the domestic and oil processing sub-chains are those that contribute most to direct VA (45% and 40% respectively).

The groundnut value chain in Niger generates positive net operating results for stakeholders involved in production, processing and marketing. Its contribution to the country's economic growth is positive, particularly through agricultural producers, whose contribution to agricultural GDP stands at 9%. The value chain receives no public aid but contributes to government revenue. However, its impact on the trade balance is negative, as the value of imports of certain intermediate inputs (chemical inputs, packaging products) exceeds the value of exports.

# Is the economic growth inclusive?

### Income distribution

All actors in the value chain make a profit. The value of NOP is 110 billion CFA francs (€166 million), 70% of which is shared among agricultural producers (Figure 5). SMEs and micro-enterprises receive a significant share of the income (28% and 18% of NOP respectively) despite their limited bargaining power. The dissemination of price information via current communication channels enables producers, particularly MSF and LF, to enhance their bargaining power.

### Jobs

The groundnut value chain creates 162,729 full-time equivalent (FTE) jobs, almost all of which are temporary. Agricultural production is the main contributor to employment. Women are involved in processing and, to a lesser extent, in the marketing and harvesting of groundnuts.

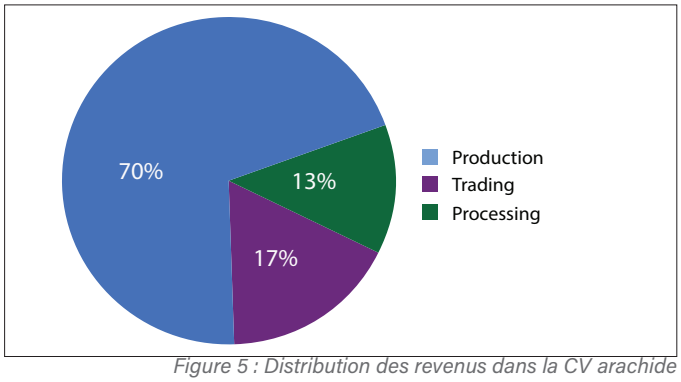


*Figure 5 : Distribution des revenus dans la CV arachide*

The Groundnut value chain in Niger is inclusive in terms of providing income and employment, particularly for women, whilst also giving them access to processed groundnut products (oil, meal) which are central to their food security.

# Is the value chain socially sustainable?

Figure 6 and the following table provide an image of the main social consequences of the VC activities in six strategic domains.

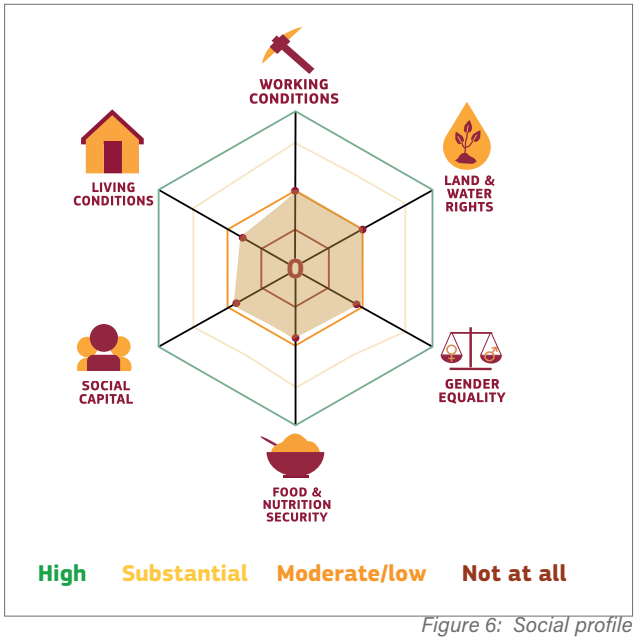


*Figure 6: Social profile*

The groundnut value chain shows some signs of social sustainability and promotes stakeholder participation and inclusion. However, all areas require attention and mitigation measures. In particular, living conditions are poor, access to resources is problematic for women and young people, social capital is low, and the value chain receives little support due to a lack of structured governance. Despite the important contribution of groundnuts to food and nutritional security, vulnerable populations—particularly in rural areas—remain constrained by rising food prices during the lean season.

