CBI
Ministry of Foreign Affairs

Value Chain Analysis Nigeria Ginger

Commissioned by The Centre for the Promotion of Imports from developing countries (CBI)

SureChain

December 2020

Table of Contents

INTRODUCTION

The Centre for the Promotion of Imports from developing countries (CBI) is part of the Netherlands Enterprise Agency and is commissioned by the Netherlands Ministry of Foreign Affairs. CBI connects small and medium-sized enterprises (SMEs) in developing countries to the European market, and in this way contributes to sustainable and inclusive economic growth. CBI offers export coaching programmes for SMEs, involves the export enabling environment (e.g. business support organisations, governments) to improve their services for exporters and publishes over 250 market studies every year. Programmes are tailored to the local situation, tackling those issues that impede export to Europe.

Nigeria has been selected due to its important trade position in Africa, but also its urgent need to professionalise sectors to improve the quality of services and products. In 2019-2020, a Value Chain Selection (VCS) was conducted to assess potential sectors to improve in Nigeria. The five most interesting value chains for a potential CBI project or multiple projects in Nigeria were identified. From a CBI shortlist, ginger, cocoa and shea were finally selected to develop an initial Business Case Idea (iBCI). This iBCI has been followed up with virtual interviews with key stakeholders. The Ginger iBCI has been approved to continue to the VCA phase.

According to FAOSTAT (2018), Nigeria is the third-largest producer of ginger in the world (after India and China). Nigerian ginger is among the best in the world, with its aroma, pungency and high oil and oleoresin content as distinct features. The main producing zone is Kaduna state, and to a lesser extent Nasarawa, Niger, Gombe, Bauchi, and Benue. Nigeria could use ginger to position itself in different ways on the domestic, regional and EU markets. On the EU market, there is scope to expand Nigeria's current fresh and dried ginger exports, by focusing among others on quality improvements and meeting the mandatory EU market requirements, as well as exploring opportunities for certification and gaining access to niche market segments. In the EU, healthy and cosmopolitan lifestyle dishes, drinks, snacks and food supplements – in which ginger is a key ingredient – are experiencing increasing popularity. Another specific trend from which Nigeria can benefit especially is the fact that European demand peaks in wintertime, when supply is low and prices are high. Nigeria, being a country with year-round ginger production, can offer a constant supply to meet such demand.

However, the Nigerian ginger sector has been facing serious difficulties over the past years: low yields, high post-harvest losses, a lack of tech and of infrastructure (and know how) to improve processing and product quality, fierce competition from Asia, price fluctuations, poor organisation and an ineffective enabling institutional environment. The VCS noted that there is nevertheless significant potential for value addition and room for CBI intervention. Some of the points noted were related to improving farming techniques, quality management and certification, investment in cold storage, investments in advanced processing equipment, and product marketing. CBI has therefore invited SureChain to conduct a value chain analysis for Nigeria's ginger sector. The objective of the assignment is to conduct a value chain analysis in the ginger sector and provide key insights for CBI to design a project related to ginger. The sub-objectives are:

- Enabling sector transition: What is needed to professionalise the ginger sector and bring more benefits to Nigeria? What is a sustainable sector according to key stakeholders? How can a sustainable sector be set up?
- With the analysis, creating a deeper understanding of obstacles and opportunities in the value chain. Relevant stakeholders in the SME export sector and the export enabling environment will also be determined.
- Validating and using the findings to establish a more detailed project results chain.

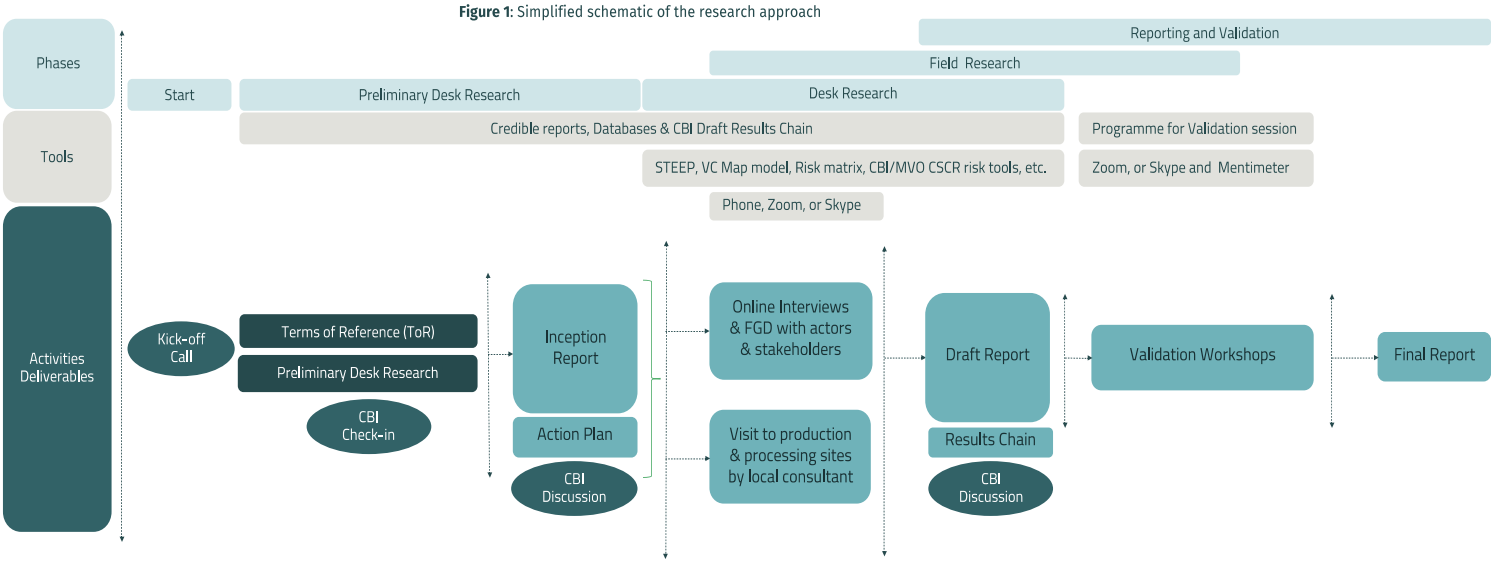
Given the situation with COVID-19, data gathering was primarily the result of desk research and online interviews with stakeholders. On-the-ground visits to some ginger-producing factories were made on a best effort basis.

The report is divided into four chapters, followed by a conclusion and annexes. Chapter 1 presents a brief research approach, Chapter 2 presents information regarding the initial product market combination analysis, Chapter 3 presents the value chain analysis of dried ginger in Nigeria, while Chapter 4 provides information in support of CBI ginger value chain project design and risk assessment.

CHAPTER 1. RESEARCH APPROACH

This chapter presents the research approach, the desk research sources and field research work (i.e. interviews, site visits and validation workshops). In Figure 1 below, a simplified schematic representation of the entire research approach is presented.

Figure 1: Simplified schematic of the research approach



1.1. Desk Research

The desk research phase commenced during the second week of August with website and database searches and report reading (literature review). A preliminary desk research was carried out to provide an inception report in August 2020. Further desk research was used to provide qualitative and quantitative data to address mainly elements 1, 2 (and partly) 3 of the VCA. This phase utilised and analysed several existing data resources from credible sources, both written sources and databases. Some of the sources consulted are listed below:

Main database(s) and tools

- ITC Market Analysis Database with tools such as Trade Map, Market Access Map and Export Potential Map providing critical data on export data and export potential for ginger from Nigeria to Europe.
- FAOSTAT provides data on Nigeria's production and yield of ginger and its market share.
- RASFF Portal provides data on cases of value chain product risk to public health. A particular search topic is establishing recent cases of risks from ginger products export to the Netherlands and the rest of Europe.
- Eurostat provides data on Nigeria's export of ginger to EU-28.
- The UN Comtrade database also provides EU and global trade data (export quantities and value) on Nigerian ginger.
- Chatham House's Global Resource Trade Database provides insightful data over a five-year period (2013-2018) on the total value of Nigerian ginger exports to the EU (and the world), the top five importing countries of Nigerian ginger, and the top five fastest growing and declining export destinations for Nigerian ginger.

Some useful reports and presentations

- The research study on the Nigerian ginger value chain by Janet Ogbeyalu Nwaekpe, a senior research scientist working for the National Root Crops Research Institute in Umudike, Nigeria. Amongst others, the study outlines nine valued attributes and characteristics of Nigerian ginger.
- 'The Development of Ginger Value Chain in Nigeria' (2017), a presentation by the North-West Regional Coordinator of the Nigerian Export Promotion Council.
- A 2017 report submitted to the USAID NEXTT project in Nigeria, [described as] 'Feasibility and business plan report on ginger processing to oleoresin'. Amongst others, the report highlights the processing of ginger products, the advantages of ginger oleoresin, the uses, applications, value additions and potential of ginger oleoresin, as well as the quality assessment of oleoresins.

- An analysis of the ginger value chain in Nigeria's Kaduna state, set out in a 2020 report by Abah Daniel of the International Fund for Agricultural Development (IFAD) Value Chain Development Programme (VCDP) in Abuja Nigeria.
- 'The European market potential for dried ginger', a recent report by the CBI Market Intelligence team.
- 'An analysis of women in ginger production as a means for achieving farm household food security in Kaduna state, Nigeria', a 2016 report by Favour Bala of Ahmadu Bello University, Zaria Nigeria.
- A market intelligence study on ginger in Nigeria by Synergos and Technoserve.

On corporate social responsibility (CSR) related topics, the following sources were consulted:

- MVO Nederland's CSR risk checker provides a CSR risk and risk management resource inventory for the ginger value chain from Nigeria.
- The World Economic Forum's Global Gender Gap Report 2020 on Nigeria, providing the current rankings for Nigeria on topics like the overall gender gap in the country, inclusion, wage equality, earned income and literacy, access to land, and the right to have a bank account and obtain access to credit. These are all relevant topics, given the role of women in ginger cultivation in Nigeria.
- The Rapid Gender Analysis (northern Nigeria) provides the current state of affairs, with an emphasis on COVID-19 and on gender issues in the northern part of Nigeria where ginger is mostly grown.

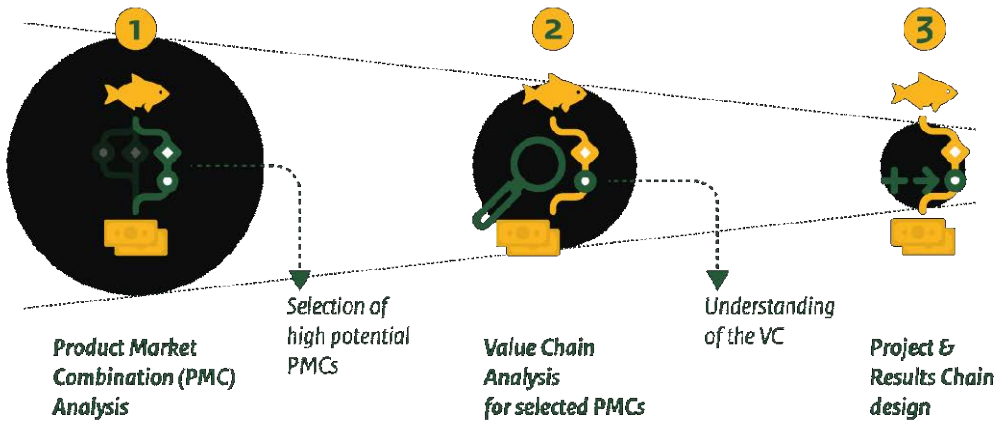
Tools and frameworks used during the reporting phase include:

- CBI-recommended visual representations and models for stakeholder assessment and VC mapping, as well as for VC obstacles and interventions.
- The Risk-Impact matrix recommended by CBI will be used to assess and report on the risk of the project interventions.
- Tables provided in the Terms of Reference (ToR) for providing input for the Results Chain formulation and the VCA figures.
- Preliminary draft of the results chain analysis.

1.2. Research Questions

The assignment consists of three subsequent elements, with research questions being defined for each element, with Figure 2 depicting a schematic description of the elements:

Figure 2: Schematic description of the elements



Element 1: Product Market Combination Analysis

In addressing Element 1, the consultants researched the following product categories: Fresh ginger; Dried ginger (Whole, splits, sliced or ground to powder); Processed ginger products; Essential oil (steam) and Oleoresin (solvent extraction); and Nutraceuticals. The main research questions with regard to this element were:

- What is the current situation in Nigeria for each category?
- What is the added value for each product category in terms of price per tonne? And what investment is needed for each product category?
- What is the market potential for each product category?

Element 2: Value chain analysis of the selected PMC entailed two parts:

Part 1: In-depth understanding of the SMEs and value chain supporters that would be involved in a CBI project. Based on discussions with CBI programme manager, dried ginger (splits) was selected as the focus of the VCA. The main research questions considered are:

- How many SMEs (<500 employees) are active in the ginger value chain?
- What are the types of companies (e.g. producers, processors, exporters) in this VC?
- What are the sizes of these companies; where are they located geographically and what is their ownership structure (percentage foreign ownership below 50)?
- How many people are employed in the ginger export VC in Nigeria?
- How many people are employed in SMEs export segment of the VC; and what are the prospects for employment growth in this VC?
- How many ginger SMEs can be included in the project, what is the motivation for including them and how can they be reached?
- What are the technical assistance needs of the SMEs?
- Who are the main service providers (e.g. input suppliers, logistics companies, consultancy firms, financial service providers) in this VC?
- Who are the main certification bodies, sector associations, trade associations in this VC?
- What are the key trade unions and labour unions in this VC?
- To what extent are the support organisations in this VC currently able to serve the needs of ginger SMEs?
- What are the technical assistance needs which must be met to close any gap between SMEs' needs and the services offered by support organisations in this VC?
- Is there motivation and willingness to cooperate in a CBI project in this VC?

Part 2: In-depth analysis of the obstacles and opportunities for SMEs to export and create sustainable and inclusive growth, and testing the assumption(s) made for each obstacle or opportunity. The main research questions are:

The ginger sector is fragmented and has many actors (a sustainable sector can link to market, create added value).

- What needs to be done in the sector to professionalise the ginger sector and bring more benefits to Nigeria?
- What is a sustainable sector according to key stakeholders?
- How can a sustainable sector be set up?

Exporters are largely unable to meet EU market requirements. (Can we set up a service delivery business model of the associations supporting exporting SMEs?)

- Is there a private-sector partner who can support export, production?
- Is there willingness of private sector (e.g. service providers) to deliver services like mechanisation?
- Can we set up a service delivery business model of the associations supporting exporting SMEs? What services can the associations offer?
- How can we link NEPC and the association be strengthened?
- Is there a private sector partner who can support producers/SMEs to grow quality ginger/oleoresins or essential oil?

Added value (added value can be created for international and domestic markets).

- What value addition activities are feasible? Oil, oleoresins, products?
- Can Nigeria compete with major processing countries (i.e. China)?
- What type of processing and/or products are achievable for Nigeria?
- What skills are needed to achieve this level?

- What is possible for organic ginger? What is market demand?

Quality (Nigerian ginger is among the best globally, with its aroma, pungency and high oil and oleoresin content as distinct features).

- Is quality proven globally?
- What branding needs to be done?
- Which stakeholder(s) can play a role?

Women and gender inclusion in the VC (there is potential for women to benefit from the ginger VC).

- What is the agency (access to skills, finance, leadership) for women in the ginger sector?

Lack of traceability limits growth to EU (digitisation can improve quality and attractiveness of the sector).

- What systems would be possible for Nigerian SMEs to tap into showing full traceability from farm to fork?
- What is the (future) role of:
  - uploading certifications in the system (What type of systems?)
  - batches (lots)
  - digitisation in agriculture
  - the use of drones
  - farming data systems (keep overview of growth stages, volumes)
- How can the sector be made for more attractive for youth?

Ensuring sustainable and inclusive growth (CBI does not merely aim to contribute to export growth but aims to ensure that growth is sustainable and inclusive)

- What are the social risks (e.g. labour conditions, child labour, forced & compulsory labour, health & safety, discrimination, freedom of association and right to collective bargaining, remuneration)?
- What are the environmental risks (e.g. water scarcity, pollution, waste)?
- What are the most salient CSR risks and why?
- What are the root causes CSR risks? What are possible solutions or interventions to address and mitigate these risks in the VC?
- What are CSR opportunities (e.g. sustainable production, inclusion of women and youth)?
- Which actors are dealing with which risks and opportunities?
- What are their goals and interventions?

Element 3: Project results chain development and validation
This involves two main activities:

- Updating the draft Results Chain already developed by the CBI programme manager. Input will be provided to the CBI programme manager for the completion of the Results Chain. The goal is to enable a good description of how activities will lead to outputs, outcomes and impact.
- Stakeholder validation of the Results Chain and the VCA research findings.

Guiding research questions include:

- Are there other activities, outputs, outcomes and impacts not indicated in the Results Chain? If so, which ones?
- Are the causality/attribution descriptions indicated in the Results Chain accurate? Are there any remaining links not yet elaborated? If so, which ones?
- Are the predefined assumptions and associated reasoning made for the ginger VC in Nigeria accurate? If not, which ones need correction?
- Are there any results in the VCA draft report that are inaccurate? If so, which ones? If so, what would be the correct information?
- Are there answers to the questions (or information gaps) in Element 2 that are inaccurate or require to be further nuanced? If so, which ones? And what would be the correct information?

1.3. Field Research (Interviews and Validation Workshop)

The field research phase was used to provide answers to all three elements, especially Element 3. Information during the field research was mainly gathered in online interviews with key stakeholders, with several

stakeholders providing additional written responses to questions. About 30 stakeholders were interviewed in Nigeria and the EU. See Annex 1: List of Interviewees.

1.4. Site Visit

A SureChain consultant in Nigeria visited the ginger processing factories of Belphins Nigeria Limited in Kaduna state[1] and Green Sahara in Plateau state.[2] In addition, the Kubacha (ginger) market in Kaduna state was visited.

1.5. Validation Workshop

The preliminary conclusions and recommendations of the draft VCA report were validated with key stakeholders in Nigeria and the EU in November 2020, in an online workshop which was organised with diverse actors and stakeholders in Nigeria and Europe. Around 25 participants were present in the validation workshop covering the entire ginger value chain. See Annex 2 for list of participants and main conclusions at the validation workshop.

1.6. Reporting

Based on the findings of both desk and field work, the team delivered a draft VCA report (according to the structure described in the ToR). On the basis of the draft VCA report, the consultants worked with the CBI programme manager to further develop the project's Results Chain. This final report was prepared and delivered based on the outcomes of desk study, interviews, field visits, the validation workshop and feedback from the CBI team.

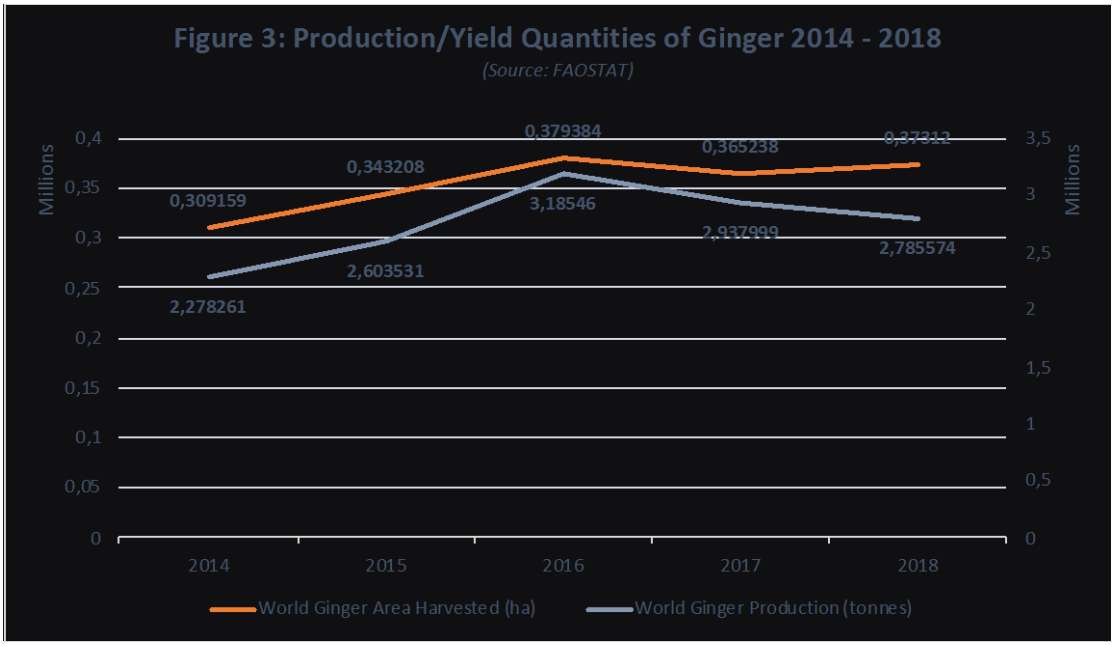
CHAPTER 2. PRODUCT MARKET COMBINATION (PMC) ANALYSIS

This chapter presents the findings of scoping information regarding the main ginger products, namely fresh ginger, processed ginger, oleoresins & essential oils and nutraceuticals. Based on the PMC analysis, CBI decided to focus the value chain analysis (VCA) on dried split ginger, which is further elaborated in Chapter 3.

2.1 Production and Export of Ginger

2.1.1 Global Production and Trade of Ginger

According to FAOSAT, as of 2018, the global production of ginger was around 2.8 million tonnes, with an average yield of 7.5 tonnes/ha. Figure 3 below shows a production peak in 2016 of around 3.2 million tonnes, but a decline in the production trend since then (i.e. 2017-2018). There are no clear explanations from sector experts regarding the current declining trend. Most believe that the production trend will stabilise over the next few years; however, this position is untenable given the expected adverse impact of the COVID-19 pandemic.



