TECHNICAL ASSISTANCE IN SUPPORT OF TRADE AND DEVELOPMENT IN MOZAMBIQUE – PROMOVE COMÉRCIO

MARKET STUDY OF NUTS AND OIL SEEDS IN THE EUROPEAN UNION

EXPORT OPPORTUNITIES FOR MOZAMBIQUE

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Table of Acronyms

EU	European Union
ACA	African Cashew Alliance
AICAJU	Associação de Industriais do caju (Association of Cashew Industrials)
AMM	Association of Macadamia of Mozambique
BEV	Federation of German Food and Drink Industries
BRC	British Retail Consortium
CAGR	Compound Annual Growth Rate
CIF	Cost Insurance Freight
CNSL	Caustic Nut Shell Liquid
CSRB	Cashew Stem and Root Boarer
DIY	Do It Yourself
EC	European Commission
EPA	Economic Partnership Agreement
FAO	Food and Agriculture Organization
FBS	Farmer Business School
FFL	Fair For Life
FOB	Free on Board
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Agency for International Cooperation)
Generation Z	The group of young people who were born in the late 1990s and early 2000s
GFSI	Global Food Safety Initiative
ha	Hectare
HACCP	Hazard Analysis Critical Control Points
HORECA	Hotel-Restaurant-Catering (Food service sector)
IFS	International Food Standard
INAE	National Inspectorate of Economic Activities
INCAJU	Instituto de Fomento do Caju (Cashew Promotion Institute)
INSEE	French National Office for Statistics
IPM	Integrated Pest Management
ITC	International Trade Centre
MAPA	Ministry of Agriculture in Spain
MRLs	Minimum Residue Levels (of pesticides in Agricultural products)
na	not available (of figure)
PE	Polyethylene
PET	Polyethylene Terephthalate
PDCA Cycle	Plan-Do-Check-Act cycle
PPM	Parts per Million
PT	Productschap voor de Tuinbouw (Netherlands Horticulture Board)
PUFA	Polyunsaturated fatty acids
QC	Quality Control

RCN	Raw Cashew Nuts
SMEs	Small and Medium Enterprises
SNACMA	Snack, Nut and Crisp Manufacturers Association (UK)
SNI	Sustainable Nut Initiative (Netherlands)
TMB	Tea Mosquito Bug
VAT	Value Added Tax
VINACAS	Vietnamese Cashew Association
UNECE	United Nations Economic Commission for Europe
USDA	United States Department of Agriculture
WARC	World Advertising Research Centre
WHO	World Health Organisation

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PROLOGUE OF THE STUDY

CONTEXT

This market study was produced as part of the Promove Comercio programme providing technical assistance in support of Trade and Development in Mozambique. The programme is implemented by DAI Development Alternatives Initiative Pty. Ltd. It is funded by the European Union.

The study is part of Component 3 of the project, which aims to disseminate and raise awareness of the EU market and its opportunities for edible nuts and sesame seeds from Mozambique among the Economic Partnership Agreement's various actors, the private sector, and civil society. Besides, Business Associations' capacity to promote EPA trade and trade opportunities must be improved.

RESEARCH OBJECTIVE

The main objective of this market study is to produce commercial intelligence, that allows producers, processors and exporters (SMEs) of nuts and oilseeds to improve their international sales, prices, sales volumes and enter new markets. More specifically, the study should identify and analyse consumer and import markets, trade channels and access requirements for nuts and oilseeds in the European Union (EU) and in selected Member States. In addition, it should provide an analysis of Mozambique's export opportunities, mainly for processed nuts in these markets and provide recommendation on how to enter the EU market successfully.

SCOPE OF THE STUDY

The study covers tree nuts and groundnuts (peanuts) referred to in this study as edible nuts as well as sesame seeds. Note that coconuts, chestnuts and betelnuts are not covered in this market study. Within the tree nuts, the most promising nuts are cashew nuts, macadamia nuts, almonds, Brazil nuts, pecan nuts and mixed nuts. After a review of the global production and market for edible nuts (tree nuts, peanuts) and sesame seeds in **Chapter 1,** the EU market is covered in **Chapter 2**.

Chapter 3 describes the characteristics of each type of nut as well as consumer uses and applications in industrial segments. Furthermore, the imports by each EU country and the developments in EU imports are reviewed and analysed. Based on the nuts that are exported by Mozambique a selection is made on imports of each EU country of the most promising nuts. Tables with detailed statistics are given in Annex 2.

The 2nd part of Chapter 3's second part focuses on the nine selected key markets: Germany, France, Spain, Italy, Netherlands, Belgium, Greece and Poland. Because of its size, the UK market is covered as well. The population trends, economic condition, savoury snack market, key trends in consumption of edible nuts and the imports of the most important nuts are covered in each market.

Special emphasis is given on the increasing recognition of the health benefits of nuts, which has led to an increase in meal and snack innovations. This provides a strong basis for the EU's future market development and opportunities.

Chapter 4 looks at trends related to consumer demand, development of new varieties of nuts, food safety certifications used by exporters from other countries, traceability, clean labelling, carbon footprint, use of co-products and new packaging trends in bulk and retail.

Chapter 5 examines the main trade channels in the EU, production of nuts in EU member states, and the principal food processors in the selected markets. Imports of edible nuts by each selected key market are further examined by looking at their origin, with an emphasis on imports from African supplying countries.

Chapter 6 reviews the legislative market access requirements in detail to minimise the number of nut interceptions at the port of entry due to noncompliance with food safety regulations which often happens with nuts and oils seeds from Africa. Practical recommendations are given in how to comply with the strict EU market access requirements.
This chapter also discusses quality standards, packaging, and labelling, as well as pricing developments and price comparisons between Mozambican and other African and Asian supplying countries. Further, retail prices for nuts and sesame seeds are listed in this chapter.

Chapter 7 discusses the main varieties of nuts and sesame seeds that are cultivated and exported in raw or processed form, as well as the associated problems and challenges. Consideration is given to the cultivation of organic nuts by small-holder farmers and cooperatives, with recommendations to use sulphur or Bio-spray amongst others.
The major export markets for Mozambican edible nuts and sesame seeds are analysed and compared to those of other African competitors.
This chapter also summarises the opportunities for Mozambican producers, cooperatives, and exporters in the EU market and in the key markets. In addition, it discusses relevant challenges, followed by the main conclusions. Furthermore, recommendations for entering the EU market are given in terms of training, control, post-harvest conditions etc.., and diversifying the supply of edible nuts to match them more with demand or market segment applications.

The last part of Chapter 7 gives practical information about identifying business partners, price setting and negotiations and some ideas about promotion as in many EU markets, buyers and consumers are not familiar with Mozambique. In Annex 3, a directory with addresses of EU importers is given.

METHODOLOGY FOR THE STUDY
Extensive desk research was conducted where all available secondary source information was accessed. A thorough search was made using official statistics (ITC, Eurostat, INC, Statista), research databases, market reports (including from Euromonitor, Mordor Intelligence, Grand View Research etc.), online trade press (LSA, Lebensmittelzeitung, Fresh Plaza, Alimarket, Organic-Bio etc..), trade associations, trade platforms (Tridge, Mundus Agri, Ingredients Network, web portals), company information sources, governmental and non-governmental trade information, market studies on the value chain, production and competitiveness of Mozambique as well as other information via the internet.

Field research was done through discussions with buyers in Germany, Netherlands and France by phone interviews between July and August 2022. Store checks at several supermarkets, organic stores in France and the Netherlands were carried out.

All data/information is reviewed and cross-checked before using it. This ensures that we are as confident as possible with the accuracy, reliability and integrity of the information. As market trends change quickly, up-to-date information is used and comparisons are made over 5 years, from 2018 to 2022.

LIMITATIONS

Trade statistics in the study must be interpreted and used with caution. The apparent consumption figures for each selected EU country provides a rough indication. Due to the volatile nature of imports and exports, particularly of groundnuts, consumption figures for trading countries like the Netherlands, Germany, and the UK should be treated with extreme caution.

Regarding export statistics from African and some Asian countries, illegal trade flows and unregistered trade can be substantial. Therefore, Mozambique's export figures are typically understated. They should be regarded indicative of the main trends.

1. INTRODUCTION

1.1 The nuts and oilseeds sector: growth and evolution

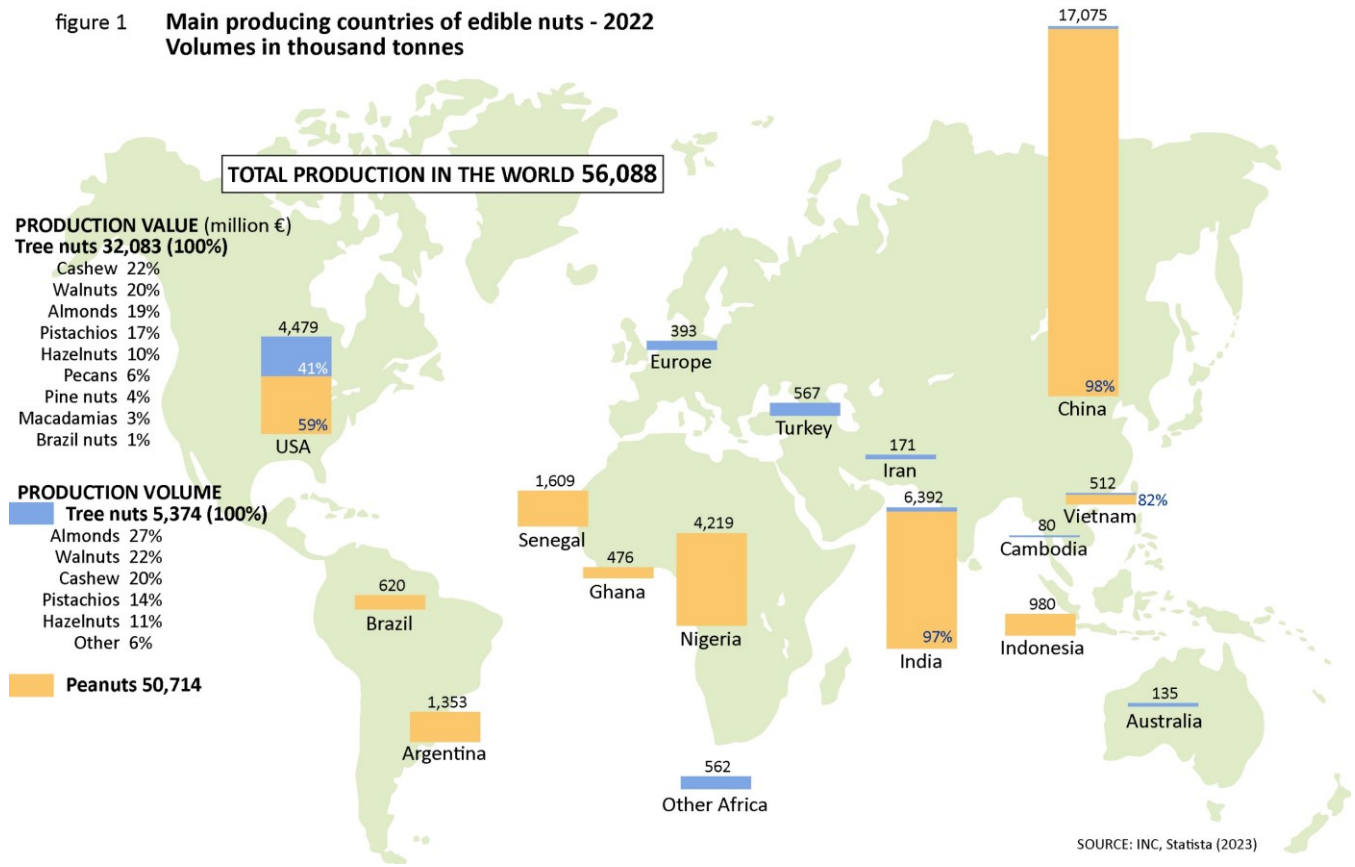
1.1.1. Global nuts production and main producing countries

Tree nut production (kernel basis) has been concentrated mostly in high- and middle-income economies over the last decade according to INC. Between 2013 and 2022, global production rose substantially from 3,343 to 5,374 thousand tonnes. Over this period an CAGR (Compound Annual Growth Rate) of 4.9% was registered which meant a production increase of more than 2,000 thousand tonnes.

In 2022, almonds and walnuts accounted for 27% and 22% of the world production volume, respectively, followed by cashews (20%), pistachios (14%) and hazelnuts (11%). Pecans, macadamias, pine nuts and Brazil nuts together accounted for the remaining 6%.

In the same year, production value was estimated at € 32,083 million of which cashews were taking up the largest part 22% (€ 6,962 million), followed by walnuts, almonds and pistachios as is shown in Figure 1.

figure 1 **Main producing countries of edible nuts - 2022**
Volumes in thousand tonnes



The USA took up the large part of global tree nut production with an average share of 36% over the past five seasons (2018/19-2022/23). Almonds, pistachios and walnuts were the most widely grown crops, accounting for 59%, 22% and 15% of US tree nut production, respectively.

Turkey is the second largest producer and accounted for 11% of global production, with hazelnuts accounting for 63% and pistachios for 30%.

Production of tree nuts in the group 'Other African countries' were mainly Cashew nuts in West and East African countries (Côte d'Ivoire, Burkina Faso, Mozambique and Tanzania), whereas South Africa was an important producer of Macadamias and Pecan nuts.

The highest annual growth rates between 2013 and 2022 were observed for walnuts and macadamias at 9% each, followed by cashews (7%). Pistachios and pecan production rose by an average of 5% per year, while almonds and hazelnuts grew at an annual rate of 3%.

Peanut production (In-shell basis) was almost 10 times larger than tree nuts production at 50.71 million tonnes in 2022. Since 2013, peanut production rose by an average 2.8% from 40.15 million tonnes in 2013. This meant an annual rise in production of 1,400,000 tonnes. Peanuts were mainly produced in the lower and middle-income countries.

China and India accounted for 35% and 13% of the global peanut production, respectively. Nigeria ranked third with 9%, followed by the USA (5%), Senegal (3%) and Argentina (3%).

Detailed information can be found in the INC Statistical Yearbook 2022/2023 that can be downloaded at https://inc.nutfruit.org/wp-content/uploads/2023/05/Statistical-Yearbook-2022-2023.pdf

The impact of climate change on future production. In 2022 and 2023, hot summers in North America, Southern Europe and Turkey severely hampered the production of all crops, including edible nuts. Especially in July and August, there was a lack of water and working conditions for the workers were tough. In 2023, temperatures were far above 40° due to climate change.

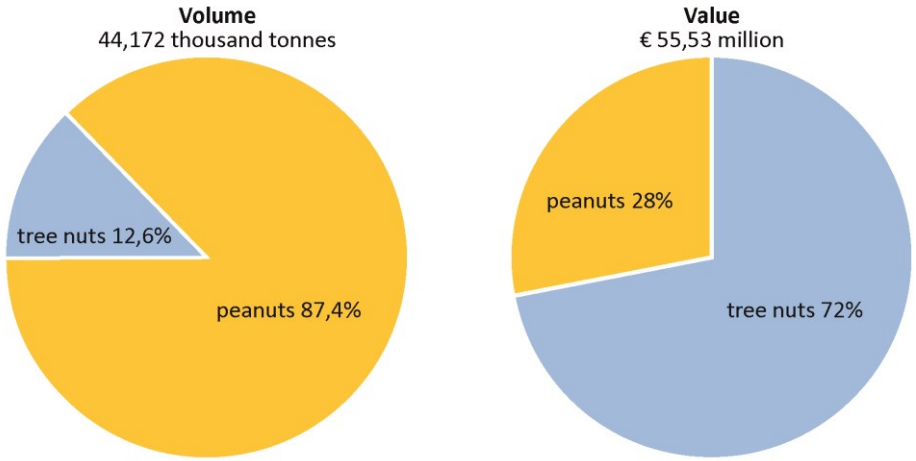
Global warming, amplified in 2023 by El Ninõ, has serious implications for food production, water availability and population health. Climatologists predict that warming around the Mediterranean will be faster than the global average if greenhouse gas emissions are not rapidly reduced.

1.1.2. Growth in the Global nuts and oil seeds market

In 2022, the total global edible nuts market was estimated at 44,172 thousand tonnes representing a value of € 55,532 million. Peanuts represented the largest part (87.4%) of the global nuts market by volume as is shown in Figure 2.

They are eaten as a snack or used in various dishes in almost all developing countries. In the Western countries, peanuts are sold as salty snacks roasted or natural with a large variety of flavoured coatings (spicy, curry, garlic, herbal etc.) or sweet coatings (chocolate, sugar, honey etc.). Besides, they are used for peanut butter which is popular in many countries, used as a spread on bread or as a basis for sauces.

figure 2 **Global market of edible nuts, 2022**
Share peanuts vs tree nuts



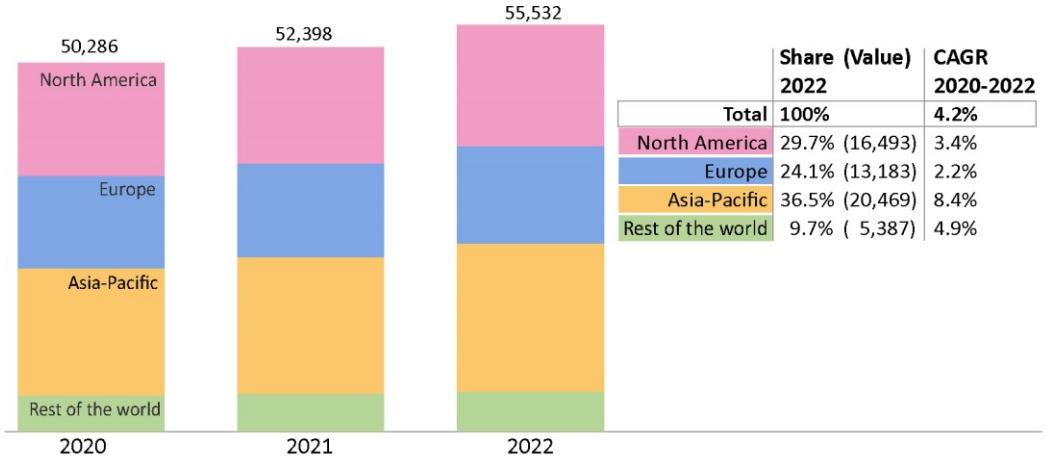
SOURCE: Statista, Grand View Research (2023)

On the other hand, tree nuts represented 72% of the market by value. They are mainly sold in Western countries where much higher prices can be commanded compared to peanuts. Most of tree nuts can be only harvested once a year and there is more work to get them out of the shell.

Growth of the edible nuts market

In the past decade, the global edible nuts market has grown steadily. There were changes in eating habits of consumers in North America, Europe and Asia with a growing number of vegetarians and flexitarians using nuts as a substitute for meat. In addition, the rising popularity of mixed nuts as a On-The-Go snack with healthy properties were also boosting the nuts industry's growth. Between 2020 and 2022 the global market increased at a CAGR of 4.2%, from € 50,286 to € 55,532 million as shown in Figure 3.

figure 3 **Global market growth of edible nuts, 2020-2022**
Value in € million



	Share (Value) 2022	CAGR 2020-2022
Total	100%	4.2%
North America	29.7% (16,493)	3.4%
Europe	24.1% (13,183)	2.2%
Asia-Pacific	36.5% (20,469)	8.4%
Rest of the world	9.7% (5,387)	4.9%

SOURCE: Statista, Grand View Research, Searce estimates (2023)

According to Grand View Research, Asia Pacific held the largest share of 36.5% in 2022, valued at € 20,469 million and has been the fastest-growing market. Between 2020 and 2022 a CAGR of 8.4% was registered. China, India, Indonesia and Japan have a large consumer base for edible nuts as they are already used in a variety of dishes.

North America was the 2nd largest market valued at € 16,493 million in 2022 of which the USA accounted for 78%, followed by Canada 14% and Mexico 8%.

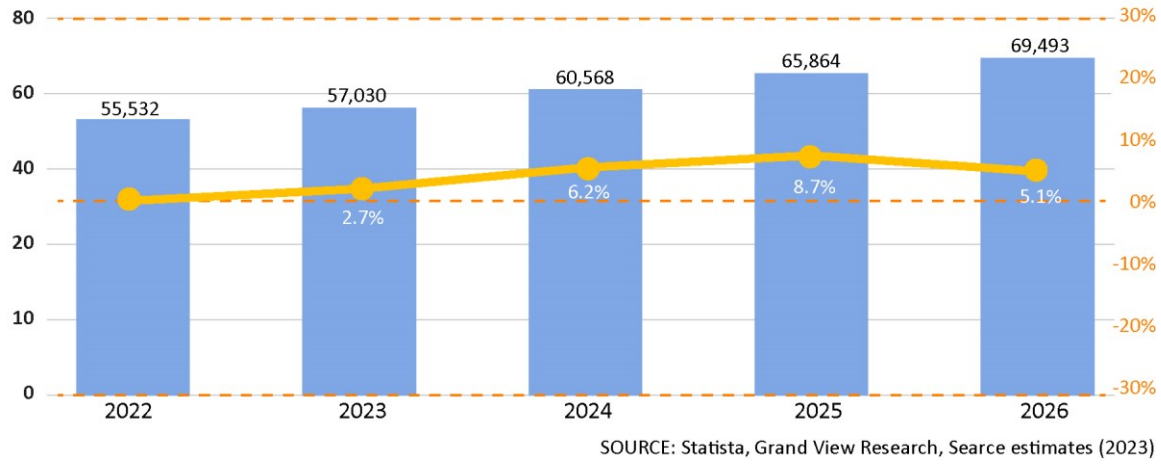
Europe (EU27 + UK) was still the 3rd largest market for edible nuts in the world and the 2nd largest market for tree nuts.

Following the war in Ukraine, sharp rises in food and energy prices has slowed down consumer expenditure in 2022/2023 particularly in Europe and in North America. This has impacted the demand for tree nuts to some extent while importers and processors continued to introduce new nut variations and nut mixtures.

Despite the slowdown in 2023, the global market for edible nuts is expected to grow further in the next 5 years, at a CAGR of 4.6% reaching € 69,493 million in 2026. The growing population and increasing disposable income in Asia-Pacific will accelerate the growth rate. The market is also driven by the trend of grazing (eating nuts in between meals) and the popularity of healthy convenience food using nuts as taste maker. Besides, consumers recognize that nuts have a high concentration of antioxidants, proteins and healthy fats. There is an increased knowledge of organic products and a growing interest among the affluent population in China and India for food that has a high nutritional value.

By 2026, the Asian market is expected to be € 29,003 million. A similar development will take place in Middle Eastern, Latin American and African countries. The edible nuts market for the Rest of the World countries is expected to be € 6,546 million in 2026.

figure 4 **Expected global market growth of edible nuts, 2022-2026**
Value in € million



SOURCE: Statista, Grand View Research, Searce estimates (2023)

The peanuts consumption, primarily dominated by middle-income economies (91%), is expected to increase at a CAGR of 4.4% from 2022 to 2026 according to Grand View Research.

Global market for tree nuts

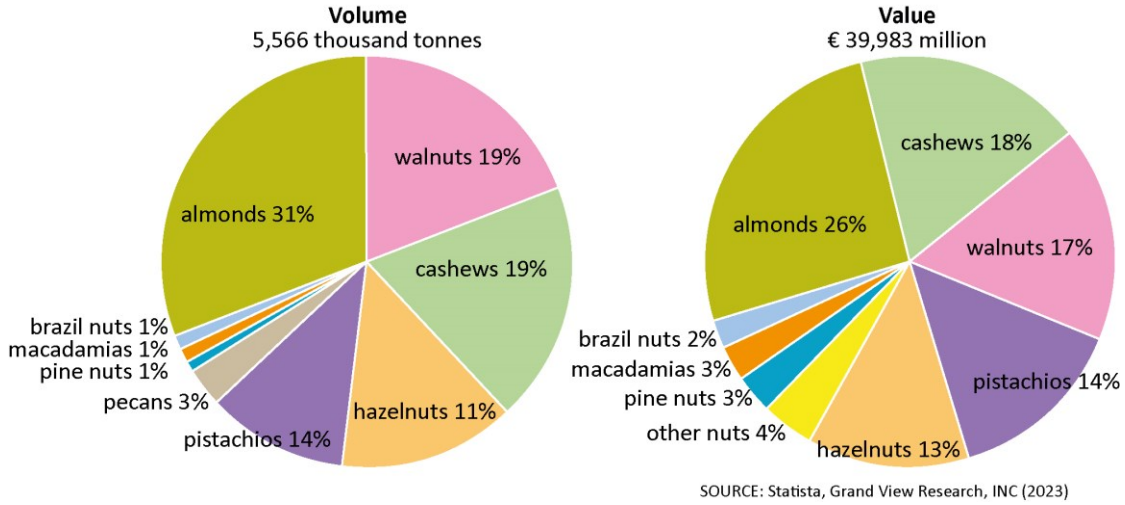
By value, tree nuts made up 72% of the global edible nuts market. In 2022 this market amounted to € 39,983 million. Tree nut consumption is mainly concentrated in the high- and middle-income countries according to INC.

The most popular tree nuts include almonds representing one quarter of the market in terms of value. As is shown in Figure 5, almonds were followed by cashews (18%), walnuts (17%), pistachios (14%), hazelnuts (13%), macadamias, pecans, pine nuts and Brazil nuts.

In terms of volume, the following volumes and market shares were registered in 2022:

Almonds	-	1,571 thousand tonnes (31%)
Walnuts	-	977 thousand tonnes (19%)
Cashews	-	965 thousand tonnes (19%)
Pistachios	-	768 thousand tonnes (14%)
Hazelnuts	-	549 thousand tonnes (11%)
Pecans	-	147 thousand tonnes (3%)
Macadamias	-	64 thousand tonnes (1%)
Pine nuts	-	48 thousand tonnes (1%)
Brazil nuts	-	38 thousand tonnes (1%)

figure 5 **Global market for tree nuts, 2022**
Share by type of nuts



SOURCE: Statista, Grand View Research, INC (2023)

By volume the global tree nut market in 2022 was 5,560 thousand tonnes and nearly has doubled in the past decade compared to from 3,060 tonnes in 2012 for the following reasons:

- **A variety of applications**

  Tree nuts have a wide variety of applications. For example, cashew nuts and walnuts can be consumed on their own or included into other types of snacks, in nut mixes, in salads, or as a flavour enhancer and source of protein in various dishes, especially vegetarian dishes.

In addition, nuts are an important part in low-calorie diets and are recommended for weight loss.

Almonds, Macadamia nuts or peanuts can be used in cosmetic nut oils. It is expected that an increase in consumer expenditure on natural cosmetics will also drive demand for nuts around the world.

- **On-line availability**

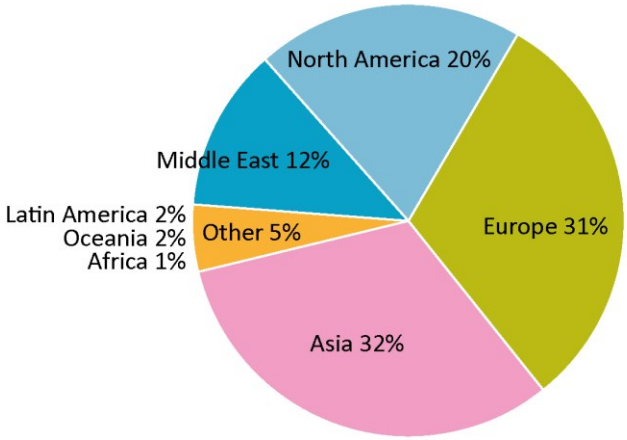
  Physical retailers still accounted in 2023 for 80-90% of the global nuts sales as consumers can physically verify product quality. However, since the COVID lockdown period retailers and on-line sellers offer nuts on their own websites as well as on e-commerce platforms such as Amazon. The rising adoption of the e-commerce sector for the purchase of food products and more internet penetration will further drive the online sales. According to Grand View Research the online sales of the nuts is expected to grow at a CAGR of 4.8% between 2022 and 2028.

- **Beneficial effects on human health**

  The rise of worldwide markets for nuts and seeds has benefited from rising levels of health consciousness. See further at par. 1.2 of this Chapter.

According to the INC, Asia was the top consuming region (32%) due to the large population and developing economies. Europe (31%) and North America (20%) are also taking up large part of the global tree nuts market. There is a high consumption of packaged nuts and there are so many bakeries and candy factories which means a significant demand of nuts and seeds. Recently, the greatest number of product launches occurred in the European and the North American markets.

figure 6 **Global market for tree nuts, 2022**
Share by region based on volume (=5,560 thousand tonnes)



SOURCE: INC, Statista (2023)

Within the Rest of the World group, consumption in Middle East amounted to an estimated 12% of the global market, due to a development of the food industry with a rising presence of International Food companies. Consumption of tree nuts in Latin America, Oceania and Africa was still low.

Oil seeds

According to the USDA, the global oil seed production was estimated at 610 million tonnes on 2022. Soy beans take up the largest part (65%) of production, followed by rape/colza seeds (12%), sunflower seeds (8%) and other oil seeds (15%) including sesame seeds.

For 2024, it is expected that global oilseed production will increase by 7%, primarily due to increases in soybean output in South America and sunflower seed production in the EU, Ukraine, and Russia. Gains in the EU, Canada, and China are reduced by declines in USA, Ukraine, Russia, and Australia.

The Global production of oilseeds is expected to reach a new record of 672 million tonnes, and the output of soybeans is anticipated to increase by 11% (40.0 million tonnes) to nearly 411 million in 2024.

Global consumption of oilseeds will continue to rise by 4% in 2023 and 2024, driven by the recovery of soybean processing in Argentina and rising Chinese demand. It is anticipated that soybean processing and consumption will account for the majority of the increase in global oilseed use. The consumption of rape/colza seeds is predicted to increase by 1%, while the refining of sunflower seeds is expected to stay nearly unchanged.

Global oilseed exports are expected to be up 1% as higher soybean import demand offsets lower rapeseed and sunflower seed imports. Slowing economic growth in China and the EU coupled with growing domestic oilseed production as well as continuing expansion of soybean planted area in South America will likely pressure global soybean prices in the coming year. Projected weaker soybean import growth in China and the EU coupled with recovery in Argentina soybean output and yet another record crop forecast for Brazil will limit opportunity for large supplying countries like the USA to expand soybean exports and gain global market share, leading to stock building.

Generally, oil seeds can be used to extract a variety of oils for culinary use. Additionally, each of they can be an essential component of a variety of flavours and spices. Some seeds, such as flax seeds, sesame seeds, lin seeds etc., can have their content extracted without first being roasted. Along with the trend towards healthy eating, the widespread utilisation of these seeds is expected to drive the market.

The trade of sesame seeds will be covered in Chapter 3.

1.2 The health characteristics of edible nuts and sesame seeds

The global market for edible nuts is being pushed forward by rising consciousness of the positive effects nuts and seeds can have on one's health.

Nuts and seeds are frequently consumed as snacks or as part of a meal. They are increasingly recognized an important component of a balanced diet. They are high in protein, fat (mostly unsaturated fatty acids) and dietary fibre.

For many people, daily fibre intake is insufficient, especially western diets (junk food, conventional ready meals, sweets etc..). This can lead to constipation, with the result that many people take laxatives, pills and drinks to relieve their intestinal problems. A good alternative is to simply eat more fibre-containing and/or less processed foods.

Most nuts (and dried fruits) are a source of fibre, such as hazelnuts, peanuts, pistachios, almonds, walnuts, Brazil nuts, macadamias and pecans. When it comes to supplementing daily fibre intake, a handful of nuts and dried fruits can help. For example, a simple snack of just a handful (30g) of nuts like hazelnuts with 2 dried apricots (30g), adds at least 6g of fibre. That's a quarter of the daily requirement of 25g of fibre.

Other beneficial effects on human health. Several scientific studies revealed that consuming nuts and seeds has several beneficial effects on human health. Most nuts, including almonds, hazelnuts, walnuts, cashew nuts, peanuts, walnuts and pistachios, contain polyunsaturated and mono unsaturated omega six and omega three fatty acids. With a small amount of saturated fat, eating nuts on a daily basis can help guard against the following health problems:

- Reduction in the prevalence of coronary heart disease
- Reduction in blood cholesterol
- the prevention of diabetes
- the prevention of gallstones in both women and men
- against obesity and metabolic syndrome
- against high blood pressure

Also, claims are made that eating walnuts helps improve blood pressure levels and reduces the risks of certain types of cancer. Almonds are essential for lowering LDL cholesterol, which are considered bad cholesterol.

Consumer awareness and interest in this key food group, as well as increased availability of information on their health benefits has driven nut and seed consumption in the Western world.

1.2.1 The concept of fitness

There are still many consumers consider nuts to be fattening. The average consumer's decision to buy is influenced more by taste, quality and variety than the health-conscious argument that nuts contain natural unsaturated fats, minerals and vitamin B. However, awareness and interest in nuts as a healthy alternative to sweets, chocolate, crisps etc. is growing. This particularly applies for:

- **Consumers of organic foods and vegetarians** who use more nuts and seeds than the average consumer. They tend to use a variety of nuts in their everyday diets. Dried fruits combined with nuts are, for example, an important source of sweetness and an

ingredient in muesli, cruesli or granola. Being an important source of protein, nuts are consumed in larger quantities by vegetarians as an alternative to meat and in vegetarian diets. In addition, demand for organic nuts is being stimulated by the growing number of organic shops.

- **For sporters eating nuts is recommended**. They are all high in calories, best eaten in moderation, unsalted or dry roasted, and in combination with whole grains for a complete protein and essential amino acids. Some of the arguments used in the sports world are:

Almonds
Almond contains the highest amount of calcium. Every 30 grams of almond can provide 75 mg of calcium, which can strengthen bones and promote muscle function. It is also plentiful in vitamins E and B, as well as magnesium.
Antioxidants in almonds help to increase one's immune system, which is useful to recover from any injuries and infections.

However, Pru du 6, an 11S globulin can cause an almond allergy which is a reaction of one's immune system to its proteins. It is often linked to anaphylaxis, peanut, and shellfish allergies. Even a tiny trace of almonds can cause severe reactions. In the USA, 9 to 15% of people are allergic to almonds. Symptoms of almond allergy include abdominal pain, cramps, nausea, vomiting, rash or hives, difficulty swallowing, itching, swelling, and shortness of breath. Currently, no treatment is available for almond allergy, so the best way to prevent reactions is to avoid almonds or consume them with moderation.

Cashews
Cashews are a nutritional powerhouse with more vitamin K, magnesium, copper, iron, selenium, zinc, and phosphorous than any other nuts.
Their main role within the body is their proven ability to increase red blood cell production which can support any endurance test. They also help reduce cramps, muscle spasms and improve recovery.

It should be noted that cashew nuts can cause food allergy although it is still rare. For example, approximately 0.1% of Americans have an allergy to cashews, and less than one in a thousand individuals will develop a severe allergy after being exposed. Common symptoms include headache, skin rash, hives, nausea, swelling, sneezing, stomach pain, and vomiting. To prevent allergic reactions, it is important to consume not too many cashews and eat cashew nuts that are fully cooked and have undergone thorough sorting and processing.

Pecans
Pecans are full of healthy monounsaturated fats and contain very few saturated fats. They are a particularly good source of oleic acid, a monounsaturated fatty acid that has been shown to improve immune system functioning, reduce inflammation, and potentially reduce your risk of cardiovascular disease.
Pecans are a plant-based source of protein. One ounce of pecans contains 3 grams of protein. Adding some to meals that will prevent getting hungry shortly after eating.

Macadamia

Macadamia nuts are nutritional 'powerhouses'. They are helpful for weight loss, healthy skin, and a decreased risk in cardiovascular disease and diabetes.

Not only are macadamia nuts high in essential vitamins and minerals, but they are excellent sources of monounsaturated fatty acids. This attribute makes macadamia nuts useful for those following the keto diet, which advises getting about 60-75% of your daily calories from fat.

Monounsaturated fats help regulate insulin sensitivity, and macadamias and their monounsaturated fat content can help boost basal metabolic rate (BMR), which is the amount of energy expended while being at rest.

Sesame seeds

When consuming a sizeable portion of the seeds there are five benefits:

- Plant protein source: Protein is an important building block for the human body and its muscles and sesame seeds provide 5 grams of protein in every 30-gram serving.
- Blood pressure management: Since sesame contains a healthy amount of magnesium, its consumption may possibly help in the effective management of someone's blood pressure.
- Bone health: Sesame seeds contain nutrients such as Manganese, Zinc, Magnesium, and Calcium that are crucial for bone health.
- Antioxidants: Consumption of sesame seeds may possibly improve overall antioxidant activity in the blood. The presence of plant compounds and Vitamin E in sesame seeds may combat the human body's oxidative stress (Health Line).
- Immune system: Health Line reports that: "Sesame seeds are a good source of several nutrients that are important for immune system function, including zinc, selenium, copper, iron, vitamin B6, and vitamin E."

As the younger generation becomes more concerned about their health, they are interested in natural/organic products and tend to eat less meat. There are good prospects for the market for nuts and seeds across the world.

Uniform, premium seeds are primarily used in decorative applications, while the seeds' physical appearance is less important for tahini or oil extracts.

1.3 Its ease of adapting to the moments of consumption

Three categories can be used to classify nut and seed consumption:

1. **Consumed as a snack or as part of a meal**.

   This category is most common. Tree nuts are widely known and mostly consumed as a snack. Salted pistachios, cashews, almonds, Brazil nuts, macadamias or mixed nuts still go very well with drinks. They also are very popular at festive occasions in Western countries.

Nuts' popularity is influenced by modern consumer habits of grazing, eating snacks between meals, and often away from home, rather than having three regular meals daily.

Everybody knows peanuts, partly because of their popularity as a snack product. They are offered salted, roasted, unsalted or with different sweet coatings (honey or chocolate) or with different salted crunchy coatings (garlic, chili, tomato, oregano etc.) – see photo below.

2. **Consumption of foods from hidden sources**, such as tree nuts, peanuts, and other nuts and seeds that are used in recipes or as ingredients in the industrial segment like breads, fruit or nut bars, breakfast cereals, cakes, cookies, ice cream, nut drinks, candies, confectionery or in special (spicy) dishes.

   Unsalted plain nuts are commonly used in meals, with various roasting flavours available for vegetarian or starter dishes. Consumers are increasingly accepting international and ethnic dishes containing nuts, driven by factors such as foreign travel, ethnic restaurant establishments, immigrant influence, and media promotion. For consumers, ready-to-use kits with edible nuts for salads and stir-fry dishes have gained popularity due to reduced cooking time.

3. **Nuts and seeds used in spreads** that are formed of tree nuts, peanuts, cashew nuts, and other kinds of nuts and sesame seeds. Peanut butter and tahini are typical examples. Peanut butter, which is a taste all consumers in Western countries acquire from childhood.

1.4 Innovation in the use of edible nuts by companies

Nuts can have a role in food reformulation, providing positive nutrition. Food manufacturers are creating healthier snacks that not only satisfy taste and indulgence, but also responding to the increased demand for foods and snacks that are ‘good for you’.

In their communication to consumers the main goal is to transform consumers' perception of snacks. Far from being a simple treat, a snack with nuts and dried fruit is becoming an opportunity for consumers to get something healthy out of their snacking occasion.

Nowadays there are many innovations the use of nuts in different kinds of food. Some examples are:

- Ready-to-eat cereals
- Baked goods
- Pizza and pasta, particularly gluten-free options
- Plant-based alternatives to desserts and ice cream, spreads,
- Plant-based fresh and powdered milk
- Plant-based dairy alternatives, dips, and sauces.
- Products for sport nutrition such as nut bars, isolated proteins
- Convenience foods including Asian dishes that traditionally use nuts, especially peanuts and cashews.

Last but not least, nuts and dried fruit are significant plant-based sources of protein and other nutrients, and they can help move the population to a healthy, sustainable diet that relies less on animal while still providing the best nutrition possible.

1.5 Segments of the food industry

1.5.1 Segments by type of industry

There are two main segments for edible nuts: The snack segment and the industrial segment.

Snack segment

The largest user of nuts is the snack segment. According to Statista, the value of the European savoury snack market amounted to around € 19.3 billion. The leading market for savoury snacks in Europe was Germany, with an estimated sales of € 3.2 billion, followed by France € 2.9 billion, Italy and Spain.

There are differences between EU countries in their preferred savoury snack. In Germany, Netherlands and Scandinavian countries, edible nuts take up a large share of the domestic market for savoury snacks, since they have been used there for many years. In France and Spain, the term savoury snack has traditionally referred to nuts, crackers or savoury biscuits which are eaten with apéritifs before dinner. Crisps and extruded snacks are most popular in Italy, Spain and the UK.

The most consumed savoury snacks in Europe remain potato chips, potato-based crisps, extruded snacks (maize or wheat) amongst others. The major growth areas have been in the extruded snack category for American style snacks (corn and taco chips) and Oriental style snacks. Consumers enjoy eating them with a large variety of fancy or exotic dip sauces. Along with the trend for healthy snacks different kinds of crisps made of vegetables, peas or lentils have been popular.

The edible nuts segment has shown a steady increase due to a large variety of roasted, coated, salted nut mixes. Consumers regard them healthier than other snacks and nuts are a popular

snack in between meals. Nuts were a popular pre-meal snack from home delivery companies, especially during the lockdown periods.

Industrial segment

For all edible nuts the industrial sector was an important user of peanuts, almonds and increasingly other tree nuts. The catering sector usually consumes peanuts and pistachios. The main consuming industries for all edible nuts in the EU are:

Confectioners, who use many almonds, hazelnuts and walnuts. Chocolate confectionery sales are high during special occasions (St. Valentine's Day, Easter or Christmas) featuring attractively packed chocolates for children. A problem for chocolate has been its reputation to be "bad for you", since it is associated with obesity, tooth decay and excess "bad" fat consumption. The addition of nuts to a chocolate bar improves its health value and therefore its appeal to consumers, as is the case with health bars, muesli bars or multi fruit bars.

Bakeries and breakfast cereal mixers, being the second largest users of edible nuts. Almonds, hazelnuts, walnuts and, increasingly, pecan nuts are used in biscuits, cakes and pastries. Bakeries have recently tended to buy more convenient products, such as more shelled, pre-cut, slivered or similarly pre-processed nuts, especially in the case of walnuts and pecan nuts. Processors consequently tend to make mixes that are more multi-functional for bakeries.

Other industries, which includes the ice cream, desserts and dairy industry using almonds, hazelnuts, walnuts and increasingly cashew nuts.

The liquor industry uses almonds in the Italian Amaretto or the Portuguese Amaro. Manufacturers of baby food, nut oils, ready meals, ready-to-use mixtures for stir-fry and salads (pine nuts, walnuts, cashew nuts) and bird food (peanuts).

The use of nuts in other industries is expected to grow further since the prevailing emphasis on healthy foods (spreads, vegetarian meals) using more and edible nuts affects all the above industries. There is expected to be an increased demand for groundnuts from the food processing industry as manufacturers increase their ranges of ready-to-use (exotic) products containing nuts for stir fry meals and ready-to-use salad kits, which busy housekeepers find convenient.

Some large industrial users of edible nuts include Danone (confectionery, desserts, cereals, France), Belin LU (biscuits, savoury snacks, part of Danone), Kellogg's (cereals, USA), Quaker Oats (cereals, bakery, part of PepsiCo, USA), United Biscuits (confectionery, bakery, UK), Dr. Oetker (cereals, desserts, Germany), Mars (chocolate, USA), Alfred Ritter (chocolate, Germany), Jacob Suchard (confectionery, cereals, part of Kraft USA), Ferrero (confectionery, spreads, Italy), Unilever (UK) and Nestlé (Switzerland).

1.5.2 Main applications of edible nuts in industrial segments

The main applications of the most relevant nuts from Mozambique in industrial segments are:

Cashews. The applications in the food industry are estimated at 10% of the EU imported cashews. The main consuming industries are:

- The confectionery industry that predominantly uses cashew nut pieces and bits to produce chocolate snacks. In addition, chocolate-coated whole cashew kernels are becoming increasingly available as a novel product, following the success of chocolate-coated almonds in several EU markets.
- The Bakery industry where splits and whole raw cashew nuts are used as spreads in cookies and pastries.
- Cashew nut spreads are promoted as a healthier alternative to peanut butter on several European markets, where they are a new product. In addition, cashew nut butter is combined with other ingredients to provide consumers with a greater variety of flavours.
- The breakfast cereals market is introducing novel cashew-nut-rich granola products.
- Protein and fruit-nut bars are increasingly available as a substitute for sweet and chocolate-based treats. These products frequently incorporate cashew almonds as a source of vegetable protein.
- Vegan dairy employs cashew nuts as an ingredient in the production of cashew ‘milk', yoghurt, and vegan cheese.
- Cashew nuts are also used in ready-to-eat dishes and sauces, such as pesto, as an alternative to pine nuts, which are more expensive.
- Cashew kernel oil is gaining popularity in the cosmetic industry due to its numerous benefits for hair and skin. High in nutrients like vitamins E, K, B6, and minerals like magnesium, iron, and zinc, it helps maintain hydration, strengthen hair, prevent hair loss, create shine, improve hair condition, aid skin hydration, and softens fine lines and wrinkles. Cashew kernel oil also has anti-inflammatory and skin-brightening properties, making it effective for hyperpigmentation, age spots, and home-healing skin irritations like acne and eczema.

Macadamias are mainly eaten as a luxury snack due to their taste and their high price. In the industry they are mainly consumed in:

- The confectionary industry using macadamia nuts in chocolate snacks, similar to the traditional use of hazelnuts. In chocolate, smaller grades of macadamia nuts are utilised.
- The bakery industry uses macadamia nut chips, bits, and dice in cakes, pastries, muffins, and biscuits.
- In most EU markets, macadamia butter is a new product. The butter is manufactured either exclusively from macadamia nuts or in combination with other nuts. Some producers add honey or chocolate to their spreads and market them as premium and luxury products.
- Macadamia nuts are increasingly utilised as a topping for ice cream. Ice desserts containing macadamia nuts are typically marketed as luxury items.
- Cereal manufacturers are beginning to include macadamias into their product formulations. Still macadamias are less used than other nuts such as hazelnuts.
- Macadamia oil is the most widely recognised non-food macadamia product. Macadamia oil can be used for cooking, but it is rarely marketed as a food product in Europe due to its extremely high price. Macadamia oil is utilised in numerous cosmetic formulations.

Macadamia oil may be included in shampoos, conditioners, and skin lubricants, among other products.

Almonds are primarily used in the confectionary and marzipan industries. In Europe, Rafaello is a prominent brand promoting Californian almonds. Growing chocolate manufacturers, including Odense Marzipan, Lübecker, and Caldic, also use almonds as ingredients. Almonds are also used in home baking, bakery, nut and fruit bars, mueslis, and nut spreads. A growing category is almond milk.

Peanuts are mainly sold as roasted salty snacks. It is estimated that 30-40% of imported peanuts in Europe are used by the following food processing industries:

- The confectionery industry which mainly uses groundnuts in chocolate-based treats. Snickers (by Mars) is one of the most popular peanut-containing chocolate snack brands, but there are many other similar products in Europe, often manufactured under private labels for retail chains.
- The bakery industry fills cakes, biscuits, and pastries with peanut fragments.
- Peanut butter is frequently imported, but increasingly produced in many European nations. The Netherlands is Europe's largest peanut processor and largest EU peanut butter producer.
- As a substitute for sweet and chocolate treats, protein and fruit-nut bars are becoming increasingly popular. Peanuts are frequently used as a vegetable source of protein in these products.
- Other segments - Groundnuts are also utilised in a variety of other products, including bird feed. Additionally, groundnut segments are a popular ice cream topping.

Sesame seeds.

- Around 35% of imported sesame seeds are used in food processing such as in salads, sushi's, ground sesame paste (tahini), humus etc.
- Baking and confectionery industries used around 50% of EU sesame seed imports mainly for toppings on bread, buns, crackers. Sesame seeds are also an ingredient for sweet snacks, biscuits or desserts such as halva.
- The sesame seeds used for oil extraction in the Asian and Mediterranean cuisines represent an estimated 10% of EU imports.
- While retail packed seeds for home use as ingredient for baking or as a garnish represents around 5%.

2. DIMENSIONS OF THE EU MARKET

2.1 Market value of edible nuts sales in the EU

In 2022, the EU market accounted for 24.1% of the world market of edible nuts. In recent years, Europe's share of the Global market has decreased relatively due to the strong growth of Asia-Pacific countries and slow consumer spending and inflation have led to two consecutive

quarters of economic contraction. That means that the eurozone fell into a recession with high energy prices and high inflation rates over the winter months in 2022. Growth in 2023 is likely to be weak.

In future, Germany will remain the most populous EU Member State by the year 2100, followed by France and Italy.

The projected population structure varies significantly between individual countries with an ageing population in Germany. The largest population losses are in several eastern and southern EU Member States according to Eurostat.

Between 2022 and 2100, the number of inhabitants is projected to fall in 15 EU Member States:

- Estonia, Spain, Hungary, and Slovenia are expected to contract by less than 10%
- Portugal, Finland, Italy, and Slovakia are expected to decline by 10-20%.
- Poland, Romania, Bulgaria, Croatia, and Greece are expected to experience significant reductions of 20-30%.
- Lithuania and Latvia are projected to experience the largest population losses, with the total number of inhabitants falling by more than 30%.

Due to a longer life expectancy, EU Member States' populations will age, with varying rates of change. This trend is already occurring in many countries. People aged 80 years and over are projected to rise to 64 million in EU by 2100.

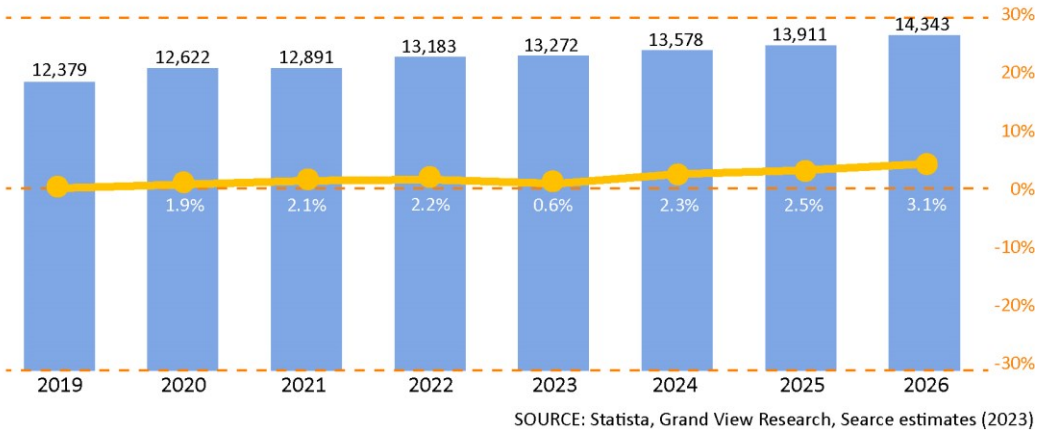
This will impact public expenditure plans, such as pensions, healthcare, and long-term care costs. But this also entails older people continuing to eat healthier to stay in good shape by consuming vegetables, fruits and nuts among other things. This is also recommended by the Ministries of Health in most EU countries.

Despite the declining population, there has been a tradition of eating nuts in EU countries for centuries. Therefore, the EU remains a very significant world market for tree nuts and peanuts.

In 2022, the edible nuts market in the EU 27 and the UK represented a value of € 13,183 million with an estimated volume of 2,153 thousand tonnes. By value, tree nuts were taking up 65 – 70% of the EU market.

Europe is the 2nd largest market for tree nuts in the world and accounted in 2022 for 31% of the global tree nut market after Asia-Pacific (32%) as was shown in Figure 6 in Chapter 1. Relative to its population of 448 million in 2022, tree nuts consumption is large compared to a population of 4,300 million in Asian Pacific.

figure 7 **EU market for edible nuts, 2019-2026**
Value in € million



SOURCE: Statista, Grand View Research, Searce estimates (2023)

Between 2019 and 2022 the EU market continued to grow steadily by a CAGR of 2.2%. However, due to cuts on expenditure resulting from the inflation in 2022/2023, tree nut consumption slowed down in almost all EU countries and the UK. As is shown in Figure 7, it is expected that the EU market will pick up from 2024 and reach € 14,343 million by 2026. In the longer run, the market continues to be driven by increasing awareness of the health benefits of tree nuts as a snack, more product innovation and new applications in health food.

2.1.1 Consumption at home and trends driving the market

Per capita consumption

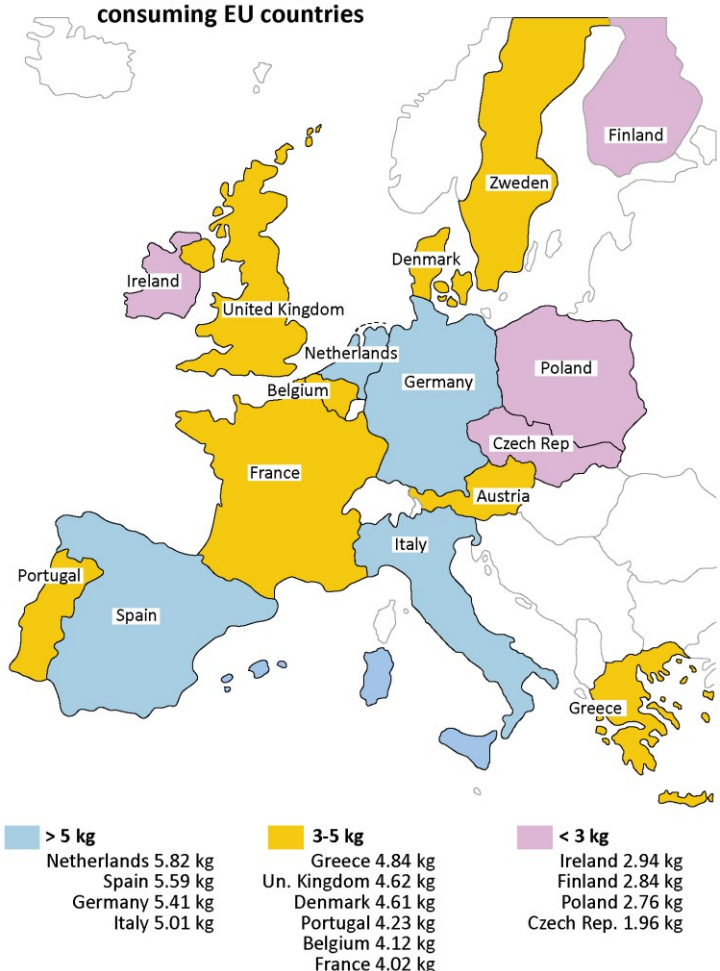
Nuts are eaten as snacks. For many households they are essential ingredients in traditional recipes, such as cereals, marzipan, baked goods, and chocolates.

In most countries peanuts or tree nuts are consumed at least 1-2 times a week which is mainly during the weekends when visitors come over or in case of social events, parties etc.

Figure 8 shows the per capita consumption of edible nuts sold for consumption at home. Czech people prefer sweets and chocolate to savoury snacks and their consumption of edible nuts was 1.96 kg per capita, the lowest in the EU. The same goes for other Eastern EU countries where people spend less on edible nuts, especially tree nuts.