| | |
|---|---|
| Working conditions | ▪ Working conditions are generally acceptable but with unsatisfactory pay for workers<br>▪ Value chain activities (particularly in processing) are highly attractive to women and young people |
| Land and water rights | ▪ Women's land rights are recognised by law, but in some areas there are difficulties in accessing land, with the result that the wealthiest individuals are able to monopolise land |
| Gender equality | ▪ Women are heavily involved in processing activities (opportunities for leadership and autonomy)<br>▪ Limited involvement in marketing<br>▪ Access to resources and other productive assets for women, but with more limited capacity than men, particularly in rural areas<br>▪ Limited involvement in marketing |
| Food and nutrition security | ▪ Positive impact of groundnut production on improving household food availability, particularly in rural areas<br>▪ Contribution of groundnut oil to improving the nutritional quality of food<br>▪ High involvement of poor households in cash crop production (cowpea and groundnut), which makes them financially vulnerable (over 50% of income spent on food purchases |
| Social capital | ▪ Existence of farmers' organisations in the governance of the groundnut value chain<br>▪ Delay in establishing an inter-professional body for the groundnut sector<br>▪ Poor coordination among stakeholders, particularly in the processed product supply chains, with producers having little bargaining power over prices |
| Living conditions | ▪ Unacceptable living conditions due to sub-standard housing and low healthcare coverage<br>▪ Low school enrolment rates for girls and very limited opportunities for value chain stakeholders to access vocational and technical training |

# Is the value chain environmentally sustainable?

The environmental impacts of the value chain are measured using a life cycle assessment (LCA) that takes into account three protection areas and one impact indicator: resource depletion, ecosystem quality, human health and climate change. Risks to biodiversity were also assessed through an exploratory analysis. The aim is to identify critical stages for improving the environmental efficiency of the value chain.

## Impacts on protection areas

Overall, the value chain VC has a relatively limited environmental impact due to the low use of agricultural inputs and the low level of mechanisation. Within the VC, damage to **human health** is primarily attributable to the agricultural production stage (50%) and the processing stage (33%), mainly as a result of fine particulate matter and greenhouse gas (GHG) emissions associated with the production and use of inputs (Figure 7).

With regard to **ecosystem quality**, nearly all impacts (99%) stem from land use associated with extensive agricultural production. However, this result should be interpreted with caution, as the life cycle assessment (LCA) does not account for the positive externalities generated by intercropping and other associated cropping systems.

Finally, **resource depletion** is driven mainly by marketing (59%) and processing (23%) activities, reflecting their reliance on fuel and electricity consumption.

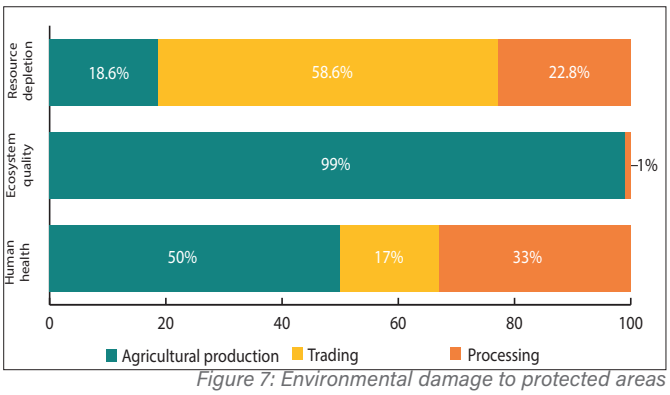


*Figure 7: Environmental damage to protected areas*

## Damage per functional unit

Environmental damage can be expressed per tonne or per hectare. Farms with high yields generally have better efficiency per tonne of product, which is not the case here as LF systems have the highest impacts except for ecosystem quality per tonne (Figure 8). The damage is linked to the manufacture of mineral fertilisers and the pesticides used. In comparison, even with lower yields, the performance of the associated systems (AT, SH, MSF) is favourable both in terms of production per tonne and land use value per hectare.