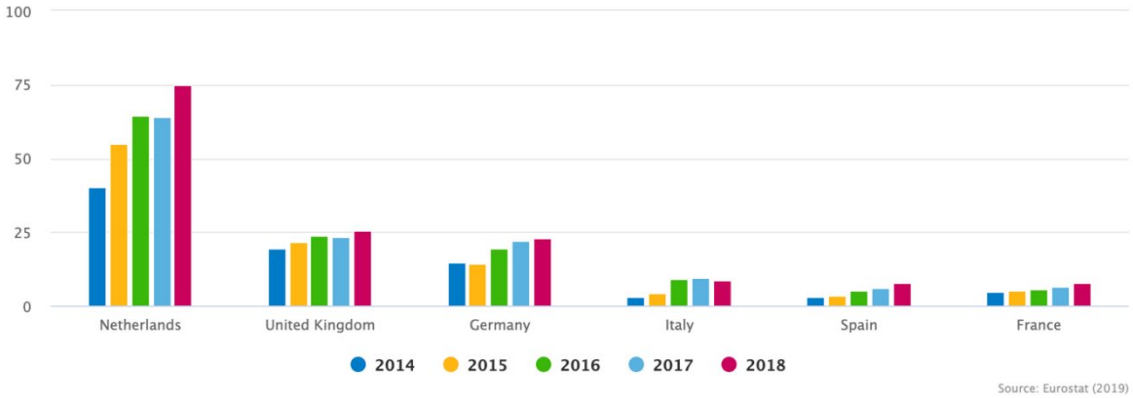
According to FAOSTAT, based on estimated global production shares, India (35%), China (18%) and Nigeria (11.5%) are the top three ginger producing countries in the world. In terms of regional production shares, Asia (84%) and Africa (15.2%) dominate global ginger production. Data from OEC shows that between 2017 and 2018 global export of ginger grew by 11.5 per cent, from USD 845 million to USD 942 million. Trade in ginger represent 0.0051% of total world trade. In terms of export, the top ginger exporters in the world in 2018 were China (USD 525 million or 55%), Thailand (USD 83.8 million or 8.9%), Netherlands (USD 72.8 million or 7.7%), Peru (USD 46.6 million or 4.95%), and Nigeria (USD 37.4 million or 3.98%). The top ginger importers in the world in 2018 were the United States (USD 114 million or 12.1%), Pakistan (USD 107 million or 11.3%), the Netherlands (USD 88.7 million or 9.41%), Japan (USD 79.2 million or 8.41%), and Germany (USD 55.7 million or 5.91%). [3]

2.1.2 EU Export and Import of Ginger

According to CBI EU market research, the top-five interesting markets for dried ginger are the Netherlands, the United Kingdom, Germany, Italy and Spain. As the most important EU trade hub for spices, the Netherlands takes the top position. The UK has one of the largest groups of Asians in diaspora who consume a lot of ginger. Overall, the popularity of ginger in EU is increasing due to ginger being considered a key ingredient in the food, health and lifestyle choices of EU consumers. CBI research also shows that in 2018, more than 70 per cent of the total EU imports were sourced directly from developing countries. In 2018, EU direct imports of dried ginger from developing countries reached 127 thousand tonnes. Since 2014, the import volume has increased

by 12 per cent annually. In that same period, the (direct) import value increased by 2.6 per cent annually, reaching EUR 160 million in 2018.[4]

Figure 4: Leading EU importers of dried ginger (x 1000 tonnes)

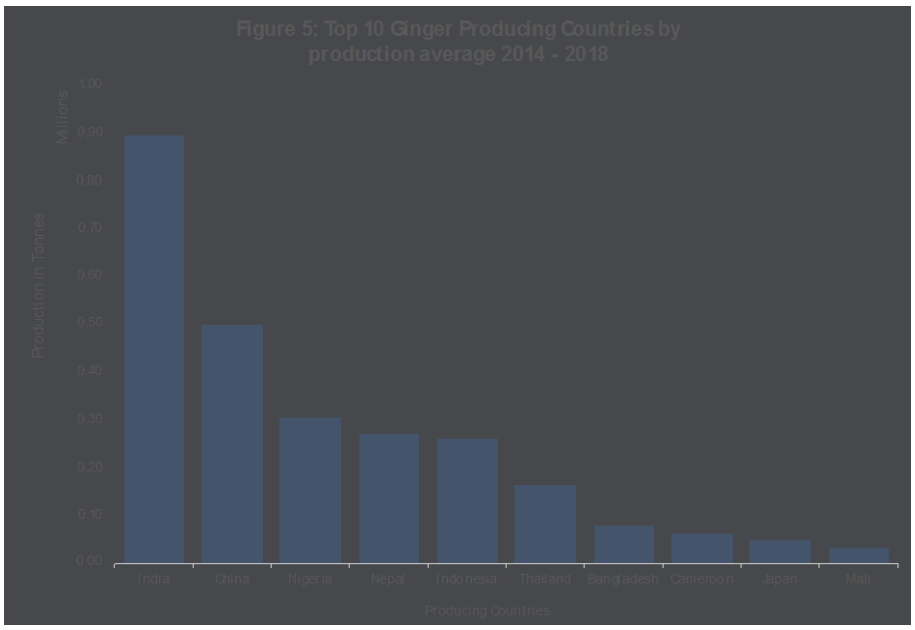


2.1.3 EU Market and Consumer Demand

As noted earlier, the EU is an important consumer market for countries exporting dried ginger. According to EU ginger market research conducted by CBI, EU demand is expected to grow in the coming years as global consumption of ginger is forecast to continue an increasing trend over the next three to five years. During the winter periods, EU consumer demand for ginger peak, as most consumers purchase ginger mainly to use as relief for symptoms of a sore throat or flu. In general, diversity in consumer health, lifestyle and food choices is driving the demand for ginger in the EU.[5]

2.2 Nigerian Ginger Production

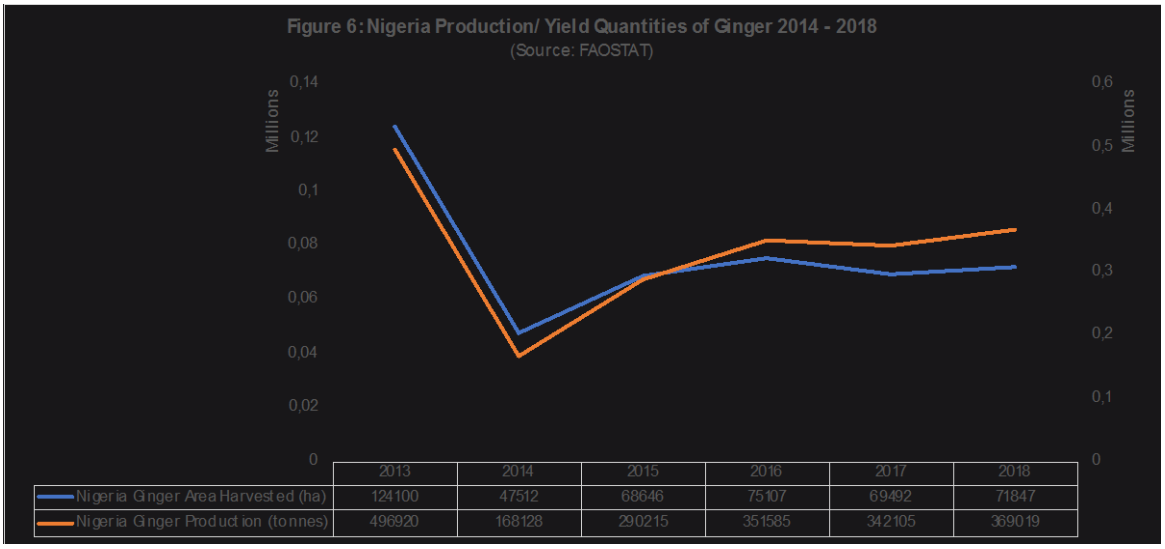
According to FAOSTAT, Nigeria is the third-largest producer of ginger in the world, with a production average of more than 300,000 tonnes during the five-year period 2014-2018. Its global market share is about 11 per cent, trailing only India (35%) and China (18%).



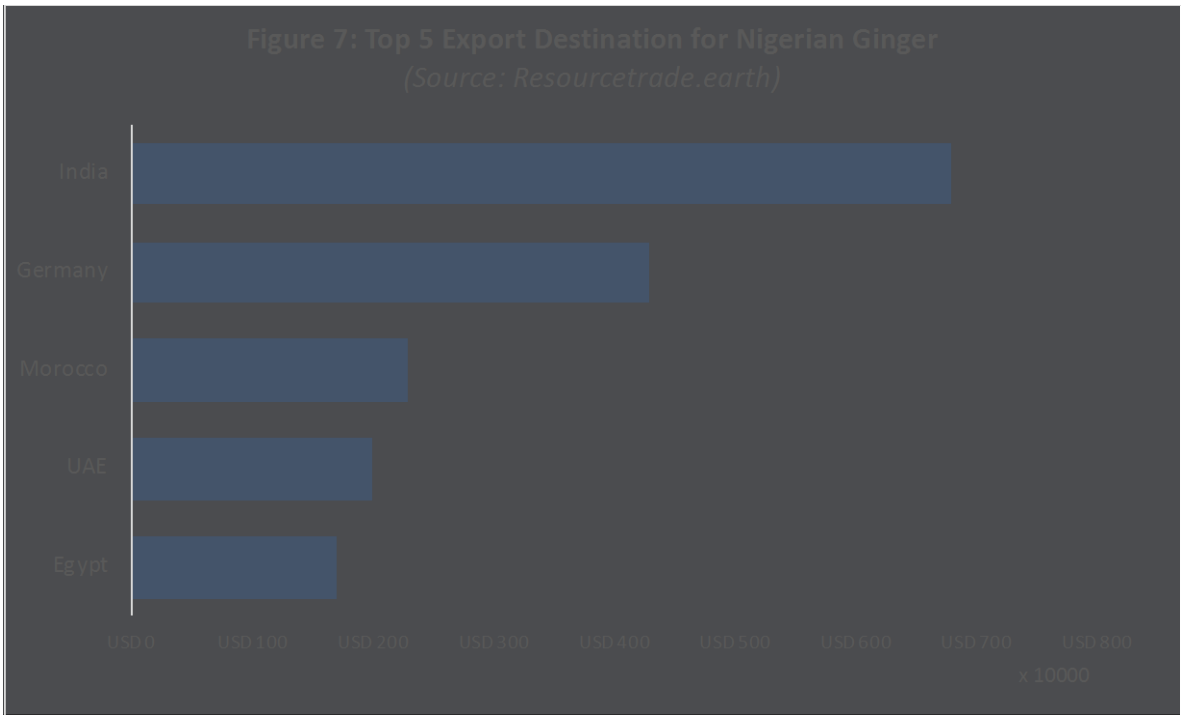
Nigerian ginger is among the best in the world, with its aroma, pungency and high oil and oleoresin content as distinct features.[6] Ginger production in Nigeria started in 1927.[7] It is predominantly grown in the northern and middle belt region in Nigeria. Kaduna state is the largest producer of ginger in Nigeria. Other ginger-producing states include Nasarawa, Niger, Gombe, Bauchi, Plateau and Benue. Two major varieties of ginger are grown in Kaduna state, namely yellow ginger (which is more widely grown in Kaduna state), locally known as *Tafin Giwa*, and black ginger, locally known as *Yatsun Biri*. According to sector experts in Nigeria, yellow ginger is highly

preferred by the market and it has an expected higher yield per hectare (i.e. about 15 tonnes/ha) than black ginger (11 tonnes/ha).[8]

Nigeria saw a steady growth in production in 2014-2018 (after a sharp decline in 2014). According to data provided by FAOSTAT, Nigeria recorded a more than 55% increase between 2014 (168,000 tonnes) and 2018 (369,000 tonnes), although this was still lower than its production in 2013. In 2019, Nigeria's ginger gross production was valued at USD 246.06 million, placing it in fourth position behind Japan, (in third place with ginger gross production of USD 366.69 million and Indonesia in second place with a gross of USD 204.05 million). The top spot is held by China, with a 4.5 per cent increase from the previous year (grossing USD 1,102.39 million in 2019). Nigeria's gross ginger production figures reinforce the importance of this sector to the Nigerian economy and explain why ginger is regarded as one of the top (non-oil) export commodities for the country.



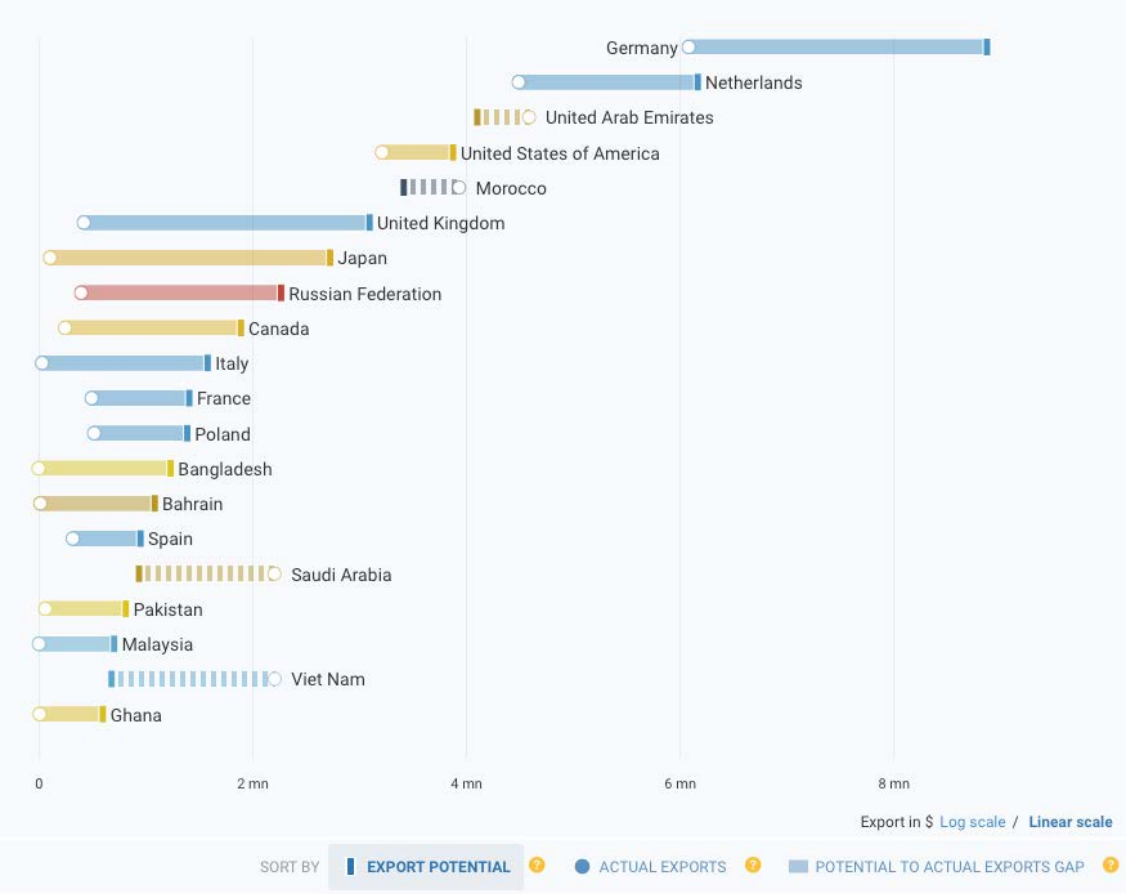
Data from the Global Resource Trade shows that the top-five export destinations for Nigerian ginger are India, Germany, Morocco, the United Arab Emirates (UAE) and Egypt, with a combined total value of USD 23 million in 2018.[9]



2.3 Nigerian Ginger Exports

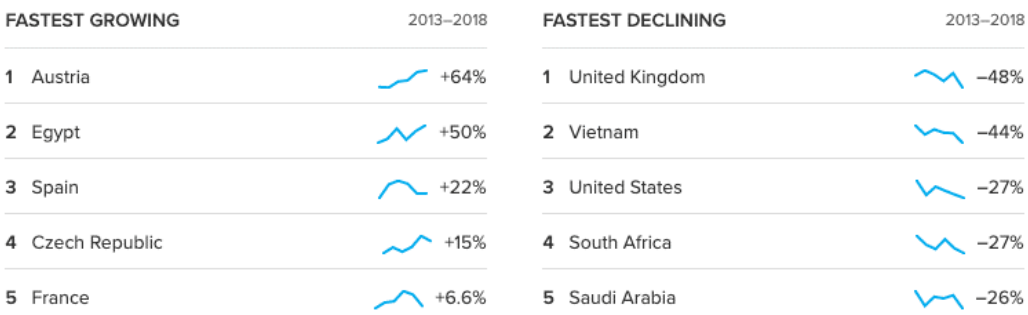
In general, over the past five years, Nigeria's ginger exports have fluctuated in price as well as in value. While the quantity of exports shows an increasing trend, the export value has decreased somewhat. This was mostly due to price fluctuations. According to the International Trade Centre's export potential assessment tool, the potential of Nigerian ginger to the EU/EFTA/UK market is valued at USD 29.9 million, and at USD 70 million when looking at all possible export markets. The percentage of unused potential lies between 63 per cent (for the BRICS+11) and 79 per cent (for the EU/EFTA), which is still quite significant.[10] According to ITC data, the Netherlands, Germany and the UAE are the markets with the greatest export potential for Nigerian ginger. The figure below shows that Germany has the largest absolute difference between potential and actual exports in value terms, with some significant space left to realise additional exports worth USD 2.7 million. To take advantage of the export potential for the Netherlands and Germany, Nigeria needs to improve on food safety and quality standards of its ginger products.

Figure 8: Export potential for Nigerian ginger *(Source: ITC)*



Over the five-year period (i.e. 2013-2018), the top three fastest growing importers of Nigerian ginger were Austria (+64%), Egypt (+50%) and Spain (+22%). During the same period, the importers of ginger from Nigeria seeing the quickest decline in imports were the UK (−48%), Vietnam (−44%) and the USA (−22%). Although it is unclear why ginger imports by the UK dropped so significantly, this may be connected to the fact that during this period there were several RASFF portal notifications of salmonella presence in ginger slices exported from Nigeria to some EU countries (e.g. the Netherlands) via the UK.

Figure 9: Fastest Growing and Declining Market Destinations for Nigerian Ginger
(Source: Resourcetrade.earth)



Market trends: A general trend is the increasing popularity of healthy and cosmopolitan lifestyle dishes, drinks, snacks and food supplements in which ginger is a key ingredient. A specific trend in the EU from which Nigeria can benefit especially is the fact that European demand peaks in wintertime, when supply is low and prices are high. As a country with year-round production, Nigeria is able to offer good quality supply. Growing awareness and government policies to reduce impact on climate change can also be beneficial to Nigeria. Of the world's leading producers, Nigeria is located closest to the EU, which means less transport is required. A trend that might pose a threat for Nigerian ginger is the growing concern among consumers regarding food safety and sustainability. Nigerian producers and processors are lagging behind in adapting to the required standards.

Comparative and competitive advantage:

- Comparative advantage: Nigeria being one of the world's largest producers of ginger certainly gives advantages in the market. In terms of available land, quantity of production and size of the labour force, there is definitely an advantageous position. Yet, the extent to which individual exporters benefit from this fact, is questionable. The sector is fragmented, not well organised and relies on ancient, low-tech methods. In conclusion, Nigeria might have a comparative advantage towards other African exporting countries, but not towards the leading exporters such as China, India, Thailand and Brazil.
- Competitive advantage: Nigeria has shown significant improvements in its business climate, of which recent rankings in the '*World Bank Doing Business'* reports testify.[11] Nevertheless, the business climate in Nigeria is far from facilitating, and in no way gives its exporters a competitive advantage.[12] Nigeria's key strengths are the intrinsic product quality, the relatively short distance to market and the low cost level. In order to fully benefit from these advantages, Nigeria has to address its significant challenges on other key areas such as access to planting material, extension services, mechanisation, quality management and storage facilities.

European requirements: Requirements for ginger on the European market can be broken down in two categories:

- Food safety requirements (traceability, hygiene and control): of which HACCP (for processed ginger) and GLOBALG.A.P. (for fresh ginger) are obligatory, while some are optional (demanded by specific European buyers). In addition, ginger has to meet EU standards on maximum levels of contamination (mycotoxins, salmonella etc.), pesticide residue levels (MRLs), detergent residue, additives, etc.
- Non-obligatory requirements: demanded by specific buyers, such as BRC, Rainforest Alliance, organic and fair-trade certification.

Some Nigerian exporters already are able to comply, yet the majority are still not able to. Most of Nigeria's exports go to less-demanding markets in Asia. In conclusion, Nigeria's current capacity to meet these requirements is low.