In 2022, the Netherlands, Spain and Germany had the highest per capita consumption of edible nuts (especially peanuts, almonds, pistachios and cashew nuts). The average of the 16 largest consuming EU countries – including the UK - is estimated at 4.78 kg per capita.

figure 8 **Per capita consumption of edible nuts in the main consuming EU countries**



Trends driving the EU market for edible nuts

- **The rise in vegan trends, paleo diets, and an increase in healthy eating habits** are significant contributors, with younger consumers (Generation Z) favouring organic and natural products particularly in Germany, France, the Netherlands, UK and Scandinavian countries.

  The paleo diet is intended to resemble the diet of our ancient hunter-gatherer ancestors. It may improve someone's overall health and reducing the risk for certain diseases, and reduce obesity. Meat, fish, eggs, vegetables, fruits, nuts, seeds, herbs, seasonings, and healthy fats and oils are included in the paleo diet. Processed foods, sugar, soft beverages, artificial sweeteners, and trans fats should be avoided. Consumption of grains, most dairy products, and legumes should be limited.

- **Europe offers opportunities through favourable regulations**, increased demand for plant products, research and development, and technological advancements in manufacturing techniques.
- **Social and health-related socioeconomic forces**: Across Europe, increasing time constraints, a faster rhythm of life, and a desire for convenience are driving consumer demand for 'wholesome and deliver sustainable energy' snack products. In addition, rising health consciousness has led to the substitution of healthier snack products for candies and cookies. Consequently, tree nuts have a market opportunity to meet these demands. Associated with this health trend is the significance of product quality and safety.
- **Moreover, naturalness is a major area of interest**. New product nut introductions marketed as "organic," "natural," and "additive-/preservative-free" were prominent, as were "fibre," "protein," and "low sodium" claims.
- **Sizeable population of immigrants and more diversified ethnic groups**. Their diets typically contain more edible nuts and dried fruits than the traditional dishes in EU countries.
- **Technological market drivers**: for manufacturers to maintain a competitive advantage over their rivals, innovation will continue to be an absolute necessity. New flavours, textures, mixes of nuts, coatings, and packaging are being introduced into the market by the industry. In parallel with the rising importance of social media as a means of disseminating information about new products, recipe ideas, and flavour combinations, the number of people shopping for food online continues to rise.
- **Economic challenges**: Most EU markets is extremely price sensitive due to the high inflation in 2022/2023. Both consumers and retailers seek premium quality at a discount price. Cost and value for money is a major challenge for the industry, often prevailing over other drivers and social/environmental values especially for the lower-middle class consumers.

2.1.2 Consumption in HORECA

Consumption of peanuts by the HORECA sector is large, while tree nuts are less common in restaurants, hotels, fast-food outlets or institutions such as hospitals, schools, homes for the elderly.

Many restaurants and hotels had difficult times or were forced to stop their business during the lock down period in 2021/2022. The inflation in 2023 has led to less people dining out.

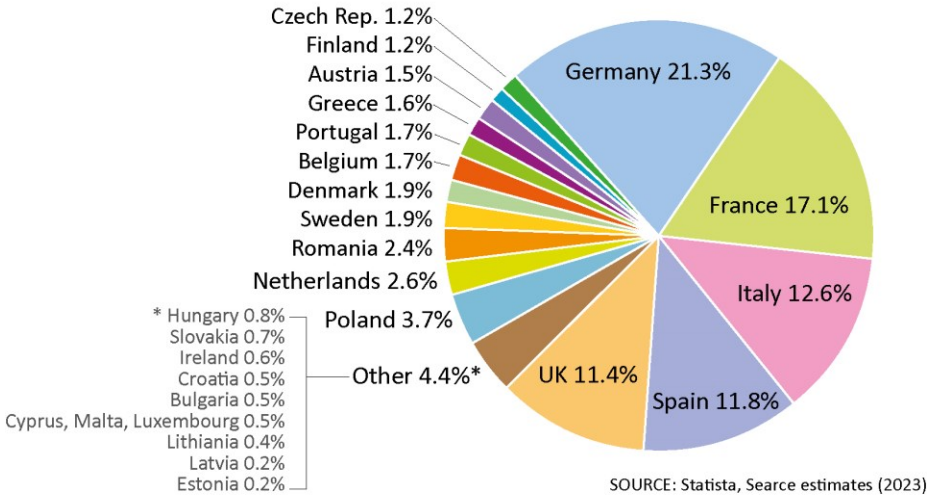
In the coming years, a higher proportion of double-earning households, single person households and the reluctance of people to spend too much time preparing meals will all stimulate more frequent consumption of meals in snack bars, canteens, fast food outlets, restaurants take-away foods and meal delivery services.

2.2 Market value of sales in different EU countries

2.2.1 Sales of nuts and oil seeds in different EU countries

Germany and France are the main markets for edible nuts and accounted for 21.3% and 17.1% in 2022. Both countries have because large population sizes and many food processors and snack industries. Italy, Spain and the UK are the other important markets.

figure 9 **European market for edible nuts, 2022**
Share by country based on value (=13,183 million)



SOURCE: Statista, Searce estimates (2023)

Other EU countries have different consumption levels for tree nuts and peanuts. Greece, Spain and Italy are large markets for tree nuts, while the Netherlands is a large market for peanuts due to a large variety in coated peanuts, the popularity of peanut butter and peanut sauce used in Indonesian dishes that are very popular.

Currently, average consumption and the popularity of different edible nuts varies considerably per country. But in future better economic times, tree nuts consumption will certainly increase in Eastern EU countries.

2.3 The value of imports of nuts into the EU and the Member Countries

World imports of edible nuts were 10,793 thousand tonnes in 2022 of which EU imports represented 26% with a registered volume of 2,788 thousand tonnes.

Between 2018 and 2022 almost all countries in the EU increased their imports of edible nuts. Total EU imports rose by a CAGR of 2.0% in volume and by 2.9% in value.

Table 1. EU 27 imports of Edible nuts, 2018 – 2022
Volume in tonnes and value in € thousand

EU 27	2018		2020		2022		
	Volume	Value	Volume	Value	Volume	Value	CAGR *
TOTAL	**2,570,269**	**10,567,054**	**2,784,804**	**11,619,038**	**2,788,064**	**11,826,329**	**2.0%**
Germany	601,788	2,987,656	671,168	3,415,975	634,823	3,293,340	1.3%
Netherlands	528,928	1,449,707	583,559	1,526,634	555,431	1,603,910	1.3%
Italy	268,463	1,221,003	295,055	1,441,859	298,878	1,439,588	2.7%
France	246,197	1,172,456	262,560	1,251,039	263,185	1,221,901	1.7%
Spain	254,468	1,033,578	270,499	1,097,286	289,376	1,155,041	3.2%
Poland	126,941	396,412	133,269	424,178	152,833	494,621	4.8%
Belgium	126,490	582,736	121,761	548,423	124,130	604,059	-0.4%
Austria	55,499	275,829	58,162	315,018	51,627	281,498	-1.9%
Romania	28,586	90,320	32,397	101,982	44,405	149,589	10.9%
Sweden	41,066	200,876	43,963	208,734	44,399	214,431	1.8%
Greece	35,464	134,476	36,208	139,273	42,696	157,469	4.7%
Czech Republic	35,330	129,083	36,829	165,301	38,962	198,781	2.7%
Denmark	29,415	131,765	34,354	153,308	31,883	142,816	1.9%
Portugal	26,729	114,002	25,206	107,509	32,545	126,692	5.3%
Luxembourg	25,323	129,127	27,025	149,762	19,681	103,449	-6.6%
Bulgaria	21,564	54,320	25,349	65,551	28,070	81,133	6.8%
Hungary	20,124	56,454	21,230	63,063	22,582	69,271	2.9%
Lithuania	15,119	65,202	18,399	78,068	20,075	88,004	7.4%
Slovakia	17,106	68,439	17,225	68,910	18,203	78,895	1.6%
Ireland	15,657	60,721	17,944	65,292	15,608	67,610	-0.1%
Finland	12,893	58,478	14,240	70,635	13,292	65,990	0.5%
Croatia	10,703	39,039	12,086	46,769	13,632	55,232	6.2%
Estonia	6,969	26,793	6,279	26,189	11,165	31,817	12.6%
Slovenia	7,420	36,708	7,573	35,897	7,705	36,087	0.9%
Latvia	5,803	24,217	6,241	25,678	6,571	35,629	2.9%
Cyprus	4,554	19,707	4,614	19,453	4,691	21,222	0.7%
Malta	1,670	7,950	1,609	7,252	1,616	8,254	-0.9%

*CAGR = Compound Annual Growth Rate 2018 – 2022 (based on volume) Source: ITC Trademaps (2023)

Germany, which imported 23% of all EU imports, is the largest EU market for edible nuts: 634 thousand tonnes, with a value of € 3,293 million in 2022. Germany is followed by the

Netherlands (share in 2022 was 20%). Both countries are leading world importers being the 3rd and 4th largest importers of edible nuts after the USA and Vietnam.

Italy was another large importer representing 11% of EU imports, which were mainly hazelnuts for the popular chocolate spread Nutella. Almonds and walnuts are also usually in demand for the Italian confectionery and bakery industries.

Spanish imports accounted for 10% of the EU total and imported mainly almonds giving a distinct nuttiness to the popular Spanish broth "ajo blanco" and the almond-honey nougat turrón, a Christmas-time tradition in Spain. Despite being a significant producer, Spain continues to import substantial quantities of almonds from the United States of California.

France represented 9% and is a large importer of peanuts, almonds and mixed nuts.

It should be noted that Rotterdam, Hamburg, Marseille and increasingly Piraeus are the major EU trading centres for peanuts (groundnuts) and tree nuts, with significant quantities re-exported onwards to other EU countries. In 2022, groundnuts took up around 61% of total EU imports.

Other countries. In the period under review, import by Poland, Romania, Bulgaria, Baltic States, Croatia, Greece and Portugal showed substantial increases as is shown in Table 1. Romania, Bulgaria mainly imported peanuts and mixtures of nuts from Poland.

The UK imports of edible nuts were 262 thousand tonnes in 2022 being slightly below the level of French imports in the same year. UK imports fluctuated in the period 2018 – 2022 which was mainly due to Brexit.

3. CHARACTERISTICS OF THE EU MARKET

3.1 Types of nuts and seeds placed on the market

Tree nuts are dry fruits with one seed whose shell hardens at the time of ripening. The consumer definition of nuts often includes ground nuts (or peanuts), which are essentially legumes but are classified as part of the nut's food category.

This market study covers *tree nuts* and *groundnuts* (peanuts) referred to in this study as ***edible nuts*** and sesame seeds. Note that Coconuts and Chestnuts are not covered in this market study.

3.2 Customs classification of the different types

The HS code groups for edible nuts and sesame seeds covered in this market study are grouped under the following headings:

HS Code	Products
0801 111	Desiccated coconut
0801 119	Fresh coconuts, whether or not shelled or peeled
0801 21	Brazil nuts (= para nuts = Amazonia nuts), fresh or dried, in shell Brazil nuts (= para nuts = Amazonia nuts), fresh or dried, shelled Cashew nuts, fresh or dried, in shell
0801 22	Brazil nuts (= para nuts = Amazonia nuts), fresh or dried, in shell Brazil nuts (= para nuts = Amazonia nuts), fresh or dried, shelled Cashew nuts, fresh or dried, in shelled
0801 31	Cashew nuts, fresh or dried, in shell
0801 32	Cashew nuts, fresh or dried, shelled
0802 1110	Almonds bitter, fresh or dried, in shell
0802 1190	Almonds excl. bitter, fresh or dried, in shell
0802 1210	Almonds bitter, fresh or dried, shelled
0802 1290	Almonds excl. bitter, fresh or dried, shelled
0802 21	Hazelnuts, fresh or dried, in shell
0802 22	Hazelnuts, fresh or dried, shelled
0802 31	Walnuts, fresh or dried, in shell
0802 32	Walnuts, fresh or dried, shelled
0802 40	Chestnuts, fresh or dried, whether or not shelled or peeled
0802 50	Pistachios, fresh or dried, whether or not shelled
0802 9010/ 0802 9910*	Pecan nuts, fresh or dried, whether or not shelled
0802 9061	Macadamia nuts, fresh or dried, in shell
0802 9062	Macadamia nuts, fresh or dried, shelled
0802 90	Other nuts, fresh or dried, whether or not shelled or peeled (excl. coconuts, Brazil nuts, cashew nuts, almonds, hazelnuts, walnuts, chestnuts "castania spp.", pistachios, pecans, areca "betel" nuts, cola nuts, pine nuts and macadamia nuts)
0802 91	Pine nuts, fresh or dried, in shell
0802 92	Pine nuts, fresh or dried, shelled
1202 41	Groundnuts (in shell)
1202 42	Groundnuts (shelled)
2008 11	Groundnuts, prepared or preserved (excluding preserved with sugar), incl. peanut butter
2008 19	Nuts and other seeds, incl. mixtures, prepared or preserved (excluding prepared or preserved)
1207 40	Sesame seeds

* From 2022

Source: ITC Trademaps (2023)

3.3 Consumption and Imports of edible nuts by type in the EU

Consumption

In 2022, the apparent consumption of edible nuts in the EU27 was estimated at 1,943 thousand tonnes. After a period of growth, consumption contracted mainly as a result of the COVID lockdowns. Based on its population of 448.4 million people the per capita consumption was 4.32 kg per person.

Table 2. EU 27 apparent consumption of edible nuts, 2018 – 2022

Volume in tonnes

EU	Imports	Production	Exports	Consumption	Per capita (kg)*
2018	2,570,269	399,947	1,124,870	1,845,346	
2020	2,784,884	410,589	1,188,029	2,007,374	
2022	2,788,064	393,741	1,237,905	1,943,902	4.32

* Based on total population

Source: ITC Trademaps, INC, USDA, Eurostat (2023)

If the UK is included, the apparent European consumption in 2022 was 2,153 thousand tonnes.

The developments in the selected key countries can be found in section 3.5 and Chapter 5.2.

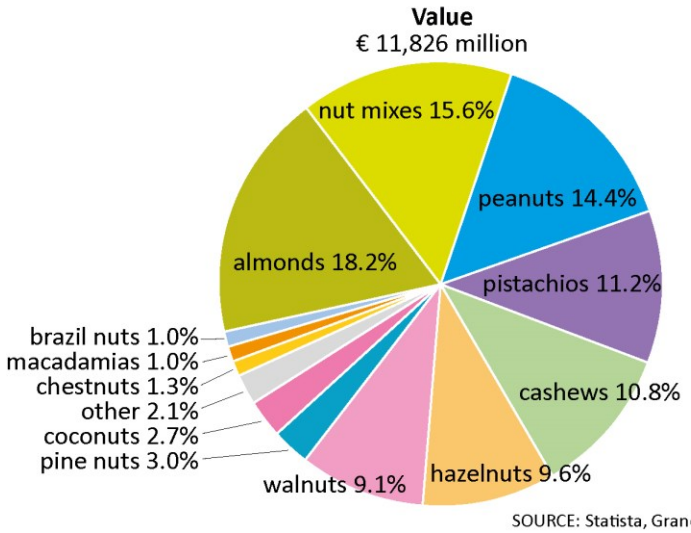
EU27 imports by type

The most important edible nuts that are consumed and traded in the EU are almonds, peanuts, cashew nuts, hazelnuts, pistachios, macadamias, walnuts, pecan nuts and increasingly mixed nuts. Within the oil seeds, sesame seeds will be covered as they are most relevant for Mozambique.

In 2022, the value of EU27 imports amounted to € 11,826 million. Around 85% were tree nuts, while the value share of peanuts was 14.4%.

Edible nuts imports were led by almonds which accounted for 18.2%, while pistachios and cashews were taking up the 2nd and 3rd position as is shown in Figure 10. The share of nut mixes of 15.6% illustrates its popularity in the EU market.

figure 10 **EU27 Imports of edible nuts, 2022**
Share by type of nuts

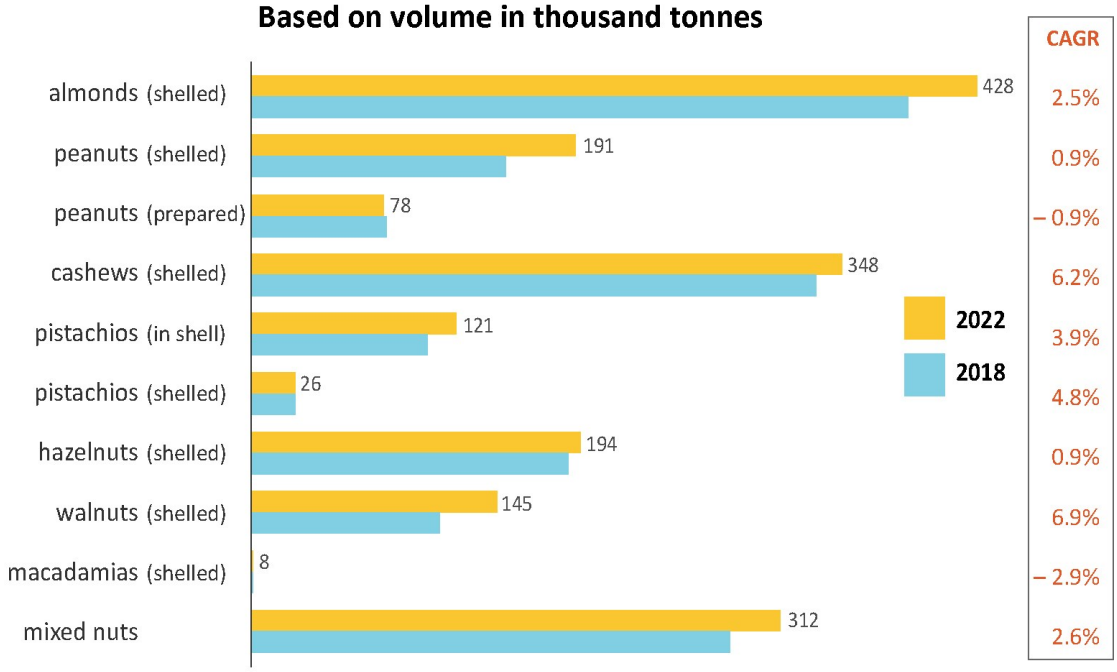


SOURCE: Statista, Grand View Research, INC (2023)

In terms of volume, EU imports were also led by almonds, followed by cashews, peanuts and mixed nuts. As shown in Figure 11, the largest increases were registered in cashews, walnuts and pistachios, while EU imports of macadamias showed a decreasing trend.

figure 11 **Development of EU imports by type**

Based on volume in thousand tonnes



NOTE: pecan nuts, pine nuts, brazil nuts, chestnuts and coconuts are not included

SOURCE: ITC Trademaps (2023)

3.4 Trends in EU imports by type of nuts

3.4.1 Almonds

The peach-like almond fruit consists of the edible seed or kernel, the shell, and the outer hull. The almond pit, containing a kernel of edible seed, is the commercial nut. There are two principal types, sweet almonds and bitter almonds, and some intermediate varieties.

The sweet almond is grown for its edible nuts. Bitter almonds provide the main source of oil of bitter almond, which is used both as a flavouring and as an ingredient in cosmetic skin preparations. The most important countries of origin are the USA (California), Spain, Australia, Italy, Portugal and Morocco *(see details in Annex 2 - Table 2)*.

Almonds are usually harvested mechanically then dried to reduce the moisture content to less than 8%. The almond crop is then delivered to a packing company to be shelled, processed and packaged. Broken, discoloured or chipped kernels are diverted for other uses, while top quality kernels are cleaned, sorted, separated according to size and finally manually inspected.

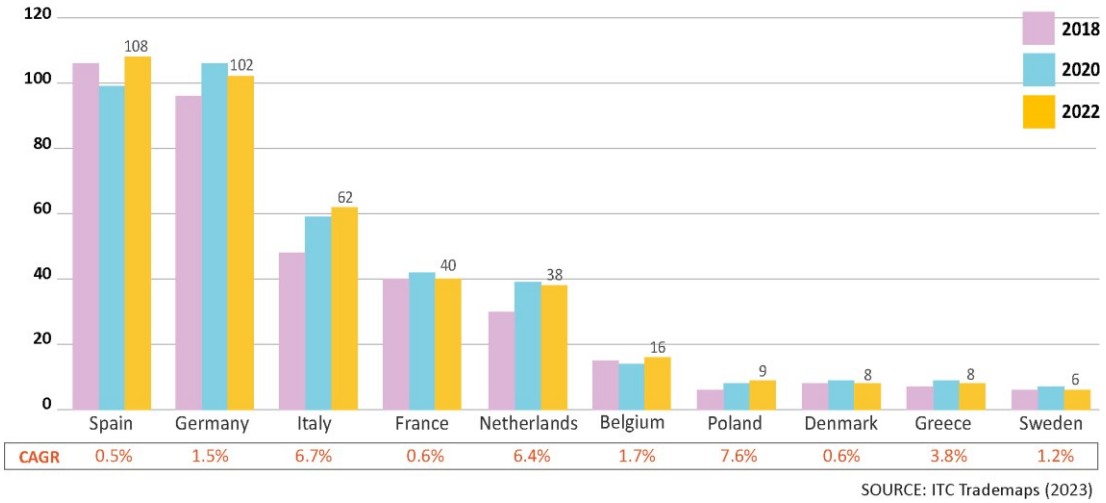
Shelled almonds are sold according to cultivars, sizes and grades. They may be sold as whole natural almonds or processed into various almond forms. Whole natural almonds have their shells removed, but still retain their brown skins. Blanched whole almonds have had both their shells and skins removed. Other popular almond forms are sold as "slices natural", "chopped natural" and "blanched silvered".

Almonds are often used in mixtures with other nuts (oil- or dry-roasted, salted, unsalted or smoked) and are an important ingredient for bakery and confectionery products such as marzipan, nougat or sugar-coated almonds. They are also used as a garnish for food dishes and a component in salads and (vegetarian) meals. In cosmetics, almond oil is used in facial skin care.

In 2022, the EU imported 464 thousand tonnes of almonds of which 92.3% were shelled almonds and 7.7% were almonds in shell. By value, EU almond imports amounted to € 2,065 million. This represented 47% of total world imports of almonds.

EU imports of almonds (shelled) were 428 thousand tonnes in 2022. Spain and Germany were the main importers and represented around 25% each. In the same year, Spanish imports were 108 thousand tonnes, valued at € 451 million. Despite a drop in 2020, an increase of CAGR of 0.5% was registered between 2018 and 2022 as is shown in Figure 12.

figure 12 **EU27 Imports of almonds (shelled), 2018-2022**
Volume in thousand tonnes (Total in 2022: 428 thousand tonnes)



SOURCE: ITC Trademaps (2023)

German imports were valued at € 517 million in 2012 and volume imports rose by 1.5% from 96 to 102 thousand tonnes between 2018 and 2020.

In the period under review, large increases were registered in the imports of Italy (+6.7%), Netherlands (+6.4%), Poland (+7.6%), Greece (+3.8%), Luxembourg (+11.5%) and many of the Eastern EU countries, especially Estonia (48.2%). With a growing expatriate community and tourism, tree nuts from the USA, primarily almonds, and walnuts are increasingly popular in confectionery, home baking, and snack food production.

Less almonds were imported by Austria (-2.3%), Ireland (-2.2%), Hungary (-4.1%), Finland (-7.7%) and Malta (-4.8%) especially since 2020.

EU imports of almonds in shell were 35 thousand tonnes in 2022 and valued € 82 million. Around 81% was imported by Spain, which mainly came from Portugal and other EU countries. Between 2018 and 2022, EU imports of almonds in shell have more than tripled from 10 thousand tonnes in 2018.

Detailed trade statistics can be found in Annex 2 – Table 1

3.4.2 Cashew nuts

Cashew nuts are considered in Europe as a luxury nut and are imported in kernel form. They come from the *Anarcardium occidentale* tree and are mainly sourced from Vietnam and India. Other non-EU suppliers include Brazil, Cote d'Ivoire, Burkina Faso, Nigeria, Mozambique, Ghana, Indonesia and Honduras *(see details in Annex 2 - Table 4).*

The cashew produces not only an edible nut, but also a nutritive, edible "apple" and valuable nutshell oil. The shell encloses a slightly curved, white, finely textured kernel, which is wrapped in a testa or thin brown skin. This is the commercial cashew nut. After harvesting, the ripe cashew apple will only keep for 24 hours, while the nuts may be kept for a year or longer, if dried to a moisture content of 8% or less and stored with care.

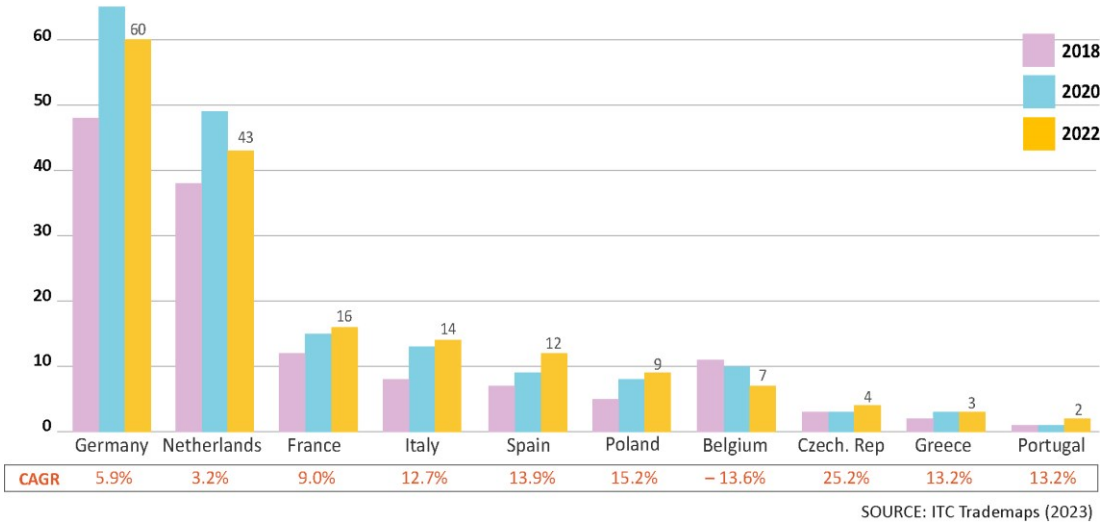
Cashews must be dried immediately after harvesting and constantly turned over and dried for several days until they rattle in the shell. They are then roasted to remove the brown Caustic Nut Shell Liquid (CNSL) which contains the poisonous compounds cardol and anacardic acid. The nuts are then shelled, by hand or machine, with the necessary care taken to avoid damaging the kernels. The kernels are then mechanically peeled and classified by quality and graded according to whether they are whole or broken (into "splits", "butts", "large pieces" and "baby bits") according to size, after which they are packed for export.

Cashews are consumed primarily as salted nuts, either individually or in nut mixtures. They have recently been widely promoted as a versatile ingredient in cookery and are also used as ingredients for desserts, in cereals and in exotic dishes.
Plain cashews without any additions are increasingly being offered, as well as different roasting flavours. In addition, cashew nuts are increasingly being used as ingredients in fruit and nut bars, breakfast cereals, nut spreads, nut drinks, ice cream toppings, cookies and other sweets.

In 2022, total EU imports of cashew nuts (shelled) was 191 thousand tonnes, valued at € 1,274 million. EU imports represented 31% of world cashew imports by volume and 37% by value.

Between 2018 and 2022 almost all EU countries, except Belgium and Sweden increased their imports of cashew nuts. Total EU imports rose by a CAGR of 6.2% in volume. However, the average value of EU imports decreased by 0.8%. Especially at the two largest importers, Germany and the Netherlands, and in Sweden and Denmark, higher volumes and lower values were registered. This indicates a trend towards lower prices paid for cashew nuts. Vietnam prices decreased due to West Africa overproduction and less demand from the USA in 2022.

figure 13 **EU27 Imports of cashew nuts (shelled), 2018-2022**
Volume in thousand tonnes (Total in 2022: 191 thousand tonnes)



SOURCE: ITC Trademaps (2023)

The largest increases by volume were registered in the imports of Germany (+5.9%), France (+9.0%), Italy (+12.7%), Spain (+13.9%), Poland (15.2%), Luxembourg (+6.8%), Czech Republic (+25.2%), Portugal (+13.2%) and many of the Eastern EU countries, especially in the Baltic States.

There was more demand for meat substitutes where cashew nuts are preferred because of their good taste, high protein content and there is more vitamin K, magnesium, copper, iron, selenium, zinc, and phosphorous in cashews than in any other nuts.

In addition, there is more variation in the kinds of cashews as a snack, especially roasted cashews, with salt, oil, butter and different kinds of flavoured coatings. Along with the trend towards healthier eating, cashews are sprinkled over salads and in stir-fry vegetarian dishes. Cashews are included in a wide variety of recipes.

As a healthy spread on bread (instead of cold meats), cashew paste is also increasingly being discovered as a luxury alternative to peanut butter or tahini.

In 2022, the EU imported 191 thousand tonnes of cashews that were almost all shelled. Just 980 tonnes were cashews in shell which were imported by Denmark, Spain and Belgium.

In contrast to the weakening demand for shelled cashews in the USA in 2022/2023, the demand in the EU continued to rise in 2023 despite the high inflation levels in different countries.

Detailed trade statistics can be found in Annex 2 – Table 3

3.4.3 Peanuts (Groundnuts)

There are four basic varieties of peanuts – Spanish, Runners, Virginias and Valencias. Spanish is a small variety with light-coloured skin, grown chiefly in South Africa, China, Argentina and India. Runners are a medium-sized, light-coloured hybrid, developed in the USA as a cross between the Virginia and Spanish varieties. Spanish and Runners peanuts are mostly used in the manufacture of peanut candies, peanut butter and peanut oil. Virginias, which take their name from the American State where they were originally cultivated, have the largest kernels and are in demand as cocktail nuts, salted nuts and in nut mixtures. They are now produced all over the world. Valencia peanuts are red in colour and originate mainly in Argentina, Brazil, New Mexico and China. They are in demand for roasting in the shell.

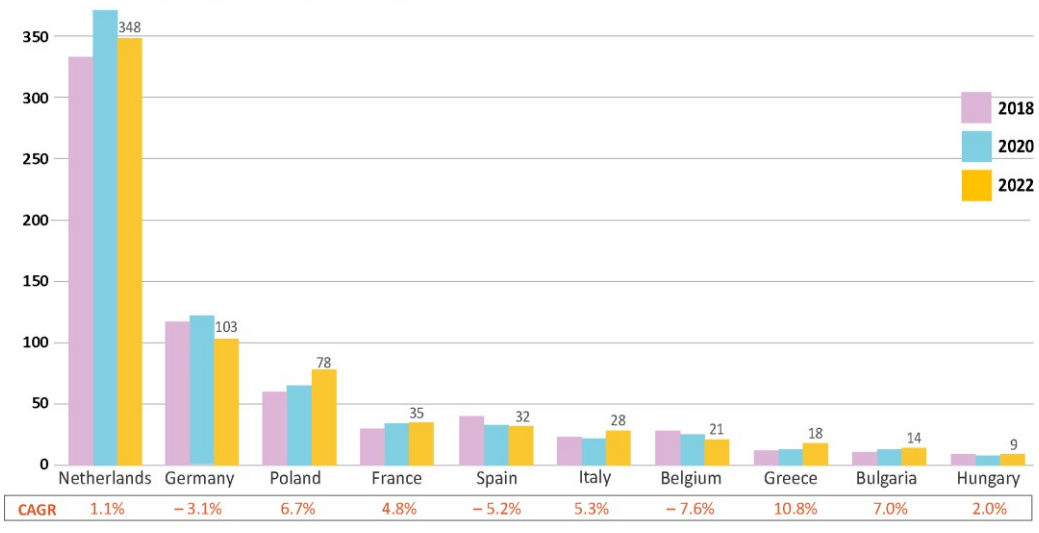
Because of high aflatoxin standards, Europe mainly imports from the American continent: first Argentina, and then the USA and Brazil are the main providers. Following harvesting, which in America is highly mechanised but in many parts of the world is still carried out by hand, the peanuts are inspected, sampled and graded. Inspection is critical, to ensure that they are not contaminated by mould containing a poisonous substance called aflatoxin, which is dangerous for both human beings and livestock. A high proportion of peanuts are shelled and cleaned prior to export. The kernels are graded, sized and packed in bags.

Peanuts have a multitude of uses: for traditional use as a snack, they are sold oil- or dry-roasted and salted, coated or used in nut or fruit and nut mixtures. In the food industry they are processed into peanut butter and sauces and used widely as ingredients in chocolate, confectionery, cereal bars, ice cream, biscuits and Asian food recipes and sauces.
The United Kingdom (103 thousand tonnes), Germany (92 thousand tonnes), and France (72 thousand tonnes) accounted for the biggest quantities of peanut butter consumption in 2019, with a combined share of 55% of the world's total consumption. The Netherlands was the first European country to produce peanut butter.

Groundnuts shelled. In 2022, total EU imports of groundnuts (shelled) were 745 thousand tonnes, valued at € 1,099 million. By volume, EU imports represented 27% of total world imports, while by value this was 32%. Between 2018 and 2022, EU imports of groundnuts slightly increased by a CAGR of 0.9% in volume and by 5.5% in value. This is partly due to increased prices of peanuts coming from Argentina.

Between 2018 and 2022, imports developed differently in the EU countries. Imports by the Netherlands, the largest EU importer increased by a CAGR of 1.1%. The Netherlands is the 3rd largest world importer after China and Indonesia and main exporter to other EU countries.

figure 14 **EU27 Imports of ground nuts (shelled), 2018-2022**
Volume in thousand tonnes



Poland (+6.7%), France (+4.8%), Italy (+5.3%), Portugal (+22.2%) and most of the Eastern EU countries increased their volume imports of shelled groundnuts between 2018 and 2022. On the other hand, German imports decreased by 3.1%. Decreases were also registered in the imports of Spain (-5.2%), Austria (-4.0%), Luxembourg (-7.1%) and Finland (-7.0%).

Since the Chinese shipping company Cosco bought into the port of Piraeus in Greece since 2016, the Chinese ships have brought more and more goods to the port including groundnuts. Piraeus has now become one of the most important transshipment hubs in the Mediterranean linking China's fast land and sea transport with Europe. Greek imports of groundnuts increased by 10.8% between 2018 and 2022. This has been to the disadvantage of the port of Antwerp in Belgium which partly explains the falling groundnut imports of Belgium (-7.6%).

Groundnuts prepared. In 2022, total EU imports of groundnuts (excl. preserved in sugar) were 78 thousand tonnes, valued at € 599 million. Around 30% was imported by Germany, followed by Italy (24%), Spain (17%), France (6%) and Portugal (5%). Between 2018 and 2022, EU imports decreased by a CAGR of 0.9% from 80 thousand tonnes. However, by value an increase was registered by 4.2% from € 507 million in 2018.

Detailed trade statistics can be found in Annex 2 – Table 5 and Table 6

3.4.4 Macadamia nuts

The macadamia is an evergreen tree of the family *Proteaceae*, which is native to Australia. The Aborigines have been enjoying these "bush nuts" for thousands of years. In 1958, they were named after the Melbourne scientist Dr. John MacAdam. The nuts are not generally well known to European consumers but are growing in popularity. Macadamia nuts are now mainly sourced in South Africa, Australia and Kenya. Other non-EU sources include Guatemala, Mozambique, Malawi, China and Zimbabwe *(see details in Annex 2 - Table 8)*.

Inside the hard, durable shell is the kernel or macadamia nut, whose distinctive flavour has been compared to that of a superfine filbert. The macadamia nut is smooth, medium-brown in colour and medium in size. During the harvest season, the nuts need to be picked up every six to eight weeks to avoid deterioration of the final product. The moisture must be removed as soon as possible to prevent damage by mould. After harvesting, the outer husk of the nuts is removed and they are then dehydrated in drying ovens to reduce the moisture content to 2.5 to 4%. The processing system has to be kept very clean because macadamia nuts easily absorb odours and flavours from their surroundings. The nuts are cracked and the kernels cleaned and sorted into grades which are called styles 0 to 7, from 0, which indicates 100% large whole kernels with a diameter greater than 20.6 mm, to 7, which indicates pieces of less than 3 mm.

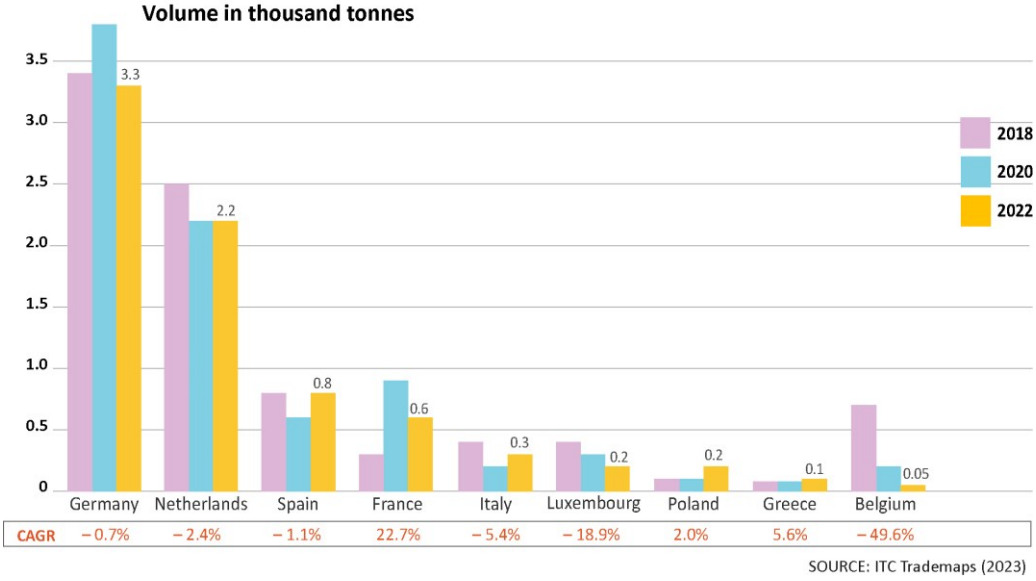
First-grade kernels are processed further for retail sale while second grade and broken kernels are used as ingredients in cakes, biscuits, confectionery, ice cream making and Asian cooking. Sometimes, the dried kernels are roasted in macadamia oil or refined coconut oil. After roasting, the kernels are drained of excess oil and cooled. Most kernels are then lightly salted. Apart from their excellent flavour, macadamia nuts are reputed to lower blood cholesterol, so reducing the risk of heart disease.

In 2022, total EU imports of macadamia nuts were almost 8 thousand tonnes, valued at € 118 million. EU imports represented 26% of total world imports. Between 2018 and 2022, EU imports of macadamias decreased by a CAGR of 2.6% in volume and by 4.7% in value.

Between 2018 and 2022, most EU countries decreased their imports of macadamia's being primarily attributed to the inflation in the EU where macadamias were likely to be erased from many consumers' shopping list because of their high price.

figure 15 **EU27 Imports of macadamia nuts (shelled), 2018-2022**

Volume in thousand tonnes



SOURCE: ITC Trademaps (2023)

France (+22.7%), Greece (+5.6%), Austria (+4.4%), Portugal (+27.3%), Ireland (+10.6%) and many of the Eastern EU countries increased their imports although the imported quantities were small.

In 2022, the EU imported 7,997 tonnes of macadamias that were almost all shelled. Just 241 tonnes were macadamias in shell which were imported by the Netherlands, Italy, France and Germany.

Detailed trade statistics can be found in Annex 2 – Table 7

In the period under review, imports by Slovakia rose from 18 to 69 tonnes which was quite noteworthy. This is the result of a sustainable sourcing project between a Slovak company and the local government in Kenya.

Box 1 - Sustainable sourcing of Macadamias in Kenya
The County Baringo in West Kenya and the Tensenses Nut Company in Slovakia have signed a partnership in 2020 to provide 50,000 Macadamia seedlings at subsidized prices for two years. The county government (CEC) will distribute the seedlings to boost crop production and provide technical support to contract farming macadamia farmers.
Opportunities for agri-business growth in the county are available due to excellent climatic conditions, boosting economic growth, and enabling local farmers to become economically independent. Agriculture contributes to the president's Big Four agenda, including food security, nutrition, and manufacturing. Farmers are stimulated to plant seedlings during long rains season for increased production, employment, and income.

Cooperatives. The project aims to make macadamia farming a livelihood source, using high-value nut seeds. The Slovakian government secured a market for macadamia nuts in European countries. Tenses Nut Company collaborates with cooperative societies, promoting sectors and distributing seedlings through an active collaboration. Local farmers are encouraged to join cooperative societies since it is the only link between them, the government and development partners. The cooperatives will be used to distribute the subsidized seedlings to their registered members with macadamia plantations.

Training. Staff will be trained to give technical support and skills in macadamia farming practices, ensuring quality export products and organizing farmers into organized groups for efficient crop production.

Value addition. County government plans to establish a factory for processing and packaging macadamias for export to European and USA markets.

County government focuses on infrastructure through cooperative societies to empower Macadamia sub-sector but also other crops.

Tensense Company, Africa Limited, is expanding its Macadamia production in Kenya to other areas with favorable nut growing conditions. The company has nurseries providing seedlings at subsidized prices and supports farmers through agro economics support programs. Tensense is ready to buy products at current market prices and has access to markets in Europe, USA, and other regions.

More information can be found at:
https://tensensesafrica.com/our-story/
https://tensensesafrica.com/gallery/

3.4.5 Hazelnuts

Hazelnuts for consumption come from *Corylus avellana L* and *Corylus maxima* Mill and their hybrids. Hazelnuts are imported mainly as shelled kernels and there is a small demand for unshelled nuts. 60% of the world's production is in Turkey. California and Italy are other sources.
The nuts are harvested mechanically or by hand.

Once picked in the husk, hazelnuts are transported to central locations to be dried in the sun or, less frequently, in heated buildings. After drying, the husks are removed, by hand or in husking machines. The shells are removed mechanically, after which the kernels are screened, graded according to size, sorted and bagged for export. Hazelnuts for sale in the shell are polished to make the colour more attractive to consumers.

The large hazelnuts called filberts are sold to consumers in shell, or in shelled (salted) form. Most imported hazelnuts are used in the production of pastes/spreads, chocolate, confectionery and bakery products. About one third of exports from Turkey are imported already processed by blanching, roasting, chopping, slicing, grinding, etc.

EU imports of hazelnuts (shelled) were 195 thousand tonnes, valued at € 1,089 million in 2022. Between 2018 and 2022, EU imports of hazelnuts (shelled) slightly increased by a CAGR of 0.9% in volume and by 1.4% in value. Germany and Italy are the largest EU importers representing 39% and 32% of EU imports respectively. France (12%) was another sizeable importer.

The imported volume of hazelnuts in shell into the EU were 17 thousand tonnes, valued at € 47 million in 2022. Italy was by far the main importing country representing 70% of EU imports.

3.4.6 Pistachios

The pistachio belongs to the *Anarcardiaceae* family, like the mango and the cashew. Pistachios are imported both in unshelled form (mainly for use as a snack product) and as kernels for use in the food industry. The most important countries of origin are Iran, USA, Turkey, China and Madagascar.

The kernel of the pistachio is a characteristic green. In general, the deeper the shades of green, the more the nuts are valued. This kernel is protected from dust, dirt and other impurities by a thin, ivory coloured shell. The nuts are usually marketed in shell, and when the shell is split, the kernel can be readily extracted by hand. Harvesting methods are in some countries are primitive, but in the USA, the nuts are harvested mechanically.

Following harvest, the nuts must be hulled and dried immediately in the sun for a short period so that they maintain their high quality and unblemished appearance. The nuts are tested for the presence of mould/aflatoxin, which is a particular risk factor with pistachio nuts, so that contaminated nuts can be removed. After sorting and grading, the nuts are roasted, salted and packaged.

Most pistachios reach the consumer roasted and salted in their shell for consumption. Shelled pistachios are utilised commercially (but not much in The Netherlands) in confectionery, ice cream and cooked pork/sausage meats.

In 2022, EU imports of pistachios (shelled) were 122 thousand tonnes, valued at € 939 million. Between 2018 and 2022, EU imports of pistachios (shelled) steadily increased by a CAGR of 3.9% in volume and by 6.5% in value. This mainly due to the rising popularity of pistachios most importing countries and increased use in mixed nuts. German imports represented 33% of EU imports. Other large importers were Belgium (19%), Italy (11% and Spain (11%).

EU imports of shelled pistachios were 21 thousand tonnes, valued at € 388 million in 2022. In the period under review imports increased by a CAGR of 4.8%. The main importing countries were Germany (43% of EU imports) and Italy (37%).

3.4.7 Walnuts

Walnuts belong to the *Juglandaceae* family. Throughout a long history of cultivation, the walnut has been highly esteemed as a superior dessert nut, which requires neither roasting nor salting to enhance its flavour. They are sold both as unshelled walnuts and as walnut kernels. Important countries of origin are China, USA, France, India and Chile.

The mechanically harvested crop contains a mixture of hulled and unhulled walnuts, which are then hulled and washed. To prevent deterioration and darkening of the kernels and to retard mould development and permit efficient shell bleaching, the walnuts are thoroughly dried as soon as possible by mechanical dehydrators. They are then separated into three categories, depending on how they will be marketed: in the sell, as kernels or as by-products. Sorting of the unshelled nuts is followed by bleaching, rinsing and rubbing to obtain a uniform tan colour. The nuts are then dried and sampled to determine their quality, and subsequently packed for export. The other part of the crop, known as "cracking stock", is shelled before being graded, cracked, sorted and packaged.
Walnuts in their shell are consumed as a luxury snack product. Shelled walnuts are used both commercially for producing oil, used in salad dressings. They are also used for bakery products, chocolate, confectionery, meal recipes, salads etc.

In 2022, EU imports of walnuts (shelled) were 145 thousand tonnes, valued at € 899 million. Between 2018 and 2022, EU imports of walnuts (shelled) substantially increased by a CAGR of 6.9% in volume and by 3.8% in value. Walnut have become more popular in vegetarian dishes, in salads and in mixed nuts. Germany is the largest EU importer and represented 37% of EU imports in 2022. Spain (12%) and the Netherlands (10%) were other sizeable importing countries.

The imported volume of walnuts in shell into the EU were 67 thousand tonnes and were valued at € 177 million in 2022. Italy represented 45% of EU imports, followed by Germany (15%) and Spain (15%).

3.4.8 Pecan nuts

Pecan nuts from the *Carya illinoensis* are rather like walnuts with smooth shells. They are imported to European countries mainly in shelled form. Important countries of origin are Brazil, USA, Argentina, Peru, Mexico, Australia, South Africa, Israel and Egypt.

The pecan industry has developed largely during this century. Production of pecan nuts is a long-term business, which requires considerable capital investment. Hand harvesting of pecan nuts has gradually been replaced by mechanical systems. The kernel moisture content must be reduced by drying as soon as possible to 4-5% to prevent mould and discoloration of the kernels. Quality is judged on the (light) colour and size of the kernel. After being cracked, pecan nuts go into a sheller, where the shell and middle partition are removed. After they are dried and sorted, the kernels are packed in different grades: halves, large pieces, medium large pieces, medium pieces, medium small pieces, small pieces and meal. Halves fetch a premium of about 10% more than other sizes, because they are much in demand by bakers.

Shelled pecans are sold to bakeries, chocolate factories, confectioners and dairies for ice cream production. They are increasing in popularity with consumers as a component in nut mixes and as an ingredient in domestic baking/cookery.

Volume imports of pecan nuts were relatively small, but demand is rising. Between 2018 and 2022, large importing countries such as Germany (5,695 tonnes), the Netherlands (5,914), Spain (1,360 tonnes), Belgium (996 tonnes) and Italy (8282 tonnes) increased their imports of pecan nuts. Main supplying countries were the USA, Mexico and increasingly other countries including South Africa.

3.4.9 Brazil nuts

Brazil nuts, also known as Amazonia nuts or para nuts, are the hard-shelled seeds of the *Berbolletia excelsa* tree, which grows wild in tropical rain forests. They are found mainly in Brazil and Bolivia and to a lesser extent in Peru, Colombia and Venezuela.

The fruits of this tree resemble large coconuts with a hard, woody casing. Inside the rough but fragile outer shell of the fruit is a tough, woody and fibrous inner shell, which contains a dozen or more Brazil nuts, closely packed together, with the thin edge inward, like the sections of an orange. When the fruits ripen, they fall to the ground. The mature fruits are picked off the ground and are broken in the forest where the outer shells are discarded. The nuts, still with their hard inner shell, are washed and given initial drying in a primitive shelter prior to transportation to the nearest local trading post. Due to the intense heat and high humidity of the Amazon region, the heaps of Brazil nuts tend to "sweat" and must constantly be turned over and aerated to prevent deterioration and mould. After drying, the unshelled nuts are manually selected to remove mouldy, empty, cracked, broken and oily-wet rejects.

The nuts are then graded according to the colour of their shells, and subjected to quality control before being packed for export. The nuts to be shelled are soaked in water for 24 hours, boiled briefly to soften the shell and then cracked by hand or machine. The good kernels are dried and graded for quality and size.

3.4.10 Mixed nuts

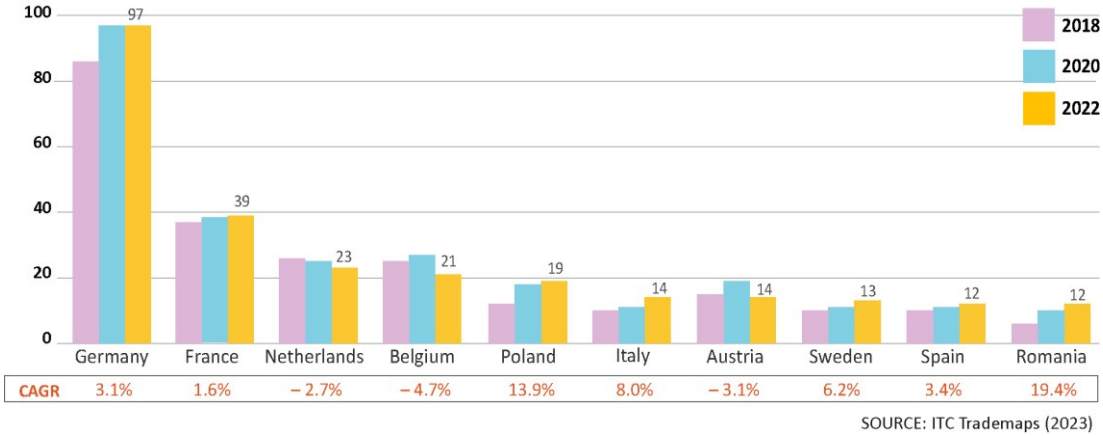
Mixed nuts

In 2022, the EU imported 312 thousand tonnes of mixed nuts and seeds, valued at € 1,845 million. After almonds, this was the 2nd largest product group which represented 15.6% of EU imports (see figure 10). Hazelnuts, pecans, walnuts, almonds and Brazil nuts are common in sweet mixes with raisins. While in salted mixes cashews, pistachios, almonds are often combined with peanuts or peas.

German imports were 97 thousand tonnes in 2022 and accounted for 31% of EU imports. Between 2018 and 2022 German imports increased steadily by a CAGR of 3.1%. France, Netherlands, Belgium, Poland and Italy were other significant importers. Large increased were registered in the imports of Poland (+13.9%), Italy (+8.0%), Sweden (+6.2%) and Romania (+19.4%) as is shown in Figure 16.

Denmark (+17.5%), Portugal (+14.3%), Bulgaria (+10.2%) and Greece (+5.6%) also imported more mixed nuts in the period under review.

figure 16 **EU27 Imports of nuts and seeds incl mixtures, 2018-2022**
Volume in thousand tonnes



SOURCE: ITC Trademaps (2023)

Detailed trade statistics can be found in Annex 2 – Table 9 and Table 10

3.4.11 Sesame seeds

Sesame seeds are tiny edible seeds grown from the sesame flowering plant and are oil-rich. They are primarily grown in tropical regions like Nigeria, Uganda, Sudan, Mozambique, Tanzania, Ethiopia and other African countries. Sesame seeds are one of the oldest oilseed crops known to humankind, domesticated over 3,000 years ago. They thrive in tropical regions and are tolerant of drought-like conditions.

Sesame seeds can be stored for several years while retaining their characteristics. The seeds burst upon maturing, called "dehiscence," and are hand-cut by farmers. They are stored at no more than 6% moisture to prevent rancidity. Post-harvesting, seeds are cleaned and hulled, and stored in warehouses in optimum temperature and conditions.

The main uses are in bakery products in burned form. These burns are widely found, be it in a burger chain or in a local bakery. The seeds on the bun add a bit of flavour and texture, and also improve aesthetics as they are a pleasant visual contrast on a plain-looking bun.

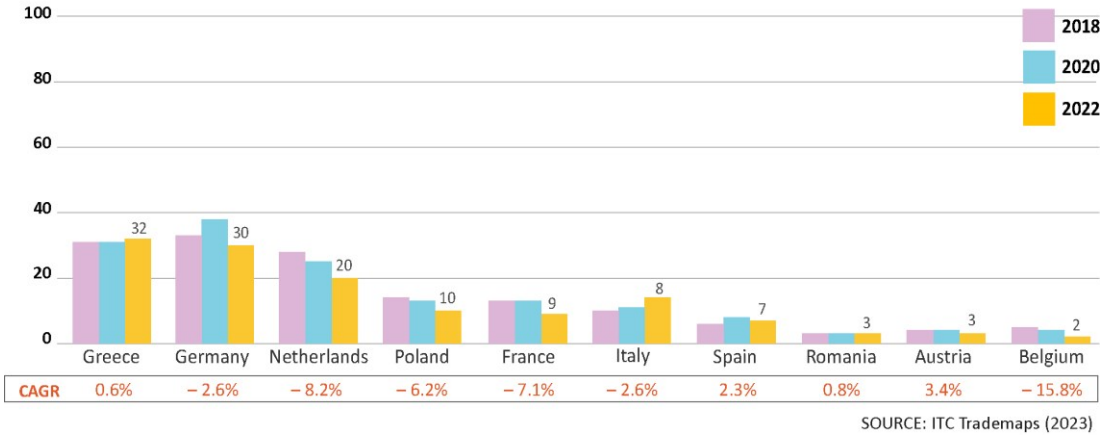
Another popular use of sesame seeds is Tahin. A condiment that is made from toasting ground hulled sesame, Tahin or Tahini is a major ingredient in the making of hummus.

Sesame oil is popular in Asia, particularly in Japanese cuisine. China and India are the top two importers of oil-grade sesame.

In 2022, total EU imports of sesame seeds were 138 thousand tonnes, valued at € 298 million. EU imports represented around 7% of world sesame imports by volume. Between 2018 and 2022 volume imports decreased by 3.4%, from 159 thousand tonnes in 2018. Greece was the largest EU importer which imported almost 32 thousand tonnes in 2022 as is shown in Figure 17. Except Greece, the major EU countries imported less sesame seed, especially the Netherlands (-8.2%), Poland (-6.2%), France (-7.1%) and Belgium (-15.8%). This can be largely

attributed to the higher prices of sesame seeds. By value, EU sesame seeds imports increased in the same period by a CAGR of 8.1%.

figure 17 **EU27 Imports of sesame seeds , 2018-2022**
Volume in thousand tonnes



SOURCE: ITC Trademaps (2023)

Nevertheless, volume increases were still registered in the imports of Spain (+2.3%), Sweden (+2.5%), Ireland (+10.2%), Croatia (10.9%), Slovenia (12.1%), Slovakia (+4.3%) and the Baltic States.