## Damage by sub-chain

For each tonne of unshelled groundnuts, impacts on ecosystem quality and resource depletion are lower in the **oil-processing supply chain**, largely because processing is only minimally mechanised, relies extensively on recycled materials, and generates several by-products that contribute additional economic value.

In terms of human health, the **domestic** and **export supply chains** exhibit similar impact profiles, with approximately 80% of the damage attributable to the agricultural stage, primarily through field emissions and the application of organic and mineral fertilisers. In the processing supply chain, energy use (wood, diesel, and electricity) is the second-largest contributor to human health impacts, accounting for 41% of total damage, after the agricultural stage (49%).

## Climate change

The contribution of the VC to climate change is low. Nearly 90% of GHG emissions come from field activities and the manufacture of inputs. The use of chemical fertilisers causes more harm than that of compost. Developing agroecological farming practices and improving composting is a first step towards improving environmental sustainability.

## Biodiversity

The expansion of the agricultural frontier due to land for food and crops poses a risk to biodiversity and increases GHG emissions caused by land-use change.

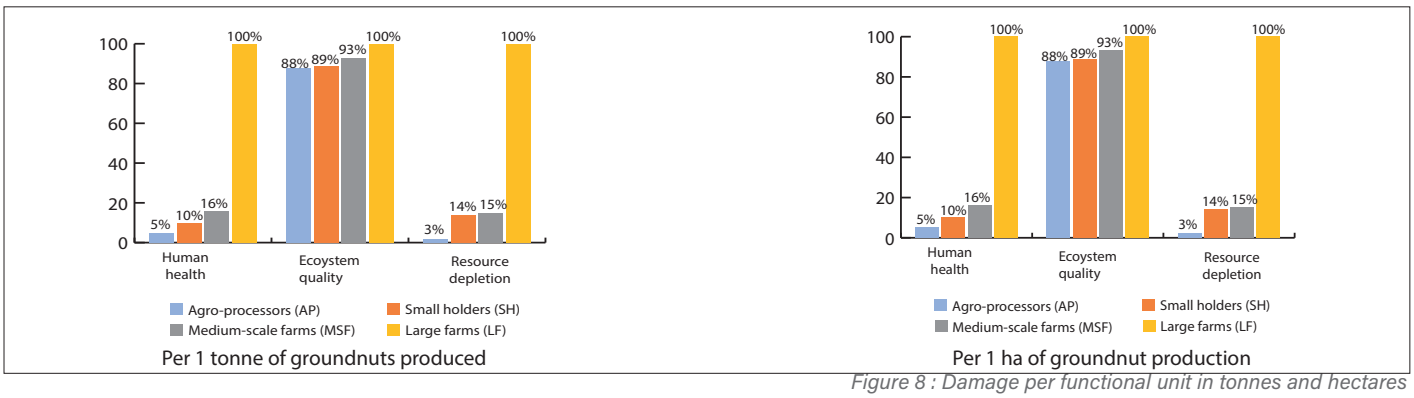


*Figure 8 : Damage per functional unit in tonnes and hectares*

The groundnut value chain in Niger causes low levels of environmental damage. The main sources of damage are: i) energy (processing) and ii) transport (marketing). Limiting the expansion of the agricultural frontier can help to enhance environmental sustainability. Balanced and agroecological intensification appears to be the most appropriate model for addressing the issue of agricultural land expansion linked to low yields.