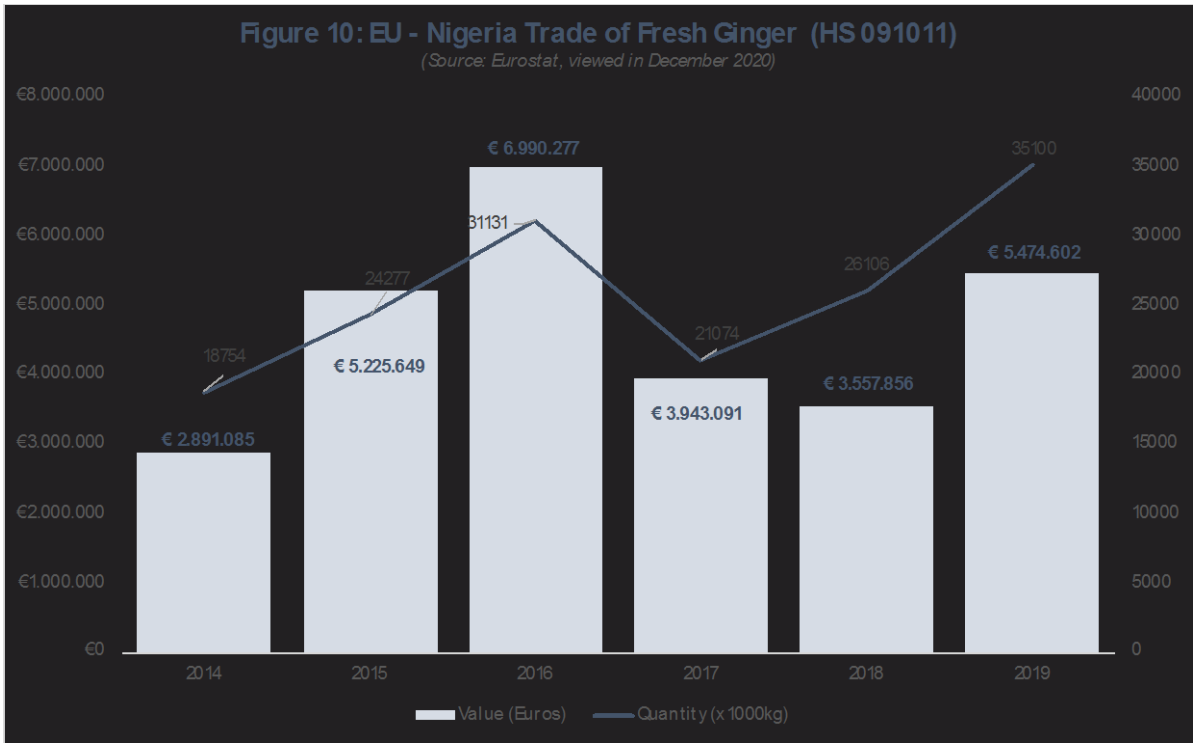
SME involvement: Ginger processing and export is a true SME business. Basically, all SMEs are locally owned. The total number of SMEs with fewer than 500 employees involved in Nigeria's ginger value chain is largely unknown. Figures obtained from different sources during the field mission varied widely. Nevertheless, during

one of the interviews, NEPC estimated that over 5,000 SMEs with fewer than 500 employees are active in the ginger value chain. Nigeria's development towards becoming a non-oil economy resulted in an increased interest from larger businesses for non-oil export value chains like ginger, especially after sharp price increases occurred in the past few years. Their entrance was beneficial for farmers but had quite disrupting effects for small exporters.

2.4 Ginger Product Segments

2.4.1 Fresh Ginger

'Fresh ginger' is classified as ginger that is neither crushed nor ground (HS 091011). According to EUROSTAT data, in 2019 the EU imported around 35,000 tonnes of Nigerian fresh ginger, valued at EUR 5.4 million. As shown in the graph below, although the export figures have fluctuated over the past five years, between 2017 and 2019 there has been an increase in both the quantity and value of fresh Nigerian ginger imported to the EU. However, the value in 2019 remained within the same threshold as in 2015 and was significantly lower than in 2016. All in all, EU imports of ginger from Nigeria appear to be quite low overall, at about 10 per cent of Nigeria's total production. This could confirm the notion held by sector experts that due to poor food safety and quality standards, Nigeria finds it challenging to export fresh ginger to the EU, as compared to exporting to Asia and its African neighbours, where regulations may be lax.

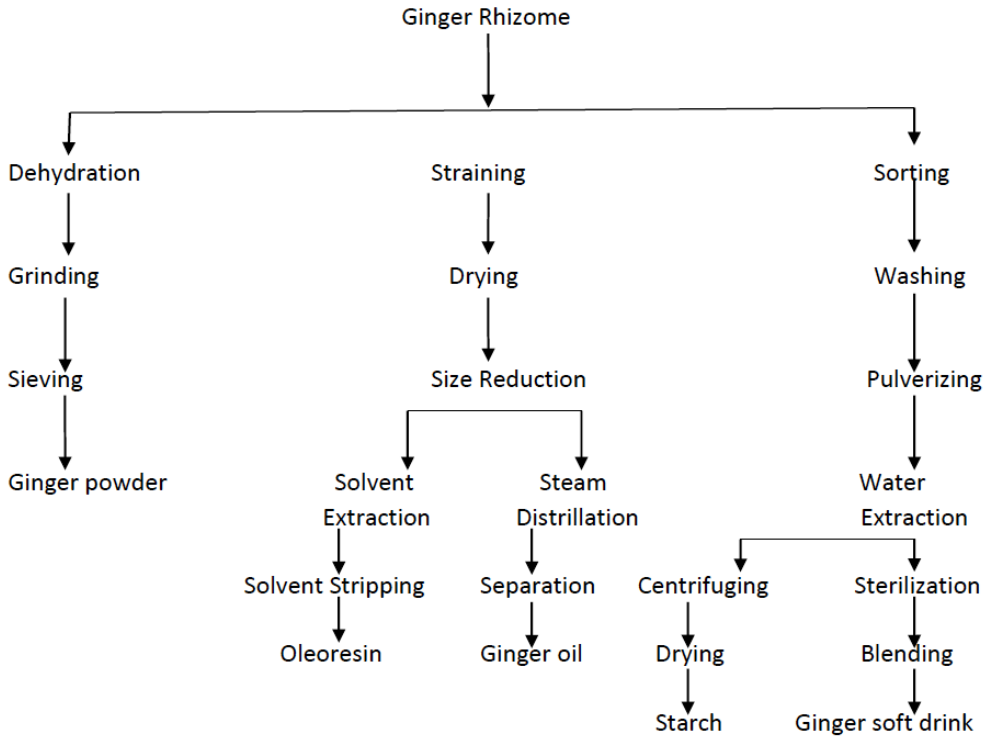


Compared to other ginger-producing countries, Nigeria comes in thirtieth place in the Ginger Producer Price Index.[13] Since 2011, Nigeria's Ginger Producer Price Index has fallen by 3.8 per cent every year, creating volatility in the ginger trade.[14] Sector experts in Nigeria stress that the price of ginger varies throughout the year. The price of fresh ginger is high during its off-seasons – April to July and October to November – and is low during the full harvest season from December to February. Seasonal variation in prices indicates that if farmer hold on to their products for three months or so, they will receive much higher prices during the off-season. Prices in early June 2020 fluctuated greatly, ranging from USD 1.64/kg to USD 4.1/kg in the span of a week. The volatility was potentially aggravated by the scarcity of fresh ginger as the planting season had already begun.[15] Investment need for fresh ginger is in the area of post-harvest handling (prior to export). Currently, due to the high water content of fresh ginger, international trade is limited compared to trade in dried ginger. The cost of transportation is high, and the product has low resistance to spoilage (because of its high perishability) due to effect of heat, humidity and poor handling.

2.4.2 Processed Ginger

Examples of processed ginger products include ginger paste, ginger powder, grated ginger, ginger shreds, canned products (ginger pulp in jars or tins), ginger beer, spice mixes, ginger teas, ginger honey, ginger pickle, ginger oil, ginger oleoresin, ginger candy, ginger soft drinks and juice, and ginger chutney. Below is a flow chart for a few processed ginger products.

Figure 11: Generic steps for some processed ginger products
(Source: USAID NEXTT/ROMIS, 2017)



Processed ginger products are usually traded in domestic markets, as most EU importers prefer to buy raw ginger from Nigeria and process this elsewhere. Much of the value addition of Nigerian ginger occurs in Asia (mainly China). Any market expansion for processed ginger would be to regional markets, unless an intervention is made. To add value, investment in this segment would be on improving food safety and product quality assurance. There have been a number of cases (reported on the EU RASFF Portal) of salmonella, *Bacillus cereus* and aflatoxin presence in processed ginger powder involving raw materials from Nigeria.

Standards Organisation of Nigeria (SON) and NAFDAC are two key institutions to work with in enhancing the standard of processed ginger products traded locally or regionally. Generally, certifications needed for exporting processed ginger from Nigeria include:

- Export Certificate from the Nigerian Export Promotion Council: attestation that the product fulfils all the necessary requirements for export to a particular market destination.
- Organic ginger certification from NICERT: an organic conformity assessment certification on behalf of ECOCERT.
- Phyto-sanitary Certificate from the Nigeria Agricultural Quarantine Service (NAQS): a certificate showing that a quarantine inspection has been conducted by accredited NAQS officials and attesting that the processed ginger product is pest-free.
- Others include certification from SON (for product quality assurance) and Global GAP (for Good Agricultural Practice certification).

A 2018 industry report shows a steady growth for the food & drinks and confectionery industries. [16] New partnerships between local and international companies in Nigeria form an important trend in these industries, potentially giving rise to an expanded market for some processed ginger products.

2.4.3 Essential Oils and Oleoresins

Spice oleoresins are widely applied in several industries due to their strong flavour and aroma. In the food processing industry, ginger oleoresins are mainly applied as a flavouring agent. Oleoresins and essential oils are preferred because of their microbiological advantages, uniformity in flavour and pungency, and ease of storage and transport. The table below shows the types of oleoresins and their applications. [17]

Table 1: Types of oleoresins and their applications.

Type of Oleoresin	Description	Source	Applications
Ginger Oleoresin	Ginger oleoresin is extracted from powdered dry ginger using suitable organic solvents like alcohol, acetone, etc. It is dark-brown in colour and a viscous liquid. Generally, a yield of 3.9-9.3% with an average of 6.5% in dry weight of ginger is obtained	India, China, Nigeria, Sierra Leone, Indonesia, Bangladesh, Australia, Fiji, Jamaica and Nepal. Of these, India and China are the dominant suppliers to the world market	Oleoresin is employed for flavouring all kinds of products and confections and finds limited use in perfumery.
Black Pepper Oleoresin	Oleoresin of black pepper is 2-5%. Black pepper oleoresin is a thick, green, viscous liquid, difficult to mix uniformly and not easy to pour	India, Brazil, Malaysia, Indonesia, Vietnam and Thailand	Flavouring, masking, deodorising, pungency, colorant
Capsicum (Chilli) Oleoresin	Prepared by extracting the crushed capsicum (*Capsicum annuum L.*) with volatile solvents. Typical yield of oleoresin depends on the solvent used and ranges from 11.5-16.5%. It is a dark-red viscous liquid	India, Spain, Portugal, Central Europe, southern Africa	Meat canning, beverages, pharmaceutical, perfumery, confectionery, tobacco, sauces, soup powders, curry powders, noodles
Cinnamon Bark Oleoresin	Prepared by extracting cinnamon bark with organic solvents; the yield using ethanol is 10-12% and using benzene is 2.5-4.3%. Recently 1,1,2-trichloro-1,2,2-trifluroethane has also been used. It is a reddish brown powder	North America	Cinnamon oleoresin is used in flavouring, cake and similar mixes, pickles, prepared meats, convenience foods and related products. Leaf oil is used as a flavouring agent for seasonings and savoury snacks to a small extent
Clove Bud Oleoresin	Clove oleoresin is prepared by solvent extraction of clove bud, yielding 18-22% oleoresin (90-92% volatile components) using benzene, and 22-31% using alcohol. Ground clove is extracted by suitable solvent(s) then evaporated or distilled to obtain oleoresin	Indonesia, Madagascar, Tanzania, Sri Lanka	In the food industry, cloves are often used in the form of ground extracted essential oils or oleoresin, used in a small amount because of their intense flavour

The global oleoresin market size was estimated at USD 1.22 billion in 2018 and is projected to reach around USD 1.94 billion by 2026.[18] In terms of market demand, there is an increasing international demand for ginger oleoresins, especially for the production of alcoholic beverages, ginger ale and gingerbread. Ginger oleoresin is also in huge demand in the Ayurvedic, nutraceutical and pharmaceutical industries. Nigeria could tap into this market demand; however, the bulk of the harvested ginger (>90%) is exported dried, while the country spends foreign currency in importing processed-ginger-products like essential oils and oleoresin. India takes the world's top spot as the largest supplier of ginger oleoresins. Several reports indicate that Nigerian ginger has superior quality that is very much suitable for both the production of ginger oleoresins and essential oil. Due to the lack of ginger processing facilities within the country, most farmers sell their produce in fresh or locally dried form at low prices. Processing facilities within the country might allow Nigerian ginger to compete favourably in the world market. According to a study for the USAID NEXTT Project, investment in more oleoresin plants in Nigeria would be of added value, as the projected profit on investment appears to be significant (almost double) after five years. According to the study, the total cost for establishing an oleoresin plant is estimated at NGN 220,000,000 (EUR 477,000) including an initial working capital of NGN 100,000,000 (EUR 217,000).[19]

During the field study of this project, a visit was made to Belphins Nigeria Limited based in Kaduna state, one of the companies with a functional ginger oleoresin plant. Below are some images of the location.

Figure 12: Images from visit to the Belphins factory based in Kaduna state

Photo: Belphins ginger processing factory in Kaduna

Photo: Ginger Juice manufactured by Belphins, Kaduna

Photo: Oleoresins plant at Belphins, Kaduna

Photo: Ginger Juice processing unit at Belphins, Kaduna

2.4.4 Nutraceuticals

Like in most parts of the world, the nutraceutical market in Africa is a lifestyle-driven market catalysed by increasing concerns about physical well-being and leading a healthy lifestyle. The rising incidence of chronic diseases and allergies is prompting consumers to incorporate nutraceuticals in their dietary intake, because they are perceived to contain natural, safer and healthier ingredients, compared to products that are chemically derived. According to industry reports, the Africa nutraceuticals market value is estimated to be over USD 430 billion by 2025 and is projected to register a good compound annual growth rate (CAGR) of 6.05% during the forecast period 2020-2025. Mordor Intelligence reports show South Africa leading the nutraceuticals market, followed closely by Egypt and Nigeria. Among others, some of the major players in the Africa nutraceuticals market are Arla Foods, Nestle, Herbalife International of America Inc., Amway and Kellogg Co..[20] Furthermore, the Africa pet nutraceuticals market is valued at over USD 291.2 million, with the value expected to have risen tremendously by 2020. Nigeria, Namibia, Morocco and Egypt are said to be markets that will drive the sales of pet nutraceuticals.[21]

Ginger is well known for its medicinal properties. According to multiple sources, ginger can help with alleviating cough, flu, rheumatoid arthritis and travel sickness. It is useful in aiding digestion and is said to be an inflammation fighter. It is also said to lower cholesterol level and blood pressure level and provides better blood circulation. It is widely used in India's Ayurvedic traditional medicine. In Nigeria, ginger is considered one of the most important ingredients in herbal medicine. Practitioners of herbal medicine use ginger as remedy for treating multiple diseases.[22]

In Nigeria, the nutraceuticals market includes the herbal, medicinal and aromatic plants (HMAP) industry. This industry is small in terms of market value but quite active, particularly in indigenous, poor and rural communities. It is an important livelihood for thousands, especially in the south-western and south-eastern parts of Nigeria. Sector experts indicate that it is difficult to reasonably value the market for HMAP products in Nigeria today. They note that current demand for HMAP products is far in excess of the supply, which automatically triggers a rise in product price. This rise in price in turn triggers reckless manufacturing of unsafe HMAP products. However, owing to Nigeria's abundant natural base ingredients for HMAPs such as ginger, sector experts believe that the market has the potential to expand, but only regionally, thereby ensuring additional income for local SMEs in the segment. Standards and regulations are still not fully developed and operational for the Nigerian HMAP market. Which means that products cannot enter the international export market. In Nigeria, the HMAP market is subject to standards and regulations set by the National Agency for Food and Drugs Administration and Control (NAFDAC).

Table 2: Summary of ginger product types, potential added value and market.

Ginger Product Types	Current Situation	Added Value	Potential Market
Fresh (0910.1100: ginger, neither crushed nor ground)	Nigeria is the fourth largest producer of ginger in the world.	Prices fluctuated widely in June 2020 between USD 1.64/kg and USD 4.10/kg.	For both fresh ginger and dried ginger, there is significant export market potential to the Netherlands, Germany and the UAE; the main challenge would be complying with strict food safety and quality standards for exporting to Netherlands and Germany in any case (there have been several recent cases of aflatoxin and salmonella in ginger imported from Nigeria).
Dried (0910.1200: ginger, crushed or ground)	Nigeria is the world's third largest exporter of dried ginger. This is mostly traded in international markets as dry-split, dried whole or sliced.	As of early June 2020, the price of dried split ginger was around USD 1.85/kg FOB, with export prices at approximately USD 1.82/kg. FAQ grade dried split ginger is priced at approximately USD 1.45/kg while the more premium ASTA (American Standard) ginger is priced between USD 1.85/kg and USD 2.00/kg. To add value, investment could be made in acquiring modern splitting, drying and cleaning machines (processors).	
Processed	Paste freezing as cubes or as grated fibre Canned products (as pulp in jars or cans, juice, ginger beer, spice mixes, teas, etc.	Value addition in improving food safety and product quality assurance together with Standards Organisation of Nigeria (SON) and NAFDAC.	These products are usually traded in domestic markets, with strong potential to expand to regional markets. Industry reports show a steady growth for the food & drinks and confectionery industries. Partnerships between local and international companies in Nigeria are an important trend in this industry, giving rise to new and expanded market.

Ginger Product Types	Current Situation	Added Value	Potential Market
Essential oil (steam) and oleoresin (solvent extraction)	Spice oleoresins find wide application in a number of industries for their strong flavour and aroma, and mainly as a flavouring agent in the food processing industry. The oleoresins and spice oils are preferred because of their microbiological advantages, uniformity in flavour and pungency, ease of storage and transport.	A recent study indicated that only one company in Nigeria is producing oleoresins, doing so at irregular intervals (more information on this company will be sought). Investment in oleoresins plants would provide added value, as projected return on investment appear significant after five years. Total cost for establishing an oleoresin plant is estimated at NGN 220,000,000 (EUR 477,000) including initial working capital of NGN 100,000,000 (EUR 217,000).	Oleoresins have large domestic as well as export markets. The global market size is significant (around USD 450 million in 2015 and estimated at USD 1.7 billion by 2022). As stated earlier, this could be a potentially huge market for Nigerian ginger, given the right incentives and/or investments. The key challenge would be to comply with specifications on density, distillation, composition, etc. of EU buyers. Investment in improving food safety and quality would provide added value.
Nutraceuticals	Nigeria is one of the main African countries using ginger in nutraceuticals and in (herbal) traditional medicine. The Nigerian herbal, medicinal and aromatic plants (HMAP) industry, although small, has already been very active for years. Ginger is considered a herbal remedy for multiple diseases in this segment. An important source of livelihood for the poor in rural communities in Nigeria (particularly in the south-west & south-east).	At present, the specific market size and product price dynamics of this market are unknown (although most likely it would be possible to obtain some data in the near future). Nevertheless, there are indications that Nigeria's share in Africa's nutraceutical industry is significant (including for pet nutraceuticals). Standards and regulations are still not fully developed and operational for the Nigerian HMAP market. Investment in strengthening market regulations can be done together with NAFDAC.	Ginger based herbal remedies are mostly sold in the domestic markets. In some cases, such herbal products are sold in neighbouring countries such as Cameroon, Benin and Ghana. The potential for the international market is quite limited due to the unregulated nature of the products from this segment.

CHAPTER 3. VALUE CHAIN ANALYSIS OF NIGERIAN DRY GINGER

This chapter provides an in-depth analysis of the Nigerian dry ginger value chain. It presents an overview of the main stages in the value chain, the main actors and key CSR issues in the value chain.

3.1 Overview of Dried Split Ginger Value Chain

3.1.1 Production

In Nigeria, dried split ginger production is mainly for commercial purposes, as only about 6 per cent of ginger farmers produce for local consumption.

Production of split dried ginger in Nigeria usually is labour-intensive and consists of processes such as land preparation, planting, weeding and harvesting. There are two main varieties of ginger grown in Nigeria: *Tafin Giwa* and *Yatsun Biri*. According to the farmers, the *Tafin Giwa* variety has higher yields than *Yatsun Biri* and has a spicier flavour.

Although Nigerian ginger farmers have a good understanding of the different varieties and input requirements, they have poor knowledge of good agricultural practices (GAP) for ginger farming, and this often leads to inefficient use of agricultural inputs (mainly fertilisers). Fertilisers and ginger buds are the two main inputs, usually purchased from local agro-input dealers in Nigeria.

At about 0.5 tonnes/ha (FAOSTAT 2018), Nigerian ginger production is lower in yield compared to its peer producing countries; for example, China's ginger production yield is about 1.2 tonnes/ha (FAOSTAT 2018). Sector experts claim that the low yield of ginger is mainly due to the use of unimproved varieties, decline in soil fertility and poor knowledge and application of GAP practices. Most ginger farmers (about 80%) practise a mono cropping system, while about 20 per cent practise a mixed cropping system. Ginger is cultivated and harvested after 5 months if to be sold as fresh. Ginger meant to be sold as dry splits and for essential oil are harvested after 8-9 months of cultivation. The table below gives an indication of the ginger production calendar in Nigeria (based on the cultivation process in Kaduna state).

Table 3: Summary of ginger production calendar in Nigeria.