Detailed trade statistics can be found in Annex 2 – Table 11 and Table 12

3.5 Consumption and Imports of edible nuts by type in EU Key countries

Based on their size and good prospects for growth, the following markets are selected:

1. Germany
2. France
3. Spain
4. Italy
5. Netherlands
6. Belgium
7. Greece
8. Poland
9. United Kingdom

3.5.1 GERMANY

Within the EU, Germany has by far the largest population size, with 83.2 million inhabitants in 2022 which were divided into the following ethnic groups: German 86.3%, Turkish 1.8%, Polish 1%, Syrian 1%, Romanian 1%, other/stateless/unspecified 8.9%.

The German population is ageing. According to the Federal Statistical Office (Destatis), the German population will contract to 82.6 million by 2070, of which 56% is aged between 20 and 66 years and 26% aged 67 and over.

In June 2023, the German parliament approved a new law which reforms the Skilled Immigration Act. The Act facilitates entry and residence for qualified skilled workers from third countries.

This implies a more diverse population. Some 15.3 million people in Germany, just under one in five nationwide, immigrated there at some point in their lives, according to the Statistisches Bundesamt. Almost 5 million more were born to migrant parents. The main countries of origin were Romania, Poland, Bulgaria. Syria, Afghanistan, Turkey. Since 2021 the number of Ukrainian refugees in Germany increased to 1.0 million people.

The GDP (Gross Domestic Product) per capita was € 35,870 and the inflation rate in 2022 was 8.7% which decreased in June 2023 to 6.4%. Fuel price were reduced although food price remained high.

The German food sector, with 6,125 companies, generated €187.1 billion in 2022. Largest sector subsegments were: Meat (21.5%), Dairy (17.1%), Baked Goods (9.1%), and Confectionery & Long-Life Bakery Products (7.4%).

The savoury snacks market

This market includes Chips/crisps, Fried or dried slices of fruits, Edible Nuts, Baked snacks, Popcorn, Potato- and grain-based snacks and Meat snacks.

According to Statista, the value of the savoury snacks market in Germany was estimated to be € 3.3 billion. Market value had increased by € 224 million compared to 2019. The German market for savoury snacks is predicted to grow more in value than in volume in the coming years and is forecast to reach € 4.1 billion by 2026.

Since 2021, consumers' incomes are tight. Private label salty snack brands are expected to gain further share of the new product market. Inflation will drive value sales, while volumes are expected to remain relatively flat after COVID-19 lockdowns boosted in-home consumption in 2020/21. This threatens the salty snacks market, as consumers are already noticing rising prices.

There is an increasing demand for healthy snacks with all-natural ingredients and environmentally friendly packaging. Germany leads EU organic market, accounting for 6.4% of the food market in 2020, with organic food products becoming mainstream. However, its share in social sustainable projects is still limited. This offers opportunities for brands to get a foothold by focusing on sustainable sourcing.

Out-of-home consumption of crisps, savoury snacks, and nuts is expected to regain ground, while the long-term trend towards working from home will continue to support in-home snacking formats. In addition, promoting health benefits will support sales.

With increasing awareness of global warming, consumers' interest in and demand for sustainability in packaging in the salty snacks market is expected to rise. This presents brands operating in the snack food market in Germany with opportunities to expand their salty snacks market share with regards to sustainability.

According to Mintel consumers' research:

- Almost half of German snack eaters believe that healthy snacks should consist of all-natural ingredients and without artificial flavours.
- Only 3% of new launches claim all-natural ingredients.
- 58% of snack eaters want a snack to indulge in for an evening/night-time snack.
- 67% of Germans say they have been affected by increases in food and drink prices (in January 2022).

The German market will continue to benefit from strong consumer demand for convenient snack foods and the popularity of snacking in general, both in and out of home.

Nearly half of German snackers prefer healthy, all-natural snacks without artificial Flavors. Volume growth will be held back by consumers focusing on health, but a “quality over quantity” mindset offers opportunities for more premium products on the snack food market in Germany. To capitalize on the 'clean eating' trend, salty snack brands should innovate with whole vegetables or freeze-dried ingredients, retaining natural nutrients.

However, there are many consumers who eat snacks for indulgence. So, there is still is an opportunity for more indulgent products that don’t have to be healthy. Salty snack brands may alternatively strive for higher quality using premium and natural ingredients for indulgent moments at home or with guests to share.

The German market for Edible nuts

Germany is the largest EU market and a large trader of edible nuts. Apparent consumption was estimated at 450 thousand tonnes in 2022, valued at € 3,213 million. In the same year, Germany represented 21.3% of the value of the EU market. The per capita consumption of 5.41 kg per person was among the highest in the EU. Between 2018 and 2022, German consumption rose by a CAGR of 1.4% although there was a decrease since 2020, as shown in

Table 3, which was primarily due to the COVID and the cuts in food spending of most German people.

Table 3 Apparent consumption of edible nuts in Germany, 2018 – 2022
Volume in tonnes

GERMANY	Imports	Production	Exports	Consumption	Per capita (kg)*
2018	601,788		175,274	426,514	
2020	671,168		196,101	475,067	
2022	634,823		184,741	450,082	5.41

* Based on total population Source: ITC Trademaps, INC, USDA, Eurostat (2023)

It should be noted that variations in apparent consumption from year to year are caused not only by actual import and export volumes but also by the holding and releasing of stock by major traders in different periods.

Consumption and market trends

German consumers usually eat peanuts and tree nuts along with drinks and use them as ingredients in traditional recipes, including cereals, marzipan, bakery items (cakes or healthy pastries) and chocolates.
The increase in single person households and an increasing number of women entering the workforce has led to a strong and growing demand for snacks, easy-to-prepare meals and different kinds of convenience food. Despite the fact that Germany is traditionally a large consumer of tree nuts and peanuts, new types of savoury snacks are increasingly offered. They are often eaten between meals - a development known as grazing.

Demand is also driven by the trend towards healthier eating. Flexitarian, Vegan, and Plant Based alternatives are growing in Germany, creating more demand for nuts and eat them more frequently. They are recognized as an important health supplement by younger German consumers who prefer organic and natural food.

According to a market survey by USAID, German consumers prioritize taste and natural ingredients when purchasing snacks:

- 81% stating it is important or very important. Low price, brand values, environmental impact, and locally produced snacks are also important factors.
- 51% of respondents believe it is important to have a selection of healthy snack products, and free from artificial ingredients are a major deciding factor.

Younger consumers tend to gather information online, with 22% visiting snack brands' websites, especially people aged 18-35 years old.

German consumers are less loyal to specific brands, creating opportunities for new entrants. Only 10% consider brand loyalty important, while 58% prefer trying new snacks. The majority of respondents tried new snack brands in the final quarter of 2021, with reasons including current offers, caloric content, and natural ingredients. The German nut and snacking industry show openness to new products, with healthy, sustainable snacks having an impact on customer loyalty.

Demand will be also driven by the growing number of immigrants and ethnic groups living in Germany. Their diets tend to be richer in dried fruits and nuts than the typical German diet.

It should be noted that the German market is extremely price sensitive, and both consumers and retailers seek premium quality at a discount price. Cost and value for money is a major driver of consumption in Germany.

German Cashew market

Cashew nuts are a popular ingredient in spreads and snack bars in Germany. Consumers are aware of their health benefits, including iron and vitamin K. The good taste drives interest among consumers, while the processing industry's demand stimulates demand for cashew nuts as well. Cashews are a protein-rich, high-fat source and a healthy vegan substitute for heavy cream in sweet and savoury dishes. They provide a seamless substitute for heavy whipping cream.

Compared to peanuts, cashews have a relatively high fibre content, which promotes healthy weight gain by enhancing digestive function. Moreover, cashews have a higher iron and magnesium content than peanuts, which enhances the body's enzymatic reactions. Due to the high nutritional value of cashews, snack manufacturers have introduced several cashew-based treats, such as lactose-free cashew milk.

In 2022, German imports of cashew nuts were 59,944 tonnes, valued at € 409 million with an CAGR increase of 5.9% since 2018. This may appear to leave room for other suppliers, but in actuality, Dutch suppliers have a large share in total EU cashew imports as well, because additional quantities are imported from the Netherlands serving as a transit country for Vietnamese and Indian cashew nuts. The primary cause for this reliance on imports from Vietnam and India is the absence of shelling processing capacity in other growing regions, especially in African countries where most cashews are cultivated. The demand for cashews from the food industry is anticipated to increase in the coming years, generating an increase in imports.

Germany's cashew kernel market primarily focuses on snack segments, while there is a growing demand for pieces and broken kernels from the food industry, used in cookies, cereals, and ice cream toppings. Germany's consumers are increasing due to lower price differentiation between cashew and other nuts like almonds. Despite minimal production, the country relies on imports to meet domestic demand.

According to Mordor Intelligence, the German cashew nut market is expected to grow by a CAGR of 4.1% between 2020 and 2028.

German imports by type

Germany is the biggest EU importer of edible nuts thanks to its consumers' high consumption and its processing industry's demand. In addition, Germany is a leading trader, processor and re-exporter of edible nuts. Hamburg, along with Rotterdam, is one of the world's key trading centres. In 2022, Germany imported 634 thousand tonnes of edible nuts worth € 3,293 million. It is the largest importer of cashews, walnuts, pistachios, mixed nuts and macadamias into the EU. Imports of peanuts, almonds, pistachios and sesame seeds were also substantial as is shown in Table 4.

Table 4 Imports of the main types of edible nuts by Germany, 2018 – 2022
Volume in tonnes

GERMANY	2018	2020	2022	CAGR	From EU	From Non-EU	From Africa

TOTAL *of which:*	**601,788**	**671,168**	**634,823**	**1.3%**			
Peanuts (shelled)	117,049	121,811	103,100	-3.2%	**48%**	**50%**	**2%**
Almonds (shelled)	95,867	106,740	101,949	1.5%	**28%**	**71%**	**1%**
Hazelnuts (shelled)	64,966	69,925	72,826	2.9%	**15%**	**85%**	
Cashews (shelled)	47,646	64,890	59,944	5.9%	**12%**	**77%**	**11%**
Walnuts (shelled)	41,015	45,183	53,127	6.3%	**13%**	**87%**	
Pistachios (in shell)	31,643	38,470	40,197	6.2%	**3%**	**96%**	**1%**
Peanuts (prepared)	40,520	43,571	37,245	-2.3%	**71%**	**26%**	**3%**
Pistachios (shelled)	10,649	10,649	10,680	0.07%	**25%**	**75%**	
Brazil nuts (shelled)	7,762	8,822	6,507	-4.3%	**8%**	**92%**	
Macadamias (shelled)	3,398	3,865	3,601	1.5%	**18%**	**17%**	**65%**
Mixed nuts	87,598	97,068	96,866	2.6%	**30%**	**68%**	**2%**
Sesame seeds	33,499	38,254	30,611	-2.3%	**10%**	**42%**	**48%**

* Supplies in percent of imported volume in 2022 Source: ITC Trademaps (2023)

Between 2018 and 2022, large increases (CAGR) were registered in the imports of cashew nuts (+5.9%), walnuts (+6.3%) and pistachios in shell (+6.2%). After reaching a peak in 2020, imports of peanuts, Brazil nuts, and sesame seeds declined in 2022.

In 2022, an average of 28% of German imports were sourced from EU countries, especially from the Netherlands. Compared with other EU countries Germany was a large importing country from Africa, especially of cashews and macadamias.

Details of German imports and its supplying countries can be found in Chapter 5.2.2

3.5.2 FRANCE

In 2022, France had around 67.8 million inhabitants and is expected to see its population grow by another 9 million people over the next 40 years, placing the country's population around 72 million by 2050.

France has a diverse population with many people coming from former colonies. In 2021, a tenth of France's population was born foreigners, according to a study by INSEE. Almost seven million people were immigrants, with over a third having acquired French citizenship. The study found that immigrants and their descendants had largely blended into society, with many having children born in France. Migration contributed to the country's diverse makeup, with immigrants from North Africa, sub-Saharan Africa, and Asia. Over 12% of immigrants were born in Algeria, Morocco, Tunisia, Portugal, Italy, Turkey and Spain. Most immigrants were women, and most flocked to large cities, including the capital, where up to a fifth of the population came from abroad.

In 2022, the average GDP per capita was € 33,180. In the same year the inflation rate was 5.9% but after declines in energy prices it fell to 4.5% in June 2023. Still food prices are high.

The French food processing industry, with 15,500 businesses and € 194.2 billion annual sales, employs 433 thousand people and supports 2 million jobs. With SMEs accounting for 98%, it is a prominent economic sector with a strong reputation. The industry invests in research and development, focusing on quality, food safety, and health concerns.

The savoury snacks market

According to Statista, France's savoury snack market amounted to € 2.4 billion in 2020, slightly less than 3% of the global savoury snack market (€ 86.6 billion). The French market is led by the potato chips category in both value and volume terms in 2021.

The French market for Edible nuts

France is the 2nd largest EU market for edible nuts. In 2022, apparent consumption was estimated at 273 thousand tonnes, valued at € 2,309 million. France accounted for 17.1% of the value of the EU market. The per capita consumption of 4.02 kg per person was slightly below the EU average of € 4.32. In 2021, the French economy bounced back, after a pandemic-induced drop in the previous year, owing to extensive fiscal support and effective virus containment. The high inflation and high energy prices in France caused consumers to cut their spending.

However, the decrease of French household's purchasing power did not affect the French consumer's demand for quality, innovative, and healthy products. Nevertheless, there are many less affluent consumers that buy based on price.

Still, the French industry continued innovation in new healthy products. After all, food remains very important to the French. In addition, the use of various types of nuts in culinary dishes is also more featured during cooking programmes such as Master Chef or Top Chef where more attention is given to vegetarian meals. Therefore, between 2018 and 2022, French consumption increased by a CAGR of 3.0% (see - Table 4).

Table 5 Apparent consumption of edible nuts in France, 2018 – 2022
Volume in tonnes

FRANCE	Imports	Production	Exports	Consumption	Per capita (kg)*
2018	246,197	54,520	57,710	243,007	
2020	262,560	53,414	51,787	264,187	
2022	263,185	58,042	48,064	273,163	4.02

* Based on total population

Source: ITC Trademaps, INC, USDA, Eurostat (2023)

Edible nuts are traditionally eaten as a snack, but are also used in chocolates, sweets (nougat), nut oils, salads and increasingly in recipes. France is not only a significant importer of tree nuts from the countries of origin, but also a large producer, consumer and exporter of walnuts, chestnuts, hazelnuts and almonds. Walnut oil is popular in salad dressings.

Consumption and market trends

France is traditionally a large consumer of peanuts and tree nuts. They are eaten with drinks during visits and sometimes at the apéritifs before the warm meal around noon. However, potato chips, maize chips with guacamole, olives or brochettes with e.g., olives, cheese and tomatoes remain great classics for aperitifs. Dipping chips, once uncommon in France, still gains popularity.

Hypermarkets offer more choice in snacks particularly in chips and crisps some of which are made of lentils, chickpeas or other beans. In order to stimulate the market for edible nuts, companies promote nuts in smaller packages (single packs, children's packs, multi-packs) for more impulse buying. In addition, they introduce flavour-roasted nuts and new types of exotic nuts. Besides, small groceries and night shops will drive demand for nuts among the growing number of immigrants and ethnic groups in France. Their diets tend to be richer in dried fruits and nuts particularly during the Ramadan period.

Even if France remains renowned for its classical cuisine, a busier lifestyle has led to a growing demand for convenience foods, including snacks and ready meals. Young consumers tend to have them between meals, which is called "grignotage" (grazing).

The French like innovative recipes using edible nuts but these should be ready-to-use and practical. To save time, French people choose culinary aids in which all the ingredients they need for a dish, including fruits or nuts, have already been added. On the other hand, in many older French households, they still prefer to compose their own recipes, which gives French home cooking its flair and originality, in which the use of some nuts complements the flavour of the dish.

Plain, salted peanuts were the most popular nuts sold but price reductions of tree nuts sold under private labels, have made them more accessible for consumers. Pistachios represent a large part of the tree nuts market, followed by almonds, walnuts, cashew nuts and hazelnuts.

Bénénuts (Pepsico) first launched dry roasted peanuts in the French market in 1988, as part of the trend towards healthy food alternatives. Importers and processors continue to introduce mixtures of tree nuts, flavoured with French or Italian herbs, with garlic or with Mexican, Indian spices.

French imports by type

France is a large EU importer of edible nuts due to its consumers' high consumption and the demand of its processing industry. France is also a major trader, processor, and re-exporter, with Marseille functioning as its trading centre.

In 2022, France imported 263 thousand tonnes of edible nuts valued at € 1,221 million. It is the EU's biggest importer of mixed nuts. These are primarily sourced from Germany, Spain, and the Netherlands, where the multinational processors Intersnack and PepsiCo are based. Peanuts and almonds were also substantial French imports. As shown in Table 6, French imports of cashews and macadamias are still modest compared to those of Germany and the Netherlands, but imports of both types are rising substantially.

Table 6 Imports of the main types of edible nuts by France, 2018 – 2022
Volume in tonnes

FRANCE	2018	2020	2022	CAGR	From EU	From Non-EU	From Africa
TOTAL *of which:*	**246,197**	**262,560**	**263,185**	**1.7%**			
Peanuts (prepared)	50,954	59,859	60,759	4.5%	**84%**	**14%**	**2%**
Almonds (shelled)	39,467	41,888	40,437	0.6%	**56%**	**43%**	**1%**
Peanuts (shelled)	29,473	34,156	35,557	4.8%	**19%**	**73%**	**8%**
Hazelnuts (shelled)	25,088	23,106	22,662	-2.5%	**19%**	**81%**	
Cashews (shelled)	11,450	14,544	16,195	9.0%	**17%**	**72%**	**11%**
Walnuts (shelled)	10,040	10,882	11,241	2.9%	**14%**	**85%**	**1%**
Pistachios (in shell)	6,926	6,112	6,941	0.05%	**3%**	**97%**	
Pistachios (shelled)	1,627	1,379	1,578	-0.8%	**43%**	**57%**	
Brazil nuts (shelled)	1,049	1,660	1,177	2.9%	**33%**	**67%**	
Macadamias (shelled)	273	922	618	22.7%	**2%**	**58%**	**40%**
Mixed nuts	37,137	38,763	39,646	1.6%	**73%**	**26%**	**1%**
Sesame seeds	12,565	12,695	9,383	-7.2%	**32%**	**35%**	**33%**

* Supplies in percent of imported volume in 2022

Source: ITC Trademaps (2023)

Between 2018 and 2022, large increases (CAGR) were registered in the imports of cashew nuts (+9.0%), peanuts (+4.8%), peanuts prepared (+4.5%) and macadamias (+22.7%). After reaching a peak in 2020, imports of Brazil nuts and sesame seeds declined in 2022.

In 2022, an average of 50% of French imports were sourced from EU countries. In comparison to other member states of the EU, France was a major importer from Africa. Cashews and macadamia nuts were the most popular nuts exported from Africa.

Details of French imports and its supplying countries can be found in Chapter 5.2.3

3.5.3 SPAIN

In 2022, Spain had around 47.4 million inhabitants which were divided into the following ethnic groups: Spanish 84.8%, Moroccan 1.7%, Romanian 1.2%, other 12.3% (2021 est.).

In the past decade, Spanish population declined due to a decreasing birth rate and difficult economic times. High unemployment levels and low wages made Spanish people searching for work in other countries. The Spanish population is expected to contract by less than 10% in future.

From 2015, immigration started to pick up and in 2020 the total immigrant population in Spain was about 6.7 million and represented around 14% of the total population. Around 1.5 million were immigrants from Colombia and other Latin American countries. Another significant group were the immigrants from other EU countries (Germany, UK, Netherlands, France etc..) which suggests that Spain is becoming an increasingly attractive destination, especially for the elderly people. However, the current hot summers due to rising temperatures may eventually discourage people from living there.

The average GDP per capita in 2022 was € 24,580 with an inflation rate of 8.3% which is forecast to reach 4.0% in 2023.

Spain's agri-food processing industry generated a revenue of €140 billion and employed over 440,000 people and is Europe's fourth-largest agri-food power. The industry has experienced resilience during the pandemic, with over 30,000 companies exporting food and drink. Spain is undergoing digitalization and sustainability to adapt to climate change and consumer trends.

The savoury snacks market

The savoury snack market in Spain is estimated at € 1.9 billion in 2023. According to Euromonitor, snacks are performing well in Spain, with moderate growth in retail volume terms and substantial growth in current value terms expected for 2023. Inflation continues to have a significant influence on prices and is the primary driver of value growth.

The Spanish market for Edible nuts

Spain is among the largest EU markets for edible nuts and apparent consumption was estimated at almost 266 tonnes in 2022, valued at € 1,553 million. Spain accounted for 11.8% of the value of the EU market. The per capita consumption of 5.59 kg per person was among the highest in the EU. Between 2018 and 2022, Spanish consumption rose by a CAGR of 0.5% but consumption fell in 2020, as shown in Table 3. This due to COVID and the cuts in food spending.

Table 7 Apparent consumption of edible nuts in Spain, 2018 – 2022
Volume in tonnes

SPAIN	Imports	Production	Exports	Consumption	Per capita (kg)*
2018	254,468	160,751	155,259	259,960	

2020	270,499	178,710	172,449	276,760	
2022	289,376	155,133	178,623	265,886	5,59

* Based on total population

Source: ITC Trademaps, MAPA, INC, USDA, Eurostat (2023)

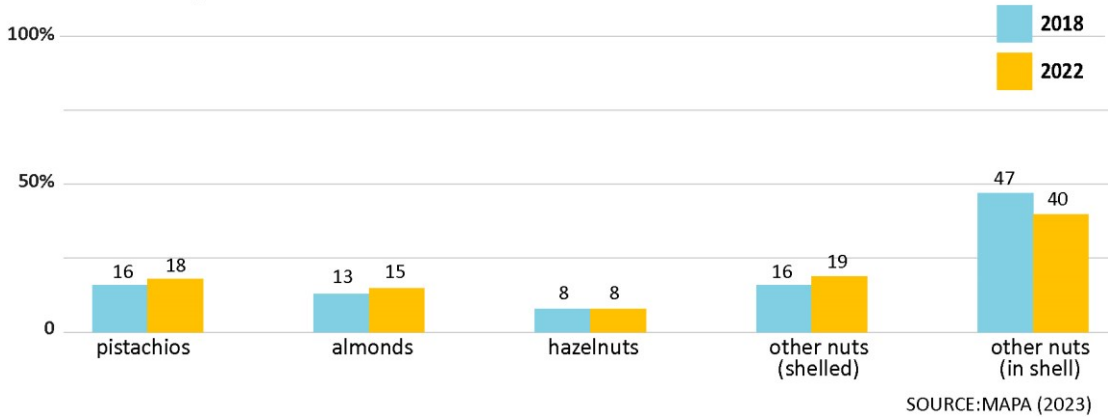
Consumption and market trends

In Spain, peanuts and tree nuts are sometimes eaten with late afternoon drinks although they are less common than in Germany or the Netherlands. Tapas remain preferred among many Spanish people. Tapas are small portions serving as an appetizer or even can be a meal. Some common favourite tapas include Spanish ham, olives, cheese, and bread. Tapas are very common in most cities and the most iconic region for tapas is Andalusia were, tapas are served as an accompaniment to drinks.

Since ancient times, moderate proportions of nuts have been consumed in Spain. In 2022, household consumption of nuts has returned to pre-pandemic levels. According to a study from the Ministry of Agriculture (MAPA), household consumption pistachios and almonds were the largest single categories in Spanish nuts consumption with pistachios becoming more popular between 2018 and 2022. The share of the large product group 'other nuts in shell' diminished and accounted for 40% of consumption in 2022. With the other nuts group, popular varieties in Spain are particularly walnuts, followed by peanuts, mixed nuts, cashews and pecans.

On the other hand, as is shown in Figure 18, the share of the 'other nuts shelled' group increased to 19%.

figure 18 **Household consumption by type of nuts in Spain, 2018-2022**
As percent of value in tonnes



Due to the inflation, prices were higher for all types of nuts, especially for almonds that have suffered from a much lower production in Spain cause by the frost in spring time and the drought in summer.

According to the MAPA report, self-employed people consume most nuts. Retirees, young couples without children, and independent young people also consume above average. Whereas young couples with young children consume below average. The northeastern, northern and eastern regions of Spain show the highest consumption.

Nuts are often bought impulsively and the existence of a large number of kiosks selling single packs of peanuts and tree nuts has stimulated the market as their health benefits are increasingly recognized by Spanish consumers.

Since the Spanish treat meals as important family occasions, snacking is a relatively recent introduction. Smaller pack sizes of nuts and promotions in hypermarkets have stimulated impulse purchasing. Manufacturers increasingly monitor markets, seeking to adapt new snacks to suit national flavours and preferences in order to increase sales.

The future nuts market will be driven by price reductions and private labels to make nuts them accessible to more consumers.

Spanish imports by type

Due to its processing industry and increasing consumer demand, Spain is a major importer of edible nuts into the EU. In 2022, Spain imported 289 thousand tonnes of edible nuts worth € 1,155 million. In addition to being a producer, Spain is a major importer of almonds (shelled) and increasingly of almonds in shell as a consequence of a decline in Spanish production due to warmer summers. Spain is also a large importer of walnuts, pistachios, peanuts and cashews into the EU as is shown in Table 8.

Table 8 Imports of the main types of edible nuts by Spain, 2018 – 2022
Volume in tonnes

SPAIN	2018	2020	2022	CAGR	From EU	From Non-EU	From Africa
TOTAL *of which:*	**254,468**	**270,499**	**289,376**	**3.2%**			
Almonds (shelled)	106,014	99,480	108,225	0.5%	**16%**	**83%**	**1%**
Peanuts (shelled)	40,385	32,577	38,399	-1.3%	**21%**	**78%**	**1%**
Almonds (in shell)	2,343	13,223	28,830	87.3%	**97%**	**3%**	
Walnuts (shelled)	15,182	15,663	17,342	3.5%	**18%**	**82%**	
Pistachios (in shell)	11,145	12,744	13,017	4.0%	**5%**	**95%**	
Cashews (shelled)	7,311	8,789	12,301	18.7%	**14%**	**84%**	**2%**
Peanuts (prepared)	6,237	7,341	10,296	13.3%	**94%**	**6%**	
Walnuts (in shell)	13,716	13,455	10,294	-6.9%	**27%**	**73%**	
Hazelnuts (shelled)	4,477	5,049	5,768	6.5%	**22%**	**78%**	
Macadamias (shelled)	789	592	756	-1.1%	**2%**	**10%**	**88%**
Mixed nuts	10,607	11,924	12,166	3.5%	**43%**	**56%**	**1%**
Sesame seeds	6,298	8,022	6,880	2.3%	**29%**	**50%**	**21%**

* Supplies in percent of imported volume in 2022 Source: ITC Trademaps (2023)

Between 2018 and 2022, large increases were registered in the imports of almonds in shell (+87.3%), cashew nuts (+18.7%), prepared peanuts (13.3%) and hazelnuts (+6.5%) and pistachios in shell (+4.0%). Spanish imports of sesame seeds rose by 2.3% in the period under review. After reaching a peak in 2020, imports of walnuts declined in 2022.

In 2022, an average of 24% of Spanish imports were sourced from EU countries. Compared with other EU countries Spain was a small importing country from Africa, except for macadamias.

Details of Spanish imports and its supplying countries can be found in Chapter 5.2.4

3.5.4 ITALY

Italy had around 59.0 million inhabitants in 2022, with an average GDP per capita of € 27,860. The inflation rate was high at 8.7% and is set to moderate to 6.1% in 2023.

Italy's population is declining, with fewer than 400,000 children born in 2022, the lowest since 1861. Since 2014, Italy lost over 1.36 million people. An ISTAT prediction suggests that Italy may lose over a fifth of its population by 2070. Italy has the highest share (23%) of citizens aged 65. This puts pressure on pension financing and healthcare systems.

This reflects worsening demographic dynamics in an economy plagued by high public debt. The decline was worsened as Italy was hardly hit by the COVID-19 pandemic in 2021 and 2020.

The fertility rate in Italy decreased to 1.24 in 2022, with a slight increase in the southern region.

Immigration partially counteracted the trend, with 229,000 more immigrants than emigrants in 2018. In 2022, around 5.05 million people, or 8.6% of the total population, were foreigners. Migration waves originate from former socialist Eastern Europe countries like Romania, Albania, Ukraine, Moldova, Poland and North Africa (Morocco, Egypt and Tunisia). Recent years have seen growing migration fluxes from Asia-Pacific countries like China and the Philippines, as well as Latin America.

Italy's food processing market, generating € 179.4 billion in revenue in 2021, is fragmented and mainly consists of smaller companies. Leading players include Parmalat, FERRERO Commerciale Italia, MARR SpA and Amadori.

The pandemic has accelerated Italy's healthy eating trend, with vegan, vegetarian, flexitarian alternatives, "free-from" products, and superfoods attracting local consumers. The pandemic has also strengthened the locally sourced food trend. However, exports of Italian food products are increasing which means an increasing demand for food ingredients from other countries.

The savoury snacks market

The Italian retail market of savoury snack was estimated at € 2.3 billion in 2023. At social occasions, Italian people usually have chips with many different flavours, savoury snack biscuits, breadsticks, taralli, olives, crackers with tapenade. Popular appetizers with drinks are pieces of focaccia (flat bread baked in the oven with olives, tomato, cheese etc.) or pieces of pizzas, two classics of the Italian cuisine.

The Italian market for Edible nuts

Italy is among the leading EU markets for edible nuts. In 2022, apparent consumption was estimated at almost 294 tonnes in 2022, valued at € 1,792 million and represented 12.6% of the EU market. The per capita consumption of 5.01 kg per person was among the highest in the EU. Between 2018 and 2022, Italian consumption rose by a CAGR of 1.4% as shown in Table 7.

Table 9 Apparent consumption of edible nuts in Italy, 2018 – 2022
Volume in tonnes

ITALY	Imports	Production	Exports	Consumption	Per capita (kg)*
2018	268,463	96,120	87,378	277,205	
2020	295,055	90,310	95,458	289,907	
2022	298,878	87,490	92,666	293,702	5.01

* Based on total population

Source: ITC Trademaps, INC, USDA, Eurostat (2023)

Consumption and market trends

The market for nuts has been growing in Italy, but there is still room for expansion given that only 30% of consumers eat them daily. As Italy is a major producer of bakery goods and confections, the custom of eating sweet snack continues.

Peanuts are eaten primarily as snacks and their usage by food processors in cereals, confectionery and ready meals is low by the standards of other EU countries. There is little tradition or interest in eating ethnic Asian foods or breakfast cereals and muesli. However, cashew nuts and pine nuts are increasingly used in salads and vegetarian meals.

Italy has historically been a family-oriented culture in which meals play an essential role. The population does not typically consume snacks between meals, and "grazing," a prevalent practise in other countries, is less common.

In order to encourage eating nuts, companies advertise nuts to athletes, health-conscious consumers, and to bakers who can use them more in cakes or desserts.

New nut-based products are being developed. For instance, nut desserts that are sold in specialised and delicatessen stores. Currently there are a few brands of hazelnut, pistachio, and peanut spreads with a high nut content in the market. Hazelnut-based products, such as hazelnut cream, enhance the Made in Italy landscape, especially in export markets.

In comparison to other savoury snacks, tree nuts are still considered to be relatively expensive; however, greater variety, the introduction of new flavoured nuts, and reduced prices will drive the Italian market in the coming years.

Italian imports by type

Due to its consumers' high consumption and its processing industry's demand, Italy is among the top EU importers of edible nuts. In 2022, Italy imported 298 thousand tonnes of edible nuts worth € 1,439 million. The value of imports is relatively high because of high imports of hazelnuts, walnuts and almonds. Italy is also a large importer of pistachios (in shell), pistachios shelled and increasingly cashew nuts, as is shown in Table 10.

Table 10 Imports of the main types of edible nuts by Italy, 2018 – 2022
Volume in tonnes

ITALY	2018	2020	2022	CAGR	From EU	From Non-EU	From Africa
TOTAL *of which:*	**268,463**	**295,055**	**298,878**	**2.7%**			
Hazelnuts (shelled)	49,307	61,342	64,458	6.9%	**5%**	**95%**	
Almonds (shelled)	47,790	59,221	61,976	6.7%	**41%**	**58%**	**1%**
Walnuts (in shell)	36,825	40,392	30,527	-4.6%	**20%**	**79%**	**1%**
Peanuts (shelled)	22,562	21,841	27,711	5.3%	**12%**	**87%**	**1%**
Pistachios (in shell)	9,847	11,971	13,841	8.9%	**52%**	**48%**	
Cashews (shelled)	8,377	13,114	13,428	12.7%	**16%**	**59%**	**25%**
Hazelnuts (in shell)	2,598	7,141	11,034	43.4%	**42%**	**58%**	
Pistachios (shelled)	6,131	6,329	9,915	12.8%	**28%**	**72%**	
Peanuts (prepared)	4,802	4,724	5,361	2.5%	**81%**	**19%**	
Macadamias (shelled)	359	215	288	-5.4%	**25%**	**30%**	**45%**
Mixed nuts	10,361	11,019	14,044	7.9%	**45%**	**54%**	**1%**
Sesame seeds	8,857	9,891	7,967	-2.6%	**20%**	**69%**	**11%**

* Supplies in percent of imported volume in 2022

Source: ITC Trademaps (2023)

Between 2018 and 2022, large increases were registered in the imports of almost all types of nuts, especially hazelnuts shelled (+6.9%), hazelnuts in shell (+43.4%), pistachios +12.8%), cashews (+12.7%), almonds (+6.7%) and mixed nuts (+7.9%). After reaching a peak in 2020, imports of walnuts and sesame seeds declined in 2022. Imports of macadamias showed a declining trend.

In 2022, 29% of Italian imports were sourced from EU countries. Compared with other countries Italy was a moderate importer from Africa. Mainly cashews and macadamias were imported.

Details of Italian imports and its supplying countries can be found in Chapter 5.2.5.

3.5.5 NETHERLANDS

The Netherlands is the most densely populated country in the EU, which had a total of 17.6 million inhabitants in 2022. Over the coming five decades, the Dutch population is projected to grow continuously, to nearly 20.7 million inhabitants by the year 2070.

The ethnic groups were: Dutch 75.4%, other EU countries 6.4%, Turkish 2.4%, Moroccan 2.4%, Surinamese 2.1%, Indonesian 2%, other 9.3% (2021 est.)

The immigrant population was around 2.6 million in 2022 which were mainly Polish, Syrian, Turkish and increasingly refugees from Ukraine.

The GDP per capita was € 43,800 and the inflation rate was 11.6%. Inflation in the Netherlands remained high at 8.8% in the first quarter of 2023. Due to falling energy inflation in July was 5.7% although food prices remained high.

In 2023, the Netherlands had 8,655 food processing companies, generating € 80 billion in net sales and employing 150,000 individuals. The country is Europe's largest meat, fruit & vegetable exporter and hold a leading position due to its central location in the EU, efficient logistics and modern processing/storage technology.

The Dutch market for Edible nuts

The Netherlands is a mid-sized EU market and a large trader of edible nuts. Apparent consumption was estimated at 137 thousand tonnes in 2022, valued at € 346 million. In the same year, the Netherlands represented 2.6% of the EU market. The per capita consumption of 5.82 kg per person was the highest in the EU. In the Netherlands, edible nuts represent almost one third of the savoury snack market, which is high in comparison to other EU countries.

Between 2018 and 2022, Dutch consumption decreased by a CAGR of 3.9% although the apparent consumption figure gives a rough indication due to the highly fluctuating nature of imports and exports especially of groundnuts.

Table 11 Apparent consumption of edible nuts in the Netherlands, 2018 – 2022
Volume in tonnes

NETHERLANDS	Imports	Production	Exports	Consumption	Per capita (kg)*
2018	528,928		368,877	160,051	
2020	583,559		386,221	197,338	
2022	555,431		418,756	136,675	5.82

* Based on total population Source: ITC Trademaps, INC, USDA, Eurostat (2023)

It should be noted that variations in apparent consumption from year to year are caused not only by actual import and export volumes but also by the holding and releasing of stock by major traders in different periods.

Consumption and market trends

Peanuts: Most of the peanuts consumed in Europe transit through the port of Rotterdam. Around 70% is re-exported as they arrive, but part of the peanuts is being transformed. The Netherlands is also the first European producer of peanut butter and the 3rd largest consumer of groundnuts.

Everybody in The Netherlands knows peanuts, partly because of their popularity as a roasted and salted snack product. They are also used in candy bars and to produce peanut butter, which is a taste all Dutch consumers acquire from childhood. The Dutch are also familiar with peanuts as a widely used ingredient in sauces, like peanut sauce (Indonesian cuisine), and in Asian dishes. Around 25% of peanut butter is used in the HORECA sector, especially in the Indonesian restaurants that can be found in almost all cities.

Plain peanuts in salted or roasted form represented more than 50% of the total peanut's consumption, while 40% were coated peanuts and 10% peanuts in the shell. In the 1970s the leading brand Duyvis introduced the "borrelnoot", a spiced flour-coated peanut which gave a large impetus to the saturated peanut market. Today, Dutch people consume a large number of coated and flavoured peanuts, ranging from chocolate, cheese, savoury, spicy or soy coatings to a large variety of flour-coated peanuts sold as "cocktail nuts", "party nuts", "tiger nuts" or exotically named nuts such as "Shanghai", "Mexicano" or "Katjang Pedis".

Tree nuts are frequently served with drinks or at social events and are well-recognized for their health benefits. Most popular are pistachios, cashew nuts, almonds, pecan nuts and mixed nuts. Macadamia nuts are still regarded to be expensive. Tree nuts are also used in exotic dishes (e.g., Chinese chicken with cashew nuts) and become popular as a tasty and healthy substitute for meat. Nuts are also used in recipes for salads, especially combined with pine nuts, walnuts, almonds, pepitas, and other seeds or with croutons (small pieces of toast).

Cashews gain popularity with roasted, seasoned varieties and more use in nut mixes.

Dutch people also enjoy new varieties of salad dressings used in French, Italian, Asian and Mexican cuisine. For the grinder and processor this has given an opportunity to introduce ready-to-use "salad kits" consisting of nuts and seeds. These ready-to-use kits and nut oils used for stir-fry meals have become very popular. Walnuts and pecans are also eaten with cheese after a special dinner.

According to a survey of the PT (Netherlands Horticulture Commodity Board), 30% of the consumers of edible nuts buy tree nuts weekly and 25% once every two weeks.

At consumer level, little attention is paid to the origin of nuts and producing countries make little effort to promote the qualities of their packaged groundnuts or tree nuts directly to consumers, unless they are offered online.

However, nut bars (specialist shops), that can be found in almost every shopping centre in the Netherlands, do inform consumers about this. Most of them originated in the 1960s and the delicious smell of roasted nuts attracts consumers. Nut bars can also be found at street markets and they offer a complete range of peanuts, luxury nuts and tropical fruits, complemented by

chocolate products, kernels, seeds and rice snacks. Recently, supermarkets started again selling peanuts and tree nuts in loose form and mention the country of origin.

Along with the trend towards healthy eating demand for tree nuts is expected to grow and Dutch processors continue to develop flavoured and coated tree nuts as well as new mixtures of nuts and seeds. As tree nuts as a snack are still regarded as luxuries, the introduction of different uses will drive future demand as well.

Dutch imports by type

The Netherlands is the second largest EU importer of edible nuts and has a long tradition as an important transit country for peanuts in the port of Rotterdam. Together with Indonesia and Germany, it is one of the largest traders of groundnuts in the world.

In 2022, the Netherlands imported 555 thousand tonnes of edible nuts worth € 1,603 million. Around 63% of this volume were peanuts (shelled). It is the second largest cashew nut importer in the EU, and a considerable part of their cashew imports are re-exported to Germany, Belgium, Italy, Poland and other EU countries.

As shown in Table 12, Dutch imports of almonds, walnuts, mixed nuts, and macadamias were substantial.

Table 12 Imports of the main types of edible nuts by the Netherlands, 2018 – 2022
Volume in tonnes

NETHERLANDS	2018	2020	2022	CAGR	From EU	From Non-EU	From Africa
TOTAL *of which:*	**528,928**	**583,559**	**555,431**	**1.3%**			
Peanuts (shelled)	333,008	371,689	348,186	1.1%	**5%**	**93%**	**2%**
Cashews (shelled)	37,849	48,507	42,987	3.2%	**2%**	**88%**	**10%**
Almonds (shelled)	29,825	38,589	38,238	6.4%	**15%**	**84%**	**1%**
Walnuts (shelled)	8,417	11,712	13,797	13.4%	**20%**	**79%**	**1%**
Peanuts (prepared)	10,651	12,468	9,895	-1.8%	**72%**	**28%**	
Hazelnuts (shelled)	8,142	6,987	6,019	-6.6%	**28%**	**71%**	**1%**
Pistachios (in shell)	9,169	4,541	5,829	-10.8%	**12%**	**88%**	
Walnuts (in shell)	2,302	1,506	2,334	0.3%	**49%**	**51%**	
Macadamias (shelled)	2,480	2,189	2,209	-2.5%	**16%**	**24%**	**60%**
Brazil nuts (shelled)	2,166	3,198	1,734	-5.4%	**14%**	**86%**	
Mixed nuts	26,128	24,761	23,428	-2.7%	**34%**	**65%**	**1%**
Sesame seeds	27,595	25,198	19,621	-8.2%	**17%**	**49%**	**34%**

* Supplies in percent of imported volume in 2022 Source: ITC Trademaps (2023)

Between 2018 and 2022, large increases were registered in the imports of walnuts (+13.4%), almonds (+6.4%) and cashews (+3.2%). After reaching a peak in 2020, imports of peanuts, Brazil nuts, and sesame seeds declined in 2022. Imports of hazelnuts, pistachios and macadamias showed a decreasing trend.

As an important trading country, the majority of edible nuts are imported from countries outside the EU. In 2022, only 9% on average of Dutch imports originated from EU countries. The Netherlands was a significant importer of cashews and macadamia nuts from Africa.

Details of Dutch imports and its supplying countries can be found in Chapter 5.2.2

3.5.6 BELGIUM

Belgium had around 11.6 million inhabitants in 2022 which were divided into the following ethnic groups: Belgian 75.2%, Italian 4.1%, Moroccan 3.7%, French 2.4%, Turkish 2%, Dutch 2%, other 10.6% (2012 est.).

According to Eurostat, Belgium is growing at a low, steady pace of 0.44%, adding about 50,300 people to the population every year. This low population growth rate is good for a country that is already fairly densely populated. Belgium has a net migration of about 48,000 per year and a fertility rate of 1.71 births per woman. Belgium's population is expected to grow to 12.5 million people by the end of 2099.

The average GDP per capita was € 36,860 and the inflation rate was high at 10.3%. Following the decline in energy prices and the effect of fiscal measures, inflation is forecast to reach 3.4% in 2023.

Belgium has 272,520 food companies, primarily producing bakery, meat, dairy, and fruit and vegetable products. Antwerpen, West Vlaanderen, and Oost Vlaanderen account for 40% of the Belgian food industry.

According to Statista, the Belgian snack food market was to € 1.34 bn in 2023. The market is expected to grow annually by 3.04% (CAGR 2023-2028).

The Belgian market for Edible nuts

Belgium is a smaller EU market and also a trader of edible nuts. Apparent consumption was estimated at 48 thousand tonnes in 2022, valued at € 223 million. Belgium represented 1.7% of the EU market. The per capita consumption of 4.12 kg per person was slightly below the EU average of € 4.32.

Between 2018 and 2022, Belgian consumption decreased by a CAGR of 1.4% although the apparent consumption figure gives a rough indication due to the fluctuating nature of imports and exports.

Table 13 Apparent consumption of edible nuts in Belgium, 2018 – 2022
Volume in tonnes

BELGIUM	Imports	Production	Exports	Consumption	Per capita (kg)*
2018	126,490		75,785	50,705	
2020	121,761		68,238	53,523	
2022	124,130		76,021	48,109	4.12

* Based on total population

Source: ITC Trademaps, INC, USDA, Eurostat (2023)

As in other EU markets, tree nuts have grown in popularity because Belgian consumers have been more health-conscious and they're increasingly eating nuts as a healthy snack at different times.

Peanuts and tree nuts are sold under private labels at lower prices in order to retain consumers in times of inflation and austerity. Cashew nuts, mixed nuts, pistachios, pecan nuts and macadamia nuts are often eaten as snacks with drinks. Due to the enormous variety of products available, growth in the Belgian savoury snack market as a whole has slowed, with Belgian people becoming more interested in other kinds of snacks or small ready meals.

To stimulate the market, nuts are promoted as snacks and as ingredients in Belgian cuisine. The Belgian industrial sector does use a large variety of nuts (hazelnuts, almonds, walnuts, pecan nuts), particularly in the confectionery industry for the production of Belgian bonbons and pralines. Tree nuts are also are used in bakery products, desserts, yoghurts and breakfast cereals.

Belgian imports by type

Belgium is a mid-sized EU importer and a trader of peanuts and pistachios. In 2022, Belgium imported 124 thousand tonnes of edible nuts worth € 604 million. Imports of these nuts and of almonds were large as is shown in Table 14. Compared to other EU countries, Belgian cashew and macadamia nut imports were modest, but still substantial in relation to the size of the Belgian population and number of processors.

Table 14 Imports of the main types of edible nuts by Belgium, 2018 – 2022
Volume in tonnes

BELGIUM	2018	2020	2022	CAGR	From EU	From Non-EU	From Africa
TOTAL *of which:*	**126,490**	**121,761**	**124,130**	**-0.4%**			
Pistachios (in shell)	9,529	13,092	23,448	25.3%	**11%**	**89%**	
Peanuts (shelled)	28,290	24,515	20,666	-6.6%	**15%**	**77%**	**8%**
Almonds (shelled)	14,667	13,822	15,677	1.7%	**39%**	**61%**	
Peanuts (prepared)	7,766	7,937	12,138	11.9%	**99%**		**1%**
Cashews (shelled)	11,503	9,996	6,425	-13.7%	**53%**	**9%**	**38%**
Walnuts (in shell)	4,249	2,878	4,168	-0.5%	**5%**	**95%**	
Hazelnuts (shelled)	5,332	4,732	3,451	-10.3%	**55%**	**45%**	
Pistachios (shelled)	624	524	1,350	21.3%	**24%**	**76%**	
Macadamias (shelled)	739	141	48	-49.4%	**98%**		**2%**
Mixed nuts	25,222	27,312	20,820	-4.7%	**67%**	**31%**	**2%**
Sesame seeds	4,630	4,435	2,323	-15.8%	**45%**	**41%**	**14%**

* Supplies in percent of imported volume in 2022 Source: ITC Trademaps (2023)

Between 2018 and 2022, large increases were registered in the imports of pistachios in shell (+25.3%), peanuts prepared (+11.9%) and pistachios shelled (+21.3%). However, imports of peanuts shelled, cashews, hazelnuts, macadamias and mixed nuts Brazil nuts, and sesame seeds declined since 2020. This is partly due to COVID and its effects on Belgian food processors.

In 2022, an average of 42% of Belgian imports were sourced from EU countries. Belgium was a relatively large importing country from Africa, especially of cashews and peanuts.

Details of Belgian imports and its supplying countries can be found in Chapter 5.2.7

3.5.7 GREECE

In 2022, Greece had around 10.4 million inhabitants which were divided into Greek 91.6%, Albanian 4.4% and other 4% (2011 est.).

Greece has experienced a population decline since 2005, dropping from 11.23 million to 10.42 million in 15 years. Projections indicate a continuation of this decline, with a projected population of 9.03 million by 2050 and 6.61 million by 2099. The decline is attributed to low fertility rates, financial crises, emigration, and an aging population. Education, economic crisis, women's unemployment, and government inability to encourage fertility contribute to the decline. After the difficult economic period and a sovereign debt crisis, the Greek banking sector is stabilizing.

Still, the cyclical effect of fewer people in Greece, aging population, and emigration creates a cyclical effect on the population.

There were 762,000 migrants which represented about 7% of the Greek population. Most came from Eastern European countries, including Albania (56%), Bulgaria (5%) and Romania (3%).

Greece, as well as Spain and Italy continue to face large numbers of illegal immigrants attempting to enter the European Union. Most illegal immigrants entering Greece do so from its border with Turkey.

Greek had an average GDP per capita of € 18,830. The high inflation rate of 9.3% in 2022, is set to moderate to 4.2% by 2024 due to easing energy prices, but food prices were still high.

The Greek food and beverage industry, with 15,700 companies and €12.82 billion sales in 2021, is the largest industrial sector in Greece, accounting for 30% of employment and revenue. The largest subsectors are bakery, oils and cereal products, accounting for 50% of production value. Medium and large businesses generate over 70% of production value.

The Greek market for Edible nuts

Greece is a smaller EU market for edible nuts and a large market for sesame seeds. Apparent consumption of edible nuts was estimated at almost 51 thousand tonnes in 2022, valued at € 205 million. Greece represented 1.6% of the EU market. The per capita consumption of 4.84 kg per person was above the EU average of € 4.32. Between 2018 and 2022, Greek consumption increased by a CAGR of 1.8%.

Table 15 Apparent consumption of edible nuts in Greece, 2018 – 2022
Volume in tonnes

GREECE	Imports	Production	Exports	Consumption	Per capita (kg)*
2018	35,464	26,566	14,825	47,205	
2020	36,208	24,125	17,336	42,997	
2022	42,696	28,516	20,437	50,775	4.84

* Based on total population

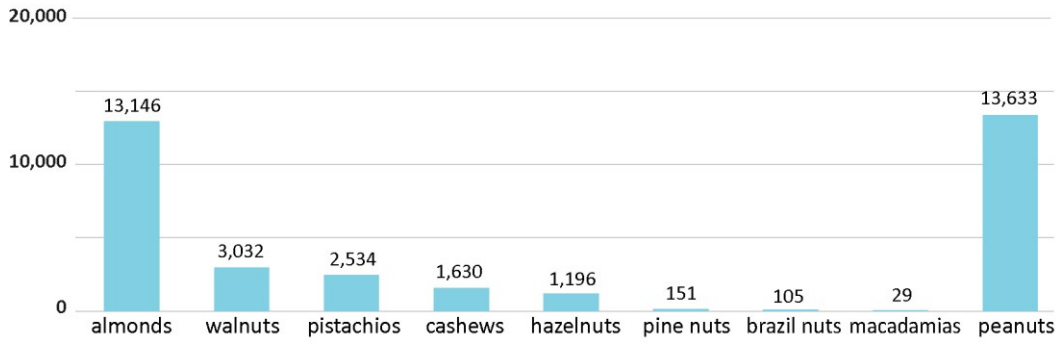
Source: ITC Trademaps, INC, USDA, Eurostat (2023)

Fruits and nuts are extensively available in shops, supermarkets and street markets. Throughout the Greek recession period Greek consumers continued to supported the Greek nuts industry though buying them. When buying edible nuts, many Greek consumers are selective and quality-minded. In general, they are receptive to culinary trends and willing to experiment with novel tastes / flavours using nuts.

Peanuts made in Greece are popular and dominated by the Virginia seed and Gregory types. They come from Kalamata, Serres, Larissa, Trikala and Crete and comply to EU regulations (minimum aflatoxin levels, MRLs).

The apparent consumption of peanuts was estimated at 13 thousand tonnes as is shown in Figure 19. Within the tree nuts, almonds, shelled walnuts, pistachios, cashews and hazelnuts were preferred by Greek consumers and by the food industry.

figure 19 **Household consumption by type of nuts in Greece, 2016**
Volumes in tonnes



SOURCE: Menexapoulos, Inc (2017)

Local produced pistachios are abundantly available from August to October. They are cultivated on a number of islands, but Aegina is most renowned for its production. Typically, pistachios are referred to as fistikia Aiginis. They are consumed roasted or raw and are slightly smaller than pistachios from other countries, but they are significantly more flavourful and sweeter.

Amygdalota are well-known almond cookies that people eat as snack or keep at home. Almost every Greek island will have its own special variation.

Koulouri (Greek sesame bread rings) is one of the country's most popular treats. People may consume one individually or share with others. A koulouri resembles a large, slender bagel with sesame seeds. It is lightly flavoured with anise and served heated and toasty. The koulouri became very popular in Thessaloniki, and its popularity expanded to the rest of Greece.

Greek imports by type

Greece is a smaller EU importer of edible nuts. In 2022, imports were 43 thousand tonnes, valued at € 157 million. It is the largest importer of sesame seeds in the EU.

Table 16 Imports of the main types of edible nuts by Greece, 2018 – 2022
Volume in tonnes

GREECE	2018	2020	2022	CAGR	From EU	From Non-EU	From Africa
TOTAL *of which:*	**35,464**	**36,208**	**42,696**	**4.7%**			
Peanuts (shelled)	11,862	12,541	17,851	10.8%	**8%**	**92%**	
Almonds (shelled)	6,899	8,836	7,994	3.8%	**31%**	**69%**	
Walnuts (shelled)	3,685	3,026	3,702	0.1%	**17%**	**83%**	
Cashews (shelled)	1,883	2,512	3,088	13.1%	**19%**	**79%**	**2%**
Peanuts (prepared)	1,869	1,686	1,715	-2.2%	**100%**		
Hazelnuts (shelled)	1,613	1,553	1,560	-0.8%	**6%**	**94%**	

Walnuts (in shell)	552	691	769	8.6%	**14%**	**86%**	
Pistachios (in shell)	1,052	391	326	-25.4%	**18%**	**82%**	
Macadamias (shelled)	78	79	97	5.6%	**12%**	**16%**	**72%**
Mixed nuts	2,387	2,414	2,963	5.6%	**29%**	**71%**	
Sesame seeds	31,160	31,446	31,932	0.6%	**1%**	**36%**	**63%**

* Supplies in percent of imported volume in 2022 Source: ITC Trademaps (2023)

Between 2018 and 2022, large increases were registered in the imports of cashew nuts (+13.1%), peanuts (+10.8%), walnuts (+8.6%), macadamias (+5.6%) and mixed nuts (+5.6%). Greek imports of sesame seeds rose marginally by 0.6%, as is shown in Table 14. In the period under review, imports of peanuts prepared and pistachios declined.

In 2022, an average of 21% of Greek imports were sourced from EU countries, especially from the Netherlands and Germany. Compared with other EU countries Greece was a large importing country from Africa. A large part of sesame seeds came from Nigeria, Sudan and Mozambique. While 72% of macadamia imports came from South Africa.

Details of Greece imports and its supplying countries can be found in Chapter 5.2.8.

3.5.8 POLAND

In 2023, Poland had around 37.6 million inhabitants with the Polish 96.9%, Silesian 1.1%, German 0.2% and Ukrainian 0.1% as the main ethnic groups. Since 2021 the number of Ukrainian refugees in Poland increased to 1.5 million people.