# Main findings and recommendations

The groundnut value chain in Niger offers significant income opportunities to stakeholders at all stages. Significant positive impacts have been observed, including a contribution to food security (on-farm consumption of produce) and the use of over 80% of the income generated to purchase food to meet household needs. Women are heavily involved in these activities. However, access to all types of resources and training remains problematic for women and young people, despite some improvements in opportunities. Social capital needs to be promoted to ensure greater stakeholder participation in governance. Finally, the value chain causes minimal environmental damage, but there is scope for improvement to reduce emissions and optimise land use.

## SWOT Matrix

| STRENGHTS | WEAKNESS |
|---|---|
| • Farmers have good experience in groundnut production and the different varieties are well adapted<br>• Availability of high-performing improved varieties (J11, GL, 55-437, 24 RRB, etc.) resulting from research<br>• Availability of labour, particularly women and young people, in processing<br>• Existence of marketing outlets in major production areas | • High population pressure and over-exploitation of land, coupled with low levels of agricultural mechanisation<br>• Difficulty in accessing quality fertilisers, agricultural credit/ financing, and advisory and support services for producers<br>• Marketing channels dominated by informal exports (particularly to Nigeria), impacting domestic availability<br>• Delay in establishing an inter-professional body for<br>• the VC |
| **OPPORTUNITES** | **THREATS** |
| • Strong domestic demand for groundnut oil and groundnut meal<br>• Existence of an action plan, focusing primarily on food and nutritional security (3N Initiative)<br>• Economic and institutional environment and the existence of legislation promoting regional market integration (UEMOA, ECOWAS, OHADA, etc.) | • Recurring drought due to irregular and poorly distributed rainfall<br>• Difficulty in accessing organic fertilisers and lack of established composting practices<br>• Poor quality of mineral fertilisers from Nigeria<br>• Strong competition from imported vegetable oils<br>• Limited access to extension services and an insufficient number of officers responsible for supporting farmers<br>• Rising fuel prices affecting transport costs |

*Figure 8 : SWOT matrix for the groundnut value chain in Niger*

## Recommandations

**Promote social capital** through: i) the establishment of an inter-professional body that can help strengthen the sector in terms of edible oil production to meet domestic market demand (which is growing), ii) the professionalisation of young producers' farms across the country's various regions, iii) empowering women to participate actively in decision-making; iv) strengthening the legal framework for women's groups to ensure their long-term viability.

**Promote the inclusion of women and young people** by facilitating secure access to land, particularly in the major production areas of southern Niger.

**Promote and sustain agroecological practices** at all stages of the value chain, notably through the promotion of intercropping, assisted natural regeneration (ANR), sustainable land management, and deepening knowledge of organic fertilisation practices and composting. Equip semi-industrial processing units with clean, autonomous energy sources such as solar power.

**To utilise** Groundnut **by-products within the value chain**, such as shells, which can be used as fertiliser and a source of energy. To treat the meal produced in artisanal processing units as a product in its own right, as it is richer in oil and intended for human consumption.

Value Chain Analysis for Development (VCA4D) is a tool funded by the European Commission / INTPA and is implemented in partnership with Agrinatura. Agrinatura (http://agrinatura-eu.eu) is the European Alliance of Universities and Research Centers involved in agricultural research and capacity building for development. The information and knowledge produced through the value chain studies are intended to support the Delegations of the European Union and their partners in improving policy dialogue, investing in value chains and better understanding the changes linked to their actions. VCA4D uses a systematic methodological framework for analysing value chains in agriculture, livestock, fishery, aquaculture and agroforestry. More information including reports and communication material can be found at: https://europa.eu/capacity4dev/value-chain-analysis-for-development-vca4d-

This document is based on the report "Analyse de la chaîne de valeur de l'arachide en République du Niger", by Andres L., Acosta Alba I., Ganda Seydou S., Habonimana B., Kotyza P., Sitou L., 2023. Only the original report binds the authors.