Jan Feb Mar	Mar Apr	May Jun	Jun Jul	Jul Aug	Sep Oct	Oct Nov	Oct Nov Dec
• Land Preparation	• Harrowing • Ridging	• Planting	• Fertiliser Application • Spraying	• Weeding	• Harvesting	• Cleaning	• Washing • Drying • Bagging

Sector experts indicate that the size of farms used in ginger cultivation is typically small and under one hectare. In Kaduna state, for example, the average plot size for cultivating ginger is 0.96 ha. Labour costs are considered high because ginger production and harvest is manual and very labour-intensive, leading to high production costs. The cost of tractor services is also high, which in Kaduna can range from USD 40-80 per hectare (i.e. around NGN 15,000 to NGN 30,000 per hectare). As a result , ginger farmers usually rely on low-cost migrant labour, mainly young boys from across the northern states and villages, who migrate in significant numbers during the harvest periods.

3.1.2 Processing

After harvesting, farmers process the ginger by rinsing or cleaning, splitting and drying the crop, before taking it to the market as dried split ginger (which generates higher prices than the fresh ginger). Processing techniques in Nigeria are still manual and rudimentary. In Nigeria, women mostly do the manual sorting, grading, cleaning, splitting, drying and peeling.

As mentioned earlier, ginger is still dried mechanically (i.e. sun drying), easily leading to microbial contamination or to the accumulation of impurities like sand, debris and stones, which diminishes its quality. In most Nigerian ginger-producing areas, ginger is typically dried on concrete floors where available. Otherwise it is dried along the roadsides or on roofs, and in many cases on the farm with just a plastic sack separating the ginger from the soil. The ginger is left out to dry for between two to three days before being packed in sacks for sale in the local markets or for storage. This practice is common among ginger farmers, so market agents have to sort and grade the ginger after buying, to remove impurities, before sending it to the commodity agents. In some cases, the agents still dry the ginger for a number of days if they find that the crop still has a high moisture content. For dried split ginger, the moisture content should be 10-12% (for it to be used in further processing), while uniform thickness of the split ginger makes drying quicker and effective.

There have been a number of cases reported on the EU RASFF Portal, of salmonella, aflatoxin and moulds presence in dried split ginger and ground ginger from Nigeria. Aflatoxins accumulate when products such as ginger are not dried properly and fungal infection occurs, which has limited Nigeria's yield and entrance into the international market.

This implies that investment in improving food safety and the quality of ginger would create added value. A prototype of a drying machine has been developed locally by the NRCRI, Umudike. Most Nigerian ginger farmers still do not have access to a splitting machine. Splitting is mainly done manually, with a knife. There is little added value processing done in Nigeria, which would potentially generate a higher and more stable price for producers and processors in the country. Especially the lack of sufficient infrastructure and modern processing facilities have made it difficult for Nigeria to meet stringent international quality specifications. To create added value, investment in acquiring modern splitting, drying and cleaning machines (processors) is necessary. Sector experts note that with the incorporation of drying machines, the processing time could be reduced from 4-10 days to 4-5 hours, while also significantly increasing the quality of ginger products. However, it comes with the burden of extra costs. Added value could also come from investing in cold storage facilities for dried ginger. Dried rhizomes, slices and splits normally should be stored in a cool environment (about 10-15°C). Studies have shown that when dried ginger is stored at room temperature (i.e. 23-26°C), it loses up to 20 per cent of its oleoresin (dry weight) and the content of gingerol is decreased.

During the field study for this project, a visit was made to Green Sahara, based in Plateau state, one of the SMEs involved in dried split ginger processing and exporting. Below are some images of the location.

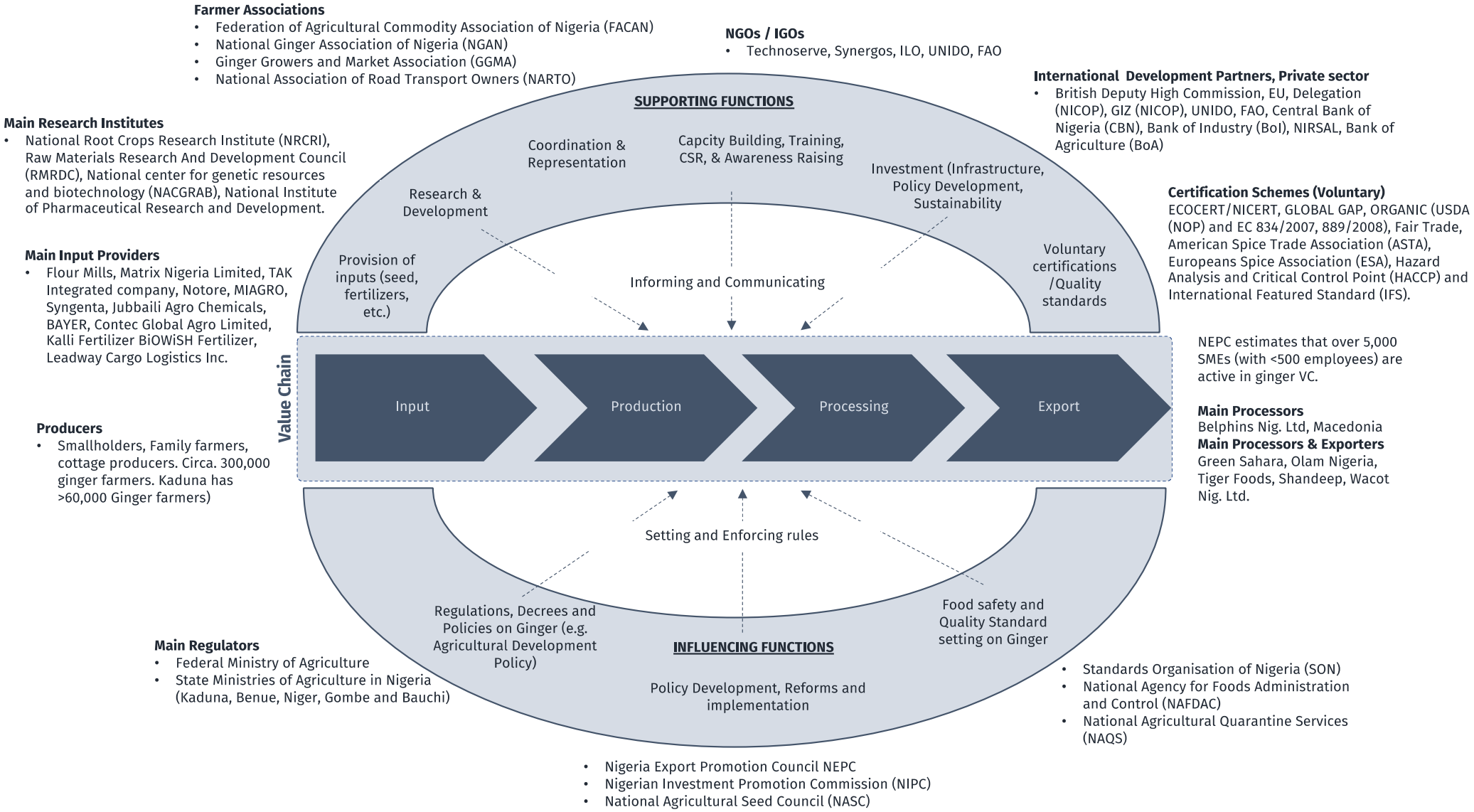
Figure 13: Images from the visit to Green Sahara, based in Plateau state

Photo: Green Sahara ginger processing factory in Plateau state

Photo: Ginger splitting machine at Green Sahara

Photo: Ginger dry splits packed for export, at Green Sahara

Figure 14: Overview of the ginger value chain in Nigeria

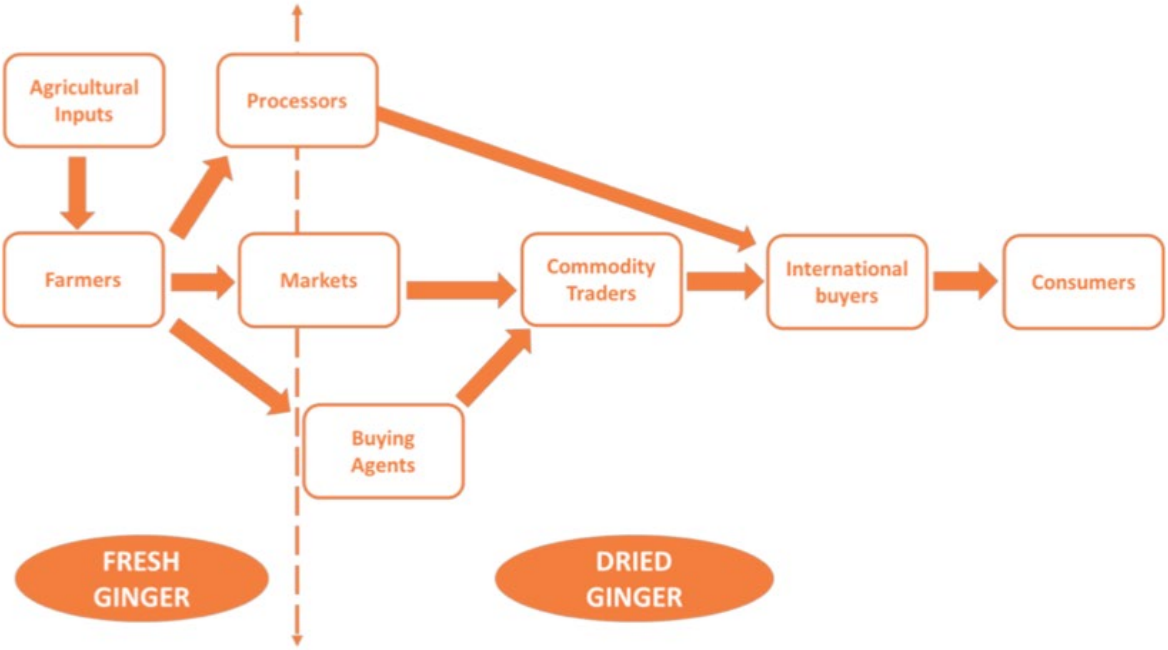


3.1.3 Market and Trade

Ginger demand (for both fresh and dried) is typically year-round. This is largely because of its multiple uses and areas of application. The demand for and trade in Nigerian ginger is steady and has a potential to grow should the quality and yield increase (amongst other market factors). Dried split ginger is produced and traded mainly for commodity and export markets (90-95% of Nigerian ginger is sold as dried splits).

According to research by Technoserve (2017), about 82 per cent of Nigerian ginger is purchased by commodity traders (meant for export), the remaining ginger is mainly bought and traded by processors and others (including cottage industry and contract sales). Their demand is only for dried split ginger. There are commodity buyers from various locations mostly representing corporate buyers and end-users across Nigeria. Smallholder ginger farmers are often uneducated and lack the information and confidence to deal with processing factories and exporters themselves, making them dependent on intermediaries like buying agents. According to field accounts, some other buyers come from neighbouring countries like Niger and Chad. The majority of the buying agents who purchase from the farmers in the markets represent commodity trading companies based in Lagos. The ginger is transported in trucks of different sizes to the various destinations and is a major source of income for the community. Based on information from exporters including Olam, the volume of ginger produced in the market is still below the level sought. Below is a simplified schematic illustration of the trade flow for the Nigerian dried ginger value chain.

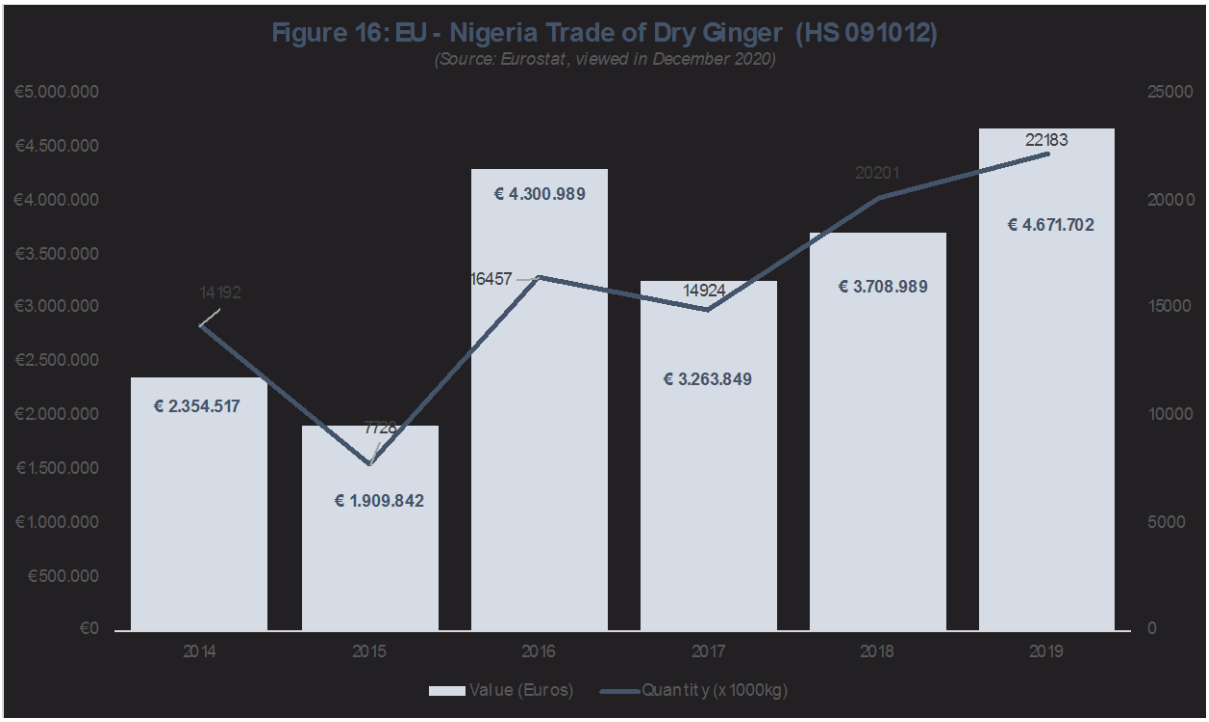
Figure 15: Typical trade flow for the Nigerian dried ginger value chain
(Source: Synergos, Technoserve, 2016)



3.1.4 Export

About 90 per cent of Nigerian ginger is exported as dry splits. It can be processed in industries to ginger powder, ginger oil and ginger oleoresin. In the dried ginger segment, Nigeria is the world's third largest exporter (after China and India). This segment holds the largest global market potential and is mostly traded in international markets as 'dry split', 'dried whole or sliced'. The top 10 importers of dried ginger are the USA, Japan, Pakistan, Germany, the United Kingdom, the Netherlands, Russia, Saudi Arabia, India and Malaysia.

Dried ginger is classified under the international *Harmonized Commodity Description and Coding System* as 'ginger, crushed or ground (HS 091012)'. According to data by EUROSTAT, in 2019 the EU imported around 22,000 tonnes of Nigerian dried ginger, valued at around EUR 4.6 million. As shown in the table below, there is an increasing trend for both the quantity and value of Nigerian dried ginger imported by the EU (although the value in 2019 remains within the same threshold as in 2016). Sector experts expect this increasing trend to continue as there will likely be continued government incentives to spur the export of Nigerian dried ginger to international markets. It is, however, unclear how the disruption caused by COVID-19 will affect this trend.



3.1.5 Price Dynamics

Domestic prices are largely determined by the export market. Prices are also affected by the farming season when the focus is put on the cultivation and supply is limited. Field accounts indicate that the prices for dried split ginger can range between NGN 16,000 to NGN 28,000 per tonne per 45 kg standard bag, (i.e. between USD 0.93/kg and USD 1.6/kg), depending on whether it is the peak season or one of the off-peak seasons. In Kaduna for example, the average price of dried ginger is about NGN 25,000 (USD 1.45/kg) per 45 kg standard bag during the off-peak period, and about NGN 12,000 (USD 0.69/kg) per 45 kg standard bag during the peak period. There is a significant price gap between different grades of Nigerian ginger. FAQ grade dried split ginger is priced at approximately USD 1.45/kg, while the more premium ASTA (American Standard) ginger is priced between USD 1.85/kg and USD 2.00/kg. The general rule of thumb is that the higher the quality of ginger maintained, the greater the premium you will receive in the market. As of early June, the price of dried split ginger was around USD 1.85/kg FOB, while export prices were at approximately USD 1.82/kg.

According to Nigerian ginger associations, the maximum price of Nigerian dried split ginger per tonne on the international market is much lower than that of Chinese and Indian dried split ginger. In comparison, Chinese dried split ginger trades as high as USD 7.00/kg, Indian as high as USD 6.00/kg and Nigerian as high as USD 3.50/kg. Sector experts indicate that this is due to the fact that Nigerian dried split ginger does not yet fully meet international quality standards and its exports contain dirt and impurities. According to research by Tridge (2020), Nigerian farmers receive the highest share in profits compared to traders, wholesalers and retailers in the ginger VC (as shown in the graph below). However, farmers are only able to earn their income after nine to twelve months as opposed to intermediaries who receive profits within a day or a week. The most viable pathway for farmers to increase their share of total profits will be to improve farm productivity and ensure that they are able to harvest medium to large rhizomes (higher grades).

Figure 16: Cost and profit structure of dried ginger
(Source: Tridge, 2020)

3.1.6 Certification and Quality

According to the CBI EU market study on ginger and other spices, certification can provide SMEs with a competitive edge, validating their compliance with CSR standards and dealing with sustainability issues. This is because sustainable sourcing of certified products is a major trend in the EU, with the UK, the Netherlands and Germany leading the way. CBI notes that for dried ginger, the main certifications are organic and Fairtrade. For organic certified ginger, the most interesting markets are Germany and Switzerland, since these countries are leading organic food markets in Europe. For Fairtrade-certified ginger, the most interesting market is the United Kingdom, since it is the number one country for Fairtrade products. However, ginger only represents under 5 per cent of all spices and herbs certified by Fairtrade International in Europe.[23]

In Nigeria, the main quality and CSR certification schemes are: NICERT-Ecocert; GLOBALG.A.P.; organic (USDA (NOP) and EC 834/2007, 889/2008); fair trade; halal; American Spice Trade Association (ASTA); European Spice Association (ESA); Hazard Analysis and Critical Control Point (HACCP); and International Featured Standard (IFS). EU buyers consider the quality of ginger crucial for exports. Ginger intended for export to the EU must adhere to EU regulation no. 1881/2006 for aflatoxins/ochratoxins and EU regulation no. 396/2005 concerning maximum residue levels (MRLs) of pesticides. According to CBI, the Quality Minima Document published by the European Spice Association (ESA) is the leading reference for the national spice associations affiliated with the ESA and for most key buyers in Europe. It specifies the chemical and physical parameters that dried ginger needs to comply with for it to be sold in the EU (before crushing and grinding). These include *ash*: maximum 8%; *acid insoluble ash*: maximum 2%; *moisture*: maximum 12%; *volatile oil*: minimum 1.5 ml/100 gr. and SO_2: maximum 150 ppm.

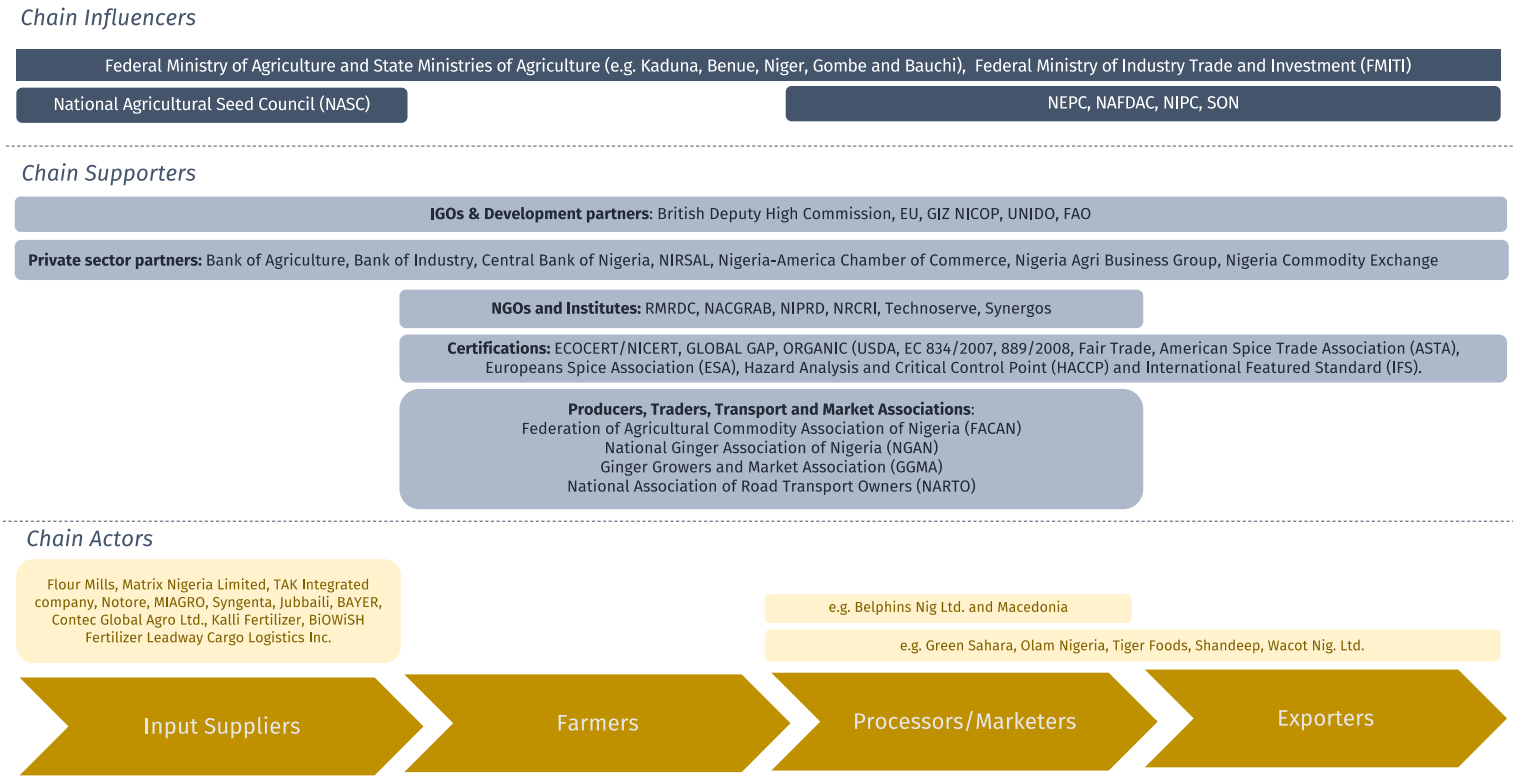
Although no specification for cleanliness is specified by the ESA, EU companies refer to specifications from the American Spice Trade Association (ASTA), which rates cleanliness for ginger based on the following: *whole insects dead* (by count = 4); *excreta mammalian* (3.0 mg/lb), *excreta other* (mg/lb); *mould* (% by weight), *insect defiled/infested* (i.e. more than 3% mouldy pieces and/or insect infested pieces by weight) (% by weight); and *extraneous foreign matter* (1% by weight).