However, in future Polish population is expected to contract by 20-30%. Poland's population has been declining since 1999, and is expected to shrink to 23.17 million people by 2100, causing nearly 40% of the country's population to lose. The fertility rate is low, and Poland experiences negative net migration, with some of its best talent leaving to other EU countries for better job opportunities. Since the war in 2021, Poland has received 1.5 million refugees from Ukraine.

The average GDP per capita was € 14,600 and the inflation rate was high at 13.2% in 2022. In May 2023, it has decreased to 13.0% because of falling prices for fuel. The conflict between Russia and Ukraine has disrupted the Polish market, and EU and Polish sanctions have led to increased inflation, with energy/fuel and food prices remaining high in 2023.

Poland's agri-food industry, with over 1,270 companies in 2021, produced and exported products worth over €33 billion. The industry, which contributes 5% of Poland's GDP, consists of about 30,000 enterprises, with 25,000 being small companies.

According to Statista, the Polish savoury snacks market was estimated to be worth a total of € 746 million. Potato chips, puffed snacks, savoury biscuits, pretzels and rice crackers are most popular snacks. In the coming year, the market is predicted to continue growing.

The Polish market for Edible nuts

Poland is a mid-sized EU market for edible nuts. Apparent consumption was estimated at 114 thousand tonnes in 2022, valued at € 493 million. In the same year, Poland represented 3.7% of the EU market. The per capita consumption of 2.76 kg per person was well below the EU average of € 4.32. Between 2018 and 2022, Polish consumption increased by a CAGR of 4.9%.

Table 17 Apparent consumption of edible nuts in Poland, 2018 – 2022
Volume in tonnes

POLAND	Imports	Production	Exports	Consumption	Per capita (kg)*
2018	126,941	7,350	39,658	94,633	
2020	133,269	7,400	41,084	99,585	
2022	152,833	7,600	45,896	114,537	2.76

* Based on total population

Source: ITC Trademaps, INC, USDA, Eurostat (2023)

After a turbulent period of growth since 2014 and rising industrialisation and hectic lifestyle in the major cities, Polish people want a return to a natural environment with a simple lifestyle. In food this is reflected in a more balanced diet with natural products that are less processed and using ingredients that are good for health such as edible nuts.

Inspired on reality TV cooking programmes, new exotic and healthy dishes are introduced using nuts. Polish people are generally open to new taste sensations.

The most popular tree nuts among Polish consumers in 2016 were almonds (43%), pistachios (24%), hazelnuts (15%), walnuts (10%), and macadamia nuts (2%), according to a USDA study. Other types of nuts accounted for the remaining 6%. In Poland, peanuts and sunflower-seed sales are higher in volume and terms than all tree nuts combined.

Peanuts, almonds and hazelnuts with added flavours are popular among Polish consumers. Currently, spicy flavours and chocolate-coated products are prevalent. Coated peanuts, also known as 'double-crunch' peanuts, are widely available and come in salted or flavoured varieties.

Along with the growing concern about health, well-being and an expected growing Polish economy, consumers are likely to spend more on healthy snacks that is natural and can be consumed "on the go." Edible nuts fit in well here.

As consumers become more health conscious, the popularity of energy bars made from cereals, nuts, and dried fruits is growing. Foreign companies that manufacture locally dominate the market for energy bars. However, an increasing number of Polish companies are beginning to produce these products successfully.

To extend the shelf life of their products, chocolate manufacturers are also beginning to seek out high-quality ingredients. This has increased the demand for nuts of high-quality as raw materials. As a result of an increase in local demand, Polish importers have become more interested in placing larger orders, thereby increasing demand for direct shipments.

Polish imports by type

Poland is a mid-sized EU importer of edible nuts thanks to its processing industry's demand and a rising demand from Polish consumers. In addition, Poland has become a dynamic business hub especially for peanuts at the heart of Europe

In 2022, Poland imported 152 thousand tonnes of edible nuts worth € 494 million. For an Eastern EU country, it is a large importer of peanuts, cashews, almonds, mixed nuts and sesame seeds.

Table 18 Imports of the main types of edible nuts by Poland, 2018 – 2022
Volume in tonnes

POLAND	2018	2020	2022	CAGR	From EU	From Non-EU	From Africa
TOTAL *of which:*	**126,941**	**133,269**	**152,833**	**4.8%**			

Peanuts (shelled)	60,480	64,931	77,699	6.5%	**8%**	**91%**	**1%**
Peanuts (prepared)	12,107	10,397	14,434	4.5%	**55%**	**45%**	
Cashews (shelled)	5,231	7,866	9,230	15.3%	**31%**	**63%**	**6%**
Almonds (shelled)	6,332	8,498	8,491	7.5%	**30%**	**70%**	
Hazelnuts (shelled)	13,798	4,700	5,455	-20.8%	**55%**	**45%**	
Pistachios (in shell)	2,798	2,843	4,676	14.2%	**12%**	**88%**	
Walnuts (shelled)	1,637	2,459	2,628	12.9%	**31%**	**69%**	
Pistachios (shelled)	182	176	329	15.9%	**10%**	**90%**	
Macadamias (shelled)	136	126	147	2.9%	**64%**		**36%**
Mixed nuts	11,646	18,710	19,499	13.7%	**61%**	**39%**	
Sesame seeds	13,388	12,516	10,363	-6.2%	**17%**	**45%**	**38%**

* Supplies in percent of imported volume in 2022 Source: ITC Trademaps (2023)

Large increases were registered in the imports of almost all nuts between 2018 and 2022, especially of cashew nuts (+15.3%), pistachios in shell (+14.2%), pistachios shelled (+15.9%), walnuts (+12.9%) and mixed nuts (+13.7%). Polish imports of hazelnuts and sesame seeds declined. In 2022, an average of 24% of Polish imports were sourced from EU countries. Poland was a large importing country from Africa of cashews, macadamias and sesame seeds.

Details of Polish imports and its supplying countries can be found in Chapter 5.2.9.

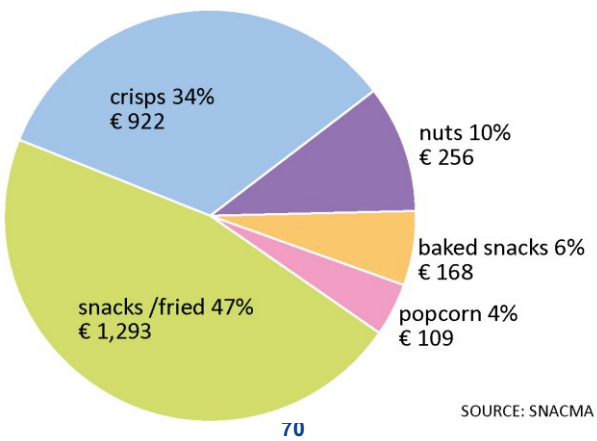
3.5.9 UNITED KINGDOM

The United Kingdom (UK) has a long trend in the import of edible nuts, is the second largest trader of edible nuts in the EU. The population of 67.3 million inhabitants (2022) constitutes the second largest market with an average per capita GDP of € 38,253 and a high inflation rate in 2022 of 11.1% which was eased to 7.9% by June 2023. Around 440,000 people in the UK work in food and drink manufacturing and sales, with an annual turnover of € 13.1 billion in 2020. The industry produces non-alcoholic beverages, spirits, confectionery, dog and cat food and beef products.

The savoury snacks market

In 2020, the value of the UK savoury snacks market was estimated at € 2.96 billion. According to the SNACMA (Snack, Nut and Crisp Manufacturers Association) this segment represented around one quarter of the British Food and Drink industry. Figure 20 shows the main product segments.

figure 20 **Savoury snacks market in the UK, 2020**
Product segments as percent of value sales in € million



SOURCE: SNACMA (2021)

Potato chips and crisps, followed by fried/extruded snacks (taco chips and crisps made of maize), are the most popular snacks with both accounted for more than 80% of the UK savoury snack market. Whereas edible nuts represented 10%.

The UK market for Edible nuts

The UK is a largest market and a large trader of edible nuts. Apparent consumption was estimated at 244 thousand tonnes in 2022, valued at € 1,564 million. The per capita consumption of 4.62 kg per person was slightly above the EU average of € 4.32. Between 2018 and 2022, UK consumption rose by a CAGR of 4.6%%, although there was a decrease since 2020, due to the COVID and the cuts in food spending.

Table 19 Apparent consumption of edible nuts in the UK, 2018 – 2022
Volume in tonnes

UK	Imports	Production	Exports	Consumption	Per capita (kg)*
2018	265,764		25,656	204,108	
2020	283,723		26,902	256,821	
2022	261,986		17,419	244,567	3,62

* Based on total population

Source: ITC Trademaps, INC, USDA, Eurostat (2023)

Consumption and market trends

The United Kingdom is an innovative market for the consumption of edible nuts. There are a variety of flavours and preparations (salted, grilled, coated) and the market is driven by the following trends:

- The trend towards healthy eating is driving demand for edible nuts. Brits are generally adventurous and willing to try different nut mixes and coated peanuts.
- Much of the health and wellness trend is changing the image of edible nuts from an inexpensive staple to a 'clean' type of product that can appeal to an increasingly group of mindful consumers looking for products that are good for them but also wants to feel good about what they eat.
- Peanuts and tree nuts are used in fruit and nut bars, nut butter spreads, and nut milk using almonds or cashews.
- Sustainability and ethical procurement are crucial factors for British importers of nuts. Europe's largest market for Fairtrade-certified almonds and oils is the United Kingdom.
- Edible nuts are benefiting from the move towards ethnic and vegan foods.

Peanuts are the favourite nuts and British people prefer the salted and roasted variety to dry-roasted peanuts. New variations of coated peanuts, red skin peanuts (from USA) and new forms of packaging (flip-top tubes) have stimulated the mature peanut market. In addition, market leader KP Foods has emphasised the nutritious value of eating peanuts in their promotions in order to reach mindful consumers.

Since British people have become more interested in other kinds of snacks and small meals, the market for peanuts has declined and additional demand is more likely to be found in the industrial sector. The very highly developed taste for Indian, Pakistani and other Asian cuisine in

the UK has stimulated a demand for peanuts and other nuts, as ingredients in ethnic dishes and sauces.

Tree nuts are used in bakery, health foods and ethnic dishes. Consumer demand for pistachios, cashew nuts, walnuts, pecan nuts, macadamia nuts and new variation of nut mixes is expected to grow in the coming years. The use of cashews, walnuts and pine nuts in salads is well-accepted.

During the COVID period, the purchase of nuts online continues to gain significant ground. However, supermarkets remain the main distribution channel for nuts.

In the coming years, there are good prospects for:

- Vitamin-rich products and those containing ingredients such as oils from almonds and other nuts, coconut, sunflower, linseed, and rapeseed.
- Low- and no-alcohol beverages with various flavour combinations, including almonds and cashews.
- Functional foods and beverages containing ingredients that provide health benefits such as enhanced immunity, improved sleep, and reduced tension.
- Foods that are minimally processed, such as cereals, dried fruit, almonds, beans, and other legumes. Some of these items are consumed directly as snacks, but the vast majority are used as ingredients in the production of finished goods in the United Kingdom.

UK imports by type

The UK a big importer of edible nuts in Europe thanks to its consumers' high consumption and demand from its processing industry. In 2022, the UK imported 262 thousand tonnes of edible nuts worth € 970 million. It is among the largest importers of shelled peanuts, cashews and mixed nuts.

Table 20 Imports of the main types of edible nuts by the UK, 2018 – 2022
Volume in tonnes

UK	2018	2020	2022	CAGR	From EU	From Non-EU	From Africa
TOTAL *of which:*	**265,764**	**283,723**	**261,986**	**-0.4%**			
Peanuts (shelled)	96,306	125,096	105,992	2.4%	**10%**	**89%**	**1%**
Peanuts (prepared)	38,185	30,196	27,698	-7.8%	**63%**	**36%**	**1%**
Cashews (shelled)	21,089	22,274	23,089	2.3%	**4%**	**94%**	**2%**
Almonds (shelled)	22,582	24,537	19,016	-4.1%	**11%**	**88%**	**1%**
Walnuts (shelled)	10,284	10,910	10,160	-0.2%	**3%**	**97%**	
Pistachios (in shell)	3,787	3,936	5,154	8.0%	**9%**	**91%**	
Brazil nuts (shelled)	4,981	5,629	3,934	-5.8%	**7%**	**93%**	
Hazelnuts (shelled)	2,093	2,113	2,382	3.3%	**6%**	**94%**	
Macadamias (shelled)	592	388	458	-6.3%	**7%**	**2%**	**91%**
Mixed nuts	29,340	25,136	25,979	-4.1%	**40%**	**59%**	**1%**
Sesame seeds	7,359	6,481	6,427	-3.4%	**2%**	**91%**	**7%**

* Supplies in percent of imported volume in 2022

Source: ITC Trademaps (2023)

Between 2018 and 2022, large increases were registered in the imports of pistachios in shell (+8.0%), hazelnuts (+3.3%) and cashew nuts (+2.3%). After reaching a peak in 2020, imports of peanuts, almonds and Brazil nuts declined in 2022. Steady decreased were registered in the UK imports of prepared peanuts and macadamias.

In 2022, an average of 17% of UK imports were sourced from EU countries, especially from the Netherlands. Compared with EU countries, the UK was a small importing country from Africa, except for macadamias.

Details of UK imports and its supplying countries can be found in Chapter 5.2.10

3.6 Seasonality factor

The vast majority of consumers have ready access to nuts. Walnuts, almonds, and hazelnuts are all native to Europe and it seems likely that they were eaten by its ancestors. The vast majority of these, on the other hand, are indigenous to Southern Europe, particularly Spain and Italy. There is evidence that nuts have been included in diets for several thousands of years. It is assumed that nut consumption was less widespread in the diets of people living in Northern Europe because historically there are less records from that region.

If nuts are kept in a cool and dry location after they have been harvested, the shelf life of nuts can extend to at least six months and possibly much longer.

The harvesting season for the most majority of EU produced nuts occurs in the autumn. In the southern EU countries, they can be consumed as early as September or October while in the northern EU countries, customers may not begin eating nuts until November or December. Up until the end of spring, nuts can make up a significant portion of the diet in most EU countries.

Demand for nuts in the EU

In nut consumption, there is some seasonality, particularly for the Christmas period and winter months for walnuts, hazelnuts, pecans and cashews. Almond consumption in Europe peaks during Christmas and New Year holidays. During the wintertime, increased demand for nuts is seen in Germany due to the large consumption of Christmas cookies and bakery products containing nuts.

In France, particularly walnuts, almonds and hazelnuts are still typically connected to Christmas. Sales usually rise sharply over the month of December. Some traders argue that their sales are doubled during that period.

In the Netherlands, almonds are used in paste form in sweet bread and the almond pastry rolls popular during the St Nicholas (December 6) celebration and the Christmas period.

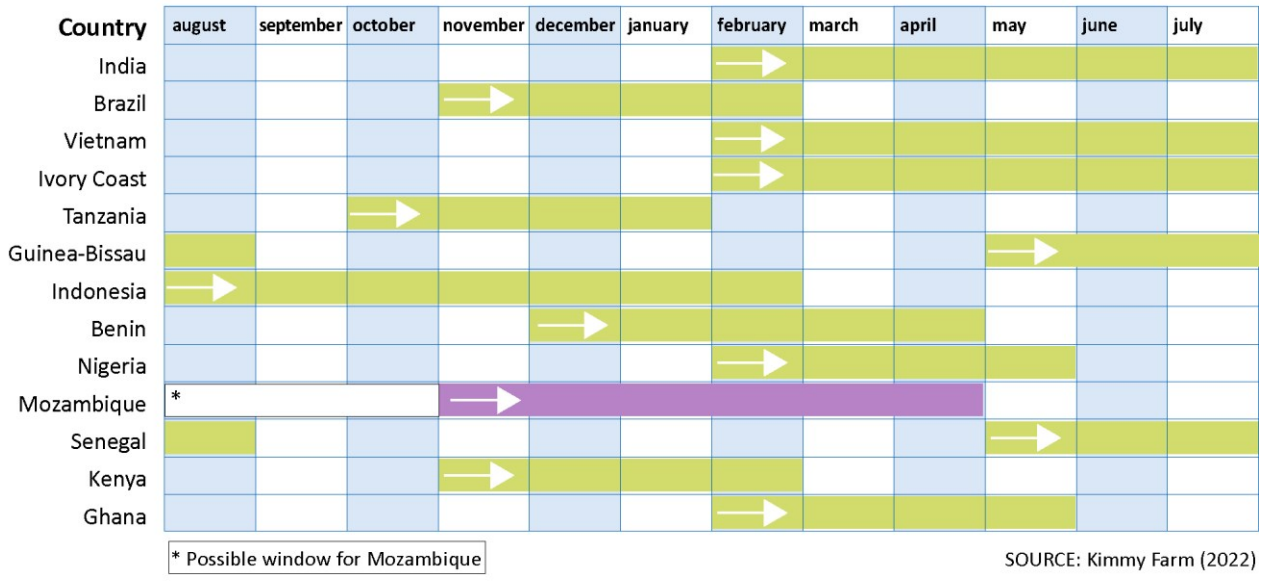
During the Islamic holy month of Ramadan, from March to April, the demand for all varieties of nuts increases. Due to a growing number of immigrants from Islamic countries in the EU, the demand during these months is expected to rise.

Demand for sesame seeds is throughout the whole year. Sesame is an annual crop meaning it is grown in the northern hemisphere and southern hemisphere. The north crops are harvested around October while the southern crops are harvested between June and July.

Harvesting season of cashews

Raw Cashew nuts (RCN) are available throughout the entire year, as they are harvested in various months and regions in the world as is shown in Figure 18. But the timing of the cashew harvest is heavily influenced by weather and sowing techniques. The availability of raw cashew nuts is greater from November to June and diminishes from July to October. According to cashew price seasonality, prices are at their highest from July to October due to decreased availability and the timing of significant festivities.

figure 21 **Cashew nuts seasons in different countries**



Opportunities by selling cashews at high prices during shortages.

Prices are low from November till June due to more availability of in EU countries. On the other hand, the demand and prices are high in December. In case of abrupt shortages in December or in other periods (July to October), exporters from Mozambique can find opportunities by filing the gap offering processed cashews to EU buyers, or selling RCN to Vietnam at a higher price. If cultivation is not possible due to the climate in Mozambique, nuts could be sold from stock.

Opportunity as back-up supplier during transition periods.

These periods are coupled with too fast decreases in deliveries from one supplying country and too late start of deliveries from another country. This leads to serious market disruptions causing higher prices of cashews in supermarkets. In this case buyers look for a back-up supplier during these periods. The reverse can also happen with overlapping supplies from different countries resulting in lower prices.

4. TRENDS IN THE EU MARKET

4.1 The search for the value-price ratio

The economic outlook for 2023 remains grim for many consumers. This uncertainty is exacerbated by turmoil in the financial sector, the potential escalation of geopolitical conflicts, and high interest rates.

According to a global survey conducted by WARC in June 2023, the financial future of EU still struggling with high product prices and rising energy and food costs. They particularly limit their pleasures and purchase of luxury goods. They delay purchases of household products, cars etc. The biggest decreases were in travel, apparel, and out-of-home entertainment. In addition, consumers have a tendency to trade down or not purchase the product at all.

Regarding food, approximately one-quarter of European consumers would look for price promotions, buy a lower alternative or buy the same product elsewhere. This has benefited the expansion of discounters such as ALDI and Lidl now being among the major supermarkets in several countries.

Additionally, consumers seek out product bundles and smaller product formats. There are also consumers who buy a product without comparing prices, and others who compare prices but decide the product is worth paying more for.

Some relevant takeaways from the WARC survey were:

- The high cost of living is leading consumers to prioritise eco-friendly and economical purchases.
- Particularly among younger consumers, influencer recommendations encourage product/brand discovery and purchase on social media.

There are several examples in which the price of edible nuts is of less concern to consumers.

- **Convenience**. As extended working hours and an always-on culture have become the norm, consumers in Europe are increasingly time poor. This has led to an ever-changing demand for convenience and "food-on-the-go."
- **Saving time and money**. Busy consumers tend to eat nuts as a substitute for a meal when away from home. This saves time and money, making the price of almonds less significant.
- **Snacks with benefits**. Bloggers and social media influencers who focus on diet, nutrition, and wellness have contributed to the rise of healthy snacking with multiple benefits, such as boosting energy, providing proteins, and other health benefits. Those susceptible to these influences are willing to pay for a product with these benefits. They pay more attention to the ingredients and nutrition facts and less to the price.

In the past five years, consumers have become increasingly interested in plant-based protein, influenced by new meatless fast-food innovations, social media, celebrity chefs, and a surge in niche culinary programs. However, not only vegetarians, vegans and people taking gluten-free diets are interested.

The new category of "flexitarians" who adopt a balanced, "half and half" approach to incorporating plant-based alternatives into their typically meat-centric diet. Alternative proteins, such as edible nuts, provide these flexitarians with the perception of improved health and nutrition, a way to support sustainability, and a break from the monotony of traditional meat. For them, using nuts in their meals is significantly less expensive than using meat and a healthy meal gives them extra value.

4.2 Traceability and transparency

Consumers have moved towards natural and sustainably produced products in the interests of safety and knowledge of their bodies. Traceability and transparency are key elements in this movement, and the digital economy is providing solutions for importers. Due to various scandals in the food and drink industry, consumers fear about food safety and there is a growing demand for certification, labelling and information on the product they buy.

Clean labelling

More than ever, consumers want food brands, importers, distributors and retailers to be honest and transparent about the ingredients and origins of their products. Clean labelling encourages

producers to emphasise key information on product packaging and labels. Whether positive or negative, on retail packed nuts they should:

- Mention the origin of the product on the retail pack, which is mainly done in organic nuts.
- Mention a table with the ingredients and their average nutritional value per 100g and/or 30g in terms of:
    - Energy
    - Fats of which saturated
    - Carbohydrates of which sugars
    - Fibres
    - Proteins and Salt

  Claims are added on the package such as 'No colorants' or 'Without preservatives' or 'Without palm oil'

- Display nutritional information

  The Nutri-Score, also known as the 5-Colour Nutrition label (5-CNL), is a simplified nutritional rating system for food products. It assigns a rating letter from A to E, with associated colours from green to red:

  A = Energy density

  B = Simple sugars

  C = Saturated fats

  D = Salt

  E = Fruit and vegetables

  The French government selected the system in March 2017 after comparing it to other labels and relying on a nutrient profiling system from the UK Food Standards Agency.

- An QR Code could be added with detailed information on how the importer contributes to a sustainable development in the country where he is buying the nuts (see photo with a story of Cashews from an Indian farmer)
- Inform the impact on the environment.

Environmental Impact *of Dried Fruit and Nuts*
Sustainability will play a pivotal part in the nutrition of the future. The environmental impact of nuts varies significantly because multiple variables need to be taken into account, such as product type, place of farming, and parameters

measured, e.g., water and carbon footprint.

Carbon footprint

Generally, edible nuts are responsible for far fewer greenhouse gas emissions per kilogram of food compared to other agricultural products such as beef, dairy, and poultry.

The EU Green Deal policy has an impact on the production and modernization costs of agricultural products, such as edible nuts. Farmers in Europe and developing countries will be required to farm more precisely, reduce their use of chemical crop protection, reduce their post-harvest waste, improve their water management, and safeguard biodiversity.

For instance, Turkish hazelnuts can grow on sloping land unsuitable for annual crops, and their production has a moderate CO2 footprint (2 kg CO2 equivalent/kg). Cashews (2 kg CO2 equivalent/kg) and Spanish almonds (2,13 kg CO2 equivalent/kg) have a similar CO2 footprint, while Californian walnuts (0,95 kg CO2 equivalent/kg.) pistachios (1.11 kg CO2 equivalent/kg) and California almonds (1.23 kg CO2 equivalent/kg) have a lower impact.

The EU presented twelve proposals in 2021 in an effort to meet the 55% CO2 reduction target by 2030. A mechanism to impose the same carbon pricing on goods produced outside the EU as on those produced in Europe was one of the proposals. This means that importers must pay a higher price for their goods. Supermarkets must also purchase carbon offsets and welcome agricultural products transported by sea from nearby nations.

In this regard, Mozambique may have an advantage over Guatemala or Chile due to its proximity to the European Union, meaning a smaller carbon footprint.

If the edible nuts are processed in Mozambique and exported directly to the EU, approximately 12,000 km of emissions will be saved in comparison to a scenario in which, for instance, the Raw Cashew Nuts are first exported to Vietnam for primary processing and secondary processing in the Netherlands or Germany before being exported to the final market in Europe.

Use of shells and the re-use of co-products

The CO2 impact of Californian almonds farms is often moderated by the reuse of nut co-products – including orchard biomass, hulls and shells, as sources of renewable energy and dairy feed.

Walnut shells can be used for cleaning and polishing, as a filler in dynamite, and as a paint thickening agent. Shells from pecans, almonds, Brazil nuts and most other nuts are useful in composting or as a potted plant drainage or filler.

Cashew apples are underutilised in many African countries. According to the findings of a GIZ study conducted in Ghana, the utilisation of cashew apples was low (10%), despite the fact that 84.37% of the respondents (farmers and local processors) had in-depth knowledge of the health benefits and value-added products made from the apples.

Cashew apple is primarily consumed as fresh fruit or juice, and has few applications as an ingredient in food preparation (cookies or alcoholic beverages), formulation of animal feed, and production of mushrooms, weedicide, ethanol, and manure.

As obstacles, cashew apple processors cited the high cost of processing equipment, the perishability of apples, the absence of capital, the market, technical expertise, and government support. However, some actions should be taken. Not using cashew apples is polluting as they rot and release nitrogen.

Water foot print

Nuts' water requirements are generally higher than most fruits and vegetables, but they are also much more nutrient-dense. New and more water-efficient varieties of tree nuts are being planted (e.g., varieties of pistachios). Furthermore, agricultural wastewater is recycled back on the orchards as agricultural irrigation

water. The vast majority of almond farms in California use micro irrigation, thereby considerably reducing water use. Being a groundnut, water requirements for peanuts are lower. In addition, peanuts are a nitrogen-fixing rotation crop for cotton, and thus the amounts of fertilizers needed to grow peanuts is quite low.

Although edible nuts have a higher environmental impact than others, they are far from those of certain animal products such as beef, which carries the highest environmental impact among foods, at around 50kg CO2eq of greenhouse gas emissions per kg of meat produced. If methane is included, the emissions reach 100kg CO2eq per kg of meat produced.

As far as water is concerned, 15415 litres of water are necessary to produce 1 kg of beef. Other animal products have a lower impact but they still rank among the highest: cheese accounts for 24 kg CO2 equivalent (including methane emissions), whilst the production of 1 kg of chicken demands 10 kg CO2 equivalent. The advantage of nuts in terms of sustainability remains also in relation to the environmental impact per gram of protein.

Transparency through sustainable sourcing

Sustainable sourcing is the process of buying products from developing countries taking into account the long-term impact on people, profits and the planet. It is a much broader perspective than contract farming focusing on product quantity, technology transfer, provision of equipment/tools, agreed price, consistent quality level and buyer guarantee.

Sustainable sourcing demands much more transparency in the supply chain, improvement of technical skills, proper input supplies, contributing to environmental and social sustainability by all stakeholders and co-operation with governments and NGOs to secure support of the project.

Box 2 - Reflections when engaging in a sustainable sourcing project

Both EU importers and cooperatives/exporters in the developing country should realize:

- That sustainable sourcing projects are not 'stand-alone'. It concerns a participative project that takes 3 years or more before it is running well.
- Sustainable sourcing can differentiate importers/retailers from their competitors or making them attractive to new consumers – but it must be done in a consistent way to avoid the risk of a green-washing image or to evolve again in a usual business project.
- It is crucial that the project should somehow fit into the development plan of the concerned region in the developing country. In addition, the importer/retailer commits themselves to contribute to a community project. This must be discussed with the cooperative or exporter and clarified beforehand.
- Small local NGOs should be involved, but with consideration.
- Ideally the cooperative can arrange production, coordination and exporting. However, in many cases exporters are still needed to do the checks, compliance to EU regulations and all the paperwork involved (incl. organic certification).
- An important part of the budget must be allocated to regular trainings by local experts or foreign experts for specific topics.
- Good communication and full transparency between all involved in the project are crucial for success.

Environmental sustainability can be achieved by promoting the sustainable use of raw materials and natural resources ensuring that operations do not have a negative impact on local communities, while playing a positive role in the local economy.

Besides, energy management, water conservation, waste management and recycling are very important to assure sustainable use of natural resources and to protect the environment and to anticipate to climate change. Farmers and other people involved in the project need to be made aware of these uses by education and training.

On the demand side young mindful consumers are also taking environmental issues into account. If the importer or retailer can demonstrate this on the product package, through a label or through promotion (video, social media), consumers are willing to pay a higher price. For products with e.g., a Fair for Life label retailers can ask an additional price of 5 - 10%.

4.3 Food safety, Certifications and Allergies

The standard quality nuts accounted for the most significant market revenue. Edible nuts are recognized for their health benefits. Providing safe, high-quality nuts is of great concern. Exporters, importer and processors ensure that nut products meet the highest standards before putting them on the market. There are requirements for sustainable products to appeal to consumers, especially when edible nuts come from developing countries.

4.3.1 Food safety and Certifications

All EU-sold foods, including edible nuts, must be safe. Imported products are not an exception. Additives require authorization. The levels of detrimental contaminants, such as pesticide residues and mycotoxins, are regulated. *The legislative requirements you can find in Chapter 6.*

Although certification of food safety is not required by European law, food importers may ask for it. The combination of food safety certification with frequent laboratory testing helps edible nut exporters to build an image of reliability.

Buyers will ask you for one of the Global Food Safety Initiative (GFSI) certifications. The GFSI itself does not provide certifications. It is a private organization that recognizes 10 food safety certification schemes in different countries that approve various auditing standards meeting their criteria. By having one of the certifications, you can demonstrate a structured, comprehensive, and effective food safety program to buyers all over the world.

The most prevalent certification programmes for nuts, all of which are recognised by GFSI, are:

Food Safety Certification System (FSSC 22000)

The ISO 22000 standard can be used by all direct and indirect players in the food chain, whatever their size or location in the world. Its use is not compulsory in the agri-food sector.

Nearly 140 countries now participate in ISO's technical committee on food. This food safety management system involves implementations to ensure the safety of products and services. The PDCA cycle (plan, do, check, act) is applied at two levels:

- the first applies to the management system.
- the second to the HACCP method recommended by the Hygiene Package.

Some organisations have already implemented a quality management system (ISO 9001) or an environmental management system (ISO 14001). The ISO 22000 standard shares many points in common with these two management systems, particularly in terms of structure and the continuous improvement approach. ISO 22000 offers a combined approach and avoids the multiplication of management system standards.

The BRC and IFS standards

These standards are private. The International Food Standard (IFS) is a common food safety standard, with a uniform assessment system established to qualify and select retailers and suppliers. The British Retail Consortium (BRC) is another private standard recommended by the Global Food Safety Initiative. It is intended for suppliers of branded and private label food products.

Both certifications enable a supplier to ensure that it meets food safety requirements and customer specifications. An audit carried out to analyse hazards will enable recommendations to be put in place. A certification body will then check compliance.

The objective of food safety is shared by these standards, and all three require the adoption of good hygiene practices specific to the agri-food sector, the implementation of an HACCP-type approach to hazard analysis and the development of a traceability system.

International Featured Standards (IFS)
A safety standard for food processors and packers that corresponds to ISO 9001, and focuses on food safety, HACCP, hygiene, the production process and the company's environment. Information about the procedure, registration fees and certification/auditing costs can be found at: https://www.ifs-certification.com/en/

British Retail Consortium Global Standards (BRCGS)
This provides technical standards for food safety, consumer protection

and environmental protection. The former BRC logo has changed in 2021.
The product, packaging, storage and distribution management system is an accepted standard in Europe. BRCGS contains more detailed rules on good manufacturing practice in terms of organisation and communication. The cost of BRCGS certification depends on many factors inherent to the facility, such as the size of the site and the scope of the certification.
Information about the procedure, registration fees and certification/auditing costs can be found at https://www.brcgs.com/resources/service-package/

Differences between the three standards

The international ISO 22000 standard is based on voluntary participation. It can be adapted to each company by imposing an obligation to achieve results only. The IFS and BRC standards, on the other hand, are imposed by distributors on manufacturers who produce their own branded products on their behalf. In these cases, they also impose obligations in terms of resources. Furthermore, IFS certification is a Franco-German initiative and focuses more on the European market, while BRC allows companies to better integrate into the UK retail market.

Despite the fact that various food safety certification systems are founded on similar principles, some buyers may prefer a single management system. It should also be noted that certification for food safety is only a starting point for exporting to Europe. Serious buyers will typically visit your company after a few years and audit your production facilities.

HACCP

Buyers may ask for the implementation of a food safety management system based on hazard analysis and critical control points (HACCP). The objective of this preventive strategy is to guarantee the safety of food for consumers by preventing, eliminating and reducing this to an acceptable level hazard of any kind. You are expected to control your supply chain in accordance with HACCP guidelines:

1. Identify any **hazards** that need to be prevented, eliminated or reduced to an acceptable level;
2. Identify the **critical control points** at which control is essential to prevent or eliminate a hazard or to reduce it to an acceptable level;
3. Establish **critical limits** not to be exceeded which differentiate bet and disapproval for the prevention, elimination or reduction of identified hazards;
4. Apply effective **monitoring procedures** for the critical points to be controlled;
5. Implement **corrective actions** when monitoring reveals that a critical control point is not under control;
6. Implement procedures carried out periodically to **check the effectiveness** of the measures referred to in the points 1 to 5;
7. Establish a **management and classification system** according to the nature and size of the establishment, to demonstrate the effective application of the HACCP method.

More information can be found at: https://haccp-international.com/

Although HACCP is not a certified standard, it serves as a reference for the definition of standards such as ISO 9000 on food safety management. Many exporters from developing countries have a difficulty with the HACCP with smallholders complaining about this requirement. Therefore, it is better to discuss the necessity with your most important (potential) trade partners in Europe or see first if they ask for it in their questionnaire.

4.3.2 Allergies and Intolerances

Peanut allergy

Peanut allergy is a common cause of severe allergic attacks, with even small amounts of peanuts causing life-threatening reactions like anaphylaxis. It is especially common in children, and it is crucial to consult a doctor for any mild reactions. Symptoms of peanut allergy include skin reactions, tingling, digestive problems, throat tightening, shortness of breath, and runny nose.

Peanut allergy is the most common cause of food-induced anaphylaxis, a medical emergency requiring treatment with an epinephrine autoinjector and a trip to the emergency room. Anaphylaxis symptoms include constriction of airways, swelling of the throat, a severe drop in blood pressure, rapid pulse, and dizziness.

Peanut allergy risk factors include age, past allergy to peanuts, other allergies, family members with allergies, and atopic dermatitis. Children and adults with severe peanut allergies are especially at risk of experiencing this life-threatening reaction.

Prevention is crucial, with recent studies showing that introducing at-risk babies to peanuts as early as 4 to 6 months of age can reduce their risk of developing food allergies by up to 80%. Babies at risk include those with mild to severe eczema, egg allergy, or both. Discuss the best approach with your child's doctor before introducing peanuts to ensure a healthy and safe environment for your family.

Almond allergy

An almond allergy is an immune system reaction to proteins found in almonds, specifically Pru du 6, an 11S globulin. This protein accounts for 65% of the total almond protein content and is responsible for severe allergic reactions. Almonds are a tree nut and are often linked to anaphylaxis, peanut, and shellfish allergies. Even a small trace of almonds can cause severe reactions.

Symptoms of almond allergy include abdominal pain, cramps, nausea, vomiting, rash or hives, difficulty swallowing, itching, swelling, shortness of breath, and anaphylaxis. Early allergy diagnosis is crucial, as almonds can cause severe reactions later in life. Skin prick tests are the most common form of allergy testing for almond allergy, which can be accurate but sometimes produce false results. Blood tests may be suggested for patients with skin conditions that might skew the results.

Almond allergy treatment is currently unavailable, so the best way to prevent reactions is to avoid almonds. Food oral immunotherapy, which involves eating a small dose of the allergen and gradually increasing the amount over time, aims to desensitize patients to the allergy.

Cashew nut Allergy

Cashew allergies are somewhat rare. They are caused by the protein cashew, which can cause skin rash, itching, hives, and difficulty breathing. They are more common in people allergic to tree nuts like almonds and peanuts, but can also occur in those not allergic to nuts. Common symptoms include headache, skin rash, hives, nausea, swelling of the mouth, face, lips, throat, sneezing, stomach pain, and vomiting. Rare symptoms include eczema, colitis, and anaphylaxis.

To prevent cashew allergies, it is essential not to eat more than 15-30 cashews per day, not eating uncooked cashews, and avoid poor-quality cashews. Cashews that have not been processed and tested are very likely to be under-roasted or immature. Therefore, consumers should consume cashews that have undergone thorough sorting and processing.

Consuming poor-quality cashews can lead to more serious consequences than diarrhoea. There are some typical cases when sellers use bleach or preservative additives to preserve the colour and longevity of the kernels.

Currently, on the market, there are many traders and shops selling all kinds of cashews with no brand name, no expiration date, and no detailed product information.

There is currently no cure for cashew allergies, but treatment options include avoiding cashew-based products and undergoing an allergy test. If allergic to cashew, avoid all cashew products, including food and cosmetics. Oral immunotherapy may be effective in treating cashew allergies.

EU allergens regulation

There is an EU allergens regulation INCO no.1169/2011 which sets the requirements for the information provided on food labelling. This Regulation provides for a high level of consumer protection, ensuring consumers are not misled and supporting them to make informed choices about the food they eat.

Food suppliers need to tell customers if any food they provide contain any of the listed allergens as an ingredient. Consumers may be allergic or have intolerance to other ingredients, but only the 14 allergens are required to be declared as allergens by food law.

These 14 allergens are:

celery, cereals containing gluten (such as wheat, barley and fats), **crustaceans** (such as prawns, crabs and lobsters), **eggs, fish, lupin, milk, molluscs** (such as mussels and oysters), **mustard**, **peanuts**, **sesame**, **soybeans, sulphur dioxide and sulphites** (if the sulphur dioxide and sulphites are at a concentration of more than ten parts per million) and **tree nuts** (such as almonds, hazelnuts, walnuts, Brazil nuts, cashews, pecans, pistachios and macadamia nuts). In the USA, sesame is also recognised as an allergen.

This also applies to additives, processing aids and any other substances which are present in the final product.

EU Regulation requires clear mention of allergen-causing ingredients on prepacked foods' labels. Buyers may ask for allergen information for non-prepacked foods, especially HORECA companies.

Food intolerance occurs when the body has a chemical reaction to eating a particular food or drink. The symptoms for mild to moderate food allergy or intolerance may sometimes be similar, but food intolerance does not involve the immune system and does not cause severe allergic reactions (anaphylaxis).

4.4 Adapt the supply to changing needs

4.4.1 Changing consumer needs and preferences

Changing eating habits

The same changes in living and working conditions impact the eating patterns of the populations of all EU member states. Regular meals become less important as the size of a household decreases. Consequently, consumers in most EU countries with increasingly hectic lifestyles are adhering to less formal meal patterns, preferring to eat in-between meals and consume fast snacks whenever possible throughout the day.

However, this is less the case in southern EU countries with family-oriented cultures, where mealtimes are more important family occasions. In recent years, companies of fast food and snacks have benefited from this trend, and the market for savoury snacks has grown substantially.

The impact of the lockdowns on healthier eating

COVID-19 has significantly impacted the food and beverage market, particularly for edible nuts and seeds producers and processors. Manpower shortages and raw material shortages are expected, affecting retail and catering industries. The pandemic lockdown disrupted transportation, supply chain, and global export and import of nuts.

Food retailers must prepare for irregular customer flows and ensure product availability during lockdown periods. Home catering trends also impact sales, as consumers seek food safety and public contract risks. However, healthy eating patterns, such as almonds, peanuts, and cashews, have provided opportunities for immune system protection.

The pandemic has led to more people buying food at the grocery store and cooking at home, which may take time for people to return to traditional dining. Importers and processors must adapt their packing methods and suggest nut-based vegan recipes for healthy meals.

Importers adding more value by differentiation and quality

As importers and processors seek opportunities to stimulate consumer interest and add value to the market, the differentiation between products for adults, adolescents, and children will become more pronounced.

As industry and consumers focus more on healthy food and natural flavours as substitutes for sugar, salt, and artificial products, the health food market continues to expand. Increasing public

concern about health and the number of food scandals e.g., in meat products may have a positive impact on the expansion of the edible nuts market.

Consistency of quality, product innovation, and variety of products or product mixtures, brought about by solid research and development, are competitive issues in the market for edible nuts. The emphasis placed on quality has increased consumer loyalty. For their specific applications, food manufacturers require consistently high-quality, custom-made or pre-processed consumable nuts or mixtures. Price has traditionally been ancillary to quality, but this may change in the future.

4.4.2 Adapting the supplies

As in any industry, food manufacturers exert pressure on processors and packers to keep prices as low as feasible. In a time of consumers cutting on expenditure, the food processing industry becomes more competitive, as is the supermarket distribution of food products. Meanwhile, there is constant pressure to develop ever-more products to provide a greater variety of products and for customised products.

More variety in nutritious snacks

Because of the millennial generation's shift towards a more health-conscious lifestyle, there has been a rise in the demand for foods that are high in certain nutrients. Especially catering to the needs of mindful customers, the producers have been working on producing new items that may meet the demand in the market for goods made from nuts and seeds.

The growing preference among consumers for food products with value additions, such as the addition of lotus seeds to smoothie bowls, is another trend that is driving up demand in the market for nuts and seeds. As a result of customers' growing preference for natural and nutritious products, the use of so-called "super" ingredients has seen a considerable surge in popularity during the most recent few years.

These items have a high nutritional and functional value, and their chemical makeup is rich in PUFAs (Polyunsaturated fatty acids), primarily omega-3, protein, dietary fibre, and bioactive substances. In addition, these products have a high value for the body as a whole.

The significant companies are placing a strong emphasis on research and development in preparation for the introduction of new products that can meet the rising demand from customers. The market is being further stimulated by the growing trend among manufacturers of processed foods to include nuts and seeds in their products because of its high nutritional value and value.

The Farm-to-Fork strategy promoting healthier eating habits

Health agencies such as the WHO are calling for action to solve the problems caused by unhealthy lifestyles, in which diet plays a pivotal role. The food industry needs to find innovative solutions to deal with the environmental impact of food production.

In the context of the EU's Farm-to-Fork Strategy, Europe is acting to facilitate the shift towards healthier and more sustainable diets, and the change of food information to consumer on food labels is among the initiatives. This should make consumers more aware of the food they eat, whilst also encourage food companies to reformulate their products.

4.5 New preparation methods, flavours and formats

Innovation will continue to be essential for manufacturers to maintain a competitive advantage. The industry is introducing new flavours, textures, mixtures and packaging. In conjunction with the significance of social media in communicating new products, recipe ideas, and new flavour combinations continues to expand.

Different ways of preparation

Nuts are generally roasted to enhance flavour, crunch, texture and aroma. Roasting the product, either in oil or dry, has a minimal effect on the nutritional value or enhances the nutty flavour. Some consumers prefer natural nuts which are eaten as a healthy snack or can be used in bakery products and breakfast cereals. Peanuts and sesame seeds are roasted first and then the oil is extracted.

With the increasing number of immigrants in Europe and the rising popularity of vegetarian stir-fry dishes, it is expected that luxury nuts will be used more frequently in these dishes.

4.5.1 New flavours

Consumers are very receptive to innovations in flavours, coatings and mixtures of different nuts, or mixtures of nuts with other products. Above all, new products must be convenient and suggest an element of "adventure". Nut processors and importers continue to expand their range of mixed nuts. Some examples are:

- Salted tree nuts (cashews, pistachios, almonds) combined with peanuts or peas, or sweet tree nuts (walnut, pecans, roasted cashews, dried banana, coconut slices with peanuts coated in chocolate (see photo below – left and middle).
- A mix of sweet almonds flavoured with caramel, coconut and honey with cinnamon (see photo below – right).

Another example is cashews offered roasted or with a chili flavour (see photo below - right).

Due to the demand for healthier snacks, more unsalted nuts and mixes of nuts are being offered. Unsalted mixes of hazelnuts, pecans, walnuts, almonds and Brazil nuts with or without raisins referred to as 'elitehaver' in the Netherlands (see photo above - left) are popular many of the Western and Northern EU countries.

In meals unsalted plain nuts are mostly used. Recently, nuts are offered with different roasting flavours adding extra flavour when eaten as a snack. Roasted nuts can also add extra taste to a vegetarian meal or starter.

In recent years, consumers became more receptive in a wide range of international and ethnic dishes using nuts. This was stimulated by foreign travel, the establishment of many different ethnic restaurants, the influence of the immigrant population and promotion by media and food industry.

Ready-to-use kits with edible nuts specially created for salads (pine nuts) and stir-fry dishes were successfully introduced because people are taking less and less time to cook for themselves every day.

4.5.2 New formats

In the industrial segment, there are new alternative meat products, in which nuts are used as an ingredient to replace beef in patties and minced meat. These products are often made with soy and pea proteins. However, consumer concerns about allergens and additives have turned some developers towards ingredients such as walnuts or other nuts. Another example of an innovative product is peanut coffee.

Many food industries are participating in this process of transformation. Unilever committed to raise nutritional standards across their food portfolio whilst Nestlé has reduced sugar and salt and used more whole grain and fortification. Product reformulation alone is unlikely to provide a complete solution and change eating patterns, but it can contribute to this process.

North America and Europe have the greatest market share for packaged and seed products. There are many bakeries and candy factories developing and launching new products. This implies a large potential for the purchaser of nuts and seeds in the coming years.

Nuts are used in the chocolate and confectionery industries due to their crunchiness, flavour, and health benefits. Approximately one-third of sweets contain almond grains, walnut halves, or pecan nut fragments. Chocolate confectioners work diligently to improve the sensory experience of chocolate by including almonds. The most popular nuts ingredients are walnuts, hazelnuts,

almonds, and increasingly cashews. However, hazelnuts remain the most common chocolate ingredient in the EU.

It is expected that the use of edible nuts in baked goods will increase, as they are an excellent way to add flavour and texture. When baked, pecans add a robust flavour and brittle, crispy texture. Cashews and macadamia nuts might fulfil the same function. Due to their striking green colour, pistachios are used as a garnish for numerous desserts.

New types of exotic nuts

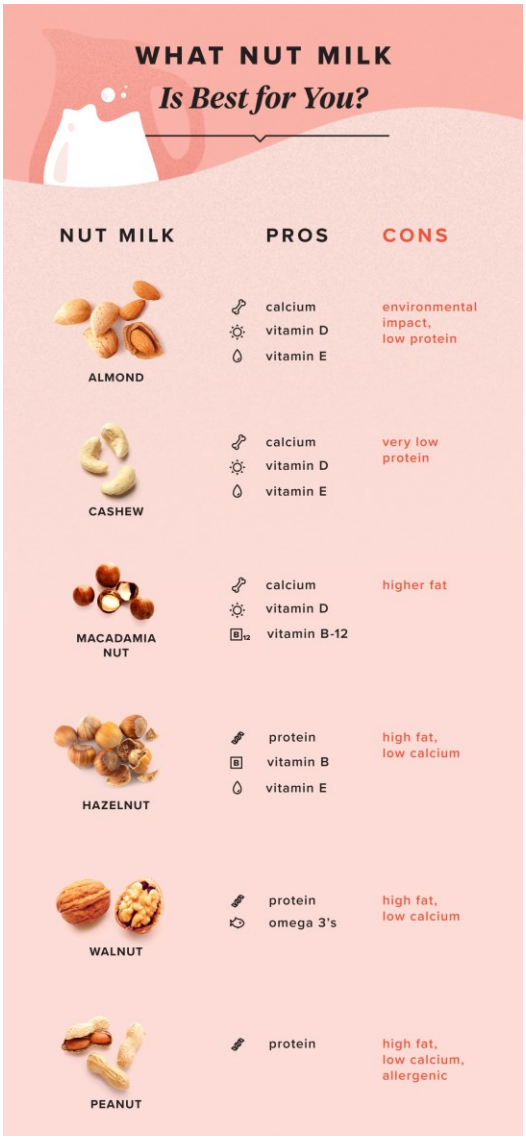
Curious consumers may be interested in new varieties of exotic nuts as a new snack, or these varieties can be also used in exotic dishes in cooking programs. They could also be used as an ingredient in the food industry. Examples include:

- Tropical almond
- Almondette (from India)
- Oyster nut (from Kenya)
- Souari nut (from Brazil)
- Heart nut (from Japan)
- Quandong nut (from Australia)
- Pili nut (from South-East Asia)
- Paradise nut (from Latin America)
- Chilean wild nut

New kinds of snack bars are introduced, especially since the pandemic influencing consumer snacking in a variety of ways. This has included more at-home snacking, using snack bars to replace meals, buying them online, exploring new brands, and choosing snack bars that can support overall health and immunity. Examples are gluten-free bars and high protein bars.

Nut drinks. Non-dairy milks, such as soy, almond, rice, and coconut, are gaining popularity. These are juices from nuts, seeds, cereals, and legumes that may be fortified with vitamins and minerals to provide the same nutritional profile, flavour, and texture as cow's milk.

Almond milk, Cashew milk, and Macadamia nut milk are popular nut drinks that are available sweetened or unsweetened. Each nut milk has its nutritional value (see photo).



4.5.3 Nuts pastes and spreads

Nuts and seeds used in spreads that are formed of tree nuts, peanuts, cashew nuts, and other kinds of nuts and sesame seeds. Most popular are peanut butter and tahini. Hazelnut spread and cashew spread are available at organic shops and are slowly gaining ground as they are still relatively expensive.

The use of nut pastes, marzipan pastes, and parsepan pastes in food segments has increased. Nut paste is a rich energy source composed of fresh, roasted, natural, or blanched almonds. It is prepared with a substantial quantity of sugar and vegetable fat to create a thick, paste-like consistency.

Almond-based marzipan pastes are used for filling cakes and confectionary and as an ingredient in ice cream and vegetable beverages. Additionally, its darker colour is utilised in the preparation of chocolate. The primary benefit of this paste is that it is the most versatile and decorative material for masking cakes.

Egg white, apricot kernels, pulverised almonds, granulated sugar and almond extract are used to create persipan pastes. They are lower in price than marzipan paste.

4.5.4 Nut flours and protein powders

Nuts have a number of different applications in the food industry. Whereas whole nuts and various cut sizes and forms (flour, blanched, slivered, diced, paste) are most frequently used, there are now fractionated nut powders, such as protein powder, flour powder and defatted flour.

Cashew flour

Cashews can be processed into cashew powder that can replace other flours, such as wheat flour. In several countries, cashew powder is used to create cakes, milk, butter, baked products, smoothies, and sauces.
The flour can be also used for making sweet or salty biscuits. It can be mixed in a dessert or as a flavouring in recipes

Cashew powder is prepared from peeled and roasted whole and broken cashews that have been pulverised into powder. In home cooking it can be used in different dishes, including curry, stew, and chilli.

Additionally, it can be used to create handmade cashew butter. Like regular cashews, cashew powder is high in fat, making it a healthy alternative to peanut butter. In addition, cashew powder can be used as a substitute for almond flour because it has a delicious, fatty taste and does not have the bitter taste of almond flour.

Almond flour

Consumers seeking healthful ingredients will find nut flours to be the ideal alternative to traditional, wheat-based grain flours. According to Olam, the global almond flour market is expected to generate US$ 2.7 billion in revenue by 2029, as the product gains in popularity.

Nut flours are delicious and adaptable, making them ideal for creating paleo, keto, grain-free, or gluten-free products, as well as re-formulating for enhanced flavour and texture.

Almond meal is ground and sieved to achieve the ideal particle size. It can contribute moisture to baked goods ranging from cupcakes for children to French macarons. Additionally, the flour is ideal in gluten-free innovations.

Due to the almonds' skin, natural almond flour has reddish-brown spots. This colouring gives homemade, rustic baked products a more natural, artisanal appearance.

Before being ground, blanched almond flour contains almonds with their skins removed. This causes the flour to become lighter in colour and finer, smoother, and fluffier in texture. It is ideal for pastries.

Nut protein powder

The demand for plant-based proteins is increasing. Nuts are frequently used as a key ingredient in gluten-free/grain-free baked products, dairy alternatives in beverages, and meat substitutes due to their favourable nutritional profile.

Nuts are an alternative source of vitamins and minerals, and they are inherently gluten-free. The protein powders from nuts also provide a clean, pleasant flavour that other plant-based proteins often lack. The versatility of nut protein powders as a binding agent, a replacement for low-solubility flours and proteins, or a contributor to the health energy of finished products is an additional selling point.

Almond and cashew protein powders are most popular. Their benefits are:

- Good source of iron*
- Good plant-based protein source*
- Free from gluten
- Superior solubility in comparison to conventional nut powders
- Extremely delicate texture
- Taste nuttier and more vegetal
- Allows for the retention of moisture owing to its fibre content

The health advantages are:

- Unsaturated fats may reduce the risk of cardiovascular disease.
- One of the few natural dietary sources of copper that can increase bone density

4.5.5 Use of nuts in cosmetics

Sweet Almond oil is used in cosmetics for its nourishing and relaxing properties and is recommended for all skin types. Thanks to its soothing and softening action, it is particularly recommended for the treatment of dry and irritated skin and for baby care products.

Almond oil has been used for centuries in ancient Chinese and Ayurvedic practices to soothe and soften the skin, treat minor wounds, and treat minor cuts.

It contains nutrients like vitamin A, vitamin E, omega-3 fatty acids, zinc, and has anti-inflammatory properties. Almond oil reduces puffiness, under-eye circles, improves complexion and skin tone, treats dry skin, improves acne, reverses sun damage, reduces scarring, and reduces stretch marks.

The oil can also be used as a carrier oil, carrying other essential oils deeper into the skin. It can be mixed with essential oils like rosehip, lavender, rose geranium, palmarosa, or lemongrass oil to further benefit the skin.

Cashews are rich in antioxidants, such as proanthocyanidins, flavonols, and vitamin E, which help neutralize free radicals and prevent cell damage.

These antioxidants also prevent inflammation, a significant contributor to aging. Cashew nut oil, a popular natural beauty product, has numerous positive effects on hair and skin. It is rich in nutrients like vitamins E, K, B6, magnesium, iron, and zinc, which help maintain hydration, hair strength, prevent hair loss, create shine, improve hair condition, aid skin hydration, and softness.

Cashew nut oil also helps diminish fine lines and wrinkles, making it a good treatment for hyperpigmentation and age spots. It also soothes irritated skin due to its anti-inflammatory properties, making it suitable for home-healing skin irritations like acne and eczema.

4.6 Health trends

4.6.1 Main health trends

Consumer awareness and interest and more availability of information on their health benefits has driven nut and seed consumption in many EU countries.

The rise of healthy snacking. Diet, nutrition, and wellness-focused bloggers and social media influencers have contributed to the rise of healthy snacking. Consumers now demand that snacks provide a variety of health benefits, from boosting energy as well as promoting regular sleep. In addition, they give careful attention to the ingredients and nutritional information.