Sector experts stress that SME exporters need support to ensure that they and their suppliers can comply with the requirements of these certifications and standards. Experts maintain that for certified ginger in Nigeria there is added value in terms of price increase. For instance, they claim that organic-certified dry splits can fetch up to USD 2,500-3,000 per tonne. GLOBALG.A.P. certification can fetch up to USD 1,100-1,500 per tonne. If processed into ginger powder, organic certification can fetch up to USD 7,000-8,000 per tonne, compared to processed ginger powder without certification (i.e. USD 4,000-4,500 per tonne). For ginger shot and oleoresin (ginger oil), organic certification can fetch a price of about USD 8.99 per 10 ml, compared to the standard product without certification (i.e. USD 8.99 per 30 ml).

3.2 Structure and Governance of the Ginger Value Chain

The figure below summarises the structure and governance of the ginger value chain in Nigeria.

Figure 17: Overview of the actors, supporters and influencers in the Nigerian ginger value chain



3.2.1 Actors

Ginger farmers

Ginger farmers in Nigeria are generally individual smallholders, farming families, cooperatives and cottage firms. As earlier noted, these farmers are mainly located in the northern and middle belt part of Nigeria where ginger is predominantly grown (i.e. in Kaduna, Nasarawa, Niger, Gombe, Bauchi, Benue and Plateau states). The nation-wide total is largely unknown; the a anecdotal estimate provided by sector experts is that there are around 300,000 ginger farmers in Nigeria. However according to a study by Synergos (2017), in Kaduna state alone there are about 21 ginger farming clusters and 353 sub-clusters across 10 local government areas, with a total of 62,952 ginger farmers. In 2016, about 60,803 ha of land area was cultivated by these farmers, with an output of 764,833 tonnes. The study further reveals that more than half of ginger farmers are between the ages of 43 and 62, indicating a fast-ageing sector. Only 15 per cent are below the age of 30, again signifying the need for more youth inclusion in the sector. While the production phase of ginger farming is dominated by men, the processing part is dominated by women. About 85 per cent of ginger-producing households have a family size of up to 10. Access to finance for small ginger farmers is almost non-existent in Nigeria, and given that ginger is a highly capital-intensive crop, farmers often find it challenging to cultivate more than 0.3-0.5 hectares. In fact, studies indicate that more than 90 per cent of ginger farmers in Nigeria are smallholders cultivating less than 0.5 ha of land. [24]

Input suppliers

In Nigeria agribusiness firms such as flour mills, Matrix Nigeria Limited, TAK Integrated Company, Notore, supply fertilisers to ginger farmers. Agro-chemical suppliers include MIAGRO, Syngenta, Jubbaili Agro-chemicals and BAYER. These inputs are relatively expensive and smallholder ginger farmers are often unable to afford them. Ginger seeds are often provided to small farmers through initiatives from federal and state ministries of agriculture, and through NGO projects. In Nigeria, the provision of agricultural extension services is limited due to insufficient and untrained public extension services agents. The current ratio of extension agents to farmers in Nigeria is between 1:5,000 and 1:10,000. There are currently only some 7,000 public extension agents in the country.[25] The recently established N-Power Agro programme expects to employ thousands of volunteering young graduates as extension advisors to support the country's growing need for

agric-extension support.[26] Packaging materials such as sacks, needles, thread and weighing services are also key inputs required by local ginger traders.

Local processors
Th fresh ginger produced is directly sold to local and commercial processors who then process and resell the products (mostly for export markets). In some cases, to meet increased demand, processors buy additional quantities from local aggregators to augment the quantities they bought directly from farmers. There are several small-scale growers who also run their own local processing (known also as cottage business). They apply simple processing techniques such as washing (manually or by low-grade pressure devices), slicing, splitting, peeling with knives and sun drying by roadsides, on rooftops and on concrete floors.

SME processors and exporters
There are several SME processing companies who own (locally produced) sun drying and splitting equipment. These SME processors buy fresh ginger from farmers or cooperatives and process this into dry splits for export. These SMEs include Belphins Nig. Ltd, Macedonia, Green Sahara, Olam Nigeria, Tiger Foods, Shandeep and Wacot Nig. Ltd. As noted earlier, during the interviews for this study, NEPC estimated that over 5,000 SMEs with under 500 employees are active in the ginger value chain. There is increasing interest from larger businesses to engage in processing and exporting of non-oil commodity value chains like the ginger VC. Tridge (2020) estimates that there are currently fewer than ten major trading corporations that export more than 1,000 megatonnes (Mt) per month.

EU buyers
EU companies consider Nigeria a ginger sourcing country, mostly for dried split ginger. Recently, CBI interviewed 10 EU companies regarding their experience in Nigeria. The companies include:

1. Verstegen B.V. (Netherlands)
2. Solina Group (international/headquartered in France)
3. Olam Group (international/headquartered in Singapore)
4. Tilbrook Products Ltd (United Kingdom)
5. Ramon Sabater S.A. (Spain)
6. Juan Navarro Garcia S.A.U. (Spain)
7. High Quality Organics Inc (international/headquartered in the USA)
8. IDH The Sustainable Trade Initiative (Netherlands)
9. Doens Food Ingredients B.V. (Netherlands)
10. Koninklijke Euroma B.V. (Netherlands)

According to some of the buyers interviewed by CBI, direct imports from Nigeria to Europe are not frequent. Direct sourcing by EU buyers from Nigeria is rare as Nigerian companies are not equipped with the necessary sterilisation machines. Therefore, the risk of mycotoxin (aflatoxin) contamination is high in Nigerian ginger. This is the main reason why Nigerian ginger is imported as splits. Splits are easier to control than ground material. Grinding ginger is not easy to perform in Nigeria as there are a lot of food safety and operational issues (such as power outages or shortages). This is not very favourable for Nigerian producers as they do not add value through grinding. One of the challenges raised by the interviewed EU buyers is that they are unable to find processors with good cutting equipment able to offer thin slices.

Instead, Nigerian ginger is often processed in India or Vietnam. Indian companies often blend Nigerian and Indian ginger to make ginger less pungent. At the moment Nigerian ginger is used more in markets where price is more important than taste. They noted the lack of accredited laboratories which are equipped for reliable testing many types of pesticide residues and other contaminants. European companies commonly conduct product tests in Europe. Another issue is the business environment in Nigeria, which in their view is currently unstable. As a result, some EU companies do not entirely feel financially and or even physically safe to work with Nigerian counterparts. Areas in northern Nigeria where ginger is typically grown are still on security alert.

Some EU companies think that it would be better to establish their own company in Nigeria and produce their own ginger instead of buying from local traders. However, some EU companies have managed to source good quality and safe ginger in Nigeria. Sourcing is now easier than ten years ago. Other products which are sourced by EU companies from Nigeria are turmeric, hibiscus, chilies and sweet paprika. Turmeric is grown in the same areas as ginger, which makes it easier to source. Hibiscus, however, is more difficult to source as it is grown in some remote areas where the language is one of the issues. In general, European companies are interested in

Nigerian companies which could offer quality dried ginger products directly to Europe. A ginger association has been established in Nigeria by mostly medium-size processors, which it does not include farmers as members.

3.2.2 Supporters

Main ginger associations and trade unions

- The National Ginger Association of Nigeria (NGAN) is one of the main recognised associations representing the interests of all ginger farmers in Nigeria. According to NGAN, it works with farmers, producers, processors, off-takers and stakeholders to ensure that ginger produced in Nigeria is of high quality and safe for consumption. It also plays an advocacy role in lobbying for improved policy initiatives for the ginger industry. Its membership size is unknown but estimated in the tens of thousands. NGAN acts as the key trade union on behalf of the ginger farmers. There is no formal organised trade union among the farmers.[27]
- The Ginger Growers, Processors and Marketers Association of Nigeria (GGPMAN) is an association that consists of stakeholders (i.e. producers, processors, traders and exporters) in Nigeria's ginger value chain. It claims that it has over 200,000 members from 33 states in Nigeria. GGPMAN plans to cover all 36 states in Nigeria, with a woman leader who intends to break the ideology that ginger can only be grown in the northern region of Nigeria.[28]

NGOs

- Synergos: Recently, the Nigerian Government launched the federal Agricultural Promotion Policy (APP), which targets an increase in productivity of a number of domestically important crops and activities and the expansion of selected crops and products to export markets. State Partnerships for Agriculture (SPA) was created to realise the goals of the APP at state level. Synergos is the implementing partner of SPA, working in close partnership with the Federal Ministry of Agriculture and Rural Development (FMARD) and various state governments to execute the strategy outlined in the APP.[29]
    - IDH: About ten years ago, IDH set up the Sustainable Spices Initiative (SSI) with public and private sector (leading national and international processors, blenders, food industry/brands, retailers) and NGO partners working actively together towards making the production and trade of spices more sustainable. IDH is already active in Nigeria in other sectors (e.g. oil palm, cassava, etc.). As noted during the validation workshop, there is interest from IDH to become active in Nigeria's ginger value chain. IDH has a pilot programme running with one ginger company, to support sustainable farming and post-harvesting practices. IDH is assessing how they could support value development in Nigeria's ginger sector.

International development partners

- According to local sources, the UK government will focus on the development of high potential pro-poor value chains including ginger through LINKS (i.e. 'Powering Economic Growth in Northern Nigeria'), a programme that aims to support the development of a "vibrant and diversified economy" in the three northern states, Kano, Kaduna and Jigawa. The programme has a total budget of about EUR 73 million (GBP 67.5 million) and is expected to run between 2018 and 2026.
- The EU and GIZ will focus on the ginger VC through the Nigeria Competitiveness Project (NICOP) project, a four-year project (2018-2022) commissioned by the German BMZ and co-funded by the European Union under the West African Competitiveness envelope (total funding is EUR 11 million). It is being implemented by the GIZ Pro-Poor Growth and Promotion of Employment in Nigeria Programme – SEDIN. NICOP is focusing on four value chains, namely ginger, tomato (including pepper and chilli), leather and garments.[30] The NICOP initiative identified the following investment opportunities specifically for the ginger value chain:
    - Further processing of ginger into additional products
    - Value addition at various stages
    - Products for cosmetic and food industries
    - Development and expansion of Agro-Support Providers
    - Development of commodities marketplace
    - Agri technological solutions to improve efficiency and yield

- The Netherlands is one of the biggest spice trading countries globally. During the interviews for this study, a number of Dutch traders indicated their interest in sourcing ginger from Nigeria. The Dutch Good Growth Fund could offer opportunities for importers to apply for funding to do business in Nigeria's ginger value chain. The Dutch FBK – the Fund against Child Labour (FBK: *Fonds Bestrijding Kinderarbeid*) – could also offer possibilities for Dutch companies involved in the ginger value chain in Nigeria, to ensure that child labour is addressed.

Banks and other financial institutions
Ginger is one of the targeted commodities in Central Bank of Nigeria (CBN)'s Anchor Borrower Program. Other commercial banks and financial institutions, such as Bank of Industry (BoI), NIRSAL and Bank of Agriculture (BoA), are also involved in providing loans to ginger farmers and processors in Nigeria. The Nigeria-American Chamber of Commerce (NACC) is working with partners to promote export in some VCs including ginger (i.e. export commodities such as sesame seeds, ginger, cashew nuts and products, shea nuts/butter, as well as processed vegetable & food products).

Certification schemes
NICERT-Ecocert is one of the certification schemes focusing on the ginger sector in Nigeria. Sector experts indicate that producers, processors and SMEs need technical assistance on the following certifications:
- Good Agricultural Practices (GAP) / GLOBALG.A.P. standard
- Organic production and/or certification for compliance to USDA (NOP)[31] and EC 834/2007, 889/2008[32]
- Fair Trade[33]
- American Spice Trade Association (ASTA)
- European Spice Association (ESA)[34]
- Hazard Analysis and Critical Control Point (HACCP)[35]
- International Featured Standard (IFS)[36]

3.2.3 Regulators
Main government agencies
The principal chain influencers in the ginger value chain are the Federal Ministry of Agriculture and the state ministries of Agriculture. The Nigerian Export Promotion Council (NEPC), National Agency for Food and Drug Administration and Control (NAFDAC), Nigerian Investment Promotion Commission (NIPC) and National Agricultural Seed Council (NASC) are government agencies that play coordinating and regulatory functions. NEPC is mandated to support the promotion, development and diversification of export. CBI and NEPC have worked together on an Export Competency Development Programme (ECP) involving 12 SMEs in the cocoa, cashew and sesame sectors. Through the ECP initiative, CBI also trained 24 NEPC officials on different aspects in these three value chains. In addition, CBI supported Market Awareness Mission and business-to-business (B2B) meetings with potential buyers organised in the EU. These involved the same 12 SMEs trained under the ECP initiative.[37]

The NASC is charged with the overall development and regulation of the national seed industry. The NIPC is charged with encouraging, promoting and coordinating investments in Nigeria. NAFDAC regulates and controls "the manufacture, importation, exportation, advertisement, distribution, sale and use of food, drugs, cosmetics, medical devices, chemicals and packaged water in Nigeria". The Standards Organisation of Nigeria (SON) is responsible for setting quality standards and training personnel for quality assurance in Nigeria. SON has established two international standard laboratories where goods and products for export could undergo test. SON has specific quality standards for the ginger value chain.

Other government institutions focusing on ginger
The raw materials research and development council (RMRDC) works together with the national centre for genetic resources and biotechnology (NACGRAB), with the National Institute of Pharmaceutical Research and Development (NIPRD), as well as with other stakeholders, to develop the ginger value chain and its utilisation in various industries.

3.3 CSR Risks in Ginger Value Chain
3.3.1 People
From a social perspective, there are four main social issues that occur in the ginger value chain, namely gender inequality, poor occupational health and safety, lack of youth inclusion and child labour.

- *Gender inequality*:

Although specific data on gender inequality in Nigeria's ginger value chains is non-existent, the results from the Global Gender Gap Index 2020 nevertheless provides a useful lens to better understand the nature of gender inequality in the country as a whole (which largely also applies to the ginger value chain). Nigeria is ranked at 128 out of 153 countries in the index.[38] The ranking indicates a decline in Nigeria's ability to close its gender gap, as it fell by five places compared to the last ranking in 2018. However, Nigeria performs relatively better in offering comparable economic opportunities to both men and women than it does on the other dimensions of the index. Ginger sector actors, however, claim otherwise. According to the index, Nigeria has closed 73.8% of its Economic Participation and Opportunity gender gap to date (38th globally) and is one of the most improved countries on this aspect globally since 2018. Labour force participation, wages and income are low for both men and women. For instance, average annual incomes are estimated to be close to USD 4,600 for women and USD 6,300 for men. These results indicate that it is crucial for programmes and interventions in the ginger value chain to prioritise the participation of women in value addition roles that would create improved income generation opportunities.

Agriculture in Nigeria accounts for some 26.4 to 28.6 per cent of female employment. Gender balance in agriculture is 62.8 per cent male, 37.2 per cent female, while in trade it is the opposite: 23.2 per cent male and 76.8 per cent female. Sector experts interviewed emphasised that the ginger value chain provides above-average female employment, as women play key roles in ginger cultivation, harvest, local processing, and roadside and market sales. Women in the ginger export business are relatively scarce.

Women farmers generally have less access to land, inputs, paid labour and extension services, and this means that they tend to grow more, but earn less. Several studies summarise two main constraints for women that also applies to this value chain:

1. *Access to land*: Women farmers are often deprived of direct land ownership in some Nigerian communities, particularly in the North. As a consequence, the have to hire land for farming activities, thereby increasing their production costs. It is well known that most land used for agricultural production has been inherited and it is rare for women to inherit land.
2. *Limited access to credit facilities*: Inadequate access to flexible and affordable credit facilities by both producers and marketers (Isitor et al., 2016) is another constraint women face. Additionally, women are less likely than men to have access to collateral for formal credit.

The increasing commercial value of ginger and its rising income potential is making more men interested in this value chain and will eventually create a competitive environment for women. Numbers are increasing of organisations, programmes and projects, focusing on women, which are relevant to this VC. This will definitely impact the potential to improve opportunities for women, enhance their skills, and create jobs for them. For example, the NEPC recently launched the SheTrades initiative in Nigeria, together with ITC, to improve export-related skills and unlock markets for women.[39]

Figure 18: Women involved in the sorting, cleaning, bagging of an trade in dry ginger splits

Youth development: Each year, tens of millions of young Nigerians enter the labour market to compete for between 1.5 to 3 million jobs. In Nigeria, nearly 25% of the general population is unemployed, 20% is underemployed and over 50% of youth aged 15-35 are without work. In Nigeria, the proportion of youth aged 18-24 in the population is significantly higher than the global average, at almost 70 per cent of the entire population. While they can be viewed as a great asset with vast potential, young Nigerians are plagued by scant opportunities for their personal and professional development. Barriers include limited access to education; growing student dropout rates; rising unemployment, with a particular shortage of white-collar jobs, and lack of access to finance for business initiatives – all at a time of heightened urban migration. This has led to growing masses of idle youth, who, in the absence of meaningful economic opportunities, threaten to destabilise the entire region, as we have seen with the rise of Boko Haram.[40] According to sector experts, the ginger export sector employs over 200,000 people and has a huge potential for creating more jobs for youth, particularly in the northern part of Nigeria, specifically in Kaduna state where ginger is predominantly grown. Kaduna has a population approximately of 1.3 million. Yet, according to KIT (2017), "the low accessibility and quality of skills training, and limited access to information and extension, result in a low-skilled workforce in the agri-food sector. Among the youth who attended higher education (approx. 15%), about 4 per cent studied agriculture. This results in a mismatch between supply and demand regarding labour force: growing agribusinesses look for specific skills, whereas there is a large pool of low-skilled and unemployed youth."

Occupational health & safety and hygiene: The cultivation and processing of dried split ginger is still largely a manual process, using mostly hand tools. Since about 90 per cent of farmers in this value chain are smallholder farmers, they hardly use any basic personal protective gear. In industrial processing establishments, the majority of factory workers are casual labourers (or seasonal workers). They work mostly without any basic personal protective equipment (PPE) like gloves, hair covers or protective shoes during processing. Some processing factories also operate under unsanitary conditions. In Nigeria, labour inspectors hardly visit factories to assess the welfare of workers and the occupational working conditions. There are hardly any labour unions in the ginger sector, as most workers only belong to local associations. Some of the main markets and collection points where ginger is collected or traded locally also feature unsanitary conditions.

Child labour: Despite the Child Rights Act (2013) and other regulatory instruments in Nigeria, child labour is still widespread across Nigeria. This is largely because the regulations are both ineffective and are not competently implemented. Another main reason is that in most Nigerian cultures it is more or less permitted for children to accompany their parents to work involving physical labour. In fact, in most cultures in the country, children are often perceived as "*economic assets, a basis for material wealth, possession and power, as they provide additional labour power for increased productivity*".[41] It is estimated that almost 15 million children are engaged in one or more forms of child labour in Nigeria, with around 85.2 per cent working in the agricultural sector (including the ginger value chain). This is concerning, given that the sector is one of the most dangerous to work in, judged by occupationally related fatalities and other associated risks.

Most working children live in rural areas that have agriculture as the major occupation. Activities in the agricultural sector are physically demanding and strenuous, and mostly involve long periods of standing, and repetitive and forceful body movements.

Children are often seen carrying heavy sacks of ginger products, often over long distances. Others are exposed to dangerous or poor and unsanitary work areas, sometimes in close proximity to tools for used for cultivation and harvesting. Many children work regularly on their families' farms, after school, during weekends or during holidays, while in some cases, those that do not attend school work full time on the farms. Toddlers are often seen with their mothers while the parent is involved in sorting and cleaning, at times exposing the toddler to dust from the processes.

Figure 19: Toddler with mother during sorting dried split ginger in Kano state

3.3.2 Planet

The Nigerian ginger sector suffers from low yields. These are mainly caused by improper inputs and farming methods as well as the impact of climate change. Plants are often stressed and vulnerable to disease, provoking excessive use of pesticides and chemical fertilisers.