As healthy dietary it appeals to people who work from home, instead of sweets and biscuits. Nuts are rich in antioxidants, which help reduce the risk of diabetes, regulate blood sugar levels, and reduce the risk of heart disease.

Gluten-free products. Due to food allergies and intolerances, consumers are increasingly modifying their diet. Consumers in Europe believe that gluten-free products taste superior. Not only do allergies drive the need for a greater diversity of dietary adjustments, but they also influence those who do not require them.

Nuts can partially replace other fats, adding unsaturated fat, protein, fibre, minerals, and vitamins to the product, as well as a pleasant nutty flavour and crunchy texture.

The NUTS 2022 Conference in Spain was held by united nut research experts worldwide, highlighting the benefits of nut consumption and identifying new topics and opportunities. The committee developed scientific proceedings, emphasizing future research by multidisciplinary teams with diverse expertise from the food industry and health agencies. This would enable sharing of beneficial ideas for humans and the environment. More information can be found at https://nuts2022.com/welcome/

More information about the health characteristics of edible nuts can be found in Chapter 1.2

4.6.2 Products free from salt and additives

Reformulation is the process of altering a food or beverage product's recipe or composition, for example by lowering the sugar, salt or fat content. To tackle the health issues related to unhealthy dietary choices, products should also be high in ingredients included in international dietary recommendations as they are good for both people and the planet.

Positive nutrition is found in a product containing impactful amounts of vegetables, fruits, proteins, fibre, unsaturated fatty acids or micronutrients such as vitamins and minerals. Purchasing choices of consumers are less about avoiding calories and fat, and more about products that offer active health profiles and added benefits, combining health and indulgence. Nutrition claims are increasingly focusing on the goodness of a product, rather than on restriction.

Edible nuts are gaining interest from the food industry for their versatility and ability to align with the consumer needs for snacks containing less salt and sugar. They provide important nutrients and are recommended under most food-based dietary guidelines. Companies look for ingredients that will not only substitute sugar but will add nutritional value to products, such as minerals, fibre and vitamins.

4.6.3 Probiotics

A growing number of consumers are choosing dairy-free products due to vegan lifestyles and health concerns. Tree nuts, a dense group of nuts with pleasant organoleptic properties, are rich in fibre and prebiotics that feed gut bacteria.

Studies have shown that almonds and almond skins can increase gut bacteria growth and potentially decrease food poisoning microbes. Tree nuts are plant-derived, dense in nutrients, and have pleasant organoleptic properties, making them suitable for making dairy-free probiotic beverages and yogurt alternatives.

Almonds, Brazil nuts, cashews, hazelnuts, macadamias, pecans, pine nuts, pistachios, and walnuts are the most commonly eaten edible tree nuts. Tree nuts contain polysaccharides and polymerized polyphenols that also exert a prebiotic effect.

Research on the shells and skins of certain tree nuts has also shown the presence of prebiotics.

Tree nuts have the potential to be a source of dairy-free prebiotic, probiotic, and symbiotic products. However, low physical stability, poor strain viability, and sensory acceptance make it

challenging to produce symbiotic products from tree nut-based prebiotics, but more research needs to be done to confirm this.

4.7 New packaging formats

Following importers' more distinct segmentation of the edible nuts market, retail packaging of nuts will also become more distinct as well. High-volume packs of 1 kg, or 1 or 2 person packs displayed at checkouts in supermarkets, organic stores, gasoline stations, and other retail outlets. Individual packaging may lead to more impulsive buying.

Doypack

Resealable packs satisfy well the need to consume expensive nuts such as cashews or macadamias over a longer period of time. An example is the Doypack sachet, which is a patented flexible packaging, available in a variety of multi-layer and single-material options to ensure that the contents are well preserved.

It is a pre-formed pack that combines the functions and advantages of hard sachets (stability, ease of use, presentation) and flexible sachet (economy, ease of use). It is flexible and perfectly stable, thanks to the original shape of its base. Doypack sachets are used for consumer products (food, DIY, hygiene, health, beauty), industry (food, medical, fashion, technology) and services (tourism, business services).

The special shape of the sachet means it can remain upright, making it easier to display on shelves or put away. Re-closable and reusable, the sachets are an excellent option for edible nuts

because they can stay fresh longer and the consumer does not need to consume the entire contents.

The Doypack sachets are offered with a variety of (zip) closing possibilities:

- Clicky with a tactile and audible effect
- Sensogrip with intuitive closure

The sachets are available in different formats with capacities from 100 ml to 5000 ml and complex films in paper, PE, aluminium or PET.

Flowpack

Flowpacks refers to packaging that provides a vast area for product display. Nuts are visible through a tiny window on the front of the package (see photo).

Flow Pack packaging is part of the horizontal packaging. The pouch thus obtained will have the shape of a pillow.

Different types of film can be utilized. Thick or thin, compostable or recyclable. Particularly, polypropylene and polyethylene. Flowpacks are mainly used for food such as

snacks, edible nuts, chocolate bars, baked goods, meats and cold cuts, dried fruits, cereals amongst others.

Flowpacks require less material in production compared to inherently stable packaging. In the production of packs disposable, recyclable materials can be used generating less waste.

Foil wrapping

One of the innovative methods of commercial food packaging is foil wrapping. Foil wraps are often pouches that are filled and then the bottom and top of the pouch is sealed with a heat seal similar to those used with commercial frozen packaging.

Bulk sales packaging

There is no standard packaging measurement for exported cashew nuts, but polybags ranging from 10 kg to 25 kg are the most common packaging type. Bags are frequently vacuum-sealed to extend their shelf life by removing air and injecting carbon dioxide and nitrogen. Additionally, cashew nuts are packaged in airtight containers.

Recently, EU importers and packers prioritise sustainability claims, especially when it comes to recyclable and environmentally friendly packaging, minimizing the use of plastic or using biodegradable material. Alternatives for plastic are increasingly developed and patented for example by Peptic (https://paptic.com/materials/) which offers sustainable packaging material made of renewable wood fibres.

In bulk packaging eco-friendly material are increasingly used such as:

- Compostable plastics
- Plant-based plastics
- Hemp plastics
- Recycled plastics.

5 PLAYERS IN THE MARKET

5.1 Marketing channels

In EU countries, importers, who are specialised in processing and packing of edible nuts, are the most significant marketing channel. They mainly import shelled nuts and after processing & packing, they sell them in bulk to large retailers (supermarkets, specialised stores) or in small quantities (retail packs under their brand or under private label).

The most common non-specialised trade channels are distributors, traders/agents, wholesalers, on-line sellers and HORECA companies.

5.1.1 Importers

Importers buy directly from producers and exporters in the countries of origin. They are responsible for all costs associated with importation: duty, terminal fees, unloading charges, local delivery and warehouse costs. Most importers know the world supply situation well while some use the services of a consultant who may, for instance, have special knowledge of the peanut trade.

Once the nuts have arrived at the port of entry in Europe, the importer draws up an arrival quality report. This is drawn up by the importer's own quality inspector, or by a consultant, who issues a quality report that serves as the basis for final settlement with the exporter. As an exporter from Mozambique, it will be useful to have your own quality inspector. The importer then organises transport by truck to its own distribution centre, or the supermarket distribution centre.

Importers have the following different functions:

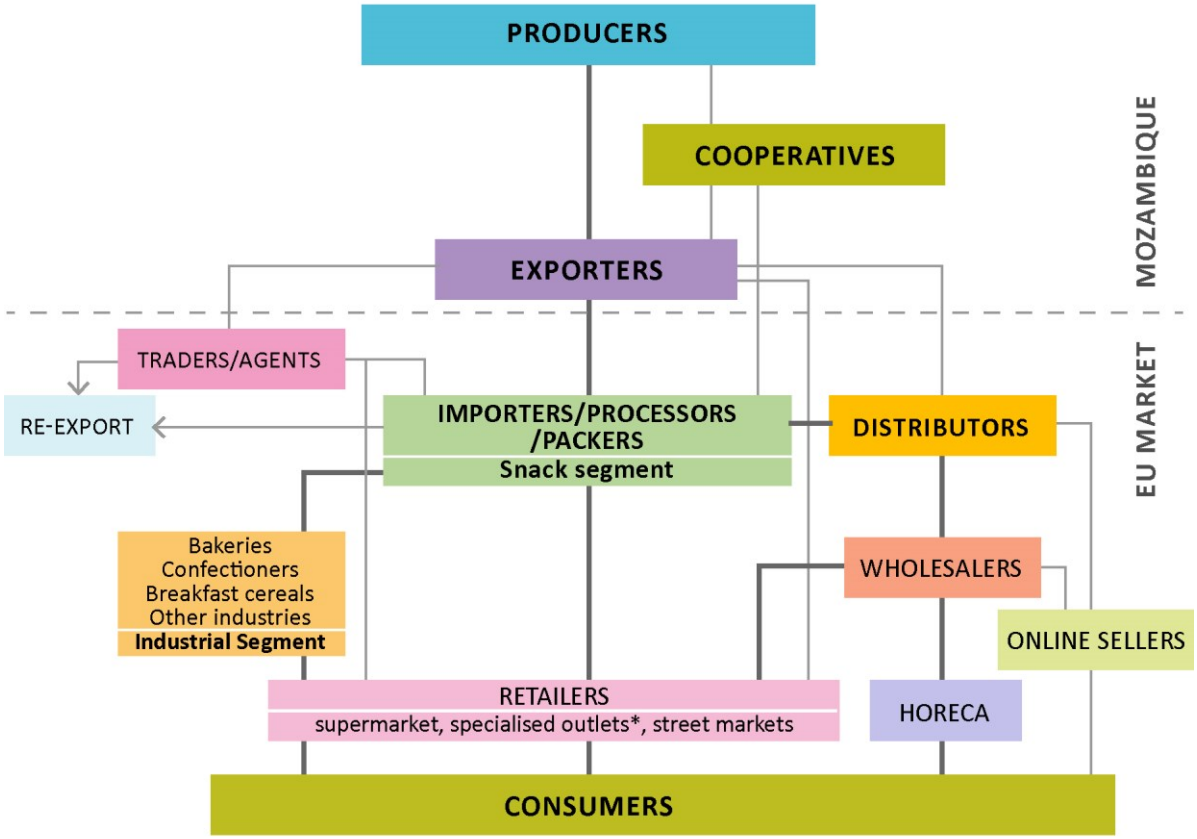
1. **Processor** : applying further treatment to the nuts by roasting, salting, blanching, slivering, cutting, milling, coating or mixing.
2. **Packer** : packing nuts in wholesale, in retail packs or for the HORECA.
3. **Re-Exporter** mainly to other EU markets.

Importing companies are selling to the snack segment as shown in Figure 21. They process a variety of nuts and peanuts to supply the food processing industry (bakery, confectionery, breakfast cereals).

They mainly supply to retailers such as supermarkets, delicatessen stores, organic shops, gasoline stations, sports centres etc.

Smaller processing companies re-pack nuts, by individual or mixed sorts, into consumer- and catering-size packs. The sizes of these packs are dictated by their customers (supermarket, catering company) or are made according to their own specifications. There are also some companies who pack exclusively under a manufacturer's brand.

figure 22 **Sales channels for edible nuts**



* Nut shops, delicatessen, organic shops, groceries, gasoline stations, sportcenters

SOURCE: Searce estimations (2023)

Intersnack (Germany/International), PepsiCo (USA/Netherlands), Ireco (Luxembourg), Omnitrade, (Germany), Max Kiene (Germany), and Trigon (UK) are some of the most prominent importers/processors/packers in Europe.

Local importers have long established links with their customers and know well the requirements of the local market. They keep a stock and are financially able to support exclusive contracts, advertising campaigns and to service in-store racks for edible nuts. Customer service extends to extremely fast deliveries, which are computerized. Incoming orders are bar-coded by sales representatives and processed at night. Afterwards the goods are made up in the early morning and shipped to retailers or other customers within 24 hours.

For these reasons exporting processed consumer packed products directly from the countries of origin is challenging.

Nevertheless, importers are an ideal entry point into the market for suppliers from developing countries. They can provide you with timely information about market developments and export advice. Importers typically import numerous varieties of edible nuts and dried fruit, so as a new supplier from Mozambique, offering a variety of nuts could improve your competitiveness.

For new suppliers, the difficulty lies in establishing long-lasting relationships with well-known importers, who work already with pre-selected partners. Regularly, established importers conduct audits and travel to producing countries.

5.1.2 Distributors and wholesalers

Distributors are less specialised and buy or trade a variety of different agricultural products including peanuts, tree nuts or sesame seeds. Two types operate on the market:

- Distributors, who buy from exporters or from importers. They process the nuts themselves to add value so that they can be sold at higher prices. They sell to wholesalers, supermarkets, online sellers or different kind of retailers.
- Distributors who buy in bulk. Nuts are directly imported from different parts of the world and sold to processors or importers. After grading, packaging and selling, they sell them in their own country or export them to international markets.

Wholesalers generally buy from distributors or importers. They offer a wide range of agricultural products, while others can be highly specialised. Wholesalers store edible nuts and sell them to retailers, online sellers or to the HORECA. Some large wholesalers operating from Germany are:

- **Lekkerland**, a leading German food and beverage wholesaler, supplies convenience foods like drinks, confectionery, snacks, and prepaid products to around 90,000 stores (gasoline stations, kiosks, tobacco stores, specialist drinks markets, food stores, bakeries, fastfood chains, canteens and other convenience stores) across six European countries.
- **Atrimex**, a German wholesaler, specializes in dried fruits and nuts, including organic specialties. They source products internationally, connect quality suppliers with top buyers, and provide processing and logistical coordination support.
- **Zieler & Co**, founded in 1907, specializes in import, export, and wholesale trade of dried fruits, nuts, seeds, syrups, chocolates, pulses, and cereals.

Wholesalers and distributors charge a commission of 20 to 30%, depending on the volume of the order and the type of processing, from basic cleaning to roasting, salting, coating, storage and repackaging. Wholesalers no longer absorb as much volume as they once did, but they are still important for organic shops, delicatessen shops, grocery shops, street markets and restaurants.

5.1.3 Traders/Agents

The Netherlands and Germany has a long history of trading in nuts. Groundnuts, sesame seeds and most of the tree nuts arrive by sea in bulk and are transported overland other EU markets. An infrastructure for trading in imported edible nuts has been established in Rotterdam, Hamburg or other EU ports. Almonds, hazelnuts and walnuts from Mediterranean and Central and Eastern European countries are brought by road. Many of the traders and agents are based in or near the port of entry to carry out inspections after arrival of the goods.

Traders are independent companies. They import on their own account and know the world supply and demand situation very well. They mainly buy bulk quantities and sell to

packers/processors or to major industrial users in their local market or re-export to foreign markets. The major trading centres for edible nuts are New York, Rotterdam and Hamburg, where some exporters have their branch offices.

The functional distinctions between the different types of traders described above have become blurred in recent years because of structural changes in the trade and a decline in the number of smaller brokers and traders in Europe. Different types of trading activity are often carried out within one company.

Agents in the nut trade typically engage in two distinct categories of activities. Agents are typically independent firms that negotiate on their clients' behalf and serve as intermediaries between purchasers and sellers. Depending on the volumes involved, they charge commissions ranging from 2% to 5% for their intermediary services.

Agents also provide suppliers for private labels to European retail chains as a separate service. It is extremely difficult for the majority of developing country suppliers to participate in the strict private label tendering procedures. For these services, some agents, in conjunction with their nut suppliers, participate in retail chain procurement procedures.

Some well-known agents for edible nuts include Hpm Warenhandelsagentur (Germany), MW Nuts (Germany), QFN (Netherlands), and Nutfully (Belgium).

Box 3 - Mistrust requests for large quantities from unknown companies / foreign investors

Recently more "briefcase exporters" and "cowboys" entered the sector benefiting the facilities especially in the Netherlands. They are small companies or just foreign investor working with logistic companies. They buy products in large quantities from smaller exporters in developing counties for a 'quick buck' at the last moment. Without controls, these products often do not comply with environmental and chemical regulations in the EU. When the shipment is intercepted, they do not pay the exporters, who in turn does not pay the smallholders.
For example, in Kenya, these companies overly influence the phytosanitary inspections by the Kenya Plant Health and Inspection Service.
It is recommended not to work with these traders or ‘cowboys’ and more with reliable importers in your EU target markets.

5.1.4 Large Retailers

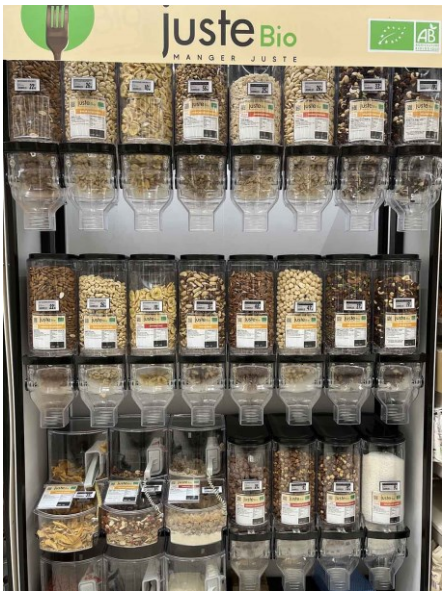
Retailers carry out the final stage of selling nut products to consumers. Sales of edible nuts can be divided into:

- **Impulse purchases,** which tend to be from gasoline stations, open markets, nut specialty shops, delicatessen shops, night shops and sports centres.
- **Planned purchases**, which are made mainly in supermarkets, organic stores and online sellers.

Around 5% of all edible nuts were sold in loose form at open markets; another part is sold at nut specialty shops. There are many independent specialised "nut bars" or nut shops in the Netherlands, Spain and Greece.

Between 75 - 80% of retail sales of edible nuts are made through supermarkets. In the 1990s, supermarkets stopped selling edible nuts in loose form and they eliminated their in-store nut bars. Instead, they sell industrial pre-packaged products. Supermarkets issue contracts for mixing and packing of their private labels, which are mainly pre-packed.

Because of the growing popularity of luxury nuts, processors persuade supermarkets to display more fresh pre-packed shelled nuts at the snack section or at special promotional sections (the so-called "gondola ends").



During the winter, particularly around Christmas and New Year's, nuts are part of special promotions.

In supermarkets, pine nuts, walnuts, and pistachios for use in salads are increasingly displayed in the vegetable section.

Along with the health trend of eating more nuts and adding them into vegetarian dishes, loose nuts are being reintroduced to supermarkets as well as organic food stores (see photo).

Following the ongoing cuts in consumer spending and widening rich and non-rich consumers, the retail sector has become more polarized with a shift towards discount or premium supermarkets.

Supermarkets and hypermarkets face challenges like moderate spending, inflation, rising production costs, high freight costs and the rising power of the discounters (ALDI and LIDL). The retail sector has become more polarized with a shift towards discount or premium supermarkets.

However, opportunities can still be found in offering more diversity in health products such as edible nuts, organic fruit and vegetables, seafood, dried fruits, cereals and bakery products containing less sugar.

In the last years the EU food retail market experienced consolidation, market saturation, fierce competition, and low prices. Leading food retailers in Europe include Schwartz Gruppe, Carrefour, Tesco, Aldi, Edeka, Leclerc, Metro Group, Rewe Group, Auchan, Intermarché and Ahold. More details can be found in Chapter 6.6.

5.1.5 Ethnic shops and Night shops

Ethnic specialty shops are a growing niche in retailing. They sell edible nuts as a healthy alternative to chips and candies in many EU countries. The growing immigration from Morocco, Turkey, Mediterranean, Middle East and Africa has changed the diet of people living in the EU. This has driven the development of these super markets and night shops which most are found in most capitals and in urban areas. Much of the diaspora from these regions shop here as well as local consumers because these shops are open longer. Fruits, vegetables and meat are offered and savoury snack such as nuts and cold drinks are popular as an in-between meal or a meal replacement.

5.1.6 Bio stores and Organic shops

Despite reductions in consumer spending, the organic food market continues to expand, although at a slower rate. Germany is the leading EU organic market. The health food trade,

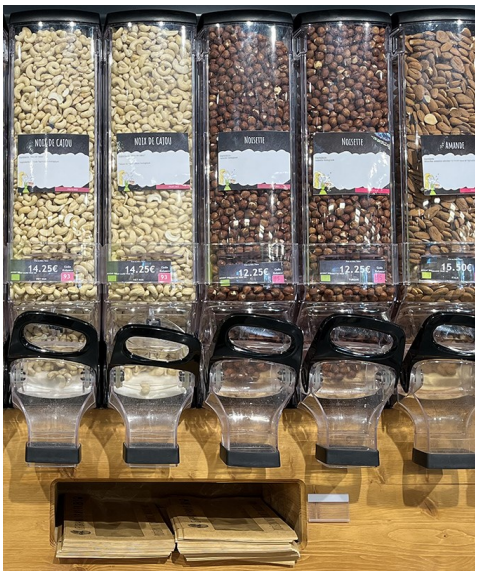
with its many organic shops, organic supermarkets and health shops (Reformhäuser). Edible nuts are supplied through the processor Neuform International.

In 2021, organic retail sales in the EU market reached € 43.7 billion, with Germany being the major market, accounting for 10.4% of the global market, followed by France (9.8%), Italy (3.2%), UK (2.3%) and Scandinavian countries. Denmark has the highest per capita consumption of € 344.

Sales of organic fruits and vegetables (including nuts) averaged around 5% (€ 2.2 billion) of total EU organic retail sales. The growing interest of the large retailers (supermarkets) and processing companies in organic products is driving the market.

Key trends in sales of organic products

- Large retailers investing in organic products to improve their image and gain higher margins.
- Large-scale retailers have increased their organic market share, but organic shops are expanding their product assortment, including edible nuts from tropical countries.
- The origin of products is a crucial factor for mindful consumers which is well communicated in organic stores at the price labels (see photo).



Importers of organic nuts include Egesun (Germany), GEBANA (Switzerland) and Tradin (Netherlands). GEBANA sells cashews which is both organic and fair trade. GEBANA runs its own processing unit in Burkina Faso and in Benin.

5.1.7 Online sales

In the food industry, online retailers have been successful over the past decade. In response to their success, brick-and-mortar stores and supermarkets launched their own websites. In addition, through price promotions, supermarkets tried to attract consumers back into their stores.

There is more competition from start-ups offering express deliveries of groceries and healthy meals, including edible nuts. Online sellers are more specialised and offer consumers more convenience. Examples of exotic dishes in the Netherlands and France include Gorilla's, Fritchi, Crisp, and Manow. They were especially successful during the global pandemic. Large online retailers include Amazon fresh and Ocado (Germany).

5.1.8 HORECA

The food service channel (hotels, restaurants, and catering companies) is typically supplied by wholesale importers. The food service industry frequently requires specific packaging of edible nuts in weights between 1 kg and 5 kg, which differs from bulk or retail packaging requirements.

Europe's food service channel is primarily driven by global cuisines, nutritious food, and food enjoyment. New (healthier) fast food, street food, and pop-up restaurants, as well as restaurants serving international cuisines and sandwich bars remain popular.

5.2 EU producing countries of nuts and Origin of imports into the EU

5.2.1 Main producing EU countries

The southern EU countries bordering the Mediterranean produce almonds, hazelnuts, walnuts, chestnuts and smaller quantities of pistachios. In 2022, total EU production of nuts was estimated at 393,741 tonnes, a drop by 4.1% compared with 410,589 tonnes in 2020. This was mainly due to the drought and frost-stricken production in Spain and Italy in 2021/2022.

During the COVID in 2020/2021 there were problems affecting cultivation and production. The ban on the entry of foreigners and restrictions on movement within the country led to a shortage of labour for seasonal agricultural work.

Production of almonds in Spain was lower in 2022 than the previous year (44%), which was due to the effect of the frost in April 2022 together with the effects of the drought on irrigation in the Guadalquivir Valley (near Sevilla).

Spain's production is expected to rebound in 2023 with rain arriving just in time for the crop in May and June before temperatures soared in July. However, meteorologists warn of a severe heatwave in summer 2023, and heat stress is an issue. The bearing planted area of almonds in Spain comprises 525,840 ha, with organic production accounting for 16%. The total area planted is 761,662 ha, with production expected to rise sharply in the next five years.

Production of hazelnuts increased to a level of 19% above average. For the new campaign 2023/2024, the prospects are bright thanks to new plantations and irrigation which certainly will help to increase production. Italy is an important producer of hazelnuts with falling production levels in 2020 that were mainly due to high temperatures.

Spain and Greece are large producers of pistachios, while France and Romania were important producers of walnuts as is shown in Table 21

Table 21 EU Production of edible nuts, 2018 – 2022
Volume in tonnes

	2018	2020	2022
SPAIN - Total	**160,751**	**178,710**	**155,133**
Almonds (shelled)	110,000	127,700	105,663
Walnuts (in shell)	17,000	18,800	17,350
Pistachios (in shell)	10,800	14,330	17,830
Hazelnuts	7,985	8,150	7,780
Chestnuts	14,966	9,730	6,510
ITALY - Total	**96,120**	**90,310**	**87,490**
Almonds (shelled)	18,550	21,740	13,800
Walnuts (in shell)	15,670	15,490	19,520
Pistachios (in shell)	1,600	3,100	1,050

Hazelnuts	48,100	35,600	38,700
Chestnuts	12,200	14,380	14,420
FRANCE - Total	**54,520**	**53,414**	**58,042**
Walnuts (in shell)	37,890	38,064	41,290
Hazelnuts	12,770	11,200	12,340
Chestnuts	3,860	4,150	4,412
GREECE - Total	**26,566**	**24,125**	**28,516**
Almonds (shelled)	7,500	7,800	7,610
Pistachios (in shell)	8,500	6,100	10,900
Hazelnuts	1,776	1,805	1,860
Chestnuts	6,690	6,220	6,096
Peanuts	2,100	2,200	2,050
ROMANIA - Total	**54,640**	**56,630**	**56,960**
Walnuts (in shell)	54,000	56,000	56,300
Hazelnuts	640	630	660
POLAND			
Hazelnuts	7,350	7,400	7,600
EU - Total	**399,947**	**410,589**	**393,741**

Source: MAPA, INC, USDA, Fresh Plaza (2023)

5.2.2 GERMANY – Food processing and Origin of imports

Food and drink industry

The German food processing sector comprises 6,125 companies most of which are SMEs. According to the Federation of German Food and Drink Industries' (BEV) Germany's food processing industry generated a total revenue of €187.1 billion in 2022.

Largest sector subsegments were: Meat (21.5%), Dairy (17.1%), Baked Goods (9.1%), and Confectionery & Long-Life Bakery Products (7.4%). Germany is home to major national and international players including the Dr.Oetker Group, Südzucker, Arla, Mondelēz Deutschland, Nestlé and Cargill amongst others.

The industry faces challenges like moderate spending, inflation, rising production costs, high freight costs and the rising power of the discounters (ALDI and LIDL). However, opportunities can still be found in edible nuts, organic products, fish, seafood, processed ingredients, dried fruits, ready meals, bakery products and pulses. Large German processors include: Suchard (with the brands *Milka* for chocolate and *Balisto* for muesli bars), Alfred Ritter (chocolate), Nestlé (chocolate, muesli bars), Kellogg (cereals), Bahlsen (chocolat, biscuits) and Hensel (muesli).

Hazelnuts, almonds, walnuts and increasingly cashew nuts are used in the German industrial sector in savoury snacks and sweet products. According to trade sources, the production of bakery products was estimated almost 3 million tonnes in 2020, while chocolate preparations filled with cereals, nuts or fruits were 250 thousand tonnes. Germany is a leading EU producer of marzipan and pralines in which various types of edible nuts are used. Germany is the 2nd largest market for cereals after the UK. The estimated size of the breakfast cereal market is 300 thousand tonnes, and it is expanding in line with the trend towards convenience and healthier eating. Food manufacturers continue to introduce healthier breakfast cereals with less sugar and healthier snack/energy bars with a larger variety of nuts as a flavour enhancer.

Major brands and processors for edible nuts: Seeberger, Atrimex, Ziler, Ültje, Fit for Fun, Mariland, Lekkerland, Munich, Real Handful (vegan), Rossmann (children), Trade Joes, Altanatura, Nordic Deluxe, Farmer Naturals, Farmer's snack, Rettergut (peanut butter).

Main imports and marketing companies in Germany can be found in Annex 3

German imports by type and origin

The German nuts market is highly dependent on imports. Imports of edible nuts rose by a CAGR of 1.3% between 2018 and 2022. In 2022, an average of 28% of German imports were sourced from EU countries. Peanuts were mainly coming from the Netherlands, most of them are consumed within the country. Only 30% are re-exported, compared to 70% in the Netherlands.

A considerable part of almonds (15%) was imported from Spain. However, the USA remains the largest supplier for almonds as well as for pistachios, as is shown in Table 22. Other non-EU supplying countries include Argentina for peanuts, Vietnam for cashews, Bolivia for Brazil nuts and Turkey for hazelnuts and mixed nuts.

Table 22 Imports of edible nuts by type and supplying countries to Germany, 2022
Volume in tonnes

GERMANY	2022	From EU	From Non-EU	From Africa
TOTAL *of which:*	**634,823**			
Peanuts (shelled)	103,100	NL (46%), other (2%)	Argentina (39%), Nicaragua (4.4%), India (4%), China (1.4%), Brazil (1.3%), USA	S. Africa (1.7%), other
Almonds (shelled)	101,949	E (21%), NL (4%), I (3%)	USA (65%), Australia (4%)	Morocco (0.6%)
Hazelnuts (shelled)	72,826	I (14%), NL (0.7%)	Turkey (71%), Georgia (6%), Chile (4%), Azerbaijan (3%), USA (0.6%)	
Cashews (shelled)	59,944	NL (11%), A (0.4%)	Vietnam (67%), Honduras (4%), India (2%), Indonesia (2%), Brazil (1%), China	Cote d'Ivoire (9%), Burkina Faso (1%), Nigeria (0.6%), Mozambique (0.5%)
Walnuts (shelled)	53,127	NL (5%), A (3%), Ro (2%), F (1%)	USA (65%), Chile (14%), China (3%), Ukraine (2%), Moldova (2%), Kyrgyzstan	
Pistachios (in shell)	40,197	B (2%), Gr (0.5%)	USA (89%), Iran (9%), Brazil (0.4%), Turkey (0.1%)	Morocco, Cameroon
Peanuts (prepared)	37,245	NL (31%), Lux (18%), Pl (11%), I (4%), B (5%), Gr (2%)	Argentina (11%), Turkey (6%), UK (2%), China (1%), India (1%)	Egypt (2%), Senegal, S. Africa
Pistachios (shelled)	10,680	I (15%), Lux (5%), NL (4%), Pl (0.7%)	USA (34%), Iran (29%), Turkey (11%), Syria (0.8%)	
Brazil nuts (shelled)	6,507	NL (7%), E (1%)	Bolivia (87%), Peru (3%), Brazil (2%), Chile (1%)	
Macadamias (shelled)	3,601	NL (17%), Sk (0.8%)	Australia (11%), Guatemala (1%), Vietnam (2%), China (0.8%)	S. Africa (38%), Kenya (24%), Malawi (2%), Zimbabwe (0.8%)
Mixed nuts	96,866	NL (10%), A (6%), Lux (5%), I (4%),	Turkey (53%), Vietnam (1%), USA (1%), China (1%)	Egypt (0.3%), Burkina Faso (1%), Benin (0.03%)

		E (3%), F (1%)		
Sesame seeds	30,611	NL (8%)	India (11%), Guatemala (9%), Pakistan (5%), Brazil (4%), China (3%), Paraguay (3%)	Nigeria (15%), Uganda (10%), Mozambique (7%), Egypt (7%), Somalia (2%), Burkina Faso (2%), Mali (2%)

* Supplies in percent of imported volume in 2022 Source: ITC Trademaps (2023)

** NL=Netherlands; E=Spain; I=Italy; Lux=Luxembourg; A=Austria; Gr = Greece

Upcoming supplying countries to Germany include Chile (walnuts, Georgia (Hazelnuts) and Guatemala (sesame seeds). Whereas Iran (pistachios) and India (peanuts, cashews) decreased their supplies.

Compared with other EU countries, Germany was a large importing country from Africa, especially of cashews and macadamias. The main supplier of cashews is Côte d'Ivoire, but there were also supplies from Burkina Faso, Nigeria, and Mozambique. South Africa and Kenya dominated the supplies of macadamias to Germany.

Around 40% of sesame seeds came from Nigeria, Uganda, Mozambique and Egypt.

German exports

Germany is the second largest exporter of edible nuts in the EU and exported 188 thousand tonnes in 2022, an increase (CAGR) by 1.8% from 175 thousand tonnes in 2018.

Around 22% were mixed nuts, followed by peanuts prepared (15% of German exports), cashews (12%), pistachios (11%), peanuts shelled (9%), almonds (9%) and other nuts (22%).

The majority of German exports went to EU countries, especially to Austria (12%), France (11%), Netherlands (8%), Italy (8%), Poland (8%) and other Eastern European markets (10%).

5.2.3 FRANCE – Food processing and Origin of imports

Food and drink industry

The food processing industry in France consists of approximately 15,500 businesses with annual sales exceeding € 194,2 billion. SMEs constitute nearly 98% of the industry. The sector employs over 433 thousand people and indirectly supports nearly 2 million jobs. It is a prominent economic sector in France with a solid reputation for quality and innovation.

France is one of the leading producer and exporter of meat, beverages, dairy products, bakery products and confectionery amongst others. In 2020, the total value of French processed food exports was € 49 billion. To reduce and consolidate costs, an increasing number of French food processors are importing ingredients from their international partners and subsidiaries.

French companies make substantial investments in research and development. In addition, the quality, food safety, and health concerns of French consumers have forced the French food processing industry to look for new, healthier products and increased demand for organic products and ingredients. Environment and sustainable development, sorting and recycling packaging waste, food waste, and energy efficiency are crucial selling points for the French food industry.

Demand for edible nuts from the French industrial sector continues to be strong, especially from bakeries, confectioners and cereal manufacturers. In 2020, the volume of bakery products was

estimated at 2 million tonnes. The confectionery (chocolate and sugar) market in France was approximately 785 thousand tonnes, of which chocolate confectionery accounted for 76%, as the French love chocolate.

Production of confectionery is mainly concentrated in the South and includes pralines (candy made of an almond or peanut wrapped in chocolate), sugar coated almonds and nougat (using almonds, walnuts, pistachios, hazelnuts and macadamia nuts).

Large food processors in France include Danone, Tereos, Axereal, PepsiCo, Ancel and Nestlé.

For edible nuts, the largest processor/packer is Bénénuts, Daco Bello, Intersnack France, Vico, Menguy's (peanuts), Cap Industries, Esprit Gourmand, Miamland, Jacques Benoit (cashews) and Kreeks (specialist for HORECA). Private labels represented in 2022 around 28% of the French edible nuts market. The main private labels were those of the largest hypermarkets, such as Carréfour, Auchan, Intermarché, Géant and German discounters successfully operating in France such as Aldo and Lidl.

Main imports and marketing companies in France can be found in Annex 3

French imports by type and origin

Imports of edible nuts by France rose by a CAGR of 1.7% between 2018 and 2022. In 2022, an average of 50% of French imports were sourced from EU countries.

Table 23 Imports of edible nuts by type and supplying countries to France, 2022
Volume in tonnes

FRANCE	2022	From EU	From Non-EU	From Africa
TOTAL *of which:*	**263,185**			
Peanuts (prepared)	60,759	NL (62%), B (18%), D (2%), E (1%), I (1%)	Argentina (8%), China (1%)	Egypt (0.5%), Togo (0.3%), Mali, Cote d'Ivoire, Guinea
Almonds (shelled)	40,437	E (39%), I (7%), D (6%), NL (2%)	USA (41%), Australia (3%)	Tunisia (0.2%),
Peanuts (shelled)	35,557	NL (19%)	Argentina (61%), USA (8%), China (5%), Brazil (3%)	Egypt (7%), Togo (0.5%), other (0.2%)
Hazelnuts (shelled)	22,662	I (12%), NL (2%), E (2%), D (2%)	Turkey (76%), Georgia (4%), Azerbaijan (1%),	
Cashews (shelled)	16,195	D (9%), NL (6%), E (1%)	Vietnam (63%), India (5%) Brazil (2%), USA (0.2%)	Cote d'Ivoire (9%), Burkina Faso (0.8%), Ghana (0.6%), Madagascar (0.4%)
Walnuts (shelled)	11,241	D (5%), Ro (5%), NL (2%), Spain (1%)	Ukraine (28%), Chile (20%), USA 14%), Moldova (7%), China (3%), India (3%), Kyrgyzstan (2%), Australia (2%)	S. Africa (0.3%), Tunisia (0.2%), Cote d'Ivoire, Djibouti
Pistachios (in shell)	6,941	E (2%), D (0.7%)	(USA (85%), Iran (11%)	Cote d'Ivoire
Pistachios (shelled)	1,578	E (13%), I (15%), D (8%), B (4%)	USA (26%), Iran (23%), China (5%), Turkey (1%)	Togo, Cameroon, Cote d'Ivoire
Brazil nuts (shelled)	1,177	D (28%), B (3%)	Bolivia (53%), Peru (6%), Brazil (5%)	
Macadamias (shelled)	618	NL (1%), D (0.8%)	Guatemala (41%), Australia (14%)	Kenya (32%), S. Africa (8%)
Mixed nuts	39,646	D (21%), E (18%), NL (15%), I (6%), B	Turkey (12%), Vietnam (3%), USA (2%), China (1%)	Ethiopia (0.1%), Togo (0.07%), Tunisia

		(6%), Lux (4%)		
Sesame seeds	9,383	NL (19%), D (5%), E (4%)	India (19%), Paraguay (3%), Mexico (3%), Guatemala (3%)	Nigeria (12%), Mali (9%), Egypt (3%), Burkina Faso (3%), Sudan (2%), Uganda (2%), Tanzania (0.8%)

* Supplies in percent of imported volume in 2022 Source: ITC Trademaps (2023)

** NL=Netherlands; E=Spain; I=Italy; D=Germany; B=Belgium

Peanuts were primarily imported from the Netherlands, with the majority being consumed domestically. Germany is an important source for mixed nuts (21%) and neighbouring country Spain is an important source for almonds (39%) and pistachios (13%).

The USA is the main supplier for almonds and pistachios (in shell), as is shown in Table 23. Other non-EU supplying countries include Argentina for peanuts, Vietnam for cashews, Turkey for hazelnuts, Bolivia for Brazil nuts and Ukraine for shelled walnuts. Upcoming supplying countries to France include Chile (walnuts), whereas India (peanuts, cashews) decreased their supplies.

In comparison to other EU countries, France was a major importer from Africa, particularly from its former colonies in West and North Africa, but also from Kenya. Cashews and macadamia nuts and sesame seeds were the most popular nuts imported from Africa.

France Exports

In 2022, France exported 48 thousand tonnes, a decrease by 1.9% from 51 thousand tonnes in 2018. Walnuts represented 42% of French exports, followed by mixed nuts (20%) and hazelnuts (6%). In 2022, around 85% of French exports went to other EU markets.

5.2.4 SPAIN – Food processing and Origin of imports

Food and drink industry

With revenue close to €140 billion and employing more than 440,000 people, the Spanish agri-food industry is the country's main manufacturing activity.

Spain is Europe's third-largest agri-food power and tenth in the world. It contributes 10% to the national GDP. In 2021, the Spanish food-tech ecosystem, as well as investments in startups, have tripled (€ 695 million).

During the pandemic, Spain's food industry demonstrated resilience, maintaining continuous supply and exports. With over 30,000 companies exporting food and drink, Spain's food and drink industry promotes its culture and traditions. The industry is undergoing digitalization and sustainability to adapt to climate change and consumer trends. Spanish Technology Centres are leaders in developing new ingredients, protein sources, nutritional properties, and precision agriculture.

Spanish production was estimated at 120 million tons of which wine represented 31%, cereals 21%, vegetables 13% and pressed olives 6%. Other important crops included tomatoes, olives, sugar beets, citrus fruit, grapes and cork. Spain is the world's largest producer of olive oil and Europe's largest producer of lemons, oranges, and strawberries. Production of nuts was 155 thousand tonnes of which more than 65% were almonds.

Large food processors/packers in Spain include Gallina Blanca, El Pozo, Galletas Fontaneda, Galletas Gullón, Quely, Vidal Golosinas, Danone, Nestlé Spain and Borges.

Major processors for edible nuts: Unió Nuts, Ferrer Segarra, M. Torras Rafi, FenixFood SL, Solanellas Nuts, Amandras Francisco Morales, Levantex, Importaco, Calconut, Manolet Almonds and Hotel Foodservice S.A.

Main imports and marketing companies in Spain can be found in Annex 3

Spanish imports by type and origin

Imports of edible nuts steadily increased by a CAGR of 3.2% between 2018 and 2022. In 2022, an average of 24% of Spanish imports were sourced from EU countries, especially almonds from Portugal, walnuts and mixed nuts from Germany and prepared peanuts from the Netherlands.

Within the non-EU countries USA was the main supplier for almonds and pistachios. Argentina and were large suppliers of shelled peanuts and Vietnam was dominant in the supplies of cashews.

Chile became an important country for walnuts, while Turkey, Georgia and Azerbaijan were important in the supplies of hazelnuts to Spain.

Compared with other EU countries Spain was a small importing country from Africa, except for macadamias which mainly came from South Africa and Kenya. For sesame seeds Egypt and Nigeria were important as is shown in Table 24.

Table 24 Imports of edible nuts by type and supplying countries to Spain, 2022
Volume in tonnes

SPAIN	2022	From EU	From Non-EU	From Africa
TOTAL *of which:*	**289,376**			
Almonds (shelled)	108,225	Port. (7%), D (2%), NL (2%), I (1%)	USA (82%), Australia (6%), Afghanistan (0.7%)	Morocco (0.3%)
Peanuts (shelled)	38,399	NL (28%)	Argentina (49%), Brazil (25%), China (13%)	Egypt (0.1%), S. Africa (0.1%)
Almonds (in shell)	28,830	Pt (91%), B (4%), I (2%)	USA (2%)	
Walnuts (shelled)	17,342	D (14%), F (3%), Ro (0.8%)	USA (57%), Chile (22%), China (2%), Moldova (0.4%)	Libya, South Sudan
Pistachios (in shell)	13,017	D (4%), Greece (0.7%), B (0.2%)	USA (81%), Iran (12%), China (1%)	Morocco, Egypt
Cashews (shelled)	12,301	D (9%), NL (2%), F (1%), I (1%)	Vietnam (67%), India (17%), Brazil (0.6%)	Cote d'Ivoire (0.7%) Nigeria (0.6%), Tanzania (0.2%)
Peanuts (prepared)	10,296	NL (39%), D (22%), Pl (21%), B (5%), F (3%)	Canada (2%), China (1%), USA (1%), Argentina (1%)	Morocco
Walnuts (in shell)	10,294	F (27%)	Chile (31%), USA (24%), Argentina (3%)	
Hazelnuts (shelled)	5,768	I (14%), NL (3%), D (3%), F (0.8%)	Turkey (50%), Georgia (16%), Azerbaijan (9%), Chile (5%)	
Macadamias (shelled)	756	NL (2%)	Australia (5%), Guatemala (1%)	S. Africa (56%), Kenya (30%)

Mixed nuts	12,166	D (26%), F (4%), Pt (5%), NL (2%), B (2%)	Turkey (32%), China (11%), Mexico (5%), USA (2%), India (1%)	S. Africa (0.02%), Ghana (0.01%), Senegal
Sesame seeds	6,880	NL (17%), D (5%), I (2%), Pt (2%)	India (21%), Guatemala (13%), Mexico (5%), Argentina (4%), Paraguay (3%), Turkey (3%)	Egypt (10%), Nigeria (9%), Somalia (1%)

* Supplies in percent of imported volume in 2022 Source: ITC Trademaps (2023)

** NL=Netherlands; Pt=Portugal, D=Germany; I=Italy; F=France

Spain Exports

Being a producer, Spain is the third largest EU exporter of edible nuts, with a volume in 2022 of 179 thousand tonnes. Spanish exports increased by 3.5% from 155 thousand tonnes in 2018. The majority (57%) were shelled almonds, mixed nuts accounted for 21% of Spanish exports.

Around 80% went to other EU countries, mainly to France, Italy, Germany and Portugal, while Morocco, Turkey, USA and Switzerland were also important destinations.

5.2.5 ITALY – Food processing and Origin of imports

Food and drink industry

Italy was the fourth largest food processing market in Europe in 2021, behind Spain, France, and Germany, generating € 179.4 billion in revenue. There are approximately 60 thousand companies, 464 thousand employees, and over 50 billion euros worth of export sales. The sector rates second in Italy in terms of the number of companies, the number of employees, and the value of exports.

The Italian food-processing industry is fragmented and mainly consist of smaller companies.

Leading players are Parmalat, Barilla Holdings, FERRERO Commerciale Italia, Campari Group, Lavazza Premium Coffees Corp, MARR SpA, Amadori, Veronesi, Suchard, Eridania, Unilever, Cirio, Nestlé, Danone and Unichips. Italian companies tend to use more multichannel strategies to offset food service losses during the COVID-19 pandemic.

In 2021, consumers shifted their focus to home-cooking and baking, while confectionery, snack bars, ice cream, and pastries experienced a return to normalcy.

Italian people prefer fresh products over canned ones, with seafood, meat, tomatoes, and beans being popular canned options. The pandemic also accelerated Italy's healthy eating trend, with vegan, vegetarian, and flexitarian alternatives, "free-from" products, and superfoods attracting more local consumers.

The pandemic also strengthened the locally sourced food trend, with progress in food technology, marketing innovations, "Made in Italy" products, and exports of finished food products contributing to Italy's increasing demand for food ingredients.

Demand from the industrial sector for edible nuts comes mainly from the large number of small confectioners, bakeries, ice cream and a few cereal manufacturers. Almonds are used for the production of liqueur (*Amaretto*) and in a large variety of desserts. In 2020, the production of Italian confectionery products was around 435 thousand tonnes, of which chocolate confectionery accounted for 60%. In the same year, the production of biscuits, crackers and

other industrial pastries was estimated at 988 thousand tonnes, while production of Italian ice cream was 220 thousand tonnes. It is expected that production and consumption of sugar and chocolate confectionery will slow, because of an increased concern among Italian people about health and diet. Some growth in the biscuit and industrial pastry market is expected, as long as the economic conditions in Italy improve.

Major brands and processors for edible nuts: Caporaso Group, BIO ITALY NATURE SRL, Disano Group, Santo Santaniello Srl, Di Bartolo Srl, Anaclerio Angelo Srl, Campobasso, Crea Srl. And New Factor

Main imports and marketing companies in Italy can be found in Annex 3

Italian imports by type and origin

Imports of edible nuts by Italy increased by a CAGR of 2.7% between 2018 and 2022. In 2022, an average of 29% of Italian imports were sourced from EU countries with Almonds coming from Spain; Pistachios, prepared peanuts and mixed nuts from Germany; walnuts and hazelnuts from France; and prepared peanuts and macadamias from the Netherlands.

The USA remains the largest supplier for almonds and pistachios, as is shown in Table 25. Other non-EU supplying countries include Argentina for peanuts, Vietnam for cashews and Turkey for hazelnuts and mixed nuts. Georgia is an upcoming supplier for hazelnuts.

Table 25 Imports of edible nuts by type and supplying countries to Italy, 2022
Volume in tonnes

ITALY	2022	From EU	From Non-EU	From Africa
TOTAL *of which:*	**298,878**			
Hazelnuts (shelled)	64,458	NL (1%), D (1%), Lux (1%)	Turkey (66%), Chile (15%), Azerbaijan (11%), Georgia (5%), USA (0.4%)	
Almonds (shelled)	61,976	E (32%), NL (4%), D (2%), B (1%)	USA (59%), Australia (0.4%), Turkey (0.1%)	Morocco (0.2%)
Walnuts (in shell)	30,527	F (19%), E (0.5%), Pt. (0.3%)	USA (51%), Chile (19%), Argentina (6%), Australia (3%)	Tunisia (0.2%)
Peanuts (shelled)	27,711	NL (6%), Hu (4%)	Argentina (81%), China (3%)	Egypt (0.3%)
Pistachios (in shell)	13,841	D (22%), Gr (12%), B (7%), E (5%), Lux (3%)	USA (37%), Iran (7%), Argentina (1%)	
Cashews (shelled)	13,428	NL (7%), D (7%), E (2%)	Vietnam (54%), Brazil (5%), India (1%), Myanmar (0.5%)	Cote d'Ivoire (20%), Benin (4%), Burkina Faso (0.5%), Ghana, Mozambique (0.2%)
Hazelnuts (in shell)	11,034	Pol (16%), Ro (12%), F (8%), Cr (6%)	Georgia (45%), Serbia (5%), USA (3%), Macedonia (1%)	
Pistachios (shelled)	9,915	D (12%), E (6%), Ro (5%), Gr (3%)	Turkey (34%), USA (28%), Iran (7%)	
Peanuts (prepared)	5,361	D (39%), NL (31%), E (5%), Pl (2%), A (2%)	UK (5%), India (3%), Turkey (3%), Argentina (2%)	Senegal
Macadamias (shelled)	288	NL (13%), D (12%),	Australia (25%), Guatemala (2%), Paraguay (1%)	S. Africa (40%), Kenya (5%)
Mixed nuts	14,044	D (19%), E (9%), B (8%), F (4%), NL (3%)	Turkey (40%), China (5%), Georgia (2%), Philippines	Kenya (0.01%)

Sesame seeds	7,967	D (10%), NL (9%)	Brazil (28%), Turkey (16%), India (10%), Paraguay (5%), Argentina (6%), Pakistan (2%)	Egypt (3%), Togo (2%), Somalia (2%), Ethiopia (1%), Nigeria (1%), Mali (0.9%), Uganda (0.7%)

* Supplies in percent of imported volume in 2022 Source: ITC Trademaps (2023)

** NL=Netherlands; E=Spain; D=Germany; Hu = Hungary; B=Belgium; Lux=Luxembourg; Ro=Romania; Cr=Croatia

Compared with other countries Italy was a moderate importer from Africa. A large part (20%) of shelled cashews came from Cote d'Ivoire and macadamias came from South Africa and Kenya.

Italy Exports

Being a producer, Italy was a large exporter of edible nuts. In 2022, nearly 93 thousand tonnes were exported, an increase by 1.6% compared to 87 thousand tonnes in 2018. Most were domestically produced hazelnuts and mixtures of nuts, each of which accounted for one quarter of total Italian exports. Other large export products were shelled almonds (13% of Italian exports) and peanuts prepared (9%).

In 2022, around 80% of Italian exports went to other EU countries (Germany, France, Austria, Spain and Belgium), while the UK, Switzerland and USA were other main destinations.

5.2.6 NETHERLANDS – Food processing and Origin of imports

Food and drink industry

In 2023, there were approximately 8,655 food processing companies in the Netherlands that generated € 80 billion in net sales and employed 150,000 individuals.

According to Statista, around 50% these companies were bakeries and patisseries, at just over 4,300. There were 420 cacao and chocolate processors, 390 snack processors, 360 pastries and cookies processors and 300 dairy producers/processors. Meat processing, dairy products, fruit & vegetables are leading sectors for exports to EU countries. In 2021, the Dutch food industry generated approximately € 76.6 billion in revenue.

The Netherlands' economy is one of the world's foremost food exporters primarily as a result of its central location, research and development in the agricultural sector, use of modern technology and equipment, and superior logistical infrastructure. The use of robotics has led the Netherlands to place less emphasis on labour and more on scientific knowledge.

Leading food processors operating in the Netherlands include Nestlé, PepsiCo, Unilever, Mars, Danone, Kraft Heinz, Royal Friesland Campina and Arla foods.

The industry relies heavily on imported (unprocessed) raw materials. However, the majority of its finished products are primarily sold in other EU countries. In addition to rising wages, high energy and basic material costs have caused difficulties for many food companies.

In the Netherlands, edible nuts are used as follows in industrial segments:

- **The confectionery industry** using nuts in chocolate bars and candies, snack/energy bars etc. The US multinational Mars has a production plant and a European purchasing office in The Netherlands. Besides the well-known Mars chocolate bars, they sell *Snickers (using almonds), M&M* (using peanuts) and *Nuts (using almonds, hazelnuts and walnuts).*

The pandemic has led to the introduction of new snack and energy bars by smaller processors and startups, promoting health and sustainability. In the Netherlands, cleaner bars using nuts are gaining traction, with allergen and gluten-free claims leading to ingredient claims. High protein bars are also gaining traction, with 26% of new bar launches in 2020 having claims of high or added protein.

New nutritious between-meal muesli snacks or biscuits using almonds, cashews, walnuts continue to be introduced by processors particularly for high value and healthy variations.

- **The bakery trade** is a significant user of hazelnuts in bread, cakes, bread, biscuits etc. Hazelnuts are purchased in different sizes and in a large variety of forms: natural, blanched, roasted, in pieces, as meal or in paste form. The same applies to almonds, which are most often used in paste form in sweet bread and the almond pastry rolls which are most popular in the St Nicholas (December 5) and during the Christmas period. Dutch bakeries also use desiccated coconut, walnuts, pecan nuts and nuts.
- **The breakfast cereal industry** is substantial in the Netherlands and uses hazelnuts, almonds and coconuts in breakfast cereals, mueslis and cereal bars.
- **The dairy industry** produces ice cream, healthy instant breakfast drinks, desserts etc. Desiccated coconut, almonds, walnuts, pistachio nuts (pistachio flavoured ice) and cashews are the main nuts used.
- **Peanut butter industry** producing peanut butter and peanut (saté) sauce. Besides consumption in the local and exports market a large part (around 25%) is used of peanut butter by the catering sector. Calvé (Unilever) and Duyvis (PepsiCo) dominate the Dutch market.

Major brands and processors for edible nuts*:* Duyvis (peanuts), Catz International, Dipasa, Jack Klijn, Quaker, Koppejan, Horizon (organic), Delinuts, Just nuts, Tovano, Kimo nootje, Leev, Notenboer, Nutcase, Dorset Cereals, Ekoplaza, Johnny Cashew, Baukje (specialist for bakeries) and Trouw (sesame seeds). In 2022, approximately 30% of retail sales of edible nuts in the Netherlands were accounted for by private brands, the largest of which were AH (Albert Heijn), Jumbo and Plus.

In 2015, the Sustainable Nuts Initiative (SNI) was formed by a group of Dutch importers, processors and supermarkets. The main objective is to improve the production and sourcing of cashew nuts in a sustainable manner. This initiative's primary objective is to enhance conditions in nut-producing countries and establish sustainable supply chains. Some EU companies have joined the SNI as well.

Main imports and marketing companies in the Netherlands can be found in Annex 3

Netherlands imports by type and origin

As an important trading country, the majority of edible nuts are imported from countries outside the EU. In 2022, only 9% on average of Dutch imports originated from EU countries. Peanuts (shelled) accounted for 63% of total imports of which 70% was re-exported to other EU countries. Argentina is the single largest supplier of peanuts. Other supplying countries in 2022 included the USA, Brazil and China.

Within the EU, Germany is a supplier of almost all nuts to the Netherlands, especially of mixed nuts as is shown in Table 26. A considerable part of walnuts (22%) was imported from France.