- *Rainfall variability and high use of water:* Nigeria is the 55th most vulnerable country to climate change and 22nd least ready to deal with it. Overall, climate change is projected to cost 6-30% of Nigeria's GDP. Studies show that rainfall variability, caused by climate change, delays ginger growth and ultimately affects ginger yields, as ginger requires moderate to high rainfall for 6 to 7 months for its growth and to attain a higher yield (Atiyong et al., 2018).[42] In addition, significant levels of water resources are used for irrigation in areas that receive less rainfall, given the high amounts of water ginger requires during production.
- *Overuse of pesticides*: Although most ginger farmers claim that they cultivate organic ginger, there are still high levels of pesticide use. Farmers overuse pesticides, sometimes using different products with the same function, because they are unaware of the product details and specifications, while agro dealers are bent on selling a lot of products, leading them to sell two products that do the same thing and then advising to mix them. Sometimes commercial sellers of crop protection products wrongly advise farmers out of ignorance. This leads to misuse and can have devastating consequences for the crops and the environment. In addition, farmers are sold counterfeit products instead of genuine crop protection products.
- During commercial processing, ginger rhizomes are commonly washed, soaked for 6-7 hours, peeled, washed, and then soaked again. One tonne of ginger can produce about 4-7 tonnes of wastewater. This wastewater is not always treated, and as a result, there could be contamination to water systems from ginger processing.

3.3.3 Profit

- *Lack of fair and clear agreements*: Due to poor education and lack of business skills, smallholder producers in Nigeria often do not insist on establishing formal agreements with their local buyers, making them prone to exploitation by traders or middlemen.
- *Insufficient income and income insecurity*: Price fluctuations of nearly 40% in recent years have made it very difficult for farmers to earn a decent income. Because ginger can be replanted and harvested again the following year, some producers choose to replant old rhizomes, hoping for a better price the following season. Ginger is highly susceptible to disease, leading to losses as high as 80% at the end of the harvest seasons making it very difficult to earn a living.
- *Weak market infrastructure*: The market architecture of the ginger value chain is not well structured or organised, and as a result, brokers (middlemen or traders) easily emerge as dominant actors. These brokers often have no licence and as the market is an informal one, they often do not pay taxes to the local authority and they are not held accountable.
- *Corruption*: This is a pressing issue in Nigeria. Transparency International's corruption index indicates that Nigeria is among the most corrupt countries in the world. This situation has not changed, despite the fact that President Muhammadu Buhari launched an anti-corruption drive after taking office in May 2015. Stakeholders who were interviewed said that acts of corruption are visible almost everywhere throughout the value chain,.

CHAPTER 4. CBI GINGER PROJECT DESIGN AND RISK ASSESSMENT

This chapter covers the proposal for the CBI's ginger value chain project design, outlining a SWOT analysis, constraints and opportunities, the results chain for the intervention (i.e. impacts, long-term and intermediate outcomes and outcome pathways, outputs, activities and inputs) and risk assessment.

4.1 SWOT Analysis

The table below highlights the strengths, weaknesses, opportunities and threats (SWOT) in Nigeria's ginger value chain.

Strengths	Weakness
• Nigeria is among the top ginger-producing countries, with a production average of more than 300,000 tonnes during the five-year period, 2014-2018 • The climate is suitable for ginger production • Nigeria saw a steady growth in production during the last five years • Nigerian ginger is considered among the best in the world, with its aroma, pungency and high oil and oleoresin content as distinct features • Local ginger processing practices adapted by farmers is easy and affordable • There is a well-established value chain and traders are available at different levels • Government has defined ginger as a high value crop and policies are supportive, with ginger value chain officers at the Federal Ministry of Agriculture and the Agricultural Development Program and its state counterparts • The Federal Ministry of Trade and Industry has established a ginger value chain commodity unit • Some local farmers have established associations and cooperative societies to increase the marketing of their crops. At the national level, two active ginger associations exist • Some SMEs are already exporting ginger products internationally • Availability of research, development and extension institutions such as NRCRI (e.g. a prototype of a drying machine and a locally built splitting machine developed locally by the NRCRI, Umudike)	• Quality and yield of Nigerian ginger is low compared to Indian and Chinese ginger. Many impurities (dirt and stones) and high contamination • High cost of inputs such as fertilisers, and no subsidy from government • High costs of tractor services for smallholder farmers, ranging in Kaduna between NGN 15,000 (USD 40) and NGN 30,000 (USD 80) per hectare • High loss of produce in the field and in storage due to rhizome rot disease • Inadequate processing equipment in Kaduna state, with only one ginger oleoresin processing plant currently active. Most ginger processing is done outside the country. Local processing (cottage industry), although affordable, is poor (prone to impurities and contamination) • Ginger-processing technologies unknown to most of the farmers • Lack of ginger cleaning facilities, collective marketing practices and only a few active collection centres in the field • Lack of access to reliable market information • Lack of access to access to digital and smart farming techniques • Inadequate agricultural extension services for ginger VC • No ginger marketing strategy and plans exist at local and national levels. Marketing of ginger mainly done individually (as associations are still unreliable) • Inadequate knowledge and techniques in production, grading, packaging and post-harvest handling • No permanent solution to the problems of rhizome rot disease, aflatoxin, moulds and other diseases • Lack of good quality inputs, credit, quality seeds • Insufficient subsidies particularly for ginger. Ginger farmers are usually uneducated and as such are often unable to take advantage of available credit facilities • Lack of awareness of CSR issues at producer and SME level (particularly on gender discrimination and inequality, child labour, occupational health and safety and poor wages) • Poor governance and leadership capabilities in current ginger and marketers' associations at national level, with farmers preferring a 'growers only' association, so that they are able to form trade unions • Only one (ginger oleoresin) processing plant (Belphins Nigeria LTD) is active, operating at low capacity (Kachia Ginger Processing Company owned by the Kaduna State Government was closed down due to inadequate supply of ginger for processing)
Opportunities	**Threats**
• Strong international demand for Nigerian dry ginger splits and oleoresin	• Rhizome rot disease infestation often destroys over half of ginger farmers' produce

• There is interest from EU companies (as long as quality and other institutional bottlenecks are addressed). In 2018, more than 70% of the total European imports were sourced directly from developing countries • Potential of Nigerian ginger export to the EU/EFTA/UK market is valued at USD 29.9 million, while unused potential of Nigeria ginger is significant: 63% (for the BRICS+11) and 79% (for the EU/EFTA) • EU consumer demand for ginger is growing due to sustainable and healthy lifestyle choices, and their discovery of new tastes and cuisines, exotic products • Multiple uses of ginger in Nigeria (as fruits, in beverages, therapeutic and pharmaceutical), so high potential for product diversification • At least one ginger (oleoresin) processing facility is active Nigeria, although there could be more • Prospect of inter-cropping with maize, beans, and vegetables exists • Opportunity to produce ginger organically, as farmers mainly use local manure • Local ginger storing practices adapted by farmers is easy and affordable to small farmers • Potential to increase area and productivity • Ginger farming is easy and less capital intensive, with high return on investment and less setup costs. Production and (dry splits) processing time is short • Government has defined ginger as a high-value crop and policies are supportive • Credit is available at rates lower than market interest rates for agricultural ventures (ginger VC included in CBN's Anchor Borrowers Scheme) • Possibility for the introduction of new varieties of disease-free quality seeds to ensure optimal yield (also fibreless ginger) • Existence of active standard setting bodies to help in safeguarding the quality of ginger for exports, i.e. National Agricultural Quarantine Services (NAQS), Standards Organisation of Nigeria (SON), and the National Agency for Foods Administration and Control (NAFDAC)	• Nigeria dry splits and powder ginger exports are often infested with aflatoxin and mould • Security situation in northern part of Nigeria is a major threat to ginger cultivation and processing • Seasonal price fluctuations affect farmgate prices • Insufficient infrastructure and poor condition of main roads and feeder roads, irrigation, etc. • Lack of water infrastructure to support ginger washing or cleaning • Unstable and expensive power and/or grid electricity

4.2 Key Opportunities and Constraints

In the overview and table below the main conclusions and insights about the opportunities and obstacles in the ginger sector are presented.

Figure 20: Overview of main opportunities and constraints in the Nigerian ginger value chain

Opportunities	Needed results	Responsible
1. Global demand for ginger products is increasing and traders are looking for new origins	• SMEs having improved trade competences • SMEs continuously capable of finding market opportunities • International markets strategically sourcing from Nigerian ginger SMEs	CBI, NEPC
2. Nigerian ginger has unique strengths: considered among the best in the world; relatively short distance to market; and competitive price	• SMEs fulfilling requirements prior to export (quality, traceability, sustainability, organic certifications) • SMEs building network of reliable suppliers, with traceable and sustainable product quality	CBI, NEPC
3. There is a well-established value chain and support is available at different levels	• Strengthened market export services for ginger SMEs • Sector Market Plan and its execution • Government proposing improvements for policies and incentives to strengthen the ginger sector (with regard to export, production, youth engagement)	CBI/EU, FMARD, NEPC
4. Total production of ginger can be increased, as well as its added value (quality, sustainable and organic)	• SMEs building network of reliable suppliers and product quality is traceable and sustainable • SMEs adding value through certifications • SMEs improve processes to improve quality of ginger splits/powder	CBI, GIZ, FMARD, state ministries of Agriculture, SON, NEPC
5. Income generating opportunities for community development to benefit households, and specifically women and youth	• SMEs adopting inclusive labour conditions, embed sustainability in business model and promoting it in the sector • Producers, cooperatives and SMEs producing higher quality ginger and add value	CBI, GIZ, ILO, SYNERGOS, FACAN, NGAN, GGPMAN
6. Potential to further build on a market system development approach	• SMEs paying for services to improve quality and sustainability of ginger cultivation, processing and export • Associations having services (trade, sustainability) and local coaches to support SMEs and producers	CBI, NEPC, FACAN, NGAN, GGPMAN, SMEDAN
7. Build on donor programmes	• National Sustainable Ginger Platform executing Sector Market Plan • Producers, cooperatives and SMEs producing higher quality ginger • Government proposing improvements for policies and incentives to strengthen the ginger sector (with regard to export, production, youth engagement)	CBI, GIZ/EU, UK, NEPC
8. Alignment with Netherlands Enterprise Agency instruments	• SMEs adopting inclusive labour conditions, embedding sustainability in business model and promoting it in the sector	CBI, DGGF, FBK team, Dutch Consulate General

Obstacles	Needed results	Responsible
1. SMEs add limited value to ginger related products	• SMEs fulfilling requirements prior to export (quality, traceability, sustainability, organic certifications) • SMEs having access to services to improve quality and sustainability of ginger cultivation, processing and export	CBI, NEPC, FACAN, NGAN, GGPMAN
2. Exporters largely unable to meet EU market requirements	• SMEs having improved trade competences • SMEs are continuously capable of finding market opportunities • International markets are strategically sourcing from Nigerian ginger SMEs • SMEs fulfilling requirements prior to export (quality, traceability, sustainability, organic certifications)	CBI, NEPC, SON, NICERT
3. Quality of Nigerian ginger (dry splits, powder) is low, due to inadequate knowledge and techniques in production, packaging and post-harvest handling	• SMEs building network of reliable suppliers, with traceable and sustainable product quality • Quality standard adopted and enforced in the ginger sector (production and processing) • Producers, cooperatives and SMEs producing higher quality ginger • Standard bodies controlling quality	CBI, GIZ, FMARD, state ministries of Agriculture, SON, NEPC
4. Negative trading image of Nigeria	• Agent on the ground for quality checks and communication and check for importers • SMEs having improved trade competences	CBI, NEPC
5. Fragmentation of the sector	• National Sustainable Ginger Platform • Joint Sector Export Market Plan • Public-private dialogues • Export unit in associations	CBI, GIZ/EU, UK, FMARD, state ministries of Agriculture, NEPC, SON, BOA, CBN
6. Enabling environment: Limited services, finance and infrastructure, and lack of policies and incentives for the ginger sector	• Associations having export services (trade, sustainability) & local coaches to support SMEs • Government proposing improvements (regarding export, production, youth engagement) to policies and incentives to strengthen the ginger sector	• CBI, NEPC, FACAN, NGAN, GGPMAN • CBI, F MARD, state ministries of Agriculture, NEPC, SON, NAFDAC
7. Sustainability issues at producer and SME level	• SMEs building network of reliable suppliers, with traceable and sustainable product quality • SMEs adopting inclusive labour conditions, embedding sustainability in business model and promoting it in the sector • Associations offering support and promoting front runners • Payment for fair working conditions	CBI, IDH, ILO, GIZ, SYNERGOS, NEPC

4.3 Results for Chain of CBI Proposed Intervention

4.3.1 Impacts

A. Added value for Nigeria's economy

i. Contribution to economic diversification:
Recently, the Nigeria Export Promotion Council (NEPC) launched a 'Zero-Oil Plan' in response to the recent impact of lower oil prices on Nigeria's revenue and Forex earnings. A major part of this plan is to enhance productivity in the agricultural sector in order to satisfy domestic consumption and boost exports. The NEPC identified 22 non-oil strategic products that will be exported to diversify the nation's foreign exchange earnings. If fully realised, the plan should generate over USD 150 billion in annual export revenue for the country. Among the 22 non-oil strategic products, ginger is one of the targeted crops. The CBI project in Nigeria's ginger value chain would contribute to the realisation of this strategic zero oil economy.

ii. Contribution to household food security:
In studying the determinants of household food security level of ginger farming households in Kaduna, Fashina et al. (2020) concluded that if ginger is farmed sustainably, it could contribute to food security in Nigeria, as its production is highly profitable. The study notes that "the improvement of the food security status of the ginger farming households largely depends on their economic and social environment".[43] Therefore, increasing access to finance, productive resources, extension services, cooperative membership and addressing social insecurities can go a long way in achieving a higher level of food security among the ginger farming households. The CBI project in Nigeria's ginger value chain would be contributing to household food security.

B. Professional Development for Women and Youth

i. Contribution to ensuring equal access to resources:
It is well established that gender inequalities and lack of attention to gender-related issues in agricultural development often lead to lower productivity, higher levels of poverty and under-nutrition. Women's limited access to resources and their insufficient purchasing power are products of a series of inter-related social, economic and cultural factors that force them into a subordinate role, to the detriment of their own development and that of society as a whole. A recent gender study in Nigeria's ginger sector revealed that majority of female ginger farmers claim that inadequate access to inputs, insufficient capital, the high cost of labour, poor storage facilities and a shortage of extension visits were the major constraints they face, compared to their male counterparts. Women implement a significant portion of ginger production and processing activities in Nigeria. The CBI project in Nigeria's ginger sector would contribute to ensuring equal access to resources for women.

ii. Contribution to youth inclusion and empowerment:
Agriculture provides employment for more than 70 per cent of the Nigeria's population and accounts for about a third of its GDP. The population of Nigeria is growing fast, which poses a challenge for the economy to absorb all its labour capacity. Youth make up the largest proportion of the Nigerian population; about 1.5 million youth are expected to enter the job market in Nigeria annually.[44] According to KIT (2017), "*the low accessibility and quality of skills training, and limited access to information and extension, result in a low-skilled workforce in the agri-food sector. Among the youth who attended higher education (approx. 15%), about 4 per cent studied agriculture. This results in a mismatch between supply and demand regarding labour force: growing agribusinesses look for specific skills, whereas there is a large pool of low-skilled and unemployed youth. This pool of labour tends to seek low-paid employment within the informal economic sector*".[45] The ginger value chain offers opportunities for youth inclusion and empowerment. Most youth (especially) in the northern part of Nigeria, are engaged in manual harvesting, drying and splitting ginger. The CBI project in Nigeria's ginger sector would contribute to youth inclusion and empowerment.

4.3.2 Long-Term and Intermediate Outcomes

The main expected outcome of the project intervention is that Nigeria's ginger sector will become a high-quality and sustainable sector that creates added value for thousands of ginger producers and SMEs. This will happen when the project supports competitive SMEs to export ginger (dried split ginger, oleoresin) to the EU,

and enables a functioning service delivery model and effective coordination of the ginger export sector in the country. Central to achieving this are medium-term outcomes such as:

- The project has enabled an environment where government agencies are supported and well-equipped to ensure improvement of associated policies and practices.
- The project has improved the trade competences of Nigerian ginger SME and the quality of their ginger product.
- The project has enabled EU markets to show increasing interest in buying good quality ginger from Nigeria.
- The project has strengthened associations to the extent that they are able to deliver support services and execute a sector export marketing plan.
- The project has strengthened associations to the extent that they are able to provide access to finance or subsidies and improved GAP capabilities.

4.3.3 Outcome Pathways

To catalyse the expected outcomes, we recommend jointly developing an initiative – the National Sustainable Ginger Initiative (NSGI) – together with interested parties in the sector, such as the CBI, EU/GIZ (NICOP), the British Deputy High Commission, the Federal Ministry of Agriculture, the latter's state counterparts and the Central Bank of Nigeria. This initiative should have three outcome pathways:

- *Outcome Pathway 1 (OP 1) – International market access*: The objective would be to enhance EU market access for Nigerian SME ginger exporters. Despite its promising product profile, Nigerian ginger is still not a major competitor to the likes of China and India in international markets, and direct sourcing by EU buyers is rare. Although some Nigerian dried split ginger can be found in the EU, the unused export potential is still huge, as noted in section 2.3. European companies are interested to see Nigerian companies that could offer quality dried ginger products directly to Europe. Sector experts would like CBI to intervene in developing market access to the EU for SME ginger exporters in Nigeria. A concrete proposal supported by most of the sector actors is the idea of establishing a Sustainable Ginger Ambassador, whose primary role would be to support SMEs in understanding and fulfilling buyer quality and certification requirements prior to export, as well as assisting in match-making between Nigerian ginger SMEs and EU buyers. Partners involved in the NSGI could identify and hire a 'trusted' and experienced ginger trade agent (to be based in Nigeria) to fulfil this ambassador role. For the first two years, the agent will be paid with financial commitments from CBI and EU traders and during this period, the agent will work to develop the business case for a platform that can sustain itself.

- *Outcome Pathway 2 (OP 2) – Quality improvement*: The objective would be to enhance the quality and yield of ginger products for both local consumption and international export. This would be done by providing support on GAP, organic and fair-trade certifications, enabling access to finance and equipment for processing and storage, capacity development of chain supporters (i.e. national export promotion councils, standards organisations, ginger associations and trade unions) and introducing traceability systems and tools.

- *Outcome Pathway 3 (OP 3) – Policy development*: The objective would be to improve the enabling environment for production and export of ginger in Nigeria. In practice this means developing policies, providing incentives and access to credits, grants and favourable loans, strengthening the capacity of government officials and agricultural extension services, streamlining exporting processes to reduce bottlenecks, and promoting the ease of doing business.

4.3.4 Output and Proposed Activities

Output for OP 1

- Ginger trade agent is hired.
- Ginger trade agent is coached and trained.
- Ginger trade agent regularly engages with EU market buyers and Nigerian ginger SMEs.
- Competitive ginger SMEs and interested EU ginger buyers identified.
- Competitive ginger SMEs undergo (online) training, attend (virtual) study tours and (virtual) international spice and ginger fairs and exhibitions.

Proposed activities

- Hire and train ginger trade agent.

- Organise quarterly calls/meetings with EU ginger buyers and SMEs (this can be done by the ginger trade agent hired).
- Set up a database for profiles of competitive and trusted SME exporters.
- Collaborate with NRCRI and others to develop quality and traceability system and tools for the ginger sector.
- Train SMEs to understand and comply with EU export requirements.
- Commission a gender baseline study and organise a gender seminar.
- Train SMEs on social, environmental and governance (ESG)/IMVO issues in their business and supply chain.
- Organise exhibitions, fairs and study tours for ginger SMEs.
- Support agent in providing real-time market price data to SMEs.
- Support agent to regularly monitor and report on the security and CSR challenges affecting the sector.

Output for OP 2

- NEPC is supported and strengthened as a key BSO (specifically, staff have been trained to become 'ginger coaches', particularly on export-related issues).
- Ginger desk is established at standards organisations in Nigeria. Standards organisations are supported and equipped (specifically, staff at the ginger desk have been trained to support the ginger sector, particularly on quality and certification issues).
- Mission statement for Nigerian ginger sector is defined by sector stakeholders (specifically through multi-stakeholder workshops).
- A five-year Sector Market Plan for Ginger is developed by sector stakeholders.
- Ginger associations are supported and strengthened (specifically, leaders have been trained on topics like governance, leadership, marketing and financial management).
- Agricultural extension officials working in the ginger sector are supported and strengthened (specifically, they have been trained to become 'ginger coaches', particularly on GAP-related issues).
- Ginger farmers are organic and fair-trade certified.

Proposed activities

- Coordinate more private sector investment for ginger processing.
- Work with government agencies & donor partners to develop and/or reform ginger promotion, marketing and/or branding, export policies & plans.
- Collaborate with NEPC /SON to develop a one-stop shop for ginger.
- Collaborate with SON to review current quality standards for ginger.
- Train government officials on Ease of Doing Business (EoDB) topics related to ginger export.
- Commission a market potential study for other ginger segments besides dry splits (i.e. oleoresins).
- Encourage government to invest in establishing or reviving ginger processing factories and associated facilities (e.g. power) in the country.