Table 26 Imports of edible nuts by type and supplying countries to the Netherlands, 2022
Volume in tonnes

NETHERLANDS	2022	From EU	From Non-EU	From Africa
TOTAL *of which:*	**555,431**			
Peanuts (shelled)	348,186	D (4%), E (0.3%)	Argentina (72%), USA (7%), Brazil (5%), China (5%), Nicaragua (3%), India (1%)	Egypt (0.8%), S. Africa (0.3%)
Cashews (shelled)	42,987	D (2%),	Vietnam (70%), India (12%), Brazil (2%)	Burkina Faso (4%), Togo (2%), Cote d'Ivoire (1%), Ghana (0.9%), Guinee Bissau (0.7%), Tanzania (0.5%), Kenya (0.2%)
Almonds (shelled)	38,238	E (10%), D (3%), I (2%)	USA (74%), Australia (4%), Vietnam (0.7%)	Morocco (0.6%) Cote d'Ivoire (0.1%)
Walnuts (shelled)	13,797	D (10%), Ro (3%), E (3%), F (2%)	USA (44%), China (14%), Chile (10%), Ukraine (5%), Moldova (4%),	S. Africa (0.5%)
Peanuts (prepared)	9,895	D (23%), Pl (22%), B (16%), E (5%), F (3%)	UK (9%), India (4%), Argentina (4%), China (3%)	
Hazelnuts (shelled)	6,019	D (19%), B (4%), I (4%), F (0.6%)	Turkey (71%)	Egypt (0.4%)
Pistachios (in shell)	5,829	D (7%), E (2%), Gr (2%), B (1%)	USA (86%), Turkey (0.8%)	
Walnuts (in shell)	2,281	F (22%), D (23%), I (4%)	USA (30%), Chile (18%)	
Macadamias (shelled)	2,209	D (8%), Malta (8%)	Australia (11%), Guatemala (8%), S.Arabia (1%), China (1%)	S. Africa (32%), Kenya (13%), Mozambique (11%), Malawi (4%)
Brazil nuts (shelled)	1,734	D (10%), E (3%), F (1%)	Bolivia (65%), Brazil (12%), Chile (4%), Peru (3%)	
Mixed nuts	23,428	D (23%), E (8%), Gr (3%)	Turkey (34%), Vietnam (4%), Israel (3%), UK (2%), Lebanon (2%)	Mozambique (0.04%), Egypt (0.04%)
Sesame seeds	19,621	D (8%), F (3%), Bg (4%)	Mexico (9%), India (8%), Pakistan (7%), Brazil (6%), Bolivia (5%), Turkey (3%), Chile (3%)	Uganda (16%), Nigeria (8%), Somalia (4%), Burkina Faso (2%), Tanzania (2%)

* Supplies in percent of imported volume in 2022

Source: ITC Trademaps (2023)

** NL=Netherlands; D=Germany; E=Spain; Gr=Greece

Significant non-EU suppliers of tree nuts were Vietnam and India (cashew nuts), USA (almonds, walnuts and pistachios), Turkey (hazelnuts, mixed nuts) and Bolivia (Brazil nuts).

Upcoming suppliers include Chile (walnuts), Mexico (pecan nuts, sesame seeds) and Guatemala (macadamias).

The Netherlands imported some cashews and macadamia nuts from Africa. Burkina Faso was the main suppliers of cashews followed by minor suppliers such as Togo, Côte d'Ivoire and Ghana. South Africa dominated the supplies of macadamias, while Mozambique and Kenya were also large suppliers.

Netherlands Exports

Due to re-exported quantities and a long tradition in the trade of peanuts through Rotterdam, the Netherlands is the largest exporter of edible nuts in the world. In 2022, total exports were 418 thousand tonnes, an increase by 3.2% compared to 368 thousand in 2018.

Nearly one third were peanuts (shelled), followed by peanuts prepared (26% of Dutch exports), mixed nuts (8%), cashews (8%), Almonds (5%) and hazelnuts (2%). Exports of peanuts prepared, mixed nuts and cashews were among the largest growing exported edible nuts.

In 2022, the Netherlands imported 42 thousand tonnes of cashews of which 78% was exported to Germany, France, Poland, Italy and the UK. In the same year, 2.2 thousand tonnes of macadamias were imported of which 73% mainly went to Germany and France.

5.2.7 BELGIUM – Food processing and Origin of imports

Food and drink industry

There are a total of 272,520 food companies in Belgium. Of these companies the majority produced bakery products and chocolate confectionery. Other important sectors were meat products, dairy processing and fruit and vegetable processing.

Antwerpen is the largest province in Belgium, accounting for 15% of the food industry's market share (40,680 food companies). Second is West Vlaanderen with 34,254 food companies (13% of the total), while Oost Vlaanderen is also home to 33,903 food-related businesses. These three provinces account for 40% of the Belgian food industry.

Most important companies include: InBev Belgium, Barry Callebaut Belgium NV, FEBELCO, Ageas, Franz Colruyt Halle, Coca-Cola Belgium, Mestdagh, Purathos, Ranson etc. Other companies can be found at https://bolddata.nl/en/companies/belgium/food-companies-belgium/

The Food industry suffered from COVID and increased transportation costs. Geopolitical tensions with Russia and China are worrying Belgian exporters. Besides, the energy crisis and ongoing disruptions in supply chains made 2021, 2022 and 2023 challenging for Port of Antwerp-Bruges.

Major brands and processors for edible nuts: Menken (peanuts, cashews), Markelbach & Corne, Caplenco and Belfrudis.

Main imports and marketing companies in Belgium can be found in Annex 3

Belgian imports by type and origin

Imports of edible nuts decreased by a CAGR of -0.4% between 2018 and 2022. The Belgian nuts market is a large importer of pistachios. Pistachios and almonds and walnuts mainly came from the USA, while peanuts mostly came from Argentina.

In 2022, an average of 42% of Belgian imports were sourced from EU countries, mainly from the Netherlands, the important EU supplier of peanuts prepared, cashews, macadamias and sesame seeds to Belgium. In addition to Turkey, Germany is an important supplier for hazelnuts.

Table 27 Imports of edible nuts by type and supplying countries to Belgium, 2022
Volume in tonnes

BELGIUM	2022	From EU	From Non-EU	From Africa
TOTAL *of which:*	**124,130**			
Pistachios (in shell)	23,448	Lux (10%), Li (0.8%)	USA (88%), Iran (0.5%)	
Peanuts (shelled)	20,666	NL (15%)	Argentina (68%), China (3%), USA (2%), India (1%)	S. Africa (8%)
Almonds (shelled)	15,677	E (16%), NL (13%), I (6%), D (2%)	USA (59%), Australia (2%)	
Peanuts (prepared)	12,138	NL (74%), D (12%), F (8%), Lux (1%), I (1%)		Togo (0.2%), Cameroon (0.1%), Cote d'Ivoire
Cashews (shelled)	6,425	NL (43%), D (6%), I (4%)	Vietnam (7%), Brazil (2%)	Cote d'Ivoire (21%), Nigeria (3%), Mozambique (3%), Burkina Faso (2%), Togo (2%), Benin (2%)
Walnuts (in shell)	4,168	F (4%), NL (1%)	USA (54%), Australia (29%), Chile (11%)	
Hazelnuts (shelled)	3,451	NL (26%), I (12%), D (10%), F (4%) Bg (3%)	Turkey (44%), Georgia (1%)	
Pistachios (shelled)	1,350	F (11%), NL (8%)	USA (43%), Iran (16%), Turkey (7%)	
Macadamias (shelled)	48	NL (79%), E (10%) D (2%), F (2%)		Rwanda (2%)
Mixed nuts	20,820	D (29%), NL (12%), F (5%), E (5%), Lux (4%)	Turkey (27%), Jordan (2%), Lebanon (1%), USA	Togo (0.2%), Egypt (0.1%), Ghana (0.09%), Cote d'Ivoire, Cameroon
Sesame seeds	2,323	NL (43%), F (2%)	India (24%), Turkey (8%), Guatemala (3%)	Nigeria (12%), Egypt (2%)

* Supplies in percent of imported volume in 2022
** NL=Netherlands; Li=Lithuania

Source: ITC Trademaps (2023)

Belgium was a relatively large importing country from Africa, especially of peanuts, cashews and sesame seeds. Cashews mainly came from Cote d'Ivoire, an upcoming supplying country, while Mozambique and Nigeria increased their supplies to Belgium in the past two years.

Belgium exports

Between 2018 and 2022, Belgian exports of edible nuts were 76 thousand tonnes and only increased by 0.3% compared to a volume of 75 tonnes. The main products were peanuts (26%

of Belgian exports), mixed nuts (17%) and pistachios (14%) of which the majority went to Germany, France and other EU markets.

5.2.8 GREECE – Food processing and Origin of import

Food and drink industry

The Greek food and beverage industry comprised 15,700 companies with an estimated sales of € 12.82 billion and more than 110,000 workers in 2021. It has an important place in the Greek manufacturing, since it is the largest industrial sector in Greece, accounting for about 30% of total employment and revenue.

Three sub-sectors cover 50% of production which are bakery products and oils. Bakery and cereal products constitute the largest subsector of food production in terms of added value, employment, enterprises, and sales volume. During Greece's economic crisis, one of the most enduring subsectors was fruit and vegetable production. Despite being the largest sector of food products, bakery has only 12 companies employing more than 250 people. They represented 0.1% of the total 9,700 total bakery companies in Greece, but they accounted for 28% of production value.

The main bakery companies are: Papadopoulos, Chipita Elbisco Hellenic Quality Foods, Arabatzis ("Hellenic Dough"), Barilla, Melissa, Karamolegos Bakery, Tottis Bingo and Hellenic Catering.

Other food products include the production of sugar, cocoa, chocolate & sugar confectionery, condiments & seasonings, ready-to-eat meals and beverages. It consists of small businesses employing up to 19 people (92%). However, over 70% of production value is generated by medium and large businesses. The top 10 firms in terms of turnover are Nestlé Hellas, ION, Giotis Haitoglou, Hellenic Catering, Alinda Velco Palirria Ari, Zanae, and Cristal Hellenic.

Major brands and processors for edible nuts: Petrou Nuts S.A., EK Fysseos S.A., Kapousouz P.C., Ovakimian S.A., Menexopoulos S.A., Moraiti Bros S.A., Ninos Ilias S.A., Bally Nuts and Barat S.A.

Main imports and marketing companies in Greece can be found in Annex 3

Greek imports by type and origin

Imports of edible nuts steadily increased by a CAGR of 4.7% between 2018 and 2022. In 2022, an average of 21% of Greek imports were sourced from EU countries, especially from the Netherlands and Germany of peanuts, mixed nuts, and cashews as is shown in Table 28. Within the non-EU countries Turkey (hazelnuts, sesame seeds), USA (almonds, pistachios), Argentina (peanuts), Ukraine (walnuts) were important supplying countries. Between 2018 and

2022, Greece imports of cashews from India declined, while imports from Vietnam steadily increased. Mozambique started to supply cashews to Greece from 2022.

Compared with other EU countries Greece was a small importing country from Africa, except for sesame seeds and macadamias. South Africa dominated the supplies of macadamias.

Table 28 Imports of edible nuts by type and supplying countries to Greece, 2022
Volume in tonnes

GREECE	2022	From EU	From Non-EU	From Africa
TOTAL *of which:*	**42,696**			
Peanuts (shelled)	17,851	NL (8%)	Argentina (80%), China (5%), Turkey (3%), Brazil	
Almonds (shelled)	7,994	E (18%), D (5%), I (5%), NL (3%)	USA (68%), Australia (0.7%), Albania (0.2%)	
Walnuts (shelled)	3,702	D (11%), NL (3%), Bg (3%)	Ukraine (45%), Chile (13%), China (11%), USA (9%), India (0.7%)	
Cashews (shelled)	3,088	D (9%), NL 6%), E (3%), Bg (0.6%)	Vietnam (63%), India (15%)	Mozambique (0.7%), Cote d'Ivoire (0.5%) Nigeria (0.4%), Burkina Faso
Peanuts (prepared)	1,715	NL (49%), D (36%), Pl (9%), Bg (3%), Ro (2%)		
Hazelnuts (shelled)	1,560	Bg (4%), Ro (2%)	Turkey (89%), Georgia (5%)	
Walnuts (in shell)	769	F (12%), NL (2%)	Chile (51%), USA (30%), China (3%)	
Pistachios (in shell)	326	Bg (8%), I (7%)	USA (82%),	
Macadamias (shelled)	97	NL (9%), E (3%)	Australia (15%)	S. Africa (72%)
Mixed nuts	2,963	D (12%), I (7%), Bg (5%), E (3%)	Turkey (66%), Thailand (3%), Moldova (0.07%)	
Sesame seeds	31,932	NL (1%)	India (14%), Turkey (12%), Pakistan (6%), Paraguay (2%)	Nigeria (40%), Sudan (14%), Mozambique (4%), Ethiopia (3%), Egypt (1%), Uganda (0.5%), Togo, Somalia

* Supplies in percent of imported volume in 2022
Source: ITC Trademaps (2023)
** NL=Netherlands; Bg=Bulgaria

Greek exports

Greece is a small EU exporter. In 2022, 20 thousand tonnes were mainly exported Albania, Cyprus, Germany and Bulgaria. Peanuts, mixed nuts, pistachios (in shell) and almonds were the main products exported by Greece.

5.2.9 POLAND – Food processing and Origin of imports

Food and drink industry

Poland is among the largest producers in the agri-food industry in Central and Eastern Europe. In 2021, more than 1,270 companies operated in this industry, producing and exporting products worth over € 33 billion. The Polish food industry consists of about 30,000 enterprises with although most (25,000) being small companies that employ fewer than nine workers. The food processing industry contributed 5% of Poland's total gross domestic product (GDP) of € 607 billion.

The strong expansion of the Polish food processing industry in 2021 was driven by both domestic demand and exports. The most valuable segments were the livestock, dairy, beverage, confectionary and bakery industries. Multinational corporations such as Coca-Cola, PepsiCo, Mars, Heinz, Danone, Unilever, Mondelez, and Nestle have invested since the early 1990s. The greatest breweries, meat processing plants, bottling plants, confectionery production, and horticultural processing plants are currently owned by multinational corporations, taking up over 70% of the Polish food & drink industry.

Main food companies are: Coca Cola hbc, Aryzta polska, Cargill poland sp., Danone polska sp., Ferrero polska sp. PepsiCo, Grupa maspex s.a.r.l., The hoop polska sp., Mondelez polska s.a., Nestlé polska s.a., SM gosty, Unilever polska s.a., Mars and VWIEC zdrj s.a.

The conflict between Russia and Ukraine in Ukraine has disrupted Polish market, affecting domestic consumption and processing industries. EU and Polish sanctions have led to increased inflation, with energy/fuel and food prices rising in 2022 and 2023.

Major brands and processors for edible nuts: Intersnack Poland, MAKAR BAKALIE, Ros Sweet, Loper de Graaf and Polmarkus.

Main imports and marketing companies in Poland can be found in Annex 3

Polish imports by type and origin

Recently, Poland has seen the highest growth in edible nuts imports with an increase of 4.8% of the volume imported between 2018 and 2022. It is also an increasingly important re-exporter to

other Eastern EU countries and a part of processed nuts from Intersnack and PepsiCo goes to the Netherlands and Germany.

In 2022, an average of 24% of Poland's imports originated from other EU countries. Germany was an important supplier of peanuts, cashews, walnuts, and mixed almonds. Italy was significant for the production of hazelnuts, while the Netherlands was notable for the Polish imports of peanuts and pistachios. Other significant EU suppliers to Poland included Spain (almonds), Slovakia (pistachios), and Hungary (mixed nuts).

Table 29 Imports of edible nuts by type and supplying countries to Poland, 2022
Volume in tonnes

POLAND	2022	From EU	From Non-EU	From Africa
TOTAL *of which:*	**152,833**			
Peanuts (shelled)	77,699	NL (5%)	Argentina (73%), China (3%), Nicaragua (2%), USA	Egypt (0.01%)
Peanuts (prepared)	14,434	D (26%), NL (22%), Gr (3%), Sk (2%)	China (40%), UK (2%), Argentina (1%), India (1%)	Kenya, Nigeria
Cashews (shelled)	9,230	D (18%), NL (12%), E (0.7%)	Vietnam (59%), India (2%), USA (0.2%)	Cote d'Ivoire (3%), Nigeria (2%), Togo (0.6%)
Almonds (shelled)	8,491	E (15%), D (13%)	USA (62%), Australia (4%)	
Hazelnuts (shelled)	5,455	I (42%), D (7%), Sv (4%), E (1%)	Turkey (15%), Georgia (12%), Chile (11%), Azerbaijan (3%)	
Pistachios (in shell)	4,676	Sv (9%), B (3%)	USA (82%), Iran (4%)	
Walnuts (shelled)	2,628	D (27%), NL (2%)	Ukraine (34%), USA (15%), China (13%), Chile (6%)	
Pistachios (shelled)	329	D (5%), I (3%)	USA (73%), Iran (16%)	
Macadamias (shelled)	147	D (53%), A (3%), E (3%)		Kenya (26%), S. Africa (10%)
Mixed nuts	19,499	D (20%), Hu (16%), Cz (8%), A (7%), NL (4%)	Turkey (31%), Ukraine (2%), USA (1%)	
Sesame seeds	10,363	Gr (7%), NL (6%), D (2%)	Turkey (21%), Pakistan (14%), India (9%), Guatemala (2%), Paraguay (0.6%)	Nigeria (20%), Mozambique (9%), Somalia (6%), Niger, Uganda

* Supplies in percent of imported volume in 2022
** NL=Netherlands; CZ=Czech Rep.; Sv=Slovakia

Source: ITC Trademaps (2023)

Poland's non-EU suppliers were Argentina and China for peanuts, Vietnam for cashews, the USA for pistachios, and Ukraine for walnuts.

In comparison to other EU countries, Poland imported relatively few nuts from Africa. Macadamia nuts originated in Kenya and South Africa.

Polish exports

Between 2018 and 2022 Polish exports increased by 3.8%, from 39 to 46 thousand tonnes. More than half went to Romania, Czech Republic, Slovakia, Bulgaria and other Eastern EU countries which were mainly shelled peanuts. Around 8% of Polish exports were nut mixtures and 4% were hazelnuts.

5.2.10 UNITED KINGDOM – Food processing and Origin of imports

Food and drink industry

Around 440,000 people across the UK are employed in jobs associated with food and drink manufacture and sales. According to the USDA, the British food and drink industry had an annual turnover of € 13.1 billion in 2020.

Main products are: Non-Alcoholic Beverages, Chewing Gum and Candy, Distilled Spirits, Dog and Cat Food, Beef and Beef Products, Condiments/sauces, spices and Beer The ten largest companies in the UK food and drink sector are: Associated British Foods (Kingsmill brand), Boparan Holdings (Fox's biscuits), Greencore Convenience Foods (sandwiches), Müller UK & Ireland, Unilever (Anglo-Dutch company), Coca-Cola Enterprises, Bakkavor, Mondelez UK and Nestle UK.

Due to COVID-19 lockdowns, food and beverage manufacturers in the United Kingdom have encountered difficulties since March 2020, particularly those supplying the hospitality, restaurant, and workplace sectors. Due to Brexit, businesses have encountered increased difficulty importing goods into the United Kingdom. Despite these obstacles and a labour shortage, the sector adapted and grew more resilient in its commercial practises through more local sourcing of packaging and more automation.

Box 4 – Brexit creates challenges for EU suppliers, but opportunities for non-EU suppliers

Brexit presents new challenges for European suppliers, causing additional administration, extra costs, and delivery delays. Brexit slows down trade, making indirect trade and re-export less attractive for exporting companies from the EU. New customs procedures and phytosanitary certificates are part of these procedures, impacting retailers using just-in-time systems. Non-EU suppliers from Developing countries e.g., from Mozambique will have a competitive position. The UK market has made significant strides in direct sourcing, with suppliers producing, for example in Kenya and other African countries increasing their market share for direct supply of products to the UK.

For edible nuts, the UK market is very diversified with many small players. The country counts many different processers and packers developing their own brands.

Major brands and processors for edible nuts: Barrow, Lane & Ballard, Community Foods Ltd, Freeworld Trading, KP Snacks, Premier Fruit and Nut, Primal Pantry, Meridian Foods, Rude Health. In addition, the super/hypermarkets such as Tesco, Safeway, Asda, and Sainsbury's process or package their nuts, which they sell under their own brand. Private labels are taking up more than one third of the UK market for edible nuts.

Main imports and marketing companies in the UK can be found in Annex 3

UK imports by type and origin

UK imports of edible nuts steadily declined by -0.4% between 2018 and 2022. As a result of Brexit less was peanuts (shelled) were imported from the Netherlands. In the same period imports of peanuts prepared from the Netherlands fell as well. However, it still represented 63% of UK prepared peanut imports.

Table 30 Imports of edible nuts by type and supplying countries to the UK, 2022
Volume in tonnes

UK	2022	From EU	From Non-EU	From Africa
TOTAL *of which:*	**261,986**			
Peanuts (shelled)	105,992	NL (4%), B (6%)	Argentina (43%), Brazil (17%), USA (15%), Nicaragua (13%), China	Egypt (0.02%)
Peanuts (prepared)	27,698	NL (63%)	Argentina (18%), USA (4%), China (2%), India (2%), Thailand (1%)	Nigeria (0.1%), Egypt (0.1%), S. Africa
Cashews (shelled)	23,089	NL (3%), I (1%)	Vietnam (91%), India (2%)	Cote d'Ivoire (1%), Burkina Faso (0.3%) Ghana (0.2%), Nigeria
Almonds (shelled)	19,016	E (9%), I (2%)	USA (83%), Vietnam (1%) Australia (1%), Chile, Afghanistan, Jordan, India	Nigeria (0.03%)
Walnuts (shelled)	10,160	I (2%), Ro (0.5%)	USA (67%), China (13%), Chile (7%), India (3%), Moldova (3%), Ukraine (2%)	
Pistachios (in shell)	5,154	NL (4%), Bg (2%), F (1%)	USA (87%), Iran (4%)	
Brazil nuts (shelled)	3,934	F (6%)	Bolivia (71%), Chile (8%), USA (7%), Brazil (5%)	
Hazelnuts (shelled)	2,382	I (5%), NL (1%)	Turkey (91%), Bolivia (1%), Georgia (0.6%)	
Macadamias (shelled)	458	I (7%)	Guatemala (0.8%), Australia (0.4%)	S. Africa (72%), Kenya (16%), Malawi (4%)
Mixed nuts	25,979	D (18%), I (12%), E (6%), Lux (2%)	Turkey (15%), China (8%), Mexico (7%), Vietnam (5%), Sri Lanka (4%) USA (4%), India (1%)	Namibia (0.1%), Egypt (0.1%), S. Africa
Sesame seeds	6,427	NL (2%)	India (45%), Guatemala	Ethiopia (2%), Nigeria

			(19%), China (11%), Nicaragua (5%), Mexico (5%), Turkey (2%)	(2%), Somalia (1%), Uganda (0.7%), Egypt

* Supplies in percent of imported volume in 2022
** NL=Netherlands; Bg=Bulgaria

Source: ITC Trademaps (2023)

The majority of edible nuts are imported from countries outside the EU. In 2022, an average of 17% of UK imports were sourced from EU countries. Argentina (peanuts), Turkey (hazelnuts), Vietnam (cashews), USA (almonds, pistachios) and India (sesame seeds) were significant suppliers among non-EU counties. As shown in Table 30, the United Kingdom imported mixed nuts from a variety of foreign countries. This probably also has to do with the Brexit as there was much less imported from the Netherlands and France. Compared with EU countries, the UK was a small importing country from Africa.

UK exports
In 2022, the UK exported 48 thousand tonnes, a decrease by 9.2% from 25 thousand tonnes in 2018. Peanuts (prepared) represented 50% of UK exports, followed by mixed nuts (19%) and cashew nuts (8%). In 2022, 70% of exports went to EU markets, mainly to Ireland (35%).

5.3 Origin of imports of selected edible nuts into the EU

Based on the size of imports, good prospects and relevance for Mozambican exporters, the following products all in shelled form are selected:

10. Almonds
11. Cashews
12. Groundnuts or peanuts
13. Macadamias
14. Mixed nuts
15. Sesame seeds

5.3.1 Almonds

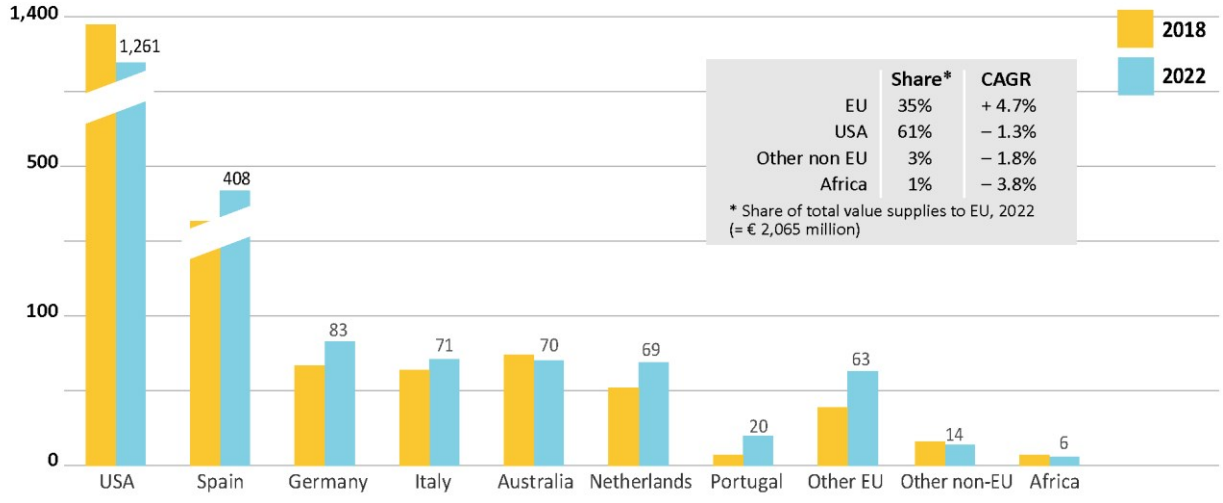
As already mentioned in Chapter 3.4.1, EU imports of almonds (shelled) were 428 thousand tonnes in 2022, and increased by a CAGR of 2.5% compared to 387 thousand tonnes in 2018.

Despite this increase values of EU almonds imports remained more or less the same at around € 2,065 million in 2022. The major decreases in values were in the almonds coming from the USA being the main supplying country as is shown in figure 22. By value, the USA accounted for 61% of EU almond imports. Due to cold and wet weather conditions during the blooming phase in California the harvesting will start late in 2023, and US growers face challenges in irrigation and pest management.

Similar decreases were registered in the EU almond imports from Australia which is another large supplier. Australia has a total area planted of 65,000 ha and no sharp growth expected. If hectares reach 70,000-75,000 ha, almond production will range at 200 thousand tonnes in the next few years. In 2023, production fell 30% short of the pre-harvest estimate due to adverse weather conditions and pollination issues. El Niño weather may also cause water supplies to become a problem.

Except the USA and Australia, the share of 'Other non-EU countries' was 3% in 2022. Within this group upcoming suppliers were Afghanistan and Pakistan.

figure 23 **Main supplying countries of almonds (shelled) to the EU, 2018-2022**
Value in € million



SOURCE: ITC Trademaps (2023)

n

increasing trend. Spain's production is expected to rebound to 121 thousand tonnes, with rain in May and June, but heatwave concerns and heat stress remain. Altogether the EU countries represented 35% of EU imports of which a large part were almonds traded via Germany and The Netherlands.

EU imports of almonds from African countries accounted for 1% of total EU imports with Tunisia as the main supplier.

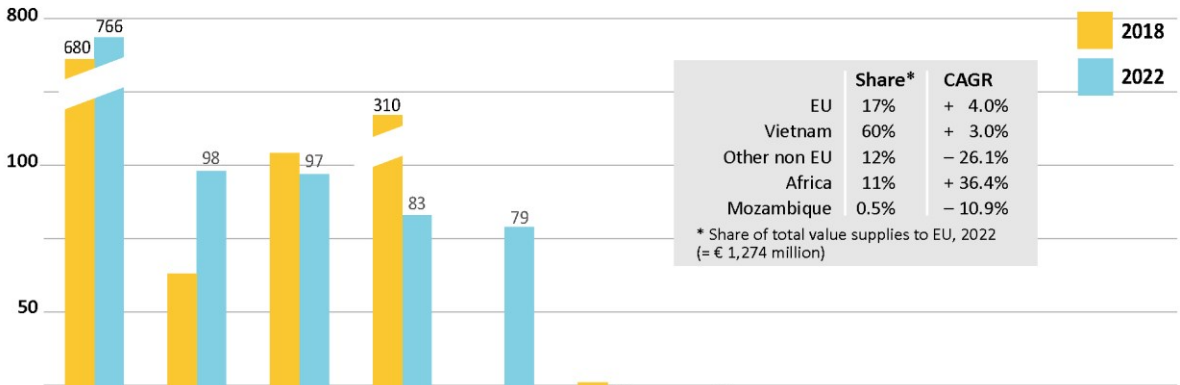
Detailed trade statistics can be found in Annex 2 – Table 2

5.3.2 Cashews

Total EU imports of cashew nuts (shelled) was 191 thousand tonnes, valued at € 1,274 million. Between 2018 and 2022, the volume EU imports substantially increased from 150 thousand tonnes by a CAGR of 6.2%. By value EU imports decreased by -0.8% from € 1,313 million in 2018 indicating falling prices because of quality problems in Vietnam and other Asian countries. Due to persistent rains during the drying phase, the moisture content of the new cultivated cashew nuts was too high.

The average value/ton of imported cashew nuts by the Netherlands from India fell from € 8,387/ton to € 6,825/ton. Spanish imports showed a similar trend with a decreasing average value from € 9,402/ton to € 8,198/ton even if there were much less cashews imported from India. This is partly attributed to quality issues with Indian cashews.

figure 24 **Main supplying countries of cashews (shelled) to the EU, 2018-2022**
Value in € million



EU cashew imports from the UK also substantially decreased, primarily due to Brexit. Average values of imported cashew nuts from the UK decreased as well.

Altogether the EU countries represented 17% of EU imports, which increased by 4.0% as is shown in Figure 23. The largest part was traded cashews mainly from Vietnam being imported by Germany and the Netherlands and exported to other EU countries with or without processing.

Vietnam is by far the leading supplier of cashews, and EU imports increased by 3.0% between 2018 and 2022.

Box 5 - Vietnam leads cashew exports due to its shelling facilities

The largest supplier of cashew nuts to Europe and the rest of the globe is Vietnam. Vietnam produces fewer tonnes of in-shell cashew nuts than Cote d'Ivoire and India. Vietnam sold over 609 thousand tonnes of shelled cashews in 2021 in the world, compared to the 367 thousand tonnes of raw cashew nuts it produced (92 thousand tonnes of shelled cashews). This is so that Vietnam can manage significantly higher volumes than for local manufacturing alone, because to its installed shelling capacity.

It imports in-shell cashew nuts from Cote d'Ivoire, Cambodia, Tanzania, Mozambique, Nigeria and other producing countries in order to make use of its numerous shelling facilities.

On the other hand, the Cote d'Ivoire's exports of in-shell nuts to Vietnam are declining as a result of investments made in local processing facilities there. Still, it is expected that Vietnamese imports from Cambodia would increase as Vietnamese processors have invested in the in-shell nut industry there.

Vietnamese shelled cashew nut production is primarily for export and represented in 2022 more than 70% of Europe's imports (by volume).

In 2020 and 2021, Vietnam handled the COVID-19 crisis well, and cashew nut exports went on as usual with just growing freight costs as a key issue.

Vietnam's Binh Phuoc province, which produces 200 thousand tonnes of cashew nuts annually, is known as the cashew nut capital of the country. Depending on the weather, the harvest season typically lasts from January until May.

Due to a lack of workers, manual cracking has almost completely disappeared in Vietnam. Instead, raw cashews are roasted before being mechanically broken.

Numerous governmental and business groups support the Vietnamese cashew industry so it can continue to hold its leading position in world's cashew supply.

The Vietnamese Ministry of Agriculture and Rural Development (MARD) supports investments in new cashew farms and productivity. MARD collaborates with Cambodia to promote dependable sourcing for the domestic processing industry in addition to developing domestic manufacturing. While the Vietnam Trade Promotion Agency supports export activities, the Vietnam Cashew Association (VINACAS) supports technological advancement and promotional efforts.

Vietnam has around 400 companies exporting shelled cashews and 150 processing companies. Olam International is the top exporter based in Singapore, accounting for 10% of the total export share. Long Son, Vietnam's largest processor, has ten processing facilities and is constantly growing due to mergers and acquisitions.

Other top exporters include Thao Nguyen, Minh Huy, and Hoang Son 1. Other companies include Cao Pat, Phu Thuy, Rals Vietnam, Da Kao, Lafooco, Tanimex, Tan Hoa, Haprosimex and Hapro.

As is shown in Figure 23, the share of 'Other non-EU countries' was 12% in 2022. Besides, the decreases from India and the UK, decreases were also registered in the EU cashew imports from Brazil.

Detailed trade statistics can be found in Annex 2 – Table 4

African countries were increasing their position in the exports (by value) of shelled cashews to the EU, particularly Cote d'Ivoire (+77.3%), Burkina Faso (+21.6%), Benin (+40.3%), while the supplies from Mozambique decreased by -10.8%. Altogether the African countries represented 11% of the EU imports and increased by +36.4% in the period under review.

Box 6 – Cote d'Ivoire, main producer of in-shell cashew nuts and main processor in Africa

There are around 250 thousand producers organised in 20 cooperatives. A projected 850 thousand tonnes of in-shell cashew nuts will be produced during the 2021–2022 season. Until now, Cote d'Ivoire sent the majority of its cashews to Vietnam and India as in-shell nuts because it lacks the processing capacity for shelling, like other African countries.

However, Cote d'Ivoire receives funding from the World Bank for processing capacity improvements from both domestic and foreign sources. Along with domestic investments, foreign companies also finance the processing of cashews in Cote d'Ivoire, which is also includes Vietnamese companies. Olam is the largest processor, followed by CILAGRI, SITA, FMA and CASA (Cajoiu des Savannas).

Cote d'Ivoire boosted its shelled cashew nut exports to the USA and to Europe with Italy, France, Germany, Belgium, the Netherlands, and Poland are its primary export destinations. In 2019, around 850 thousand tonnes of nuts were produced of which 10% were processed domestically. A target of 300 thousand tonnes was set for 2022 and domestic processing rate should increase to 30-40% through 3 new processing plants.

The resin from the cashews is used in the industry as a fluid for aircraft breaking systems and cashew apples are used to produce wine, syrup, jam and juice.

In Cote d'Ivoire, cashew production and commercialization are governed by the Cotton and Cashew Board (Conseil du Coton et de l'Anacarde), which also supports processing. Through a number of incentives, the government promotes investments. For example, cashew nut processors in Cote d'Ivoire will no longer be subject to customs tariffs or value-added taxes on equipment they buy in the next five years.

In 2020 and 2021, the COVID-19 pandemic had little to no impact on the cashew nut harvest. However, there were delivery delays and logistical problems, which were caught up in 2022.

Box 7 - Burkina Faso cashew industry boosts; Europe's supply uncertain

Thanks to a government initiative to support the cashew industry, which resulted in the planting of one million cashew trees, the cultivation of cashew nuts has increased in Burkina Faso since 2000. Approximately 330,000 hectares are now under cultivation, producing a total of over 100,000 tonnes.

The majority of cashew growers are members of their local organizations, unions, and cooperatives. Around 97% of the 45,000 households that grow cashew nuts are spread among the Cascades, Sud-Ouest, Hauts-Bassins, and Centre-Ouest regions.

Burkina Faso exported 121 thousand tonnes of in-shell cashews overseas in 2021, primarily to Singapore and

5.3.3 Peanuts - Groundnuts

As already mentioned in Chapter 3.4.3, EU imports of groundnuts (shelled) were 745 thousand tonnes in 2022, valued at € 1,099 million.

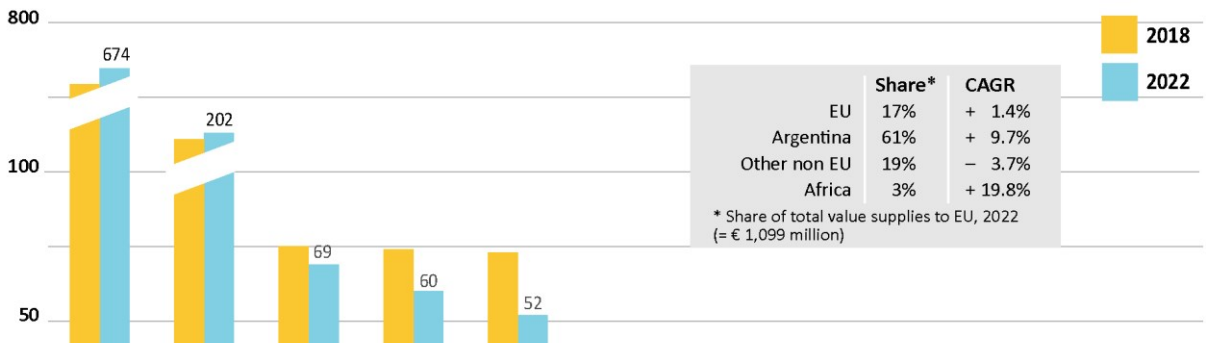
The CAGR for groundnut imports into the EU between 2018 and 2022 was 0.9% for volume from 718 thousand tonnes in 2018. Whereas EU value imports rose by 5.5% from € 886 million. This is mainly because of more imports of higher-quality peanuts and higher pricing for peanuts coming from Argentina which is by far the main supplier representing 61% of EU groundnuts imports in 2022, as is shown in Figure 24.

The average value/ton of imported groundnuts by the Netherlands from Argentina rose from € 1,032/ton to € 1,203/ton. French imports from Argentina showed a similar trend with increasing average values from € 1,081/ton to € 1,263/ton.

There is strong buying interest in the EU and in Asia where peanut prices remain high. Argentine suppliers remain cautious with offers, while in the USA the crop outlook for 2023/2024 is promising. On the other hand, adverse weather conditions coupled with geopolitical tensions in Africa have caused extensive crop losses. This implies that prices for groundnuts are on the rise in all producing countries.

The value imports from the Netherlands and Germany, being the main trading hubs for re-exports, increased between 2018 and 2012. Altogether the EU countries represented 17% of EU groundnut imports.

figure 25 **Main supplying countries of groundnuts (shelled) to the EU, 2018-2022**
Value in € million



EU imports of groundnuts from other large non-EU countries such as Brazil and USA showed a decreasing trend. Supplies from China has become small being related to the increase in Chinese consumption of peanuts.

Increases were registered in the imports from India and upcoming groundnut supplying countries such as Chile, Turkey and Vietnam. Except Argentina, the share of 'Other non-EU countries' was still 19% in 2022.

EU imports of almonds from African countries accounted for 3% of total EU imports with rising supplies by Egypt and Togo, and falling supplies by South Africa and Cote d'Ivoire.

Detailed trade statistics can be found in Annex 2 – Table 6

5.3.4 Macadamias

Total EU imports of macadamias (shelled) was 8 thousand tonnes, valued at € 118 million. Between 2018 and 2022, EU imports of macadamias decreased by a CAGR of 2.6% in volume from 9 thousand tonnes and by 4.7% in value, from € 143 million in 2018.

South Africa and Kenya accounted together for 58% of EU macadamia imports, both showing a decreasing trend. Because of COVID, macadamia prices fell in most of the producing countries. As the Ukraine war and inflation continue, there has been no improvement in the global market due to diminishing demand and an over-supply.

Similar decreases were registered in the EU macadamia imports from Australia which dropped by half as is shown in Figure 25. Altogether the EU countries represented 19% of EU imports of which a large part were almonds traded via the Netherlands and Germany.

The share of 'Other non-EU countries' was 20% in 2022. Within this group an upcoming supplier was Guatemala which doubled its supplies to the EU despite its higher average value of € 11,329/ton compared with Kenya € 8,890/ton to the Netherlands. This implies a higher quality of macadamias from Guatemala, although relative to its size it is not yet seen as serious competitor on the global macadamia market in terms of volume.

EU imports of macadamias from Mozambique represented 3% of EU imports and supplies rose by 7.8% between 2018 and 2022 which was mainly to the Netherlands.

Other African countries such as Malawi, Zimbabwe and Rwanda accounted together for 2% of total EU imports in 2022.

figure 26 **Main supplying countries of macadamia (shelled) to the EU, 2018-2022**
Value in € million

Detailed trade statistics can be found in Annex 2 – Table 8

A new programme in Kenya aims to offset the macadamia growers' enormous losses, and local processing will also receive support from the government. More attention will be given to improve the quality standards of EU buyers. However, there are still several structural issues which hamper further development (see box below).

Box 8 - Liberalisation of the economy affected the Kenian macadamia sector

It is believed that Kenya's county and national governments failed to implement necessary measures to support the macadamia sector, resulting in significant farm gate prices and losses for farmers. Issues contributing to these poor prices include the government's belief that competition will improve once more exporters of raw macadamia are introduced.

The low quality of the nuts produced makes the KSh180/kg (= € 1.14) price unsustainable and fears have emerged in recent years that Kenya is losing its grip on the niche international market.

Kenya's macadamia nut-production supplied about 20% of the global demand in 2009. It now supplies between 90 and 95% of its production for exports mainly to USA, EU, Japan, China, Hong Kong and Canada. In 2020, demand for Kenya's macadamia declined by 40% due to the COVID-19 pandemic.

New entrants, including China, Guatemala, Malawi, Vietnam, Colombia, New Zealand, Mozambique, Brazil, Paraguay, and Swaziland, threaten Kenya's global market. The Chinese government established the International Macadamia Research and Development Center in Lincang in 2018, and the country's market potential has grown significantly in the last decade.

Challenges to Kenya's market competitiveness include:

- The low-quality nuts produced by Kenyan farmers due to the insufficient support the sector receives from the government and other actors.
- Climate change, pests and diseases, poor agricultural practices, lack of input access, use of unsuitable or old macadamia varieties and immature harvesting as Kenya's main challenges.
- A lack of a functioning formal association of macadamia farmers. The Ministry of Agriculture did initiate the creation of the Macadamia Growers Association of Kenya in 2009, but it remains underfunded and without offices.
- Small plantations typify Kenya's production system as opposed to producers like China, South Africa and Australia, which have large plantations. Around 200,000 small farms in Kenya currently produce an estimated 42,500 tons of in-shell nuts.

The production of macadamia nuts in Kenya dates back to 1944 when European settler Bob Harries introduced the crop from Australia. The Kenya Nut Company (KNC) was established in 1975, processing nuts from its estate and out-growers. The liberalisation of the economy affected the macadamia sector, leading to the entry of Farm Nut Co. in 1994. Middlemen became predominant in sourcing nuts from farmers, offering better prices and immediate payment. This reduced farmers' costs of transporting nuts to collection centres and collecting payments from banks.

5.3.5 Mixed nuts

EU imports of mixed nuts and seeds were 312 thousand tonnes in 2022, valued at € 1,845 million. Imports rose by 2.6% in volume from 282 thousand tonnes in 2018. By value, an increase was registered by 5.8% compared to € 1,468 million in 2018.

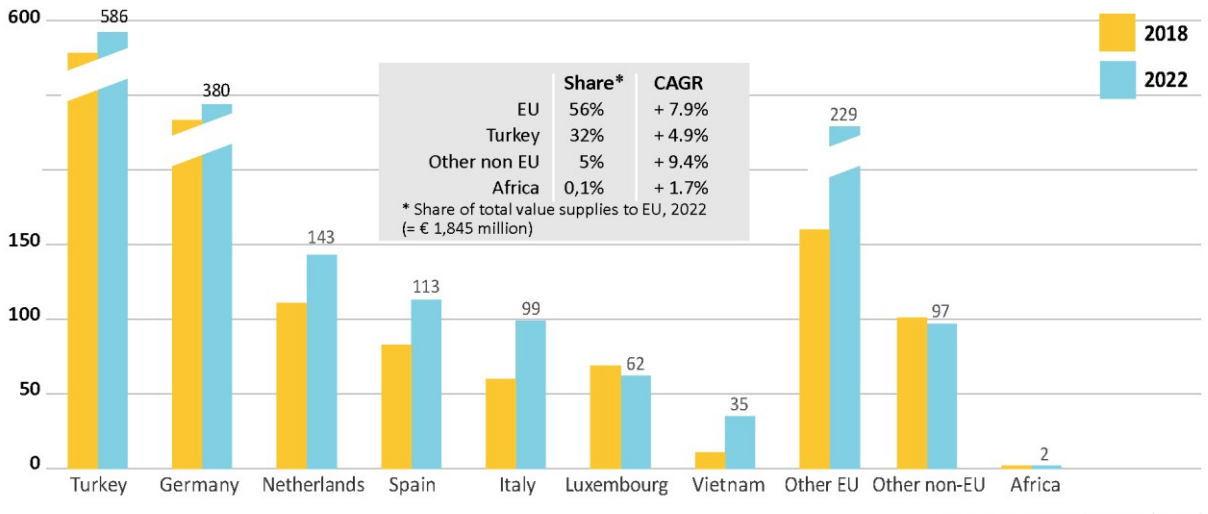
The major increases in value were in the mixed nuts coming from Turkey being the main supplying country as is shown in figure 26. Turkey accounted for 32% of EU imports.

Except Luxembourg, increases were registered in the supply of mixed nuts by most EU countries which are led by Germany being 2nd largest supplier. Altogether the EU countries represented more than half (56%) of EU imports in 2022.

Except Turkey, the share of 'Other non-EU countries' was 5% in 2022 which included supplies by USA, China, UK. Within this group upcoming suppliers were Vietnam and Moldova.

EU imports of mixed nuts from African countries accounted for 0.1% of total EU imports with South Africa, Burkina Faso and Mozambique as the main suppliers. Between 2018 and 2022, EU imports from Mozambique decreased from 990 to 250 tonnes.

figure 27 **Main supplying countries of mixed nuts (shelled) to the EU, 2018-2022**
Value in € million



SOURCE: ITC Trademaps (2023)

Detailed trade statistics can be found in Annex 2 – Table 10

5.3.6 Sesame seeds

In 2022, total EU imports of sesame seeds was 138 thousand tonnes, valued at € 298 million. Between 2018 and 2022 volume imports decreased by 3.4%, from 159 thousand tonnes in 2018, while by value an increase of 5.0% was registered compared to € 245 million in 2018.

The major increases were in the sesame seeds coming from the Nigeria which held a share of 15% in EU sesame seeds imports as is shown in figure 27.

Box 9 - Nigeria faces challenges regarding food safety concerns and logistical blockages

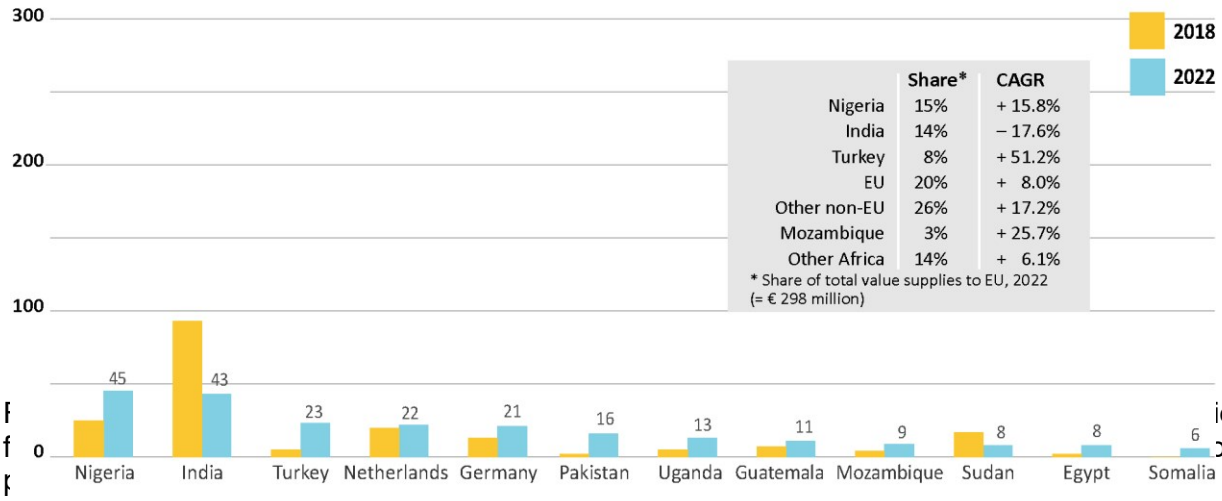
Nigeria, a major sesame seed producer and exporter, has experienced rapid growth in importance in the last decade. In 2021, Nigeria's 'beni-seeds' were the second most important agricultural export by value. The country aims to increase production by utilizing its available land. However, challenges include food safety concerns, logistical blockages, and volatile production. Recent cases of salmonella contamination led the EU to introduce checks of 50% of all sesame seeds from Nigeria.

These checks increased the EU import prices and were reducing Nigeria's competitiveness. Olam and other companies supported farmers with improved seeds and inputs, and has two modern sesame processing facilities in Nigeria. Safety and quality measures, such as in-house aflatoxin testing, open up a wider export market for small-scale sesame farmers and cooperatives.

Large increases were also registered in the EU sesame imports from Turkey which has become the 3rd largest supplier, as well as in the supplies from upcoming countries such as Pakistan, Guatemala, Brazil, Bolivia and China. The share of ‘Other non-EU countries’ was 26% in 2022. Guatemalan sesame is a high-quality crop with almond flavour, white colour, and large grain size, making it ideal for bakery decorations and toppings.

Supplies by India substantially decreased by 17.6% from € 93 million to € 43 million. This is mainly because Indian sesame's reputation is harmed by quality and contamination issues (ethyleenoxide), hindering access to EU markets. In 2021, imports dropped due to EU stricter controls on ethyleenoxide in sesame seeds in all EU countries. Besides, harvests in India were disappointing due to excessive rainfall during the Monsoon and the weather phenomenon El Niño in 2022. Indian suppliers were holding back their stock and Indian growers in Rajasthan switched to peanuts, which is reduced sowing.

figure 28 **Main supplying countries of sesame seeds to the EU, 2018-2022**
Value in € million



SOURCE: ITC Trademaps (2023)

large part were sesame seeds traded via the Netherlands and Germany.

EU imports of sesame seeds from Mozambique represented 3% of EU imports and was the 3rd largest African supplier to the EU. Value supplies rose substantially by 25.7% between 2018 and 2022. The main importing markets from Mozambique were Germany, Greece and Poland.

Next to Nigeria and Mozambique, other African countries accounted together for 14% of total EU imports with Uganda, Sudan, Egypt, Somalia, Ethiopia, Burkina Faso, Mali and Tchad as the main suppliers.

Uganda is the 2nd largest supplier of sesame seeds to the EU. Their sesame production is a significant contributor to agricultural exports, with organic production contributing almost one fifth of the country's value. The country's low chemical inputs and landlocked location make it a low-cost option.

However, Uganda faces challenges such as low yields, volatility, traditional methods, limited value-adding, and high certification costs for small farmers. In 2019, the government launched a National Organic Agriculture Policy to improve food security and export flows.

Sudan also faces challenges in reducing pesticide residues, salmonella, and aflatoxin contamination, hindering its ability to export to the EU. This leads to increased rejection and economic losses. The EU now mandates salmonella inspections on 50% of Sudanese sesame seeds.

In Ethiopia, there was also increased pressure on supply and demand due to pests, diseases, and lack of inputs. COVID has led to supply chain disruptions and weakening food supplies. The Ethiopian government has called for farmers to focus on sorghum, and military conflicts in sesame growing regions and along the Sudanese border affect logistics and supply.

Detailed trade statistics can be found in Annex 2 – Table 12

6. REQUIREMENTS OF THE EU MARKET AND PRICES

6.1 Food safety

6.1.1 Legislative requirements

Food safety

European citizens require safe, wholesome food. In the late 1990s, food incidents highlighted the need for EU-level food and feed law principles. The European Commission developed an integrated approach 'from farm to fork', covering all sectors of the food chain, including feed production, primary production, processing, storage, transport, and retail sale. In 2002, the European Parliament and Council adopted the General Food Law Regulation (EC) No 178/2002 EN, laying down the general principles and requirements of food law.

The number of controls on microbiological safety has increased in the past decade. For edible nuts this General Food Law establish maximum levels for certain contaminants, such as pesticide residues and mycotoxins, that could be found in the nuts or in the product using nuts as an ingredient. To ensure food safety and to allow appropriate action in case of unsafe food, food products must be traceable throughout the supply chain and the risks of contamination must be reduced as much as possible.

Mycotoxins and Aflatoxins

In peanuts, mycotoxins, especially aflatoxin, are the primary reason groundnuts could be prohibited from the EU market. In 2018, the Rapid Alert System for Food and Feed (RASFF) recorded 181 groundnut rejections at the border due to aflatoxin content. The country with the highest rejection rate was Argentina (30%), followed by China (19%), Egypt (18%), and the United States (7%). The level of aflatoxin B1 in peanuts intended for direct human consumption may not exceed 2 micrograms (µg)/kg, and the total aflatoxin content (B1, B2, G1 and G2) may not exceed 4 micrograms (µg)/kg.

However, higher aflatoxin levels of 4 µg (food) or 10 µg/kg (milk products) is permitted for peanuts if the products are not intended for human consumption. In these cases, the peanuts must be separated or treated before being sold.

Table 31 Maximum permitted levels of Aflatoxins in edible nuts, 2022

	Maximum levels in µg/kg (micrograms/kg)	
	B1	**Sum of B1, B2, G1, G2**
Peanuts for human consumption	2.0	4.0
Peanuts for other purposes (ingredient)	4.0	10.0
Cashews	2.0	4.0
Macadamias	2.0	4.0
Pecans	2.0	4.0
Brazil nuts	5.0	10.0
Hazelnuts	5.0	10.0
Almonds	8.0	10.0
Sesame seeds	2.0	4.0

Source: HealwithFood (2023)

In the past few years, groundnuts from Gambia and Sudan have been inspected more frequently. The levels of aflatoxin in groundnuts imported from those two countries have not decreased. Therefore, the European Commission issued a special regulation in June 2019 requiring health certificates and laboratory testing results for all consignments, and 50% of imported groundnuts undergo physical inspections.

In cashew nuts, mycotoxins, pesticide residues, microorganisms, and heavy metals are the contaminants that are most frequently controlled. Mycotoxins are the primary reason nuts could be prohibited from the EU market, with aflatoxin B1 in cashew nuts not exceeding 2 µg/kg and total aflatoxin content (B1, B2, G1 and G2) not exceeding 4 µg/kg. However, cashew nuts have a lower incidence of aflatoxins than other nuts, such as groundnuts. Experts believe that aflatoxin is not a problem in the production of cashew nuts because their shells contain cardol, which prevents the formation of aflatoxins.

In macadamia nuts and sesame seeds, the aflatoxin contents B1 must also not exceed 2 µg/kg and the total aflatoxin content (B1, B2, G1 and G2) must not exceed 4 µg/kg. However, the incidence of aflatoxins is much lower in macadamias than in other nuts.