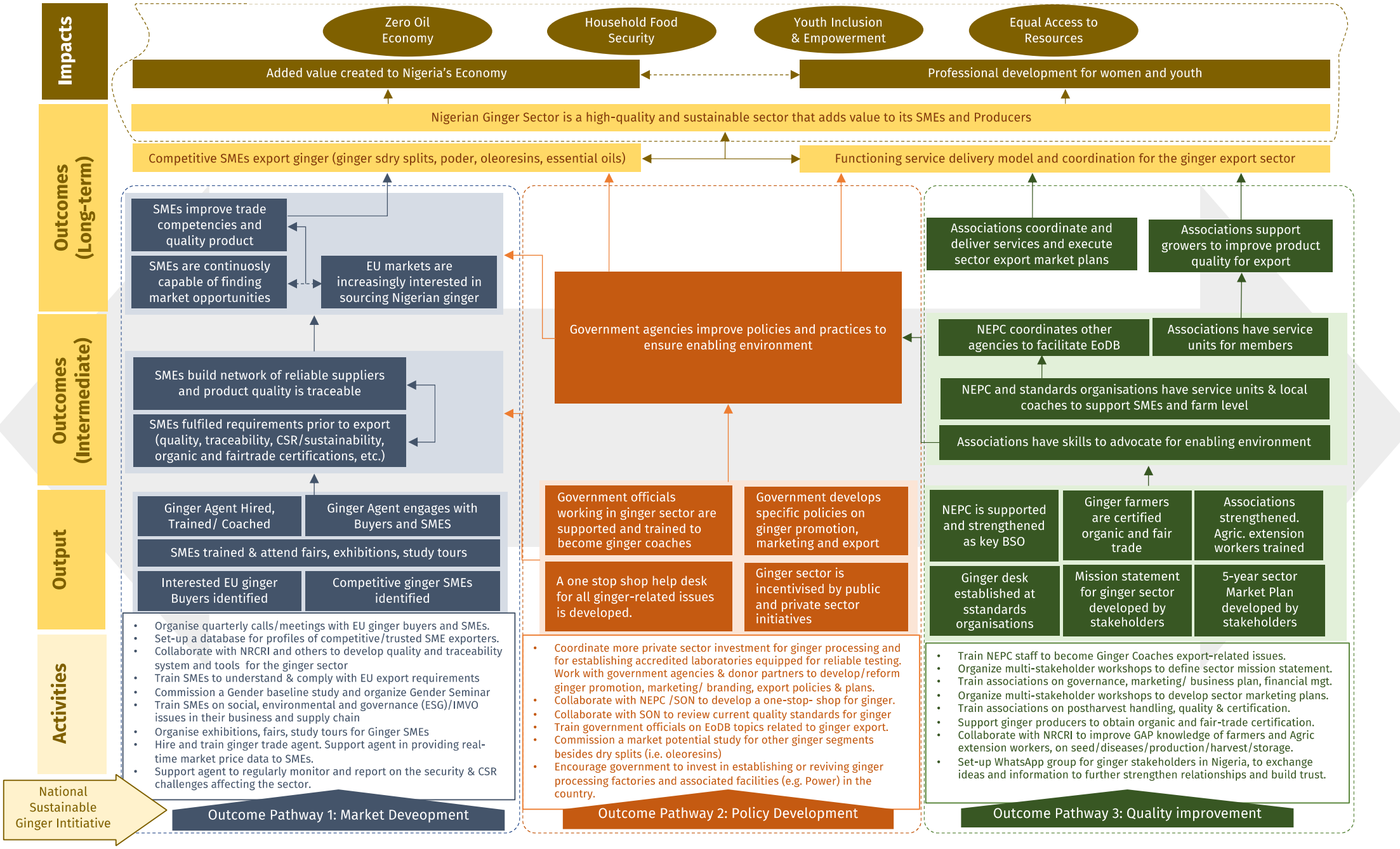
Output for OP 3

- A one-stop shop help desk for all ginger-related issues is developed (this can be linked to the ginger desk proposed at one of the standards organisations or at NEPC).
- Government officials working in the ginger sector are supported and strengthened (specifically, staff have been trained to become 'ginger coaches', particularly on policy-related issues).
- Nigerian public and private sector institutions provide additional (financial) incentives to the ginger industry.
- Nigerian government develops specific policy on ginger promotion, marketing and export.

Proposed activities

- Train NEPC staff to become 'ginger coaches' on export-related issues.
- Organise multi-stakeholder workshops to define sector mission statement.
- Train associations on governance, marketing and/or business plans, financial management.
- Organize multi-stakeholder workshops to develop sector marketing plans.
- Train associations on post-harvest handling, quality and certification.
- Support ginger producers to obtain organic and fair-trade certification.
- Collaborate with NRCRI to improve GAP knowledge of farmers and agricultural extension workers, on seed, diseases, production, harvest and storage.
- Set-up a WhatsApp group for ginger stakeholders in Nigeria, to exchange ideas and information to further strengthen relationships and build trust.

Figure 20: Overview of proposed impact pathways for CBI ginger project in Nigeria



4.5 Risk Assessment

The risk assessment is presented based on the following risk assessment matrix:

- Likelihood of materialising: 5=almost certain; 4=likely; 3=possible; 2=unlikely; 1=rare
- Impact on project: 5=severe; 4=major; 3=moderate; 2=minor; 1=negligible

Risk or Critical Assumption	Possible impact on Proposed CBI intervention	L	I	Mitigation Strategy
Poor enabling environment and lack of cooperation from government officials in Nigeria can create bottlenecks	Without the government's involvement (local, state and national), sector transition cannot be realised as improvements are needed for trade, setting quality standards and control	4	4	• At the outset of the project design, involve government officials at both local, state and national levels. • Invite government officials to the validation sessions and maintain close contact with them throughout the process. • Invite government officials to training activities and important project activities throughout the project and visits to SMEs. • Include in steering committee.
Lack of cooperation with other international development partners already working on the ginger sector in Nigeria	Without the cooperation of international development partners in Nigeria, the sector transition is almost impossible for CBI to realise on its own.	3	3	• At the outset of the project design, explore synergies with international development partners such as EU/GIZ, the British Deputy High Commission and IDH. • Discuss the possibility of jointly setting up a National Sustainable Ginger Platform (as proposed in the intervention) where each partner plays a distinct role or roles towards achieving a shared goal. • Invite EU/GIZ and the British Deputy High Commission to the validation sessions and maintain close contact with them throughout the process.
Security threat, especially in the southern part of Kaduna state (major ginger region)	There will be a significant decline in ginger production, meaning that the supply of Nigerian ginger to the export market would be disrupted.	4	4	• Support SMEs in sourcing from different ginger growing areas in Nigeria (with traceable supply). • Closely monitor events in the northern part of Nigeria. The Netherlands Embassy in Abuja is a good source for latest information in the region. • Create a project security risk tracking tool and update this regularly based on information from credible sources in the country (embassy, Dutch NGOs based in Nigeria, etc.). • Involve local leaders in project design and execution to ensure local ownership and protection in case of crisis.
Reputational damage from corruption (financial misconduct) and safeguarding (sexual misconduct) incidents of project partners, beneficiaries and other stakeholders. Potential of corruption cases involving government officials or associations who are asking for bribes for doing business, lowering taxes or for providing particular services (or not)	The reputation and credibility of CBI and the ginger project could be impacted if project partners, beneficiaries and other stakeholders are involved in corruption and/or covering up incidents. The risk is higher in the northern part of Nigeria.	5	4	• Request partners to establish procedures for preventing, deterring, detecting and responding to misconduct cases. • Establish clear guidelines for reporting such cases to CBI. • Make transparency and attitude towards corruption explicit in MoUs. • Inform the government and associations from the start that the project should benefit all members. • Ask for advice from the Dutch embassy on how to support sector development and involvement of the public sector. • Discuss this topic with EU buyers.
SMEs involved in the project are unreliable. There is often a gap	EU companies expect Nigerian SME exporters to be trustworthy, timely with	4	4	• Very strict selection criteria including ability to set up transparent supply chains, investments in management systems, staff

between what is offered and what is shipped	deliveries and keep up to the agreements. EU companies value reliability of supply and truthfulness more than quality. If these important aspects are not consistently established, EU companies will lose interest (and involvement) in the project.			• Consistent monitoring and evaluation is required. • Set up an agent to establish, strengthen and maintain relationships between SMEs and EU companies.
Reputational damage from CSR risks of project partners, beneficiaries and other stakeholders, particularly child labour, poor wages, gender discrimination and inequality	Producers and SMEs that are part of the ginger project could still engage in child labour, poor wages, gender discrimination and inequality. This could affect the credibility of the project.	3	3	• Ensure that EU companies develop their supplier Code of Conduct (policy at least addressing gender inequality, child labour and poor wages should be part of the CoC) and that SMEs comply with them. • As part of the project, set up a traceability system to track and document quality details at farm level, farmer buying criteria, etc. • As part of the project, ensure that producers and SMEs obtain fair trade certification. • Conduct CSR and ESG training or coaching for ginger SMEs.
Risk of prolonged COVID-19 restrictions in the supply chains and virtual support for participating SMEs and BSOs	Although long-term impacts of COVID-19 are unknown for the spices sector, lockdowns are expected to restrict movement and transportation, which could affect supply and prices. Potentially no trade fair or visits to Europe in 2021.	4	3	• Conduct all training, coaching and workshops online, potentially throughout 2021. • Set up a tentative virtual EMP and MOM trajectory. • Build in evaluation moments to assess market access. • Hire a local coordinating consultant (with expertise on business coaching and institutional capacity building). • Encourage project partners, beneficiaries and other stakeholders to follow national public health guidelines at all times.
Assumption: By making SMEs more competitive and understanding market requirements, they will be asking their suppliers (farmers and processors such as drying) for better quality and sustainable ginger, leading to higher yield, higher efficiency, less loss and more income for ginger producers if they produce quality ginger	There is a need for successful SMEs that are role models for the sector to show public actors that quality standards are key. This means that higher skilled jobs are needed in the ginger sector and a greater appeal to youth for working in agriculture.	2	4	• Carefully select SMEs. • Work with a number of SMEs already exporting to EU/other high demanding markets and build on their experience. • Support SMEs intensively to work on sustainability and traceability. • Support training programmes in the sector. • Work with importers willing to invest in quality support and/or certification. • Share best practices in the sector (quality = higher payment and yields).
Assumption: By setting up a sector platform – the National Sustainable Ginger Platform (NSGP) – effective coordination in the sector will be realised. This will ensure that policymakers understand how to support the ginger sector, that associations better understand their role in supporting their members, and	Without a platform and policies, the sector cannot become inclusive and sustainable. No major steps can be taken, however, so this outcome pathway is very important.	3	3	• Build up strong relationships with government partners. • Find a strong individual who can lead the NSGP. • Find multiple donors to work together to drive sector change, something CBI cannot achieve on its own.

that the private sector is able to strengthen their service or production capacity				
Assumption: To professionalise grower associations and ensure that member services offered by the Nigerian Export Promotion Council are improved for SMEs that export, produce (i.e. grow) and process ginger. These associations will become brokers in linking available resources (training, finance) to their members	If we cannot strengthen BSOs it will be very difficult to support more SMEs to add value and realise sector change.	3	4	• Carefully select the BSOs to collaborate. • Sign clear agreements. • Find the right individuals to manage the programme. • Build on earlier NEPC engagement with CBI.

Annex 1: List of Interviewees

- **SME exporters:**
  1. Belphins Nigeria Limited
  2. Green Sahara Nigeria Limited
  3. Tiger Foods Nigeria Limited

  (Exporting a mixture of dried ginger and essential oil/oleoresins.)

- **Institutional stakeholders:**

  For discussions on product quality assurance and export
  4. Standards Organisation of Nigeria (SON)
  5. Nigeria Export Promotion Council (NEPC)

  For discussions on product varieties, characteristics and value chain dynamics
  6. National Root Crops Research Institute Umudike
  7. Raw Materials and Development Council (RMRDC)

  For discussions on enabling environment for ginger export/trade
  8. Federal Ministry of Agriculture and Rural Development (FMARD)
  9. Kaduna State Ministry of Agriculture
  10. Kaduna State Agricultural Development Project

- **Ginger associations:**
  11. National Ginger Farmers Association
  12. Ginger Growers Association of Nigeria
  13. Federation of Agricultural Commodities Association of Nigeria (FACAN)

- **International donor organisations, embassy:**
  14. Netherlands Consulate General in Lagos
  15. EU Delegation in Nigeria
  16. GIZ

- **Relevant local private sector players (e.g. service providers, finance institutes):**
  17. Bank of Agriculture (BoA)

- **EU-based oleoresins/ginger importers:**
  18. Verstegen
  19. Solina Group
  20. Olam Group
  21. Tilbrook Products Ltd.
  22. Ramon Sabater S.A.
  23. Juan Navarro Garcia S.A.U
  24. High Quality Organics Inc.
  25. IDH
  26. Doens Foods Ingredients B.V
  27. Koninklijke Euroma B.V.

  (Importers were interviewed earlier by CBI.)

- **NGOs in Nigeria:**
  28. TechnoServe Nigeria
  29. Synergos Nigeria
  30. Oxfam (Nigeria)

Annex 2: List of Participants at the Validation Workshop

There were some 25 participants at the validation workshop representing 14 participating organisations, CBI and SureChain.

A. List of Participating Organisations

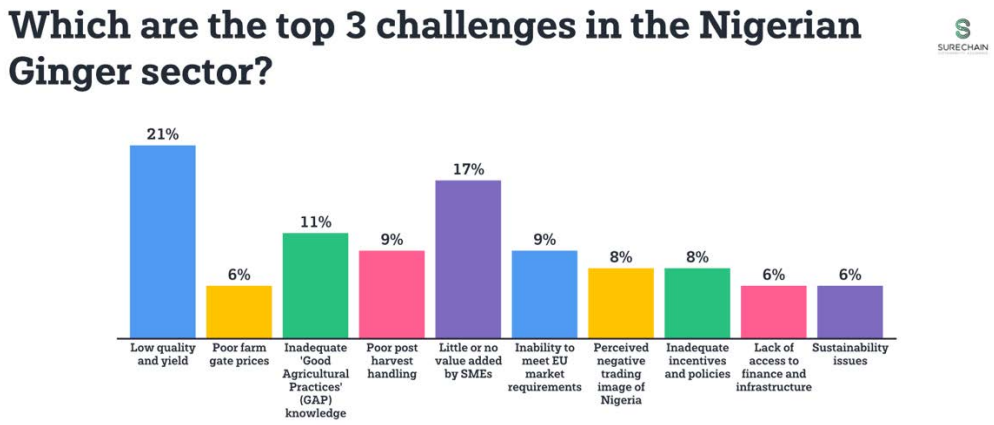
- **SME exporters:**
  - Belphins Nigeria Limited
  - Oklan Best
  - Tiger Foods Nigeria Limited
- **Institutional stakeholders:**
  - Kaduna State Ministry of Agriculture
  - Standards Organisation of Nigeria (SON)
  - Nigeria Export Promotion Council (NEPC)
- **Ginger associations:**
  - National Ginger Farmers Association
  - Ginger Growers Association of Nigeria
  - Federation of Agricultural Commodities Association of Nigeria (FACAN)
- **International donor organisations, embassy:**
  - Netherlands Consulate General in Lagos
  - EU Delegation in Nigeria
  - GIZ
- **Relevant local private sector players (e.g. service providers, finance institutes):**
  - Bank of Agriculture (BoA)
- **EU-based oleoresins/ginger importers:**
  - IDH

  (Importers were interviewed earlier by CBI.)
- **NGOs in Nigeria:**
  - Synergos Nigeria
- **CBI**
- **SureChain**

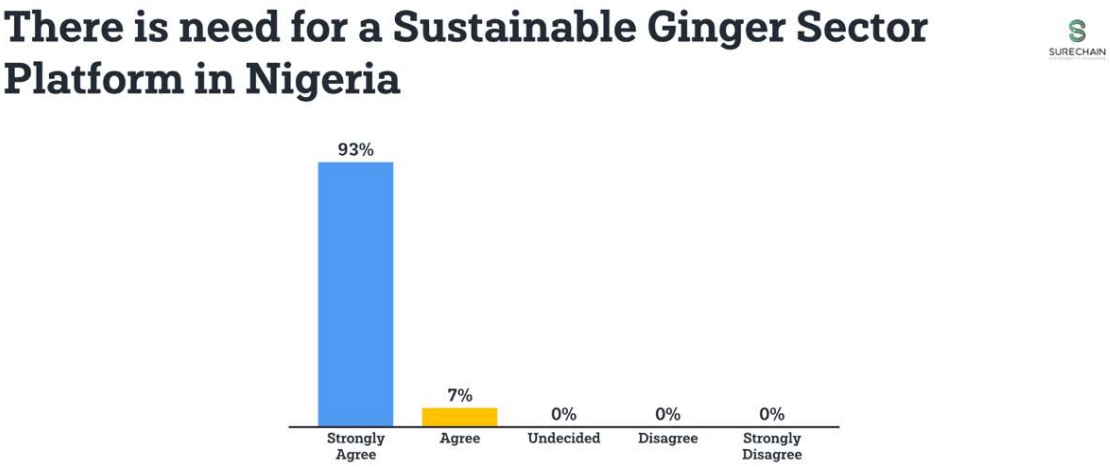
B. Summary of outcomes of validation workshop

Below is a summary of the main outcomes of the validation workshop, including responses to six interactive online surveys conducted during the workshop.

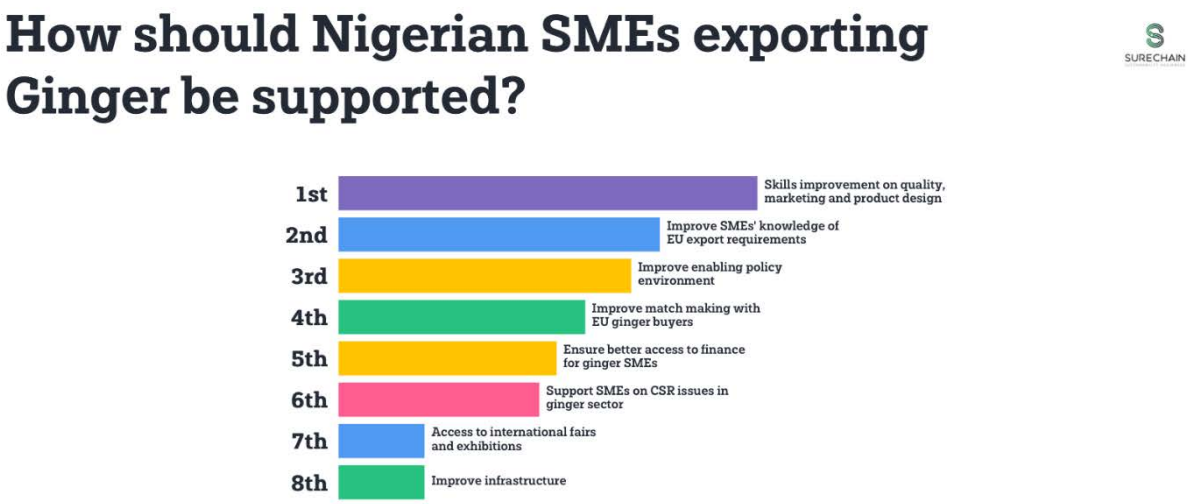
- **On challenges in the ginger sector**: Stakeholders discussed the various challenges in Nigeria's ginger value chain. The majority of the participants confirmed that the main challenges in the ginger sector are the low yield and low quality compared to those of Nigeria's peer producing countries. It was also confirmed that there is almost no value addition (through processing) in Nigeria's ginger value chain. Several stakeholders noted that lack of investment and access to finance in the sector are major limitations to ensuring value addition in this sector.



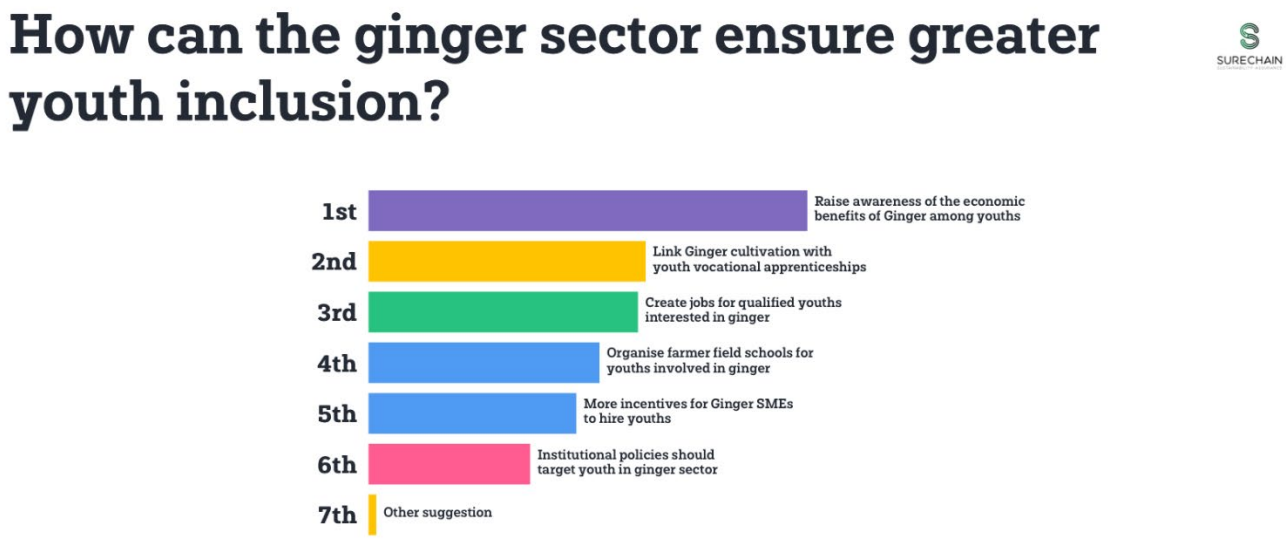
- **On the proposed ginger platform and goals**: When asked if participants agreed that a National Sustainable Ginger Platform is needed to transform the sector (with the goals presented in section 4.3 above), all participants agreed. There was a degree of shared optimism that most of the goals mentioned could be achieved. It was also confirmed that having a locally based ginger coordinator would be effective in delivering the outcomes of the proposed project. A participant mentioned that the platform should also be linked to other commodities as well, to ensure that all commodities benefit from the objectives of the proposed project.



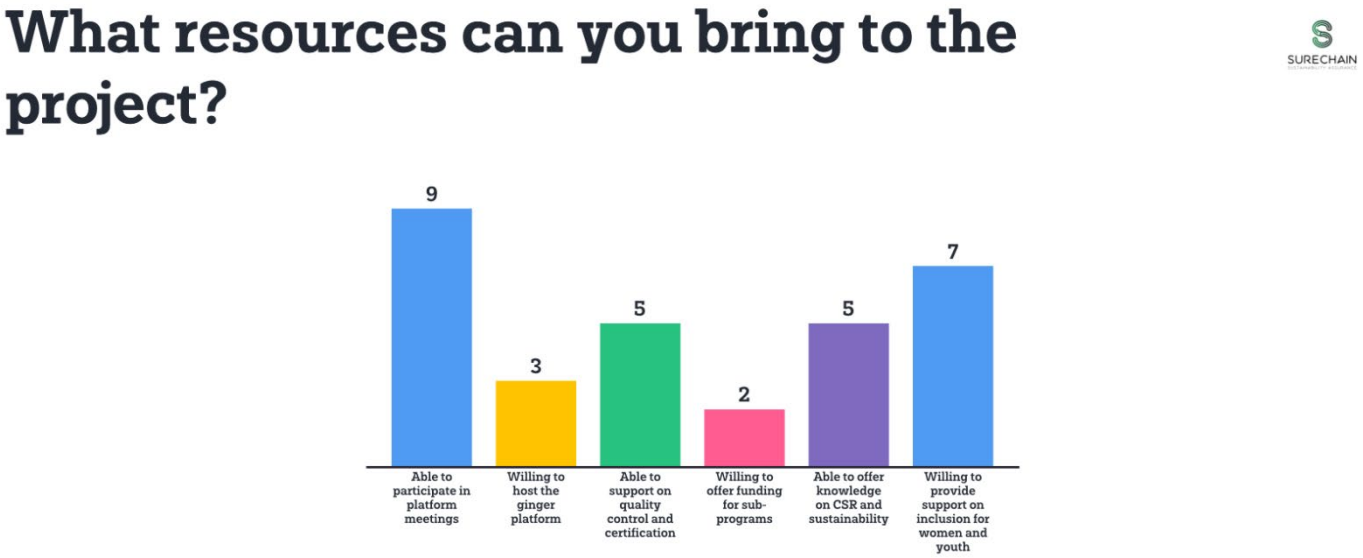
- **On how Nigerian SME exporters could be supported by the proposed programme**: Participants also discussed how Nigerian SMEs exporting ginger could be supported. The majority stressed that improving the skill set of SMEs on quality, marketing and product design is crucial. Most of the SMEs in this value chain still lack know-how in those areas and would need some support to improve their knowledge on export requirements for the EU market. Some of the companies already exporting ginger expressed interest in matchmaking with international buyers. SON emphasised the challenges that ginger exporters face in complying with quality standards. More support is needed throughout the chain to improve product quality (particularly the elimination of impurities, mycotoxins/aflatoxins contamination, moulds, etc.).



On youth inclusion: The discussion on how to involve youth in the ginger value chain was interesting. It was confirmed that despite large numbers of Nigerian adolescents and young adults, most are still unable to find gainful employment. They are also not interested in agriculture and the sector is becoming an ageing sector. Most participants confirmed that the youth is unaware of the economic benefits of ginger and that more awareness raising could incentivise them to become involved. Others noted that youth inclusion in the ginger sector, particularly in the northern part of Nigeria, could help youth and their families recover from the economic devastation they may have experienced, caused by the impact of insecurity in the area over the past years.



On partnership and commitment: Participants discussed their willingness to be involved in the proposed CBI ginger project. All participants were eager to be involved. Three participating organisations indicated their willingness to host the proposed CBI project. The NEPC, in particular, stressed its capability to host the ginger platform, given its previous experience with working with CBI. The Bank of Agriculture (BoA) indicated that it is willing to be involved in offering some funding for sub-programmes of the proposed project. The CBI programme manager will follow up with participating organisations on their involvement.



On participants 'expectations for the proposed project: Below is a word cloud of expressions from participants on what they expect from the proposed CBI project in Nigeria's ginger sector.

Annex 3: Ginger Value Chain Figures and Data

STAKEHOLDER	INDICATOR	VALUE
SMEs	Number of SMEs operating in this sector	• NEPC estimated that over 5,000 SMEs with fewer than 500 employees are active in the ginger value chain. • The export sector is estimated to employ over 200,000.
	Number of SMEs with international business contacts (EU/EFTA and non-EU/EFTA)	• According to NEPC, about 20-26 ginger exporting SMEs have international business contacts (EU/EFTA and non-EU/EFTA). • Tridge (2020) estimates that there are currently fewer than ten major trading corporations that export more than 1,000 Mt per month.
	Number of exporting SMEs in this specific value chain	According to NEPC: • 26 in 2018 • 21 in 2019
	If company audits are conducted: level of export knowledge and capacities, incl. reference to current growth (in turnover and/or export)	No available information on company audits. However, sector experts maintain that SMEs have "moderate export knowledge". It is stressed that ginger SMEs require more knowledge and capacity development to be able to comply with EU export requirements.
BSOs and sector associations	Number of BSOs and sector associations active in this value chain	• Nigerian Ginger Association of Nigeria (NGAN) and Ginger Growers, Processors and Marketers Association of Nigeria (GGPMAN). GGPMAN claims that it has around 200,000 registered members. • NICERT is a key BSO for certification in the ginger value chain in Nigeria. • Some NGOs also act as BSOs in the ginger sector, for instance Synergos. • NEPC is also active in this value chain.
	Type of export-enabling services provided by BSOs and sector associations	• Certification • Extension service and/or aggregation • Logistics • Packaging and product development • Capacity building
	Level of cooperation between the private sector, government, NGOs and knowledge institutions	According to NEPC, the level of cooperation is high. A few examples mentioned during interviews are: • The Anchor Borrower's programme supports low-interest loans for ginger cultivation and processing, bringing together producers, cooperatives and buyers. • NICOP is currently partnering with NEPC to work with SMEs (including those processing ginger) on HACCP registration as well as sensitisation on export procedures. • Synergos is working with state governments to implement the goals of the APP initiative of the federal government by facilitating the ginger clinic under the current State Partnership in Agriculture (SPA) in Kaduna, Benue and Kogi states.

	Management capacities of BSOs	The associations have clear governance structures including management roles and responsibilities. They are recognised by government institutions and are active in influencing government initiatives in the sector. According to interviewees, the associations still have a lot to learn when it comes to providing effective coordination, marketing and service delivery for their members. Interviewees specifically mentioned that skills related to proper financial management, defining a strong business model and planning as well as marketing is currently poor in these associations.
With local government	Number of relevant export development strategies and international trade-related policies formulated and implemented	There is no specific government policy on ginger export, although there are policies that apply to the ginger value chain in Nigeria. • General Agricultural Programme: o Agricultural Promotion Policy (APP) which amongst others, aims to prioritise the development of selected crops to improve domestic food security and boost export earnings. While this policy applies to ginger cultivation in general, and ginger is considered a key export earner for Nigeria, it was not identified as a priority crop in the APP.[46] • Nigerian Agricultural Export Control Plan (or Single Quality Control Management Plan): A five-year plan (until 2021) aiming to bring Nigerian agricultural exports up to international standards. The plan was requested by the EU.[47] • Zero Reject Programme: Established by FMARD to promote best practices in agricultural products quality handling and link stakeholders and farmers for quality consumption and export drive.[48] • Relevant Youth Programmes: o Livelihood Improvement Family Enterprise (LIFE), which aims to contribute to job creation, value addition, and promotion of business enterprises in agricultural value chains, thereby increasing rural income generation and improved livelihoods for youth and women.[49] o N-Power Agro: N-Power Agro is a government programme that will train qualified youth to provide advisory services to farmers across the country, to augment the existing low number of public agricultural extension service staff.[50]
	Level of access to finance for SMEs	Stakeholders indicate that this is low, particularly for women-led or owned SMEs and smallholder farmers in the ginger sector. Nevertheless, it is worth mentioning that ginger is one of the commodities considered under the Anchor Borrowers Program, which aims to provide loans through the existing Micro, Small and Medium Enterprises Development Fund (MSMEDF) to private large-scale integrated processors who have entered into an agreement with the smallholder farmers to purchase their harvested produce at the agreed prices. [51]
Contextual factors	Production figures of main products in this value chain (esp. those products that CBI would want to focus on) incl. product pricing	According to FAOSTAT data, Nigeria ginger production recorded an over 55% increase between 2014 (168,000 tonnes) and 2018 (369,000 tonnes), although this is still lower than its production in 2013. In 2019, Nigeria's

<table>
<tr><td></td><td></td><td>gross ginger production was valued at
USD 246.06 million.

Pricing
Although prices fluctuate, based on information from chain actors and NEPC, the prices are:
• Cleaned split dried ginger:
o Conventional: USD 1,850/Mt
o Organic certified USD 2,500-3,000/Mt
o FAQ Grade: USD 1,450/Mt to USD 3,000/Mt
• Ginger powder:
o Organic certified: USD 7,000-8,000 per tonne
o Conventional: USD 4,000-4,500 per tonne
• Ginger shot and oleoresin (ginger oil):
o Organic certified: USD 8.99 per 10 ml
o Conventional: USD 8.99 per 30 ml</td></tr>
<tr><td></td><td>Direct export to the EU/EFTA in volumes and EUR, incl. growth in %</td><td>According to EUROSTAT data:
• In 2019 the EU imported around 35,000 tonnes of Nigerian fresh ginger (24.9% growth since 2017), valued at EUR 5.4 million (16.3% growth since 2017).
• In 2019 the EU imported around 22,000 tonnes of Nigerian dried ginger (a 19% growth since 2017), valued at around EUR 4.6 million (a 17% growth since 2017).</td></tr>
<tr><td></td><td>Main export destinations</td><td>• Data from the Global Resource Trade shows that the top 5 export destinations of ginger from Nigeria are India, Germany, Morocco, the UAE and Egypt, with a combined total value of USD 23 million in 2018.[52]
• According to ITC data, the Netherlands, Germany and the UAE are the markets with the greatest export potential for Nigerian ginger.</td></tr>
<tr><td></td><td>Main certification standards in this value chain in this country</td><td>Global GAP, Organic, Fair trade, BRC, HACCP, FDA, Halal, ISO, IFS, Good Agricultural Practices (GAP), Europeans Spice Association (ESA), ASTA, USDA, NOP, EC 834/2007,889/2008, ECO CERT</td></tr>
<tr><td></td><td>Ginger production in Nigeria in 2016-2018</td><td><table><tr><td>YEAR</td><td>VOLUME (tonnes)</td></tr><tr><td>2016</td><td>351,585</td></tr><tr><td>2017</td><td>342,105</td></tr><tr><td>2018</td><td>369,019</td></tr></table></td></tr>
</table>

REFERENCES

1 Belphins (n.d.) *About Us*, online: http://belphins.tripod.com/aboutus.html, viewed November 2020.

2 Green Sahara Farms (n.d) *Featured Projects*, online: https://greensaharafarms.com/index-2.html, viewed November 2020.

3 OEC (n.d.) *Ginger: Product Trade*, online: https://oec.world/en/profile/hs92/ginger?redirect=true, viewed in November 2020.

4 CBI (2019) *EU market potential for dried ginger*, online: https://www.cbi.eu/market-information/spices-herbs/dried-ginger/market-potential, viewed September 2020.

5 ibid.

6 Fresh Plaza (n.d.) *Nigerian Ginger Farming*, online: https://www.freshplaza.com/article/9060156/nigerian-ginger-farming/, viewed September 2020.

7 InfoGuide Nigeria (n.d.) *The Origin of Ginger in Nigeria*, online: https://infoguidenigeria.com/ginger-farmingnigeria/#:~:text=The%20origin%20of%20ginger%20can%20be%20traced%20to,Plateau%20State.%20But%20today%2C%20Ginger%20is%20cultivated%20nationwide, viewed September 2020.

8 Ahmed (2018) *Ginger Farming Practice in Jabba Region, Kaduna State, Nigeria*, online: https://fud.edu.ng/journals/dujopas/2018_JUNE_Vol_4_issue_2/027%20edited-1.pdf, p. 155, viewed September 2020.

9 Resource Trade (n.d.), *Export of Ginger from Nigeria*: online: https://resourcetrade.earth/?year=2018&exporter=566&category=918&units=value, viewed November 2020.

10 ITC (n.d.) *ITC Country Fact Sheets: Spotting Products with Export Potential*, p. 86.

11 CNN (2019) *Nigeria improves in World Bank ease of doing business ranking, but is it easier to do business there?*, online: https://edition.cnn.com/2019/10/24/africa/nigeria-improves-in-world-bank-ranking/index.html, viewed November 2020.

12 World Bank (2018) *Doing Business in the Nigeria 2018*, online: https://www.doingbusiness.org/content/dam/doingBusiness/media/Subnational-Reports/DB_in_Nigeria_2018_w-bookmarks.pdf, pp. 4-5, viewed November 2020.

13 This represents the average changes in domestic selling prices over time.

14 Tridge (2020) *Analysis on the Ginger Industry in Nigeria*, p. 9.

15 ibid.

16 Authorstream (2018) *Nigeria Food & Beverage Report 2018*, online: http://www.authorstream.com/Presentation/fabwestafrica-3593512-nigeria-food-beverage-industry-report-2018/, viewed August 2020.

17 USAID Next, ROMIS (2017) *Feasibility Study and Business Plan for ginger processing to oleoresin an industry wide study report*, p. 63.

18 GLOBE NEWSWIRE (2019) *Global Oleoresins Market Will Reach USD 1.94 Billion by 2026*, online: https://www.globenewswire.com/news-release/2019/08/02/1896332/0/en/Global-Oleoresins-Market-Will-Reach-USD-1-94-Billion-By-2026-Zion-Market-Research.html, viewed in November 2020.

19 USAID Next, ROMIS (2017) Feasibility Study and Business Plan for ginger processing to oleoresin an industry wide study report, p. 63.

20 Mordor Intelligence (n.d), *AFRICA NUTRACEUTICAL MARKET - GROWTH, TRENDS AND FORECASTS (2020 - 2025)*, online: https://www.mordorintelligence.com/industry-reports/africa-nutraceutical-market, viewed August 2020.

21 Africa Business Communities (2017) *Africa Pet Nutraceuticals Market on high growth trajectory*, online: https://africabusinesscommunities.com/news/africa-pet-nutraceuticals-market-on-high-growth-trajectory/, viewed August 2020.

22 Spycroc (n.d.) *Nigerian Herbal Remedies (Complete list of Nigerian Herbs for all diseases)*, online: https://www.spycroc.com/2019/03/nigerian-herbal-remedies-here-is.html, viewed August 2020.

23 CBI (2019) *EU market potential for dried ginger*, online: https://www.cbi.eu/market-information/spices-herbs/dried-ginger/market-potential, viewed September 2020.

24 Tridge (2020) *Analysis on the Ginger Industry in Nigeria*, p. 6.

25 Kristin, Davis, Tunji (2019) *Organisational capacities and management of agricultural extension services In Nigeria: Current status*, online: https://www.ifpri.org/publication/organisational-capacities-and-management-agricultural-extension-services-nigeria-current, viewed November 2020.

26 N-Power (n.d.) *Video*: *What you need to know*, online: https://www.npower.gov.ng/n-agro.html, viewed November 2020.

27 NGAN (n.d.) *About us*, online: https://www.nigeriaginger.org/, viewed October 2020.

28 GGPMAN (n.d.) *About us*, online: https://www.gingergrowers.org/about-us/, viewed October 2020.

29 Synergos (2016): Market Intelligence Study: *Baseline information for the current market for rice, cassava, ginger and potato in Kaduna, Kogi and Benue states*, p. 4**.**

30 GIZ (2019) *The Nigeria Competitiveness Project (NICOP)*, online: https://www.sedin-nigeria.net/images/resources/eu/factsheets/NICOP-project-factsheet-new3.pdf, viewed November 2020.

31 The National Organic Program (NOP) accredits third-party organisations to certify that farms and businesses meet the national organic standards. USDA and accredited certifiers also work together to enforce the standards, ensuring a level playing field for producers and protecting consumer confidence in the integrity of the USDA Organic Seal. See: https://www.ams.usda.gov/about-ams/programs-offices/national-organic-program, viewed November 2020.

32 It lays down detailed rules for the implementation of Council Regulation (EC) No 834/2007 on organic production and labelling of organic products with regard to organic production, labelling and control. See: *https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32008R0889*, viewed November 2020.

33 Fairtrade Standards are designed to support the sustainable development of small producer organisations and agricultural workers in developing countries. The Fairtrade Standards incorporate a holistic blend of social, economic and environmental criteria. The standards contain both core requirements and development requirements aimed at improvements that benefit producers and their communities. Traders are also covered by the standards, underscoring the commitments companies and businesses must make to contribute to sustainability in their supply chains and operations. See: https://www.fairtrade.net/standard, viewed in November 2020.

34 The European Spice Association Minima Quality document describes the quality minima for dried herbs and spices (including dried ginger), which should be demanded by buyers when these products are purchased for further processing within the EU. See: https://www.esa-spices.org/download/esa-qmd-rev-5-update-as-per-esa-tc-26-03-18.pdf, viewed November 2020.

35 The HACCP International certification mark is aligned with the due diligence requirements of the world's leading food safety standards and quality systems. Ten key criteria are examined to give that full assurance. Certified products need to satisfy all criteria. See: https://haccp-international.com/about-us/, viewed November 2020.

36 The IFS Standards currently comprise six standards, which have been developed for and by the stakeholders involved in all parts of the supply chain. All standards are process standards which help users when implementing legal provisions regarding food and/or product safety, and provide uniform guidelines on food, -- product safety and quality issues. An IFS certification shows that the certified company has established processes which are suitable for ensuring food and/or product safety, and that it has considered and implemented customer specifications. Certification is open to food manufacturers, brokers, logistics providers, manufacturers of household and hygiene products as well as wholesalers. See: https://www.ifs-certification.com/index.php/en/standards, viewed November 2020.

37 NEPC (n.d.) *Strategic Partner*, online: https://nepc.gov.ng/blog/strategic-partner/cbi/, viewed November 2020.

38 WEF (n.d.) *The Global Gender Gap Index 2020 rankings*, online: https://reports.weforum.org/global-gender-gap-report-2020/the-global-gender-gap-index-2020/results-and-analysis/, viewed November 2020.

39 NEPC (n.d.) *Women in Exports*, online: https://nepc.gov.ng/trade-facilitation/women-in-exports/#:~:text=NEPC%20created%20the%20Women%20in%20Export%20division%20to,potential%20buyers%20Support%20in%20collective%20trade%20promotion%20services, viewed November 2020.

40 PyceraGlobal (2016), *Launching Agrifood Youth Opportunity Lab*, online: https://www.pyxeraglobal.org/launching-agrifood-youth-opportunity-lab-nigeria/, viewed September 2020.

41 Odukoya (2009) 'Child Labour in Nigeria: Historical Perspective' in Hugh Hindman (ed.), *The World of Child Labour: An Historical and Regional Survey*, p. 231.

42 Atiyong (2018) *Effect of Rainfall Variability on the Sustainability of Ginger Yield in Jaba local government area of Kaduna state, Nigeria*, online: https://www.researchgate.net/publication/325466221_EFFECT_OF_RAINFALL_VARIABILITY_ON_THE_SUSTAINABIL

ITY_OF_GINGER_YIELD_IN_JABA_LOCAL_GOVERNMENT_AREA_OF_KADUNA_STATE_NIGERIA, viewed November 2020.

43 Fashina et al. (2020) *Determinants of Food Security Level of Ginger Farming Households in Kaduna State, Nigeria*, p..10.

44 Adesugba M, Mavrotas G. (2016) *Youth employment, agricultural transformation, and rural labour dynamics in Nigeria.* IFPRI discussion paper 01579.

45 KIT (2017) *Enhancing food systems in Nigeria: Scope and Perspectives for Dutch Policy interventions,* online: https://www.kit.nl/wp-content/uploads/2019/10/Enhancing-Food-Systems-in-Nigeria.pdf, p..14, viewed November 2020.

46 FMARD (n.d.) *Green Alternative*, online: https://fmard.gov.ng/green-alternative/, viewed November 2020.

47 Oxford Business Group (n.d.) *Agriculture Exports in Nigeria Increase*, online: https://oxfordbusinessgroup.com/analysis/leveraging-growth-agricultural-exports-are-although-various-hurdles-still-need-be-overcome, viewed November 2020.

48 FMARD (n.d.) *Zero Reject*, online: https://fmard.gov.ng/zero-reject/, viewed November 2020.

49 FMARD (n.d.) *Life Programme*, online: https://fmard.gov.ng/the-life-programme/, viewed November 2020.

50 N-Power (n.d.) *Video*: *What you need to know*, online: https://www.npower.gov.ng/n-agro.html, viewed November 2020.

51 CBN (2016) *Anchor Borrowers' Programme Guidelines*, online: https://www.cbn.gov.ng/out/2017/dfd/anchor%20borrowers%20programme%20guidelines%20-dec%20%202016.pdf, viewed November 2020.

52 Resource Trade (n.d.), *Export of Ginger from Nigeria,* online: https://resourcetrade.earth/?year=2018&exporter=566&category=918&units=value, viewed November 2020.