In almonds the allowed aflatoxin levels are higher as is shown in Table 31. However, presence of aflatoxins is the most common reason for border rejections of almonds exported to Europe.

In sesame seeds, the use of ethylene oxide should be avoided. Ethylene oxide is used in some countries to ward off mould and salmonella, but is not permitted in Europe. Although there is sometimes only a very small amount of contaminated sesame in the final product, Europe has recently decided that all final products that are "contaminated" must be recalled. In 2021, it was discovered that ethylene oxide had been used on a shipment of sesame seeds from India. This led to the removal of sesame seeds from shelves at supermarkets (Delhaize et Colruyt) in Belgium. From 2021, controls have been intensified across the EU.

MRLs (Maximum Residue Levels)

To avoid health and environmental risks, the EU has set maximum residue levels (MRLs) of pesticides in agricultural products, including edible nuts, that are controlled by Europe's food

safety authorities. Table 32 gives an overview of the latest MRLs for all nuts (mg/kg) as from March 2023. This new regulation will apply from September 26, 2023

Table 32 Maximum residue levels of pesticides in edible nuts, 2023

		Maximum levels (mg/kg)
Pesticide	**Type of nut**	**New MRL**
Isoxaben	Tree nuts and Peanuts	0.01
Tetraconazole	Tree nuts and Peanuts	0.01
Novaluron	Tree nuts and peanuts	0.01
Bromopropylate	Tree nuts	0.01
Chloridazon	Tree nuts	0.04
Imazaquin	Tree nuts	0.01
Azoxystrobin	Peanuts	0.02
Benzovindiflupyr	Peanuts	0.04
Cyantraniliprole	Peanuts	0.01
Flutolanil	Peanuts	0.02

Source: Eur-lex Europa, INC (2023)

Products containing a higher concentration of pesticide residues than allowed are withdrawn from the EU market. However, it is uncommon to find excessive levels of pesticide residues in cashew nuts because the shell, in which residues may accumulate, is removed prior to the nuts' importation in Europe.

In peanuts, it is fairly uncommon to encounter excessive levels of pesticide residues, as the shell, in which residues may accumulate, is usually removed before consumption.

A frequently updated list of pesticides approved for use in the European Union is regularly published by the EU. You can search at https://food.ec.europa.eu/plants/pesticides/eu-pesticides-database_en

Some EU retailers set stricter standards by requiring their suppliers to comply with lower residue levels than the EU regulations. They may ask for upfront information about your pesticide spray records, or a pesticide analysis of samples by an accredited laboratory. Shipments are physically checked at the port of arrival and a counter pesticide analysis will be done at the clients' laboratory in Europe. They may impose penalties on suppliers who do not adhere to their limit or who submit products with high MRLs that are other than the approved sample. A slight deviation in the MRL can lead to rejection of your product.

PRACTICAL TIPS TO COMPLY WITH THE MRLs

- → Harvesting of nuts and sesame seeds must be at the correct maturity level.
- → The correct post-harvest practices and proper storage condition are crucial to prevent the development of Aspergillus and Aflatoxin contamination.
- → Keep control over the temperature and humidity levels. For cashew nuts, specifically, it is important to the control moisture level during storage and transport (<65% relative humidity) to avoid the product being damaged by mould and enzymatic changes.
- → Use bio pesticides or apply chemical pesticides correctly. To meet this demand, smallholders and exporters have to ensure that the consumer has an excellent experience when they eat nuts. To deliver quality products to the market, Mozambican growers must ensure proper crop husbandry, use natural pesticides if feasible. IPM - Integrated Pest Management is effective to minimize the risk of exceeding MRLs (see below)
- → When your growers use chemical fertilizers and related inputs, train them to use at the right stage and use the right dose in order to meet the MRL levels in Table 31.

→ Avoid using Ethylene oxide in sesame seeds to ward off mould and salmonella.

IPM – (Integrated Pest Management)

Pest infestation is a significant challenge in cashew production, but also in other nuts. Most common in India are insect pests like tea mosquito bug (TMB) and cashew stem and root borer (CSRB), while there are similar insect pests in Eastern African countries.

Chemical treatments are widely used to manage cashew pests. However, biological and behavioural management is also possible. IPM can prevent crop loss caused by pests and reduce pesticide expenditures. As a farmer, you can save money on chemical pesticides as natural pesticides are applied based on the need for control rather than on an established schedule. Other reasons to use IPM include:

- It helps to keep a balanced ecosystem
- It keeps the environment healthy
- Chemical pesticides can become ineffective because as pests develop resistance.

Some of the tactics to maintain populations of parasites off-balance are shown below.

Tactics to maintain pest balance and prevent resistance development	
Cultural methods	Minimizing pest problems by minimizing conditions like water, shelter, and food. Growing adapted crops, planting them in the right place, and addressing their water and nutritional needs can help plants resist diseases, outgrow weeds, and resist insects
Physical methods	Prevent pest access to hosts or areas by physically removing them using methods like barriers, traps, vacuuming, mowing, or tillage, depending on the situation.
Biological methods	Use predators, parasites and diseases of pests in a targeted way to suppress pest populations. Use of microbial diseases of pests have become part of the chemical pesticide registration process and is treated below under Chemical methods.
More details can be found in an e-book by the ICAR-Directorate of Cashew Research that can be downloaded at https://cashew.icar.gov.in/wp-content/uploads/2017/02/e-book-26.pdf	

Chlorates levels

The level of chlorates for all tree nuts was reduced in 2020 to 0.1 parts per million (ppm). In June of 2020, legislation regarding chlorate levels took effect. Chlorates are not typical pesticides used in the production of nuts, but they can come into contact with nuts through chlorinated water and chlorinated detergents. Therefore, you have better controlling the use of water and detergents within your production facilities.

Heavy metals

In August 2021, the European Commission set the maximum level of cadmium for cashew nuts (and all other tree nuts except pine nuts) at 0.20 mg/kg wet weight.

Microbiological contaminants

Important causes of food-borne illness include the presence of very low levels of salmonella and E. coli in ready-to-eat or processed foods in including cashews, almonds, and other nuts. Salmonella and E. coli can be transmitted to nuts by birds, animals, humans, exposed water,

garbage heaps, etc. Pasteurisation is currently used more frequently to prevent salmonella outbreaks.

More recommendations about the international code of hygienic practice for tree nuts can be found in Annex 4.

6.1.2 Quality requirements

Quality requirements for edible nuts are determined by the percentage of defective produce, by number or weight, and by their size, shape, and colour. The industry has defined several quality criteria, but some of them, such as taste and flavour, are subjective and cannot easily be determined based on physical characteristics.

Kernel outturn ratio (KOR) is crucial for cashew nut processing efficiency, but buyers often ensure quality control. Producers often have little information about quality and markets. Quality therefore is rarely a main issue in price negotiations at farm level.

Buyers often have complex product specifications for ingredients to be used in chocolate products, for example, cashew halves with a maximum diameter of 23 mm, or Brazil nuts in the unusual size of 140-150 pieces to the pound.

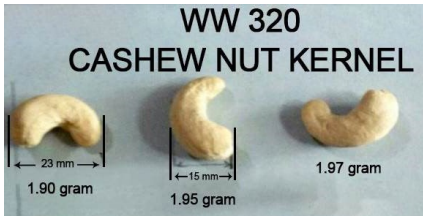
Specific cashew nut quality requirements are established in several standards. The most widely standard applied in Europe is the United Nations Economic Commission for Europe (UNECE). Other producing countries, such as India, Brazil, Vietnam, Tanzania, Kenya, and the Association of Southeast Asian Nations, also develop similar but slightly different standards.

The most important criteria used to define the quality of cashew nuts are as follows:

- **Class** — The EU does not have an official standard for cashew nut classification. However, the UNECE classification is widely used in the market. In this classification, cashew nuts are divided into three main classes: Extra Class, Class I and Class II, according to the permissible defects and colour of the kernel's skin.

- **Style and skin colour** — In practice, quality and price are usually determined based on the characteristics of the cashew nuts, thereby combining the style (whole, splits or pieces) with the grade and look of the skin. The skin may be white or have been scorched or darkened to some degree during the processing.

- **Grading** — The EU has not officially defined grading categories for cashew nuts. The most frequently used grading classification, also from the UNECE, corresponds to the USA cashew nut standards.



Variety in gradings of tree nuts and seeds		Main applications
Cashew nuts	□ Whole kernels W240 / W210 / W 180 □ Whole kernels W320 (standard large) □ Large White Pieces (LWP) □ Kernels split or broken □ In shell	→ as a snack (salted, roasted), fruit bars → as a snack (salted, roasted) → for plant-based butter, paste, milk → breakfast cereals, confectionery, bakery

According to the US standards, whole kernels are graded based on the number of cashew nuts in one pound (0.454 kg) or in one kg — for example, 210 nuts per pound equals 465 nuts/kg. The W210 cashew nut kernel is larger than the w320, which is why they are heavier. The cashew W320 is internationally known as the 'standard large nuts' and is mostly demanded because of their rich taste.

- Broken cashew kernels are graded according to the diameter of the pieces.

Almond kernels must meet quality requirements such as style, colour (natural or blanched), absence of foreign matter, taste, flavour, and moisture content of 6.5% or less. Whole kernels up to 1/8 broken off are the bulk of the trade, but pieces can also be traded.

Specific criteria for almonds are defined as follows:

- **Class** — Almond classification is not officially defined in the European Union. However, the United Nations Economic Commission for Europe (UNECE) classification is widely used in the market. The UNECE classification divides almonds into three main classes: Extra Class, Class I and Class II, depending on the presence of allowed defects.
- **Sizing** — The European Union has not officially defined grading categories for almonds. The most frequently used grading classification, also by UNECE, grades almond kernels by a minimum kernel diameter, or by the number of almond kernels per 100 grams or ounce (28.3495 grams). The Almond Board of California has also developed more detailed classifications for specific almond varieties.
- **Special characteristics** — In practice, the quality and price of almonds is usually based on the characteristics of the almond kernels, such as presentation and variety, which determine taste and flavour.

Variety in gradings of tree nuts and seeds		Main applications
Almonds	□ Whole kernels □ Whole kernels bleached □ Kernels split or broken	→ as a snack → bakery products, marzipan → almond milk, energy/fruit bars, almond oil

	□ Almond flakes □ Almond dices □ In shell	→ Confectionery, bakery

For Peanuts, the quality is determined by the percentage of defective products by weight, including in-shell pods, damaged pods, and discoloured pods. Kernels also have defects, including damaged, discoloured, and broken or split kernels. Other quality criteria, such as taste and flavour, are subjective and cannot be easily determined based on physical characteristics. UNECE, the most widely applied European standard, is based on the United States standards.

The most important criteria used to define the quality of peanuts are:

- **Grading** – The European Union does not have an official standard for grading groundnuts. The most frequently used grading classification comes from the USA. In this standard, grades are defined by the number of groundnuts counted in one ounce (e.g.,38/42 or 40/50). The size is added to the name of the groundnut type or variety (e.g., Super jumbo Virginia in shell 9/11). However, grading classifications originating from other producing countries may be used, as well.
- **Type** (variety) – There are many varieties of groundnuts. The most frequently cultivated botanical groups are:
  - Runner (most commonly grown in the United States and Argentina),
  - Spanish (most commonly grown in South Africa),
  - Hsuji (Spanish type round shaped variety grown in China)
  - Virginia (large kernel type typically found in gourmet snacks).
- **Form** – The most common forms are in-shell, red skin, blanched, splits and blanched splits.

For sesame seeds there are no specific EU food quality standards. As a general rule, food imports into the EU must be:

- safe and suitable for human consumption;
- free of abnormal flavours and odours;
- free of dirt in amounts that may be harmful to human health (for example, there should be no dead insects or plant residues in your product);
- free of sand, living insects, mites or other impurities.

Quality grading of sesame depends broadly on its colour, oil content (52% for 1st grade, 48% for 2nd grade and 45% for 3rd grade), moisture content and purity level. Generally, 3 broad quality categories of sesame can be distinguished, which are linked to its use in hulled or unhulled form:

- food grade, for direct consumption;
- bakery/confectionery grade, for use in baked goods and snacks;
- crushing grade, for processing into edible oil, mostly from roasted seed.
- It is necessary to roast the oil seeds in order to reduce the amount of moisture that is contained within the seeds before extracting the oil. If the oil is extracted from raw seeds, it will have some impurities inside it, which will bring the quality of the edible oil down to an unacceptable level.

Variety in gradings of sesame seeds	
Sesame seeds	□ Unhulled

	□ Unhulled roasted □ Hulled

Product Information Sheet

As an exporter, you have to prepare a Product Specification or Product Information sheet mentioning:

- → Exact product specification
- → Logistical information (packaging, type of pallet, recommended storage)
- → Ingredient declaration
- → Sensory properties
- → Nutritional values
- → Mycro organism
- → Mycotoxins
- → Chemical values
- → Physical values
- → Additional information (compliance to EU regulation regarding pesticides, heavy metals and size of the nut)
- → Presence of allergens
- → Shelf life
- → Production method

Examples of Cashew nuts and Sesame seeds can be found in Annex 5

In a first enquiry buyers will ask you for a product information sheets together with a laboratory test to check the quality of your nuts. If your nuts meet their required specification, they will ask to send a sample.

Samples

There are no specific requirements for samples of imported foodstuffs. Samples for trade fairs and other promotional events are systematically exempt from local labelling or shelf-life requirements. Product samples must be clearly marked as samples and accompanied by a statement that they are not for sale.

PRACTICAL TIPS:
→ Before entering into a supply contract, consider whether you can keep to it and deliver products of consistent quality in the quantities requested. Always keep extra stock for unforeseen situations.
→ The buying company makes a quality report upon arrival of the nuts. This is done by their own quality inspector or by a hired specialist who makes this report. It is the basis for final payment to you as an exporter. It is advisable for you to have your own quality inspector.
→ If the quality is affected by climatic conditions, keep your customer informed well in advance so that they can take the necessary measures.
→ Always focus on A-quality when supplying high volumes. Category II nuts are more difficult to sell. They mainly end up in the spot market giving you less stability in sales.
→ Consider other uses for LOTs of nuts that do not meet the required quality level.

6.2 Certifications and Voluntary Standards

Phytosanitary Certificate

Before shipping, the nuts or sesame seeds must have an official certificate that they are free from specific diseases. Diseases are often caused by fungus or by insects that are attracted to the nuts laying too long on the ground resulting in defects affecting the quality. Sometimes these defects cannot be detected in an early stage and they come up during transport or in the supermarket.

Since 1 September 2019, the new European Directive (EU) 2019/523 and Implementing Regulation (EU)2019/2072 made phytosanitary requirements more strict.

Product safety Certificates

Buyers will ask you for one of the Global Food Safety Initiative (GFSI) certifications. The IFS and BRC certification are mostly demanded as well as the ISO 22000 certificate. More details can be found in Chapter 4.3.1.

Especially larger buyers and consumer brands require compliance of the processing units and products. Common standards referred to in interviews include the basic African Cashew Alliance (ACA) certification and the hazard analysis and critical control points (HACCP) certification. Audits of processing units are generally carried out by specialised agencies such as SGS, Bureau Veritas, CERES and Control Union.

Halal certification

Islam became a more prevalent religion in the EU. Halal certification follows the principle that everything is halal except for certain non-halal items, such as alcohol, blood, non-fish, dead meat, imolated foods, and swine. Buyers either may ask you for a Halal certificate, a statement from your company mentioning that the origin of your edible nuts is not from animals, part of animal or from alcohol. They also could ask you to complete a Halal Questionnaire.

Kosher certification

In accordance with Jewish dietary law, kosher certified means meat and milk products are not mixed together, animal products from non-kosher food animals are not included, and kosher meat is from animals that are properly slaughtered. Even if it is clear that nuts do not contain meat of milk, buyers may still ask you for a Kosher certificate or a statement from your company mentioning that the origin of your edible nuts is not from animals, fish, grape products or milk. They also could ask you to complete a Kosher Questionnaire.

Organic certification

In order to sell organic edible nuts and sesame seeds, it is important to be aware that a commitment must be made to cultivate all crops organically on a plot of land. In this case chemical contamination can be avoided if only few nuts are cultivated organically and others not.
Depending on region, this may be challenging in an open field situation in a tropical country as Mozambique with various kinds of pests and insects.

If you wish to become an organic farmer or exporter, the following procedure applies:

1. You must be registered and certified by an accredited inspection body. This inspection agency or body (Ecocert, Veritas, OneCert or Ceres) is responsible for checking that you comply with the rules of organic farming. They check if you use organic farming methods such as permaculture, crop rotation and natural pesticides for at least two years.

2. Once you have filled in the necessary forms, an initial check and a series of verifications is carried out to ensure that you are complying with the rules of organic production. An inspection will be done every year. You must pay for these inspections.

3. Once you have been approved by the certifier, you can use the EU organic logo on your products, as well as the logo of the certifier.

4. All organic products imported into the EU must have the appropriate electronic "Certificate of Inspection (e-COI)", which is issued by the certification body on request. These certificates are managed through the Trade Control and Expert System (TRACES). Without an electronic certificate of inspection, products will not be released from their port of arrival in the European Union. They only can be sold as a 'conventional' product.

In 2021, the new regulation (EU) 2018/848 on organic farming will come into force, at the same time as the new official control regulations. As well as verifying that imported products comply with European rules, it will also increase checks and improve possible action against fraudsters.

According to COLEACP, switching to organic cultivation is an issue that must be treated with caution. In many cases the farmgate prices are not higher, so often small farmers do not really benefit from it. The biggest part of the profit is for the exporter (or middleman) who is applying for the organic certificate. He pays the annual fees and does all the paperwork. Another large part of the higher sales price is for the importer and retailer.

Despite the challenges it is worth to apply for organic certification. Typically, the annual certification fees are too high for smallholders. But if a cooperative applies, it is worthwhile.

In addition, organic nuts are popular among vegetarians and flexitarians as a snack. In growing organic food industry, they are used in producing biscuits, muffins, brownies, and cookies. Organic nuts are also used as a topping to create a premium look for bakery products such as cakes and pancakes. Even if organic nuts are more expensive than conventional nuts, they give the highest and purest quality nutrients.

Fair trade certificate

Fairtrade is widely adopted sustainability certification. For small-scale producer organisations, Fair Trade International has developed a nut-specific standard.

The standard specifies safety measures for employees in cashew nut cultivation and in processing facilities. They also specify the payment terms and FairTrade minimum price for conventional and organic raw edible nuts from developing countries, especially from Africa. Fair trade certification is carried out by FLO Cert in Germany.

More information can be found at https://www.fairtrade.net/product/nuts-and-oils

Other certificates

Various other 'fair trade' standards are available on the European market such as:

- Fair for Life (FFL) having a similar proposition as Fairtrade. It is a standard for importers and exporters who can demonstrate decent working conditions and commit to fair sourcing and responsibility towards the cooperatives or farmers. FFL certification is applicable to a broader number of agricultural products. Organic certification is not compulsory for Fair for Life certification holders More information can be found at www.fairforlife.org

Other common sustainable certificates include:

- Rainforest Alliance - https://www.rainforest-alliance.org/
- Ethical Trading Initiative (ETI) - Social compliance of companies working in or from developing countries – www.ethicaltrade.org which is more used in the UK.

6.3 Packing and Hygienic Packaging

Almonds

There is no standard size for almond export packaging, but the most common size for European markets is 25 kg, although many traders take imperial units and 50 lb (22.68 kg) packages.

Additional sizes include 5, 10, and 12.5 kg packages. Common types of packaging include cartons with a plastic liner. Typically, a 20 ft container can hold 450 bags of 25 kg, while a 40 ft container can hold 880 bags of 25 kg.

Almonds should be able to be stored for a minimum of 12 months if kept in ideal conditions. Temperatures between 2° C and 7° C and relative humidity between 50–60% are optimal for storage.

The packaging of almonds must:

→ Protect the product's appearance, flavour, aroma, and quality characteristics. Almonds in containers must not be stored alongside fibres or fibrous materials, as oil-impregnated fibres accelerate self-heating and rancidity.

→ Protect the product from bacterial and other types of contamination, including contamination caused by the packaging material itself. If the cargo's water content is excessively high and container transport is used, moisture-related damage may occur.

→ Not transfer any foreign odour, flavour, colour, or other characteristics to the product. Almond kernels are sensitive to pungent and unpleasant odours.

The safety of materials in contact with food must be evaluated to ensure that no hazardous levels of chemical substances infiltrate into the food.

Cashews

In most African countries, the Raw Cashew Nuts (RCN) are stored in jute bags to ensure adequate ventilation after harvesting and drying. The relative humidity of RCN should remain between 6 and 10%. Plastic (fertiliser) bags and other synthetic bags are detrimental to the quality of RCN. This applies even more to shelled cashews.

Primary storage can last between a few days and a few months. It is crucial for product quality that storage takes place in suitable conditions, such as not in homes. In this case, there is a risk of exposure to moisture and rodents, insects etc.

Most producers in African countries have an interest in moving the products quickly, which entails selling them quickly in order to obtain access to cash for consumption and investment and to prevent product deterioration.

Bags for transporting and storing RCN are an additional input in the cashew industry. Jute bags are preferred. There is a jute bag distribution service in Côte d'Ivoire, but producers and exporters complain that inferior quality bags break after two or three uses. In Benin and Côte d'Ivoire, bags reused from Ghana's cocoa commerce are commonly used for transporting and storing cashews. It is common in Benin to transport RCN in polypropylene bags.

The cashew nut processing industry conditions, stores, and exports RCK in industrial plastic bags and cartons minimizing damage during transport and exposure to humidity during sea freight.

Export packaging of cashews

The processed cashews are packed in vacuum plastic bags to keep them fresh as long as possible, after wards bags are packed in carton boxes (see photos).

Cashews in bulk from Asia are mostly exported in carton boxes. There are 3 different quantities:

- Cashew cartons – The minimum order quantity to buy is a carton. A single carton is typically 50 pound (22 kg), although 25 kg is more common in the EU.
- Cashew pallets – One pallet is 2,000 pounds (around 900 kg) made up of 50-pound cartons.
- Cashew containers – a cashew container/truckload consists of 35,000 pounds (15,875 kg)

The use of paper or stamps with trade specifications is permitted so long as the printing or labelling was done with non-toxic ink or glue. In order to optimise the use of pallet and container space, packaging is frequently cube-shaped. Variable dimensions are compatible with conventional pallet and container sizes.

To prevent cross contamination, packaging materials and articles must be safe and protect food integrity from contamination and damage during transportation or handling. These materials must also ensure food safety and avoid transferring constituents to food.

Peanuts

In the case of shelled peanuts, the most common forms of export packaging are vacuum bags in cartons and jute bags for in-shell peanuts. Other materials include tinplate or paper boxes.

The packaging size for exporting peanuts in bulk vary. Peanuts are frequently exported in bulk quantities of 25 kg, but large bags containing 1 to 1.5 tonnes are also frequently used.

Macadamias

There is no general rule for the size of the packaging for exported macadamia nuts, but the most common type of export packaging is vacuum bags placed in cartons. The most common weight is 25 lbs (11.34 kg) but some exporters deliver nuts in 10 kg packages.

Sesame seeds

Typically, sesame seeds are transported in 25 kg or 50 kg polypropylene (PP) or multi-layered paper bags.

Two of the EU regulations for food packaging are applicable to sesame exports to Europe. The packaging materials not release harmful levels of their components into foods and have no impact on the flavour, odour, or chemical composition of foods.

Information about retail packaging of all nuts can be found in Chapter 4.7

6.4 Labelling rules

Export bulk packaging labelling of almonds must contain the following information:

- Name of the product:
  - **Almonds**: Product name could be ‘almond kernels’ or ‘almonds’. Other trade names regarding form can be used in addition to ‘almonds’, such as ‘whole almonds’ or ‘blanched whole almonds’. It is common for export packaging labels also to include the variety name.
  - **Cashew nuts**: Product name could be either “cashew nut kernels” or “cashew nuts”. Other trade names, specifying form can be used in addition to “cashew nut kernels”.
  - **Macadamias**: Product name could be either “macadamia nut kernels” or “macadamia nuts”. Other trade names specifying form can also be used in addition to “macadamia nut kernels”.
  - **Peanuts**: Product name should indicate the type of peanuts and the name of the product must appear on the label, with either “groundnuts/peanuts” or “groundnuts/peanuts in-pod”.
- Name and address of the manufacturer, packer, distributor or exporter.
- Origin of the product and LOT number.
- Commercial specification: class, size and net weight. It is common, though not obligatory, to specify the crop year and best before date.

- Storage instructions — storage and transport instructions are important due to the high oil content, which can negatively influence the quality of product if not handled properly.

Allergies

With regards to allergy labelling on retail packaging, the EU Regulation requires a clear presentation of allergen-causing ingredients on *prepacked* foods' labels, highlighting them using font, style, or background colour. In practice, importers like Intersnack, PepsiCo and others do not warn about allergies on retail packs. However, it is recommended to discuss this issue with your importer.

In case of *non-prepacked foods* in retail, you do not need to mention the presence of allergies on the export bulk packaging. Buyer may ask for allergen information, especially if it is a HORECA company. You can mention about allergens in your Product sheet (see Annex 5).

It also happens that a buyer asks for a 'Food Allergens Statement'. In this case, you can send him a document mentioning your company name, address, contact details and sign it with a company stamp and mention:

Please be advised that food here may contain these ingredients: milk, eggs, wheat, soybean, fish, shellfish, tree nuts, and peanuts. lupin, molluscs, mustard, sesame, celery, sulphur dioxide (including sulphites).

Retail packaging product labelling must be in compliance with the European Union Regulation on the provision of food information to consumers. This regulation defines clear mentioning of ingredients, nutrition labelling, nutri score (on the front of the pack), origin labelling, contents in grams, barcode, best before date, name, telephone, web site of the importer or of the customer service department. The photos show a pack of cashew nuts from Intersnack France (left) and the retailer Hema in the Netherlands (right).

With regards to food safety, a short warning should be mentioned on the pack of each edible nut saying ‘We recommend not to give this product to young children (0-4 years) because of a risk of suffocation’.

Retail products must also be labelled in a language understood by consumers, so generally it will have to be in the official language or languages of each destination country.

Regarding the labelling of organic products, labels must bear the name of the producer, processor or distributor who last handled the product. The code number of the national certification authority must also appear underneath the organic logo. In the package on the photo, it says ‘FR-BIO-09, Agriculture non-EU’

The *PEFC* logo is added on the package (see photo) to ensures that the *paper* comes from sustainably managed forests by controlled sources, and it can be *recycled*.

Information about retail packaging can be also found in Chapter 4.2

In country packaging

Particularly fruit and vegetable products, such as in Kenya, are increasingly packaged retail-ready in African countries. In order to reduce packaging and repackaging expenses, edible nuts could also be packaged at the source. Moreover, enormous savings can be realised on the use of packaging material throughout the entire value chain.

In this case, the nuts must be graded before packing and shipping. This is to ensure a uniform product which adheres to the customer’s specification.

Product grading at times is a real issue and there could be an opportunity to set up a packing house providing an independent service for producer groups to QC and to uniformly pack for export. The pack house could act as independent quality control.

Logistics and Export documents

Cashew kernels are generally exported by the processing units themselves, with support of service providers. In West Africa, Bolloré Logistics is one of the key export service providers for edible nuts.

The nuts for EU transit go in large majority by (refrigerated) vessels through the port of Rotterdam, in the Netherlands. Part of the trade goes through Hamburg, in Germany, and Felixstowe, in the UK.

Afterwards, the importer arranges the transport by truck to their own distribution centre, or to the distribution centre of the supermarkets.

As Mozambique is not a member of the European Union, all goods entering the bloc must be accompanied by specific documentation as shown below.

Document	Contents / Remarks
Commercial invoice	Contains the basic information on the transaction and is always required for customs clearance.
Customs value declaration	Must be presented if the value of the imported goods exceeds € 20,000
Freight documents (sea freight)	- Bill of Lading - Commercial invoice - Packing list - Certificate of Origin - Inspection Certificate and Phyto-sanitary Certificate - Letter of Credit (depending on the agreed payment term) - Shipper's Export Declaration (SED), which they fill in online - Insurance certificate
Freight insurance	Insurance invoice is required for customs clearance only when the relevant data do not appear in the commercial invoice indicating the premium paid to insure the merchandise.
Packing list	Provides information on the imported items and the packaging details of each shipment. This may also include all relevant information or documentation on certifications, where appropriate.
Customs import declaration (SAD)	This document is used for Customs declarations in the EU. It can be made either by the exporter or importer or their authorized representatives (forwarder). The SAD customs declaration is generally completed electronically by the forwarder with customs expertise using specialist software. It must be filled in correctly in order to be acceptable to the customs authorities.

6.4 Price developments at importer level

6.4.1 Developments in EU import prices

Prices of edible nuts vary according to the type of product, its origin and the level of supply available on the world market. Most edible nuts have only one harvest per year and can be kept dehydrated in special cold stores.

In Asia, cashews are an integral component of culinary preparation. Especially in India, all cashew products are typically used in food processing, resulting in much smaller price differences between fractured and whole kernels on the Indian market.

Several characteristics of the cashew market indicate that it is a still developing market, which increases financial risks. These elements include:

- A limited number of large traders control RCN's export trade.
- Demand for cashew kernels is rising swiftly, but it is uncertain for how long this will last.
- Only a handful of countries have the capacity to process cashew nuts globally.
- The trade of cashew kernels is dominated by a small number of significant international traders.
- Cashew nuts import prices remain high due to the long value chain, with cultivation in Africa, primary processing in Asia, and secondary processing in the Netherlands. However, African countries increasingly start to export directly to EU markets, putting pressure on cashew nuts prices from Vietnam and India.
- There is no internationally recognised pricing mechanism for cashews and no transparent global cashew market price.
- In addition, RCN prices fluctuate significantly between the beginning and end of the harvesting season.

Because of the big variations in availability caused by changeable harvests, weather conditions or disasters (e.g., El Niño), changes in supply have a much larger effect on price levels than changes in demand. Producers in African countries typically lack sufficient information about quality and markets. Therefore, quality is an issue considered less important during price negotiations at farm-level. However, exporters are far more aware of prices.

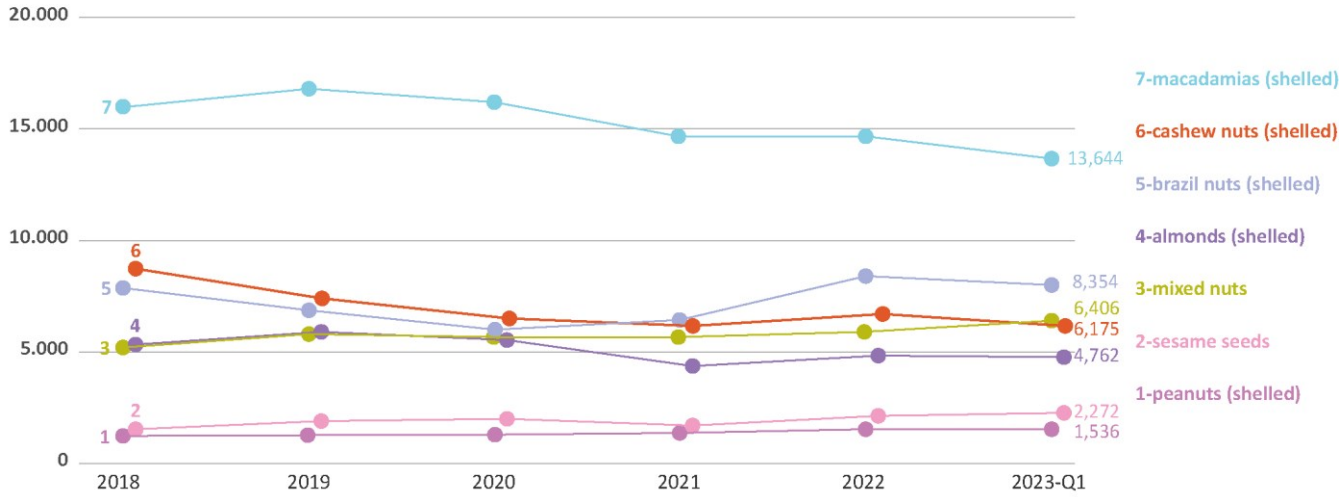
Major influences on price levels

- Prices are set on a global level and speculation based on forecasts for the coming harvest. This can cause rapid changes in prices.
- Other factors which have a significant effect on prices are the exchange rate of the dollar; quality; grade; presentation (whole, shelled, pitted, broken, sliced etc.) and the method of drying/processing which has been used prior to export.

A drop in supply of one type of nut does not necessarily mean a price increase, if substitution by another type of nut is possible, which is often the case. Sometimes food manufacturers switch to using more almonds instead of hazelnuts, because the hazelnut prices increased as a result of a shortage in supply.

An indication of prices can be obtained by the EU average annual import values/tonne of the selected types of nuts given in Figure 29. These values only give an indication and should be interpreted with caution, as they may vary across EU countries.

figure 29 **Average value/ton of edible nuts and seeds imported by the EU, 2018-2023**
Value in €



SOURCE: ITC Trademaps (2023)

Except peanuts and Brazil nuts, values of the other nuts decreased considerably in 2021 mainly attributed to slowdowns in demand and disruptions in deliveries due to COVID. The average prices of Macadamias continued to show a decreasing trend after 2021. Between 2018 and the 1st quarter of 2023, the macadamia average prices decreased from € 16,013 to € 13,644. Almonds showed a similar trend with prices decreased from € 5,339 to € 4,762.

In the same period, EU imported average prices of cashew nuts decreased substantially from € 8,731 to € 6,170 in 2021 and remained at that level in 2023, after a peak in 2022. Exports prices from Vietnam continued to decrease in 2023 following an overproduction in West Africa and a surplus in stock levels due to less demand from the USA in 2022/2023.

On the other hand, the average prices of peanuts rose steadily by 25% from € 1,234 to € 1,536 between 2018 and 2023 (Q1), while average prices for mixed nuts rose by 20% from € 5,202 to € 6,406.

In the same period average prices of sesame seeds increased by 45% from € 1,542 to € 2,272 which can be attributed to imports of higher quality sesame seeds from Guatemala and Pakistan, which was at the expense of lower quality sesame seeds from India.

Since 2022, there have been shortages in the supplies from African countries due to the intensified political tensions in Niger, Sudan and Ethiopia. This implies an opportunity for sesame seeds from Mozambique.

The average prices of Brazil nuts were relatively high and average values/ton picked up in 2022, reaching € 8,354 in 2023.

6.4.2 Developments in export prices from supplying countries

The major origin country for a particular type of nut often determines the basic reference price for that product world-wide.

Table 33 Average value/ton (in €) of edible nuts and seeds imported by the EU, 2018 – 2022
Main competing supplying countries (incl. from Africa)

	2018	2020	2022
Macadamias (shelled)	**16,013**	**16,181**	**14,698**
- South Africa	15,447	11,960	13,034
- Australia	14,384	12,398	12,717
- Kenya	11,515	9,887	9,801
- Malawi	12,032	12,246	1,911
- Guatemala	13,122	13,235	11,052
- Mozambique	-	-	12,610
Cashew nuts (shelled)	**8,731**	**6,485**	**6,715**
- Vietnam	10,387	5,366	6,167
- India	8,448	6,863	7,249
- Cote d'Ivoire	8,334	4,167	4,632
- Nigeria	3,112	1,554	683
- Mozambique	6,457	3,504	4,777
- Burkina Faso	5,431	5,192	4,818
Almonds (shelled)	**5,339**	**5,530**	**4,834**
- USA	5,311	4,772	4,628
- Spain	6,304	6,333	5,475
- Turkey	8,343	6,815	6,319
- South Africa	8,044	5,278	6,325
- Mozambique	3,579	4,518	4,538
- Benin	7,328	5,414	5,383
Mixed nuts	**5,201**	**5,790**	**5,902**
- USA	4,348	4,697	5,363
- Turkey	4,543	5,083	4,933
- Vietnam	6,252	6,865	7,393
- South Africa	2,765	2,642	3,061
- Ethiopia	2,395	2,984	3,074
Peanuts (shelled)	**1,234**	**1,291**	**1,548**
- Argentina	1,010	1,110	1,201
- India	827	972	1,185

- Sudan	1,537	812	1,028
- USA	963	978	1,250
- Senegal	571	665	732
- Malawi	659	746	1,067
- Mozambique	593	627	645
Sesame seeds	**1,542**	**1,833**	**2,145**
- Sudan	2,283	1,210	1,570
- India	1,377	1,420	1,716
- Nigeria	928	1,014	1,063
- Ethiopia	1,220	1,280	1,619
- Tanzania	1,023	816	1,135
- Mozambique	1,202	151	606
- Burkina Faso	663	925	1,092
- Guatemala	1,569	1,839	2,264

Source: ITC Trademaps (2023)

For example, the USA is the reference for almonds, Argentina and the USA for groundnuts, Vietnam for cashew nuts, Australia and South Africa for macadamias etc.

To get a better idea, it is best to compare the prices in terms of average value/ton levels - based on export values - for the selected nuts between 2018 and 2020 (table 33).

Except Burkina Faso and Senegal, the average prices of Western African countries showed a decreasing trend, especially for cashew nuts, almonds and peanuts.

Macadamias. South Africa, Kenya, and notably Malawi experienced a decline in macadamia nut values. The average prices of Mozambique's exported macadamia nuts were comparable to that of Australia.

Cashews. The average price of cashews in Vietnam, Cote d'Ivoire and most notably Nigeria, decreased significantly, while prices of Vietnam rose after 2021. In 2020, average prices from Mozambique were € 3,504 being almost half of the level of € 6,457 in 2018. But in 2022 average Mozambican prices picked up.

After 2021, the average price of shelled cashews in Vietnam, Cote d'Ivoire, and Nigeria declined considerably, while prices in Vietnam increased again to € 6,167 in 2022. In 2020, the average Mozambican price was € 3,504, which was nearly half of its € 6,457 level in 2018. But in 2022, average prices in Mozambique increased to € 4,777.

Almonds. In 2022, the Mozambican price for shelled almonds reached a comparable level as the United States, at € 4,538.

Mixed nuts. As shown in Table 32, the average price of mixed nuts increased in all countries, including South Africa and Ethiopia.

Peanuts and sesame seeds. The average price of shelled peanuts and sesame seeds (with the exception of Sudan) has shown similar upward tendencies. However, the average price of peanuts in Mozambique was half that of Argentina, and the price of sesame seeds was less than half that of Sudan or India.

This should give Mozambican exporters sufficient reason to increase their price levels considerably if they can deal directly with foreign buyers in new export markets, comply with

quality requirements and overcome all trade barriers. As an exporter, you can expect to receive a better commercial price if you focus on higher quality or organic certified nuts or sesame seeds.

Practical Tips

Create a free account on www.tridge.com to obtain basic sesame market information. The paid service includes detailed pricing and market intelligence insights.

Mundus Agri (https://www.mundus-agri.eu/) is a paid service with price charts with export prices of the cashew, macadamias, peanuts, almonds, pistachios, hazelnuts and the international oilseeds markets. Although you can also create a free account with limited access to their information.

Evolution and forecast of EU import prices for 2024 and 2025

According to reports, the European spot market was active throughout March 2023, with limited supplies boosting buyers' interest. Traders anticipate that the European market will remain active but challenging. They are awaiting deliveries but Europe's demand is primarily for prompt shipments. Only a few inquiries were received for Q4 2023 and Q1 2024. In Europe, there is a shortage of high-quality cashew nuts.

The market sentiment in Europe is said to have improved, with some traders reporting an increase in demand and inquiries as buyers for cashews and almonds seek to secure in contracts at the current low prices. In 2024 and 2025, cashew nut prices are anticipated to rise again due to increasing demand and the increased availability of cashew nuts of superior quality. The prices of peanuts and sesame seeds continue to increase as a result of sustained demand and a decrease in supply from the principal African supplier as a result of ongoing political tensions. The almond industry in the US is uncertain about future demand, so almond prices are not expected to increase considerably relative to their level in 2023.

6.5 Price structure, margins and retail prices

6.5.1 Margins in the edible nuts trade channels

The margins charged in the edible nut trade channels are influenced by quality, supply, added value in processing, conventional or organic product amongst others. In EU countries, wholesale and retail prices for edible nuts and the margins associated with them vary significantly.

The following are very rough guidelines on the mark-up added to the buying price by each type of trader:

Trade channel	Average margin
Agent/broker	2-5% (depending on quantity)
Importer/Processor/Packer	30 - 35%, which includes roasting, salting, packing, storage

	costs and transport. But margins may be higher depending on additional coating costs and marketing costs.
Wholesalers	20 – 30%
Retailer	100% or more (excl. VAT)

Some examples of calculations of retailer prices are:

For cashew nuts (shelled):

- → Based on an average CIF import price of € 6.20/kg plus a 35% importer's margin, a wholesaler buys the salted, roasted cashew packed nuts for € 8.37/kg.
- → After adding their margin of 30%, wholesalers sell them for approximately € 10.88/kg.
- → Retailers' margins are large because they sell mostly in small packages (150 to 250 grammes), giving average retail prices for roasted, salted cashew nuts that can exceed € 21.76/kg + 20%VAT = € 26.10/kg.
- → Without VAT, the ratio CIF – Retail price is 3.5 (=multiplying coefficient).
- → If the retailer purchases directly from the importer, his margin could be as high as 150%. And when he purchases directly from the exporter, his margin could reach 250%.

For sesame seeds:

- → Based on an average CIF import price of € 2.20/kg plus a 30% importer's margin, a wholesaler buys them for € 2.90/kg.
- → After adding their margin of 30%, wholesalers sell the sesame seeds for approximately € 3.70/kg.
- → Retailers' margins are large because they sell sesame seeds in small packages (50 to 100 grammes) and the price for sesame seeds can exceed € 7.4/kg + 20% VAT = € 8.87/kg.
- → Without VAT, the ratio CIF – Retail price is 4.0 (=multiplying coefficient)

Margins on some luxury nuts (pine nuts, macadamias, smoked almonds and pecan nuts) can be higher because they are slower moving.

6.5.2 Average retail prices of edible nuts in the EU

Recently, the retail sector has become increasingly polarised in recent years, with a shift towards either the discount or premium segment. The main characteristics of the European food retail market are consolidation, fierce competition and lower prices in the discount segment. Nevertheless, edible nuts have a particular attraction for both categories of retailers because of direct product profitability (gross profit less handling and display costs). Compared to other products, the cost of keeping the shelf filled is low and edible nuts do not take much space in their warehouse or distribution centre.

In supermarkets, hypermarkets and discounters the majority of edible nuts are sold in packed form. The pack sizes of edible nuts from importers/processors for consumption as a snack tend to be uniform, but pack contents vary in weight from 200g to 500g. Following the success of loose sales of nuts in organic stores, supermarkets are increasingly offering loose sales of organically certified nuts.

As a result of recent food price inflation and rising energy costs, consumers tend to purchase fewer conventional luxury nuts and organic nuts compared to peanuts and other savoury snacks.

However, prices of cashew nuts, pistachios, and nut mixtures have recently decreased, making them more accessible to consumers. Besides, consumers who are more interested in buying nuts as a specific ingredient for a recipe seem less concerned about prices.

There is often little or no difference between retail prices for the same items within different supermarkets. At the open market, prices of fresh nuts are less than at nut specialty shops and delicatessens, where they tend to cost more.

Cashews

Depending on the country, retail chain and brand, the prices of the cashew nuts sold to end consumers vary significantly across Europe. The prices of salty roasted cashew nuts usually range from €20/kg to €25/kg, while prices of natural unsalted kernels commonly vary between €12 and €15/kg.

Almonds

The average retail prices for raw, non-peeled almonds in Europe usually fluctuate between €10 and €15/kg, depending on the size and brand of the packed nuts. For some specific varieties, such as Nonpareil, prices are higher.

Peanuts

The prices of salty roasted peanuts usually range from €6/kg to €10/kg, but this product is very different from the commonly imported raw kernels which undergo processing after importation.

Prices also vary greatly depending on the type of imported product (variety, size, origin, presentation etc.).

In 2021 the prices for groundnuts offered by EU importers were in the following range:

- Argentina Runners split - €1.25/kg - €1.35/kg
- China Hsuji - €1.35/kg - €1.55/kg
- USA Runner - €1.25/kg - €1.30/kg

Macadamias

The retail prices of salty roasted macadamia nuts usually range from €25/kg to €45/kg. This price indication does not tell macadamia nuts suppliers a lot as the final price is very different from the export price due to the addition of many other costs, such as transport, roasting, packing, sales and profit margins.

Sesame seeds

The wholesale and retail sales prices for sesame seeds and related margins on the European market also show big variations. In addition to seed quality, processing stage and conventional or organic quality, the size of the package is an important factor. See example in the previous section 6.5.1.

6.5.3 Detailed retail prices of edible nuts in selected EU countries

As is shown in Table 34, retail prices for tree nuts in the selected countries range from €4.02 to €12.05 per 250g bag, with natural nuts priced 25% to 30% less than salted, grilled, or flavoured nuts.

Table 34. Retail prices of edible nuts and sesame seeds in 2023
In € for 250g including 20% VAT

Edible nuts	Organic supermarket (France)	Carrefour (France)	Hema (Netherlands)
IN BAGS			
Almonds natural	5.70 – 6.55 (origin: Italy)		5.02
Almonds grilled, salted	7.95 (Italy/ France)	8.87 (Netherlands, Benenuts) 7.44 (Germany, Seeberger) 7.90 (France, Daco Bello) 4,02 (France, Carrefour brand)	
Almonds slivered	4.03 (Italy/ France)		
Almond powder	4.08 (Italy/ France)		
IN LOOSE FORM			
Almonds natural	3.88 (Italy)	4.48 – 5.73 (organic)	
Almonds grilled, salted		5.06 (organic)	
Almonds blanched		5.60 (organic)	
Almonds caramelized		4.03	5.26
Almonds slivered		5.51 (organic)	
Almonds cubes		6.08 (organic)	
Almonds in black chocolate		6.08 (organic)	
IN BAGS			
Cashew nuts natural	7.25 (Vietnam)		6.25
Cashew nuts grilled	6.80 (Vietnam/ France)	5.98 (India/ France, Vico)	

		9.22 (Burkina Faso, Ethiquable)	
Cashew nuts, salted		5.98 (India/ France, Vico)	
Cashew nuts grilled, salted		7.82 (Vietnam, Seeberger) 6.74 (Asia, France, Carrefour brand)	6.25
Cashew nuts, tomato and spices		5.48 (Asia, France, Carrefour brand)	
IN LOOSE FORM			
Cashew nuts natural	5.56 (Vietnam)		
Cashew nuts, roasted in curry	7.66 (Vietnam)	6.73 (Organic, Vietnam)	7.58
Cashew nuts, herbes de Provence		7.85 (Organic, Vietnam/France)	
Cashew nuts, with black garlic		7.85 (Organic, Vietnam/France)	
Cashew nuts, with Italian mix (piment, tomato, oregano, garlic)		7.85 (Organic, Vietnam/France)	
IN BAGS			
Peanuts grilled, salted	3.76 (Egypt)	2.86 (Netherlands, Benenuts) 2.16 (Carrefour brand)	
Peanuts with honey **Peanuts with paprika coating**			2.50 2.58
IN LOOSE FORM			
Peanuts, grilled salted	2.98 (Egypt)	3.12 (Organic, Egypt/ France)	
Peanuts in shell		2.58 (Organic, China, Netherlands)	
Macadamias – in Bags	11.12 (Kenya)	12.05 (Germany, Seeberger)	
Macadamias – in loose form	8.28 (Kenya)	11.32 (Organic, Kenya)	
Mixed nuts – in bags (cashews, hazelnuts, almonds)		4.98 (Organic)	5.02 – 6.94
Mixed nuts – in loose form (almonds, hazel, cashew, raisins) (almonds, pistachios, pumpkin seeds)		5.43 (organic, Indian style) 4.90 - 6.79 (organic)	
Pecan nuts – in loose form	8.66 (Mexico)	11.41 (Organic, Mexico, USA)	
Sesame seeds – in loose form	1.68 (Paraguay)		

Source: Store checks at Le Grand Panier, Carrefour and Hema (2023)

The price of salted, grilled, or flavoured cashews ranges from €5.48 to €7.82, with cashews from Burkina Faso of the 'Ethiquable' brand being more expensive. The prices of loose cashews are not significantly different from those of cashews sold in packages. Most of the cashew nuts sold at Carrefour are sourced in Vietnam and processed in France.

The most expensive nuts are macadamias and pecans, while mixed nuts and peanuts are relatively inexpensive, even when compared to cashews and almonds. The variety store Hema in the Netherlands sells its own mid-range brands.

An interesting observation is that coated peanuts are relatively inexpensive. The same is true for the availability of more sweet and salty combinations of mixed nuts with seeds and beans. Main reason is to make nuts more accessible to a larger consumer base.

7. OPPORTUNITIES FOR MOZAMBIQUE IN EU MARKETS

In 2020, agricultural land (% of land area) in Mozambique was reported at 52.7% in 2020, according to the World Bank. Mozambique has huge tracts of fertile agricultural land, and a very large rural population living under poverty levels, demanding resources and ways of life.

The importance of agriculture

Agriculture accounted for more than 25% of Mozambique's GDP in 2019 and employed almost 4.3 million families being more than 70% of the country's labour force. Rural livelihoods in Mozambique are predominantly dependent on agriculture. Most producers are smallholder farmers, and the majority of their crop is rain-fed, making it susceptible to rising temperatures and variable rainfall.

According to recent estimates, 46% of Mozambicans live below the poverty line, and due to the country's rapid population increase, this percentage is rising. In order to tackle chronic undernutrition, ensure poverty reduction, and promote job development, an increase in agricultural productivity and increased access to markets are priorities to tackle food insecurity.

There are roughly 400 commercial farmers – primarily producing sugar, soybeans, bananas, rice, vegetables, fruit, cotton, tobacco and also edible nuts. Maize and cassava, are grown by 80% of all Mozambican small-scale farmers and make up more than one-third of cultivated land.

Challenges in climate change

Mozambique's climate varies from tropical and subtropical in the north to semi-arid steppe in the south. October-March is hot and rainy, while April-September is cooler and drier. The rainy season begins in November and peaks in January/February. Rainfall in Mozambique varies from 1,800 mm near Zambezi Delta to 300 mm in lowlands, with northeast monsoon affecting highlands and Indian Ocean cyclones causing heaviest rainfalls.

It is predicted that over the next 40 years, yields of main crops such as cassava, sorghum, soybeans, and groundnuts could decline by 2–4%, particularly in the central region. Some drought-sensitive main food crops, such as maize, could decrease by up to 11% on average between 2046 and 2065, and by up to 45% in regions such as Tete. According to a climate risk profile from USAID, the spread of existing and new agricultural pests (fall armyworm) and more temperature fluctuations, pose an unprecedented threat to maize and sorghum. Increased flood and drought risk is likely to have a negative impact on key value chain crops such as soy, pigeon pea, and sesame, thereby disrupting local markets and producers' income.

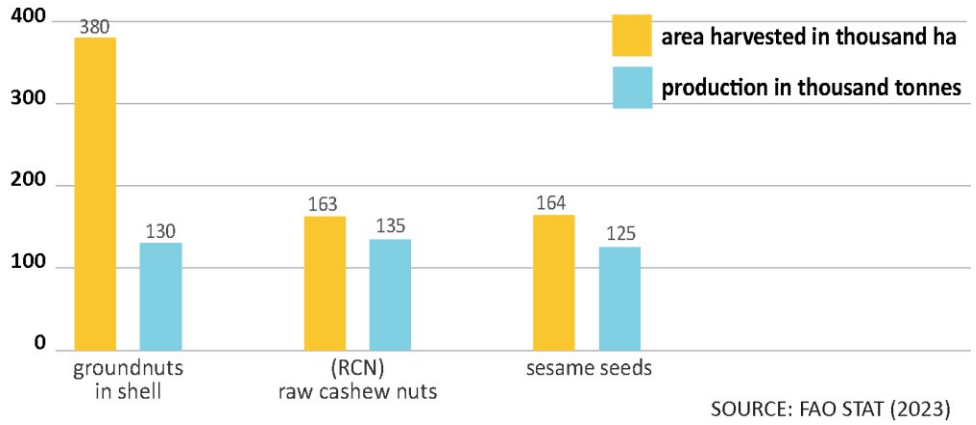
The need for diversification and processing
It is essential for smallholder farmers to diversify more into cash crops. With its wide geographical extent, Mozambique has the climatic environments suitable for the cultivation of various types of nuts (cashew, macadamia, pecan, almond) and grains of oilseeds (peanut, sesame). It also has the potential to strengthen the processing of these crops. With only 16% of land suitable for farming currently being cultivated.

7.1 Types of nuts grown and oilseeds in Mozambique

The total area harvested in Mozambique for the 3 main crops - raw cashew nuts (RCN), groundnuts and sesame seeds – totalled 706 thousand ha in 2021. Around 54% was used for groundnuts according to FAO. Harvested areas for raw cashew nuts (RCN) and sesame seeds accounted each for approximately 23% of this total. The harvested area for macadamias is estimated between 6 – 10 thousand ha. Mediterranean almonds and pecans are also grown in Mozambique, although on a limited scale.

The estimated production of raw cashew nuts (RCN) was 135 thousand tonnes. As shown in Figure 30, when comparing production to harvested area, the production figures for RCN and sesame seeds were significantly higher than those for groundnuts. A main reason is that generally larger areas of land are needed to produce 1 ton of groundnuts.

figure 30 **Area harvested and production of nuts and sesame seeds in Mozambique, 2021**



7.1.1 Groundnuts

Most of the groundnut (in-shell) are produced in the northern provinces of Nampula, Zambezia and Cabo Delgado and in the southern provinces of Inhambane, Gaza and Maputo.

Varieties of groundnuts
There are thousands of groundnut cultivars, with the four most prevalent market groups being:

- Spanish
- Runner
- Virginia
- Valencia.

All four varieties are cultivated in Mozambique, with the majority flourishing in the Mogovolas region. Due to distinctions in flavour, oil content, size, shape, and disease resistance, specific cultivar groups are preferred for particular applications.

The diverse cultivars are interchangeable for many purposes. The majority of groundnuts sold in the shell are of the Virginia variety, with some Valencias chosen for their enormous size and attractive appearance.

Typically, Spanish groundnuts are used for confections, salted nuts, and peanut butter. The vast majority of Runners are used to create peanut butter.

The numerous varieties of groundnuts are distinguished by their branching patterns and branch lengths. There are two primary forms of growth: cluster and runner. While bunch types grow vertically, runner types grow low to the earth.

Virginia types and Runner types differ from Valencias and Spanish types in that neither bloom nor produce fruit on the primary stem of the plant.

The difference between a Virginia and a Runner lies in the extent of their pods. If at least 40% of pods use a 34/64-inch roller standard, then technically this variety has enough 'fancy pods' to qualify for the Virginia market.

Production volume
As shown in Table 35, approximately 130 thousand groundnuts (in shell) with an approximate value of € 26,000 were produced in Mozambique in 2021. The production of groundnuts comprised one-third of the total output of the three crops, which was 390 thousand tonnes. Since 2018, groundnut production has increased at a CAGR of 1.1%. The decline in 2020 may be attributable to Cyclone Eloise.
The majority of groundnuts produced are used to extract oil for domestic and consumption and for exports. As a high-quality cooking oil, it is an essential protein source for both humans and animals. Additionally, the oil provides much-needed foreign currency. The production of groundnut oil more than tripled between 2018 and 2020, from 4,633 to 15,010 tonnes.

Table 35. Production and processing of main nuts and sesame seeds, 2018 – 2021
Volume in tonnes and value in € thousand

Mozambique	2018		2020		2021		
	Volume	Value	Volume	Value	Volume	Value	CAGR *
TOTAL	**347,747**	**82,832****	**421,935**	**108,844****	**390,161****	**109,582****	**2.4%****
Groundnuts in-shell	123,438	24,919	103,000	20,793	130,500	26,243	1.1%
Groundnut oil	4,633	na	15,080	na	na	na	Increased !
Cashew nuts in-shell (RCN)	130,000	21,951	143,000	24,147	135,161	24,823	0.8%
Sesame seeds	74,283	35,962	132,000	63,903	125,000	60,514	11.0%
Sesame oil	15,393	na	28,855	na	na	na	Increased

*CAGR = Compound Annual Growth Rate 2018 – 2021 (based on volume) Source: FAOSTAT (2023)
** Excluding groundnut oil and sesame oil

Use of groundnuts in Mozambique

Groundnuts are significant as an essential source of feed for animals and a component of rural and urban diets. Mozambican people consume the groundnut in a variety of forms, including the pods, roasted or boiled. In addition, peanut butter is used as an important condiment in traditional African cuisine. The groundnut, once considered a food crop, is now considered a cash crop due to its economic significance and ability to generate income for Mozambican smallholder farmers.

Low production yield and a need for improvements

Despite the fact that four local varieties of groundnut are cultivated in Mozambique (Ramas, Virginia, Spanish, and Valencia), low production yields are due to a number of issues.

- **The cultivation of groundnuts is on many small plots** (less than 1 ha) and smallholder (mostly women) have to deal with climate change which means more frequent drought stress due to storm variability, cyclones and more diseases and pest attacks. Besides, the inputs of quality seeds and not sufficient fertility of the soil is not high. Besides, there are infrastructure-related issues as many farmers live in remote areas.
- **Most smallholder farmers use traditional cultivation techniques** and struggle with seed varieties that are not uniform in size or colour.
- **Smallholder farmers often depend on traders or primary buyers** who do not give the proper advice on cultivation. Therefore, they have limited technical knowledge to increase productivity. Their post-harvest practices encourage aflatoxin contamination rather than prevent or limit it. More high-quality agricultural inputs and education in effective agricultural practice are needed.

Olipa-Odes, a local horticultural NGO located in the northern province of Nampula, requested technical assistance in pre- and post-harvest groundnut management from CNFA, a USAID-funded international development organisation. If they are able to improve their production methods with the help of technical assistance, farmers can sell groundnuts to Ikuru and Olam International, two large importers that export to EU markets. Farmers can also sell to Mozambican exporters and cooperatives can export shelled peanuts to EU processors. In 2023, there is an expected shortage in peanuts supplies from India and USA due to a lack of rainfall.

Food safety and reducing aflatoxin contamination

According to a 'Nutrition Smart Agriculture profile on Mozambique', the Mozambican national food control system requires better coordination, resource utilization, capacity building, and quality control mechanisms. This would benefit the laboratory INNOQ and INAE by improving communication and technical regulations.
Investments in technology, such as upgrading regulations and ensuring inspectors follow clear protocols, would also benefit INNOQ. Additionally, they might perform analyses and, for instance, use a straightforward test for exporters or cooperatives to find out whether groundnuts contain aflatoxin. It will save time if this can be performed in Mozambique rather than having to conduct these analyses in South African laboratories.

Updates in analytical and sampling methods would enhance food safety and quality assurance at the national level as well. Increased consumer awareness on food safety is crucial for promoting safe and high-quality food.

Aflatoxins, produced by certain fungi, can cause serious illness and death in humans and animals. They accumulate on tropical crops and grains, contaminating various food products like maize, sorghum, cassava, paprika, melon seed, sesame, rice, yam chips, chili, but also in macadamia nuts, and sesame seeds.

In Mozambique, aflatoxin contamination in maize and groundnuts is widespread. To reduce contamination, sound agronomic practices and post-harvest practices must be followed.

In February 2019, Mozambique's Ministry of Agriculture and Food Security approved the registration of two Aflasafe products, which proved to be an innovative and simple way to control aflatoxin in groundnuts and maize.

More information can be found at:
https://www.aflatoxinpartnership.org/about-aflatoxin/

PRACTICAL TIPS TO MINIMIZE AFLATOXIN CONTAMINATION

- → Properly dry groundnuts to a safe storage moisture level.
- → Use new/clean gunny sacks or polybags to store groundnuts. Only put clean sorted kernels into bags. Bags should not be placed directly on the floor.
- → Do not heap groundnuts in shells/pods on the floor/ground instead the storage facility.
- → Maintain proper storage facilities (well-ventilated, dry and low relative humidity) and take care not to expose groundnuts to moisture during transport and marketing.
- → Control insect and rodents during storage.
- → Do not mix new with old groundnut stock.

7.1.2 Cashew nuts

The cashew tree is a Brazilian native. It was brought by Portuguese explorers in the 16th century to Mozambique and many other tropical countries. It was a minor agricultural product for many centuries, farmed mostly for its fruits and cashew trees were used in the forestry industry for its quick growth, reforestation, and timber production. Due to the fact that RCN must be further processed before consumption, which is primarily done in Asia, and their relatively high price, the country's consumption of cashew nuts by Mozambican people is still quite low.

In Mozambique, 1,400,000 families rely on the cashew tree (Cajueiro) for their livelihood. About 30 million trees are thought to have been planted and to be producing, mostly in the Nampula but also in Zambezia, Cabo Delgado, Ihambane, Gaza, and Sofala.

Production volume
Around 135 thousand of raw cashew nuts (RCN) were produced in 2021/2022, valued at € 24,823 and Mozambique accounted for 3.5% of global output. Since 2018, RCN output has grown at a CAGR of 0.8%, reaching a peak of 143 thousand tonnes in 2020 as is shown in Table 35.

The cashew sector in Mozambique enjoyed its glory in the 1970s. For example, in 1973, it reached a peak of 240 thousand tonnes. The global market has undergone significant modifications since then. Vietnam and India have become the biggest importers, producers, and exporters of cashew nuts. The majority of the production of RCN is done in Sub-Saharan Africa with Côte d'Ivoire being the biggest producer.

Processing of cashew nuts
At the end of the 19th century, a number of entrepreneurs from the Indian state of Goa created the first industrial cashew nut shelling process to increase the value of the cashew nut. Since the beginning of the 20th century, Indian processors have been importing Raw Cashew Nuts (Raw Cashew Nut, RCN) from Tanzania and Mozambique. This is due to the long history of trade between East Africa and India.

Today, industrial processing of RCN in Nampula comprises 17 formal factories with a total installed capacity of around 107 thousand tonnes, employing 17,000 workers, 57% of whom are women. Locally, just 40,000 tonnes of cashew nuts are processed. Utilization of the capacity has grown from 35% to 50% in recent years, with 13 active factories, among which there are two industrial-scale processors in Maputo. There are four factories in the pipeline and five dormant facilities in Zambézia. The primary processed cashew kernels are exported to EU and American buyers for secondary processing (i.e., roasting and flavouring).

According to a feasibility study regarding the competitiveness of the cashew nuts industry conducted by Nitidae, Mozambique was in 2019 the 9th cashew producing country and the 4th cashew processing country globally.

The processing sector benefits from the following advantages:

- **Mozambican factories are close to the cultivation areas** and therefore pay lower prices for procurement of raw cashew nuts (RCN), compared to than factories in Vietnam, India, and Ivory Coast.
- **A tax on RCN exports to Asian countries** although these countries can benefit from economies of scale as a result of their increasing mechanization of cashew processing.
- **Minimum salaries in Mozambique** have been lower since 2014 and the cost of taxes to employ unskilled labour in Mozambique were much lower in 2019 than those from the Ivory Coast, India and Vietnam.

TRADE AGREEMENTS WITH THE EU FOR CASHEW NUTS AND OTHER TYPES OF NUTS

The World Trade Organisation (WTO) Trade Facilitation Agreement (TFA) and the Economic Partnership Agreement (EPA) with the EU are two significant trade agreements that Mozambique has concluded in recent years that are expected to strengthen trade facilitation reforms.

Mozambican exporters can benefit from the EU-SADC EPA agreement. The advantages are:
→ Duty-free and quota-free access to EU markets
→ More flexible rules of origin and cumulation provisions
→ Access to competitive capital
→ Imports of intermediate goods into Mozambique due to a tariff lag schedule for several EU products.

Maximising the benefits of the agreement will require increased awareness among the various stakeholders involved, particularly traders, investors, and civil servants. It is also crucial to implement the agreement's provisions effectively.

On the other hand, **Mozambique faces numerous disadvantages** when compared to its main competitors.

- **High taxes** are paid by Mozambican cashew processing companies, while India and Ivory Coast provide strong tax relief and credit to support the cashew sector.
- **There is a lack of subsidies** to Mozambican processing companies
- **Import of almost all processing machines**, spare parts, and inputs, and pay import taxes.
- **The financial cost of working capital loans** is higher than in competing countries. The procurement is concentrated (2 to 3 months) and the interest rate processors have to pay is higher than in Asia or even Ivory Coast.
- **The availability of qualified technical and administrative experienced persons** is limited. Therefore, labour costs for skilled personnel are higher than in Asian countries.
- **Low yields in terms of quantity and quality**. All factories in Mozambique achieve lower yields than their counterparts in India and Vietnam due to a lack of mechanisation experience, worker expertise, and factory organisational flow.

In June 2023, the number of cashew processing units in Nampula province, Mozambique's largest production area, decreased from 37 to 6. This has led to demotivation among producers and farmers, estimated at over 300,000. The province has over 37 companies, including 17 processors, 13 factories, 4 ‘fabriquetas’ (small factories), and 20 exporters. However, only six of these units are operational, resulting in a rising unemployment. To address this issue, the government aims to improve the cashew value chain, ensuring fair remuneration for producers and motivating them to expand production.

Main challenges in the Mozambican value chain

Improving yields. Mozambique cashew is characterized by some of the lowest yields and quality levels in Africa (3 kg/tree and a kernel out-turn ratio of 44/45), despite government efforts to increase production.

Quality level. Cashew production faces low quality levels because of aging trees, pests and diseases. Key challenges for production include replacing aging trees with improved root-stock and stepped-up anti-fungal spraying.

Tax on exports. RCN exports were subject to an 18% tariff on the FOB price in 2001. The purpose of this law was to encourage domestic processing. As an unforeseen consequence, the national production of RCN dropped by almost half compared to its level in 1972, when Mozambique was the world leader in cashew exports.

Raw cashew nuts (RCN). The majority of cashew exports are raw nuts, that are mostly sold "informal" (no tax).

Problems in distribution of seedlings and chemicals. The government has provided subsidies for seedlings and chemicals to address these issues, but inefficient distribution has not stimulated anticipated volume increases. Besides, producers were not well informed on using the chemicals to meet international requirements. Therefore, quality remains a significant challenge.

Smuggling. For producers, gaining access to capital to penetrate this market poses the greatest obstacle. Whereas for processors, particularly in the secondary sector, smuggling is a major issue. The government establishes a minimum price for cashew kernels. It seems that illegal people arrive and offer higher prices, prompting producers to sell to them so they can export the goods, often without paying taxes.

More mechanical processing in Mozambique. However, if cashews are processed manually, processing companies should ensure that each worker has the appropriate protective equipment (gloves, etc.) to reduce the risk of injury. This conduct was condemned by the international community. It happens that companies minimise or disregard protective equipment for their employees, to save money and reduce product prices.

More cooperation with Vietnam and China. The government entered into new agreements with Vietnamese and Chinese companies. In future, this will consume a substantial portion of the RCN that would otherwise have been processed by Mozambican companies. This could further discourage them.

- In May 2023, Vietnam and Mozambique are promoting agricultural cooperation and development through a delegation meeting in Maputo. The delegation assessed agricultural cooperation projects and exchanged prospects for future cooperation. The meeting took place during the fourth session of the Joint Committee of Intergovernmental Vietnam and Mozambique.

- China is selling land in an industrial park on Hainan for a project to transform Mozambican cashew nuts. The project, led by Tiley Real Estate, requires cooperation from the Mozambican government to ensure cashew nuts supply. It aims for in-depth transformation, including extract production for food and cosmetic industries. The project is part of an industrial park in Haikou, focusing on agricultural processing.

Mozambique's cashew regulations have evolved with three modifications: mandatory registration, investment in processor production, and removing input subsidies to engage the private sector.
In May 2023, the Mozambican government approved a law to create a financing line and subsidize cashew prices.

The PROMOVE Agribiz programme

Despite several initiatives to increase productivity and quality of cashew nut production and raise the percentage of processed cashew nuts (currently accounting for 30% of total production), cashew production is still not competitive.

The main reasons are:

- Weak governance structure of the value chain, where key stakeholders such as farmers, service and input providers are unorganized, under-represented and not well linked.
- The high dependency of farmers on external inputs and subsidies.
- The presence of illegal buyers and an unregulated environment for the purchase of raw cashew nuts.
- Crop productivity is negatively affected by insufficient service provision, low usage of inputs, the high vulnerability of Mozambican cashew trees to pests and diseases, and low replantation rates.

PROMOVE Agribiz aims to improve rural competitiveness and food security by cultivating commercial partnerships with businesses and expanding the availability of commercial operational and support services along the value chain – see Box 10. The European Union and the German Federal Ministry for Economic Cooperation and Development (BMZ) fund this GIZ-implemented programme.

Box 10 – Promoting Private sector development in the Cashew Value chain in Mozambique

The Cashew Value Chain (CVC) development component focuses on four working packages:

- **Working package No. 1 - Improvement of governance and dialogue**
  The Cashew Value Chain in Nampula and Zambezia aims to define a coordinated, inclusive, balanced, and equitable value chain development vision, focusing on horizontal and vertical dialogue, and improving weaker stakeholders' engagement, especially the private sector.
  Activities include:
  → Organization and facilitation of meetings and workshops.
  → Production of communication materials.
  → Capacity development for dialogue and concertation.

- **Working package No. 2 - Support the reduction of input provision by the public sector**
  The activity cluster aims to privatize and transfer production and inputs from the public sector to the private sector, strengthening its role as a regulator and promoter of the Cashew Value Chain.
  Activities include: consultations, workshops, research, and collaboration with private sector, sprayer associations, farmers, and SMEs.

- **Working package No. 3 - Strengthening of private service provision**
  CVC Development focuses on building a network of profitable, accessible, and market-driven service providers in various areas, including agricultural extension, financial services, ICT, production and input aggregation, and mechanization services.
  Private service providers are encouraged to expand and improve their services, with a focus on developing integrated financial services to support value chain operators through the promotion of saving and loans schemes, access points (banking agents) and financial literacy training.
  Activities in this work package encompass:
  → Training of trainers.
  → Capacity building activities such as Farmer Business School (FBS) and SME-Loop.
  → On the job trainings.
  → Assessments and consultancies.

- **Working package No. 4 - Promotion of Inclusive Business Models (InBM)**

Cashew apples are underutilized in African countries, with 10% of them used, despite 84.37% knowing their health benefits. They are primarily consumed fresh and have limited applications in food preparation, animal feed, and manure production.

In Mozambique, they are processed informally in rural areas into alcoholic beverages for local consumption and payment for services. In Nampula, cashew apple juice processing plants are in operation, and small volumes of apples are processed into molasses for organic pesticides and fungicides.

A cashew nut shell plant with an annual capacity of 1,000 tonnes of oil is active, and small quantities of de-oiled shells are used as bio-fuel for green cooking stoves.

To encourage cashew apple utilisation, it is recommended that farmers, companies and other stakeholders should be informed more on the value addition or quick processing of apples at consumer and industrial levels, and to supply processors with stimulus packages.

7.1.3 Macadamia nuts

A study by Nitidae on the macadamia value chain indicates that the Mozambican macadamia value chain is promising but in its infancy. It means that there are numerous requirements to improve growth opportunities throughout the chain.

Cultivation
There are currently 3 major macadamia provinces in Mozambique:

1. Manica with 2,000 ha planted and 1,800 ha to be planted
2. Niassa with 1,500 ha planted and 2,400 ha to be planted
3. Gurué with 700 ha planted and 1,500 ha to be planted.

In addition to Inhambane and Maputo, there are two other regions in southern Mozambique where some macadamia plantations have begun production and investors indicated that they will plant macadamia.

Production
In 2022, there were 45 estate projects, with some 7 estates producing macadamia in large quantities. They have a strong market presence and a clear vision for the future. The actors

involved in the production of the macadamia are commercial growers, mostly private companies owned by foreign investors. The sector is still young and vulnerable to the volatile international market.

There is presently no small-scale macadamia production or processing plants in Mozambique. The Association of Macadamia of Mozambique (AMM) is comprised of several macadamia producers.

In 2022, macadamia production ranged between 2,000 and 3,500 tonnes. Still Mozambique occupies the 6th position among the worlds' macadamia nut (in-shell) exporters.

Processing and styles of kernels
They Nuts-In-Shell (NIS) are primarily exported to South African factories for kernel production. South African factories also import NIS from neighbouring countries that lack factories, such as Zimbabwe, Zambia or Malawi. After the cracking of the macadamias, the factories sell the kernels to brokers or other distributors in the consuming countries.

Different "styles" of kernels will result from the processing of macadamia nuts. Some kernels will be of the highest quality (unbroken, large size, white colour) and will be classified as:

- "Wholes", which refers to designs S, 0 and 1.

Then, classifications are assigned based on the degree of kernel breakage:

- "Mixes" represent styles 2 and 3.
- "Halfs" style 4.
- "Pieces" styles 5 through 7.

Export markets
The macadamia market is segmented into two sub-markets:

- The Nut-In-Shell market, whose consumer is China, importing them in-shell from Mozambique.
- The kernel market, which requires processing at cracking factories, which are primarily located in South Africa and Australia.

It is crucial for macadamia cultivators to have the flexibility to sell on these two markets.

To provide this flexibility to macadamia producers in Mozambique, it would be extremely advantageous to obtain the official certificate required for direct export to China. For the time being, Mozambican producers are required to use intermediaries in order to export to China, thereby losing added value and the opportunity to gain more awareness in export markets about Mozambique's reputation as a quality origin for macadamia nuts.

Macadamia value chain development
The first priority of the Mozambican macadamia sector should be to increase primary production, with a strong emphasis on quality, as macadamia is a niche, reputation-driven delicacy market.

Three short-term recommendations are proposed to accomplish this objective:

1. Support the development and installation of more commercial plantations/farmers.

2. Foster the creation of a larger smallholder production basis through pilot partnerships with commercial farmers.
3 Promote agronomic research to meet the aflatoxin levels in the EU market, sharing information about price developments and knowledge transfer.

Organic macadamias
On the long-term, other objectives, such as the promotion of national processing factories and organic certification, should be realised. The current global supply of organic macadamia nuts is extremely limited. The only organic macadamia is produced in Mozambique, where over 5,000 smallholders are employed by firms such as Limbua Group, Ten Senses, and Jungle Nuts. These businesses are both organic and Fairtrade certified, as the demand for products with both certifications is high.

The role of the IAM
The inclusion of smallholders in the Mozambican macadamia value chain appears impossible without a strong partnership with the existing commercial producers. The IAM (Instituto de Amêndoas de Moçambique) should therefore provide support and reassurance to these actors to encourage their participation. Several measures could encourage commercial producers to include smallholder farmers:

- → Provide incentives to encourage the construction of cracking facilities.
- → Support outgrower programmes with subsidies and technical assistance.
- → Establish a robust traceability system with an official registry to prevent illegal activities.

7.1.4 Sesame seeds

Cultivation
Native to Sub-Saharan Africa, sesame is well adapted to Mozambique's climate. It is primarily grown by smallholder farmers in Nampula, Sofala, Cabo Delgado and Zambezia provinces. More than 98 percent of production is exported, of which approximately 75% is destined for Asian markets.

Production
In 2021, around 125 thousand sesame seeds were produced in Mozambique with an approximate value of € 60,500. Compared to 74 thousand tonnes in 2018, production has nearly doubled. The production of sesame oil showed similar increases from 15 thousand to almost 29 thousand tonnes between 2018 and 2020.
Sesame seed is grown by 375,000 smallholder farmers in Mozambique, with its greatest concentration in Nampula. According to a sesame value chain study from Environomica Consulting the sector has the potential to increase production and exports. Improved seed, sowing spaces, drainage, and harvesting timings can double yields. Climate variability and change risks may increase sesame production risks, but its drought and high thermal tolerance can mitigate these risks.

Use of sesame in Mozambique

In Mozambique, sesame is the most widely cultivated income oilseed crop. Small holders usually produce sesame as sole crop in small separate areas or in intercropped field. It has great economic potential in the domestic and international markets as a result of high-quality oil, with application in the food and oil-chemistry, and a potential market capable of absorbing quantities exceeding the current supply. However, demand for sesame oil is currently almost inexistent in Mozambique, where soybean and canola oils dominate the consumer's market.

Low quality, yield and the need for improvement

Smallholders produce low-quality, undifferentiated raw sesame grain for oil crushing, the lowest-value product in the global value chain.

They rely on local seeds recycled from harvests or purchased on the local market, which limits productivity and quality. This practice leads to diseases, commercial depreciation, and loss of product uniformity.

Most locally available seed is cleaned, sorted, and packaged by local firms, rather than grown specifically for purity and quality. The Mozambican Institute for Agricultural Research (IIAM – Instituto de Investigação Agrária de Moçambique) produces two varieties of white sesame seeds in Nampula known as Lindi variety and Nicaragua variety, however availability is limited.

Yields are low, averaging 300 Kg/ha, compared to potential 1,000 Kg/ha. Despite a larger number of producers, productivity stagnated over the past five years, mainly due to rain-fed production and lack of climate-smart practices. Rain-fed production exposes farmland to climate variability, causing crop failure and affecting productivity.

Floods pose the greatest threat to sesame crops in Mozambique, limiting export volumes and limiting the value chain. Pests, such as flea beetle (Alocypha bimaculata), also impact production. Harvest practices and post-harvest handling are crucial, with anticipated harvests causing lower yields and delayed harvests causing capsules opening and sesame seed shedding. On-farm storage can also degrade product quality and expose it to theft and contamination while waiting to be sold for higher prices.

Commercial cultivation

Commercial sesame cultivation in Mozambique has experienced a surge in the early 21st century, thanks to donor programs, government policies, outgrower schemes, and NGO-led projects.

The Mozambique government has implemented the PEDSA 2011-2020 strategy to strengthen food security and household income in rural areas of the country through improved agricultural competitiveness.

International agencies have implemented value-chain development programs in producing provinces. However, the sesame sector remains unregulated in Mozambique.

Exports and traders

Mozambique exports 98% of its sesame seed produce as graded but undifferentiated grain, with ETG and Olam being the dominant international commodity-trading firms.

Small and medium traders buy the produce directly at farm gates or at small buying facilities, often pre-financed by larger buyers. Domestic traders compete for low-quality product volumes and seize market premiums through in-house sorting and grading. Few small and medium traders have storage capacity and logistics to deliver the produce to buyers.

Large buyers set up collection stations and logistics in high production areas, dominated by industrial traders who set demand and price rules on the domestic market. ETG operates the largest operations in Nacala and Beira, with cleaning, colour sorting, and dehulling capacity.

Processing capacity and grades
Olam and Afrisiam also have capacity for cleaning, sorting and processing for export. ETG estimates in 100,000 tons the volume needed to successfully run a crushing plant for sesame oil in Mozambique and compete on the global market.
The sesame processed at ETG currently results in 50% premium grains, 30% second grade sesame, 10% third grade and 10% foreign and residual materials.

Crop rotation and organic fertilizers
Sesame farming practices in Mozambique can be detrimental to soils for draining excessive amounts of nutrients. Smallholder farmers typically grow sesame for a three-year cycle on the same plot experiencing diminishing returns on year two and abandoning the plot after year three. In this regard, crop rotation with legumes and increased use of organic fertilizer would improve yields' consistency and reduce labour needs.

Constraints in the sesame value chain
According to a sesame value chain study from Environomica Consulting, the most important constraints to the sustainable development of the value chain are:

- Overall low production volume creates competition for low-quality, undifferentiated products to meet growing demand for sesame seed on the export markets.
- Low yields resulting from low quality input and suboptimal crop management practices keep productivity far below its potential.
- Low quality products with mixed colour and grain size that result from mixed seed varieties lower the price of the produce on the market.
- Poor integration among value chain actors creates imbalances and prevents the downstream flow of information, knowledge and quality input.
- Government agencies in Mozambique share limited knowledge on sesame production and trade. Outgrower schemes and donor-funded interventions offer extension services to a limited number of farmers.
- Enforcing contract farming in the domestic sesame market is challenging due to high competition, side selling, and limited sanctions for defaulting producers.
- Lack of accessible credit limits the ability of the value chain to expand and include a broader array of actors.

- Limited research on climate change impacts threatens production capacity and resilience of producers.

To deal with the constraints in sesame seed production, following recommendations are suggested:

1. Producers need access to quality input and technology, such as certified seed varieties and extension services. Funding strategies should be implemented to establish demonstrative farm plots and farmer field schools in production hot spots, promoting private sector initiatives for IPM services and producing and multiplicating scarce certified seed varieties.

2. Government and development agencies should collaborate with producer associations, traders, and exporters to support product differentiation and marketing strategies for both low- and high-grade sesame seed.

3. Promoting the formalization of product quality standards will stimulate formal transactions with higher gains for producers and lower costs for exporters.

4. Ensuring a diverse suite of crop species and varieties, combined with conservation agriculture and sustainable mechanization, will boost productivity and climate resilience.

5. ICT can play a crucial role in securing and timely analysing crop production and climate data.

6. Farmers associations should become more aware of their role in the value chain and function as vehicles for technical assistance and services from dealers and buyers to producers.

7. Establishing or enhancing producer centres for product aggregation with basic machinery would enable producers to clean, sort, and store their produce, access better prices, and provide training in financial literacy and table banking.

8. Efforts to tackle greater integration of women throughout the value chain should focus on boosting sustainable mechanized labour services and encouraging vertical integration of producers.

9. A domestic sesame processing industry should be promoted through a provision similar to the export ban for unprocessed cashew nuts.

10. Successful seed crushing plants for edible sesame oil have low potential, but organizations should consider intervening to test this strategy at a small-scale level.

11. Partnerships between producer groups, local entrepreneurs, and NGOs can be used to test this value-addition model, potentially scaling up to produce higher volumes and sell on the global market for commercial cosmetics.

7.1.5 Organic cultivation

According to a study commissioned by GIZ to assess the feasibility of organic RCN (Raw Cashew Nuts) production in Mozambique, most cashew farmers regard chemical sprays as the only possible weapon against PMD (Powdery Mildew Disease). They have no idea on how to improve their situation regarding pests and disease attacks. In addition, pesticides and fertilisers are counterfeit goods and frequently sold in many African countries without control or explanation to farmers who are often illiterate.

The study found that cashew trees absorb nutrients in their roots within the outer radius of their foliage, and the regenerative process provides additional crops, improving yield and income.

However, farmers have limited access to information about agroecology, except for IAM staff visiting them to recommend cleaning the soil, pruning trees regularly, and using chemicals against PMD. They lack the necessary knowledge about natural laws and the importance of biodiversity.

Training is needed to improve tree resilience through GAP, AFS, good IPM as well as adaptation to new agricultural practices.

In case of infestations, farmers should be able to produce their own pesticides and receive sulphur to combat PMD. There are two types used:

- **Sulphur**. This is proven effective in preventing powdery mildew disease at a modest unit cost increase.
- **Bio-spray**. This is a unique material invented in Mozambique and can be used to prevent oidium. However, the efficacy of bio-spray has not yet been proven, and further testing and trials are needed to determine the active ingredients in the bio-spray recipe.

The cashew law should include the provision and subsidy of inputs, like sulphur, that are harmless to humans and environment, and are approved for organic cultivation.

According to a Cashew Value Chain Analysis of Technoserve, EU buyers of cashew kernels are interested in investing in organic production in Mozambique as a result of past problems among farmers. These problems included unsuccessful interventions, high costs of supervision and inspection, and insufficient production volume.

Main challenges for farmers
In organic certification challenges need to be overcome such as low farmer organization, high administrative costs, buyer guarantees, frequent inspections, and a 3-year conversion period for tree crops perennially treated with chemicals.

Encouragement by incentives
Farmers need to be encouraged to adopt organic practices and focus on environmental protection and sustainable, regenerative practices. They can become self-reliant experts, improving soil quality and tree health.

To reduce costs and promote organic cultivation, IAM should consider providing polyclonal seeds and planting instructions to farmers, as direct planted trees bear fruit more quickly and develop a broader root system. The use of synthetic chemicals for pest control should also be reconsidered, as it is more effective to maintain tree health through ground cover and IPM strategies.

Other incentives to encourage farmer towards organic cultivation include:

- → **Lobbying for regenerative and organic cultivation** to improve environmental practices.
- → **Establish an Organic Growers Association** stimulating legislation and start-ups and providing guidance and legal certainty in organic agriculture. This Association can also make a joint application for Organic Certification.
- → **Learn from field experiences**. A small parallel organic RCN value chain already exists in Mozambique, with a Helvetas-led cashew project receiving organic certification since July 2022. This AMCANE project offers a 5-20% premium to organic certified farmers. This foundation can be used to learn from field experiences and establish further certifications. Experiences can be also obtained from Malawi or Tanzania.
- → **Investing in organic cashew production** which can be economically viable if holistically approached and all stakeholders deal with each other on an equal footing. This can lead to premium markets, soil health, biodiversity, food security, and resilience for smallholder farmers.
- → **More research on new 'bio spray'.** Time and money could be freed up by governmental authorities for research into traditional African medicine and alternative bio sprays.

7.2 Destination countries for nut and sesame seeds exports from Mozambique

Trade statistics in this market study must be interpreted and used with extreme caution. Due to illegal trade flows that are not registered, export figures from Mozambique, other African and Asian countries are typically understated. They are meant to indicate the main trends in international trade flows.

7.2.1 Exports to the world

Mozambique exported 242 thousand tonnes of edible nuts worth € 355 million in 2022, ranking 26th in the world among exporters of edible nuts (excluding sesame seeds). Between 2018 and 2022 exports increased substantially by a CAGR of 19.6% which was largely attributed to rising exports of Cashews (RCN and shelled) as is shown in Table 36.

Cashews (RCN) formed the majority of Mozambican nut exports, which primarily went to India. From 2018 to 2022, Indian imports of RCN from Mozambique quadrupled, from 10 to 42 thousand tonnes, particularly beginning in 2021. The Cashew processing industry in Udupi district is facing many problems. There is a shortage of local availability of RCN, an overdependence on single-origin and market prices are unstable. As a consequence, India

imported since 2021 large volumes of RCN from competing countries in Africa especially from Cote d'Ivoire (273 thousand in 2022), Ghana (225 thousand), Benin (186 thousand), Guinee Bisau (130 thousand) and Tanzania (105 thousand).

Vietnam was the 2nd largest destination and accounted in 2022 for 28% of Mozambican RCN exports. Between 2018 exports doubled from 7.5 to 16 thousand tonnes. However, Cote d'Ivoire (474 thousand in 2022), Tanzania (114 thousand), Nigeria (79 thousand) and Senegal (32 thousand) are the main African suppliers of RCN to Vietnam.

Cashews shelled have become a third largest group within Mozambican nuts exports which mainly went to Vietnam (51% of total shelled cashew exports). Since 2019, Vietnam started to import more shelled cashews from Mozambique. Exports rose from 18 tonnes in 2018 to 2.4 thousand tonnes in 2022, valued at € 22.7 million. Mozambique has become the 3rd largest supplier to Vietnam after Nigeria which exported 59 thousand tonnes and Cote d'Ivoire (4.5 thousand tonnes).

Mozambican exports to South Africa have dropped since 2020 from 1,148 to 343 tonnes in 2022. Exports of shelled cashews to the USA dropped as well from 1,463 to 300 tonnes in the same period. This could be partly attributed to the lockdown period and the closing of Mozambican processing companies.

Besides, Vietnamese investments are increasing. Mozambique is considered a gateway for Vietnamese companies to enter Southern African Development Community (SADC) member states. Among the investment sectors are agricultural such as rice, fertilisers, wood and cashew nuts (see section 7.1.2).

Other important destinations for shelled cashews are EU countries – see next section 7.2.2.

Peanuts (groundnuts) shelled were the second largest export product for Mozambique which were 42 thousand tonnes in 2022, valued at € 40.6 million. Exports to Indonesia were 24 thousand tonnes representing 57% of Mozambican peanut supplies. Exports have dropped significantly in the period 2019 – 2021 partly due to quality problems and COVID issues. Instead, Indonesia imported more from India and Sudan. In 2022, however, exports of shelled peanuts to Indonesia picked up reaching 34 thousand tonnes.

The Philippines and Pakistan were other important destinations and accounted for 7% and 6% of Mozambican exports respectively. The unit value to the Philippines was as low as € 226 per tonne, which was significantly lower than the total average unit value of € 966 per tonne of Mozambican peanuts. This may be attributed to problems comparable to those with Indonesia.

Table 36. Mozambique exports of edible nuts to the world by type, 2018 – 2022
Volume in tonnes and value in € thousand

MOZAMBIQUE	2018		2020		2022			Main destinations
	Volume	Value	Volume	Value	Volume	Value	CAGR *	In 2022 (%volume)
TOTAL	**118,117**	**155,329**	**187,369**	**220,833**	**242,605**	**355,898**	**19.6%**	
Peanuts shelled	25,969	19,671	4,411	3,292	42,005	40,596	12.8%	Indonesia (82%), Philippines (7%), Pakistan (6%), India
Cashews in shell (RCN)	22,058	38,165	37,697	39,202	56,698	74,318	26.5%	India (72%), Vietnam (28%)
Cashews	246	1,590	7,237	25,359	4,754	22,712	109.7%	Vietnam (51%), Portugal (8%),

shelled								S. Africa (7%), UAE (7%), USA (6%), Belgium (4%), India (3%), Germany (2%), Netherlands (1%)
Macadamias in shell	1,716	6,021	2,248	7,822	3,391	10,947	18.5%	S. Africa (91%), Vietnam (6%), China (4%)
Almonds shelled	221	790	103	466	383	1,736	14.7%	S. Africa (50%), Vietnam (19%), UAE (14%), India (11%), Bulgaria (5%)
Brazil nuts shelled	71	390	733	3,961	257	1,087	37.9%	Vietnam (32%), Greece (18%), S. Africa (16%), India (11%), Netherlands (6%), Croatia (6%)
Almonds in shell	75	492	261	1,041	176	402	23.7%	S. Africa (100%)
Other nuts in shell	108	113	10	44	129	353	4.5%	S. Africa 97%, Netherlands 3%
Peanuts prepared	33	25	525	449	84	65	6.8%	
Macadamias shelled	206	3,003	46	118	291	3,713	9.0%	S. Africa (99%), China (1%)
Brazil nuts in shell	21	3						S. Africa
Nut mixtures	1,049	5,670	204	1,803	122	877	-41.7%	USA, Curacao, S.Africa
Sesame seeds	66,344	79,396	133,894	137,276	134,315	199,092	19.4%	China (57%), S.Africa (32%), Japan (7%), Germany (1%) India (1%), Greece (0.6%), Poland (0.5%)

*CAGR = Compound Annual Growth Rate 2018 – 2022 (based on volume) Source: ITC Trademaps (2023)

Macadamia (in shell) exports were 3,391 tonnes, worth € 10.9 million which mainly went to South Africa (91% of total exports) for cracking and primary processing. Mozambique accounted for nearly 4% of total Macadamia (shell) exports. Between 2018 and 2022, exports nearly doubled from 1,716 to 3,391 tonnes which was largely attributed to more exports to South Africa. The unit value to South Africa was € 3,196 per tonne, which was well below the € 4,650 per tonne of Mozambican exports to China or Vietnam. In 2022, however, exports to both countries have dropped significantly.

Macadamia shelled export volumes were relatively small and caught up after a drop in 2020. In 2022, Mozambican exports were 291 tonnes, valued at € 3.7 million most of which went to South Africa.

Almonds shelled exports were 383 tonnes in 2022 and increased by a CAGR of 14.7% compared with 221 tonnes in 2018. They went mainly to South Africa (50% of Mozambican exports). Since 2021, more was exported to Vietnam, UAE and India.

Mozambican exports of **Almonds in shell** were small at 129 tonnes, valued at € 402 thousand, all of which went to South Africa, as is shown in Table 36.

Between 2018 and 2022, **Brazil nut (shelled) exports** decreased from 390 to 257 tonnes. In 2020 and 2021, large export volumes to the United States, Lebanon, and the Netherlands resulted in a peak of 733 tonnes. In 2022, however, all three countries discontinued imports from Mozambique.

Other nuts in shell including pecan nuts mainly went to South Africa. Between 2018 and 2022, exports increased by 4.5% from 113 to 129 tonnes.

Nut mixtures were mainly exported to the USA, India and the EU (Belgium, Netherlands, Sweden), but dropped in 2022. In the period under review, Mozambican exports decreased by 41.7% from 1,049 to 122 tonnes.

Sesame seeds exports were large compared to edible nuts' exports being 134 thousand tonnes, valued at € 199 million. Exports have doubled between 2018 and 2020, from 66 to 133 thousand tonnes and continued to rise in 2022. This was primarily due to increased exports to China, which doubled its level of imports in 2018.

Also, large increases were registered in the exports to Japan (from 9 to 15 thousand tonnes), Germany (from 0.9 to 2.1 thousand tonnes) and Greece (from 0.6 to 1.2 thousand).

Thanks to the rising price levels of sesame seeds in the world market and more exports to EU countries (Germany, Greece, Poland), the average unit value of Mozambican exports rose from € 1,135 in 2021 to € 1,482 in 2022.

7.2.2 Exports to the EU

Exports to the EU were still small. The EU accounted for 2% of Mozambique's exports of 242 thousand tonnes of edible nuts to the rest of the world in 2022. In the same year exports to the EU were 4.7 thousand tonnes valued at almost € 11.3 million, as is shown in Table 37.

Between 2018 and 2022 Mozambican exports to the EU rose by a CAGR of 4.3%, from 4,004 to 4,756 tonnes, which was mainly due to more exports of shelled cashews and sesame seeds.

Table 37. Mozambique exports of edible nuts and sesame seeds to the EU, 2018 – 2022
Volume in tonnes and value in € thousand

MOZAMBIQUE	2020		2021		2022		
	Volume	Value	Volume	Value	Volume	Value	CAGR*
TOTAL	**4,004**	**9,399**	**5,204**	**9,550**	**4,756**	**11,280**	**4.3%**
Cashews (shelled)	932	3,266	830	2,732	1,132	5,409	4.9%
Brazil nuts (shelled)	519	3,162	596	2,667	78	404	-37.8%
Almonds (shelled)					19	87	
Sesame seeds	2,364	2,704	3,768	4,094	3,522	5,361	10.4%

*CAGR = Compound Annual Growth Rate 2018 – 2022 (based on volume) Source: ITC Trademaps (2023)

The exports of cashew nuts increased by 4.9%, from 932 tonnes to 1,132 tonnes, primarily to Portugal, Belgium, Germany, and the Netherlands, as is shown in yellow in Table 36. Since 2019, exports to Portugal and Belgium increased substantially reaching 1,856 tonnes and 1,030 tonnes respectively.

Whereas Mozambican exports of cashews shelled to Germany decreased from 3,103 to 484 tonnes between 2019 and 2022. In the same period, exports to the Netherlands also decreased from 4,249 to 307 tonnes.

Exports of Brazil nuts dropped from 519 to 78 tonnes, which major decreases in supplies to the Netherlands. This can be attributed to quality issues or too high levels of aflatoxins.

Exports of almonds just began in 2022, which was mainly to Bulgaria.

7.3 Opportunities and export potential for nuts from Mozambique

7.3.1 Opportunities in the EU and in the selected Member states

The long-term outlook for the EU edible nuts market is positive despite the declining EU population and difficult economic condition in 2023. In the majority of EU countries, rising health concerns will continue to drive demand for plant-based products in the coming years.

The following main driving forces imply good opportunities for Mozambique:

- **Changes in eating habits** of consumers with a growing number of vegetarians and flexitarians using nuts as a substitute for meat. In addition, the rising popularity of mixed nuts as a On-The-Go snack with healthy properties were boosting the industry's growth.
- **More global influences on cuisine**. There are more ethnic restaurants and shops generating more diversity in meals due to immigrant influence. Ready-to-use kits with edible nuts for salads and stir-fry dishes gain popularity.
- **Healthier snacks**: In addition, rising health consciousness has led to the substitution of healthier snack products for candies and cookies. Consequently, tree nuts have a market opportunity to meet these demands. Associated with this health trend is the significance of product quality and safety.

- **More variations** in peanuts and tree nuts are offered by importers and processors which include in salted, roasted, unsalted form or with different sweet coatings (honey or chocolate) or with different salted crunchy coatings (garlic, chili, tomato, oregano etc.).
- **Diversity in unsalted nuts** is increasingly popular in meals, with roasting flavours available for vegetarian and starter dishes.
- **Rising demand for energy snacks**: Across Europe, increasing time constraints, a faster rhythm of life, and a desire for convenience are driving consumer demand for 'wholesome and deliver sustainable energy' snack products. Most tree nuts are also recommended to sporting people as besides high in proteins, they are high in calories and calcium for strengthening the bones and muscle functions.
- **Tree nuts have a wide variety of applications.** For example, cashew nuts and walnuts can be consumed on their own or included into other types of snacks, in **nut mixes**, in **salads**, or as a **flavour enhancer** and source of protein in various vegetarian dishes and in healthy **nuts drinks and nut spreads**.

  Almonds, Macadamia nuts or peanuts can be used in **cosmetic nut oils**. It is expected that an increase in consumer expenditure on natural cosmetics will also drive demand for nuts around the world.

More information on industrial applications of nuts can be found in Chapter 1.5.2.

- **An increase in EU research and development** activities related to the health benefits of nuts and seeds, creating opportunities for new market entrants.
- **Modernization of production techniques** by EU processors to use more nuts in healthy meals and beverages. There will be more demand for supplying countries of edible nuts and seeds, including Mozambique.

The best opportunities for Mozambican exporters and cooperatives are to offer primary processed nuts and seeds to importers and processors in the EU. In the selected markets there are the following opportunities:

GERMANY	Market potential and opportunities
Size	• Germany dominates the EU market for edible nuts, with an estimated 450 thousand tonnes consumed in 2022, valued at € 3,213 million, and a high per capita consumption of 5.41 kg per person. • Between 2018 and 2022, German consumption rose by a CAGR of 1.4% although there was a decrease since 2020.
Population	• Germany's population is becoming increasingly diverse, with more residents from Romania, Poland, Bulgaria, Syria, Afghanistan, Turkey and Ukraine who usually consume more edible nuts and sesame seeds than German people.
Consumers	• Nearly half of German people prefer healthy, all-natural snacks without artificial flavours. Also, a “quality over quantity” mindset offers opportunities for more premium products on the snack food market in Germany. Consumers are less loyal to specific brands, creating opportunities for new entrants.
Industrial segment	• The German nut and snacking industry are open to new products, with healthy, sustainable. The industrial sector uses nuts like hazelnuts, almonds, walnuts, and increasingly cashews in savoury snacks and sweets. Germany is the EU's

	second-largest cereal market after the UK. • Germany's cashew kernel market primarily targets snack segments. There is an increasing demand for pieces and broken kernels in food industries for cookies, cereals, and ice cream toppings. Industrial use is rising due to lower price differentiation between cashew and other nuts like almonds.
Imports	• Germany is a leading trader, processor and re-exporter of edible nuts. Hamburg is one of the world's trading centres. In 2022, Germany imported 634 thousand tonnes of edible nuts worth € 3,293 million. It is the 2nd largest EU exporter. • It is the largest importer of cashews, walnuts, pistachios, mixed nuts and macadamias into the EU. Between 2018 and 2022, large increases (CAGR) were registered in the imports of cashew nuts (+5.9%), walnuts (+6.3%) and pistachios in shell (+6.2%). • German cashew nuts imports reached € 409 million in 2022, with a 5.9% CAGR since 2018. Dutch suppliers dominate German cashew imports, relying on Vietnam and India due to lack of processing capacity in African countries. • Compared with other EU countries, Germany was a large importing country. Non-EU suppliers, including from Africa, especially of cashews and macadamias. The main supplier of cashews is Côte d'Ivoire, but there were also supplies from Burkina Faso, Nigeria, and Mozambique. South Africa and Kenya dominated the supplies of macadamias to Germany. • Around 40% of sesame seeds came from Nigeria, Mozambique and Egypt.
Other	• Germany leads EU organic market, accounting for 6.4% of the food market in 2020, with organic food products becoming mainstream. However, its share in social sustainable projects is still limited. This offers opportunities for exporters from Mozambique to get a foothold by focusing on sustainable sourcing.

FRANCE	Market potential and opportunities
Size	• France is the 2nd largest EU market for edible nuts. In 2022, apparent consumption was estimated at 273 thousand tonnes, valued at € 2,309 million. France accounted for 17.1% of the value of the EU market. • The use of various types of nuts in culinary dishes is more featured during cooking programmes such as Master Chef or Top Chef where more attention is given to vegetarian meals. Therefore, between 2018 and 2022, French consumption increased by a CAGR of 3.0%.
Population	• France has a growing population with many people coming Arab countries who frequently eat nuts (especially during the Ramadan). In 2021, a tenth of France's population were foreigners.
Consumers	• Edible nuts are traditionally eaten as a snack at the apéritifs before the warm meal around noon. But they are also used in chocolates, sweets (nougat), nut oils, salads and increasingly in recipes. • The lock-downs (COVID) and the rising prices of food have caused French consumers to stock up more. They buy more ready-made products and foods with a longer shelf life. This implies more demand for edible nuts. • Companies promote smaller packages of edible nuts, offering flavour-roasted

	and exotic varieties, boosting impulse buying and attracting more consumers. • Salted peanuts remain popular, but private label price reductions make tree nuts more accessible, with pistachios being the largest market share, followed by almonds, walnuts, cashew nuts and hazelnuts.
Industrial segment	• France's food processing industry, with 15,500 businesses and €194.2 billion annual sales, primarily comprises SMEs. Amongst other products, it is known for quality and innovation in bakery products and confectionery, which also use nuts. • Production of confectionery is mainly concentrated in the South and includes pralines (candy made of an almond or peanut wrapped in chocolate), sugar coated almonds and nougat (using almonds, walnuts, pistachios, hazelnuts and macadamia nuts).
Imports	• In 2022, France imported 263 thousand tonnes of edible nuts valued at € 1,221 million. • Between 2018 and 2022, large increases (CAGR) were registered in the imports of cashew nuts (+9.0%), peanuts (+4.8%), peanuts prepared (+4.5%) and macadamias (+22.7%). • In comparison to other EU countries, France was a major importer from Africa, particularly from its former colonies in West and North Africa, but also from Mozambique. Cashews and macadamia nuts and sesame seeds were the most popular nuts imported from Africa.
Other	• With increasing awareness of global warming, consumers' interest in and demand for sustainability in packaging in the salty or sweet snacks market is expected to rise. This presents opportunities for exporters when speaking with French buyers.

SPAIN	Market potential and opportunities
Size	• Spain is among the largest EU market for edible nuts and apparent consumption was estimated at almost 266 tonnes in 2022, valued at € 1,553 million. Spain accounted for 11.8% of the value of the EU market. The per capita consumption of 5.59 kg per person was among the highest in the EU. • Between 2018 and 2022, Spanish consumption rose by a CAGR of 0.5%.
Population	• The Spanish population has declined, however, immigration increased, with 6.7 million immigrants in 2020, mainly from Latin America, representing 14% of the total population. This also includes elderly people from EU countries who are affluent and are likely be attracted to eating healthy food (including edible nuts).
Consumers	• Retirees, young couples without children, and independent young people consume above average. • Although peanuts and pistachios are sometimes eaten with late afternoon drinks, mixed nuts, cashews and pecans became more popular. • Nuts are often bought impulsively at the large number of kiosks selling single packs of peanuts and tree nuts. Health benefits are increasingly recognized by Spanish consumers which is driving the market. • The future nuts market will be driven by price reductions and private labels to

	make nuts them accessible to more consumers.
Industrial segment	• Spain's agri-food processing industry, with 30,000 companies, generated €140 billion in 2021 and employed 440,000 people. As Europe's third-largest exporter, it faces climate change adaptation and future imports of almonds and other nuts.
Imports	• In 2022, Spain imported 289 thousand tonnes of edible nuts worth € 1,155 million. In addition to being a producer, Spain is a major importer of almonds (shelled) and increasingly of almonds in shell as a consequence of a decline in Spanish production due to warmer summers. Spain is also a large importer of walnuts, pistachios, peanuts and cashews. • Between 2018 and 2022, large increases were registered in the imports of almonds in shell (+87.3%), cashew nuts (+18.7%), prepared peanuts (13.3%) and hazelnuts (+6.5%) and pistachios in shell (+4.0%). Spanish imports of sesame seeds rose by 2.3% in the period under review. • Compared with other EU countries Spain was a small importing country from Africa, except for macadamias which mainly came from South Africa and Kenya. For sesame seeds Egypt and Nigeria were important suppliers.
Other	• Being a producer, Spain is the third largest EU exporter of edible nuts, with a volume in 2022 of 179 thousand tonnes. Spanish exports increased by 3.5% from 155 thousand tonnes in 2018. The majority (57%) were shelled almonds. Mixed nuts accounted for 21% of Spanish exports. Around 80% went to other EU countries.

ITALY	Market potential and opportunities
Size	• Italy is a leading EU market for edible nuts. In 2022, apparent consumption was estimated at almost 294 tonnes in 2022, valued at € 1,792 million and represented 12.6% of the EU market. The per capita consumption of 5.01 kg per person was among the highest in the EU. • Between 2018 and 2022, Italian consumption rose by a CAGR of 1.4%.
Population	• Italy's population is declining. Immigration partially counteracted the trend. In 2022, around 5.05 million people, or 8.6% of the total population, were foreigners. Migration waves originate from former socialist Eastern Europe countries like Romania, Albania, Ukraine, Moldova, Poland as well as North Africa (Morocco, Egypt and Tunisia) who are eating relatively more edible nuts.
Consumers	• The pandemic has accelerated Italy's healthy eating trend, attracting vegan, vegetarian, flexitarian, and superfood alternatives. • The market for nuts has been growing in Italy, but there is still room for expansion given that only 30% of consumers eat them daily. • Cashew nuts and pine nuts are increasingly used in salads and vegetarian

	meals. • In order to encourage eating nuts, companies advertise nuts to athletes, health-conscious consumers, and to bakers who can use them more in cakes or desserts. • Greater variety, the introduction of new flavoured nuts, and reduced prices will drive the Italian market in the coming years.
Industrial segment	• Italy was the fourth largest food processing market in Europe in 2021, behind Spain, France, and Germany, generating € 179.4 billion in revenue. There are approximately 60 thousand companies, 464 thousand employees, and over 50 billion euros worth of export sales. • Demand from the industrial sector for edible nuts comes mainly from the large number of small confectioners, bakeries, ice cream and a few cereal manufacturers. Almonds are used for the production of liqueur (*Amaretto*) and in a large variety of desserts.
Imports	• Due to its consumers' high consumption and its processing industry's demand, Italy is among the top EU importers of edible nuts. In 2022, Italy imported 298 thousand tonnes of edible nuts worth € 1,439 million. The high value of imports is because of high imports of hazelnuts, walnuts and almonds. Imports of pistachios (in shell), pistachios shelled, and increasingly cashew nuts were high. • Imports of edible nuts by Italy increased by a CAGR of 2.7% between 2018 and 2022. • A large part (20%) of cashews came from Cote d'Ivoire. Macadamias came mostly from South Africa and Kenya.
Other	• Exports of Italian bakery products are increasing which means an increasing demand for food ingredients, including edible nuts from other countries.

NETHERLANDS	Market potential and opportunities
Size	• The Netherlands is a mid-sized EU market and a large trader of edible nuts. Apparent consumption was estimated at 137 thousand tonnes in 2022, valued at € 346 million. The Netherlands represented 2.6% of the EU market. The per capita consumption of 5.82 kg per person was the highest in the EU. • Edible nuts represent almost one third of the savoury snack market, which is high in comparison to other EU countries.
Population	• The Netherlands is the most densely populated country in the EU and Dutch population is projected to grow. Turkish, Moroccan, Surinamese and Indonesian are well represented ethnic groups all of whom are eating relatively more peanuts and tree nuts.
Consumers	• The Netherlands is familiar with peanuts due to their popularity as roasted and salted snack products, candy bars, peanut butter, and as an ingredient in Indonesian cuisine (peanut sauce) and Asian dishes.

	• Dutch people consume a large number of coated and flavoured peanuts. The Netherlands is also the first European producer of peanut butter and the 3rd largest consumer of groundnuts. Tree nuts are popular for their health benefits and are often served with drinks or social events. The nut bars offer a wide range of natural or roasted luxury nuts. • Popular varieties include pistachios, cashew nuts, almonds, pecan nuts, and mixed nuts. Macadamia nuts are considered expensive. Tree nuts are used in exotic dishes and salads. Cashews gain popularity with roasted, seasoned varieties and more use in nut mixes. • Dutch processors are developing flavoured and coated tree nuts, focusing on healthy eating trends and introducing new uses to drive future demand.
Industrial segment	• In 2023, the Netherlands had 8,655 food processing companies (chocolate, snacks, cookies, bakeries, cereals), generating €80 billion in net sales and employing 150,000 individuals. • The industry relies on imported raw materials, with most finished products sold in EU countries.
Imports	• The Netherlands, as the second largest EU importer of edible nuts, has a long history as a transit country for peanuts in Rotterdam and is one of the largest traders of groundnuts globally. • In 2022, the Netherlands imported 555 thousand tonnes of edible nuts worth € 1,603 million. Around 63% of this volume were peanuts (shelled). • It is the second largest cashew nut importer in the EU (43 thousand tonnes in 2022) from Vietnam and India being re-exported (after salting or roasting) to other EU countries. Imports of almonds, walnuts, mixed nuts were also substantial • Between 2018 and 2022, large increases were registered in the imports of walnuts (+13.4%), almonds (+6.4%) and cashews (+3.2%). • The Netherlands imported cashews and macadamia nuts from Africa. Burkina Faso was the main suppliers of cashews followed by Togo, Côte d'Ivoire and Ghana. South Africa was a main supplier of macadamias, while supplies from Kenya and Mozambique were also relatively large.
GREECE	**Market potential and opportunities**
Size	• Greece is a smaller EU market for edible nuts and a large market for sesame seeds. Apparent consumption of edible nuts was estimated at almost 51 thousand tonnes in 2022, valued at € 205 million. Greece represented 1.6% of the EU market. • Between 2018 and 2022, Greek consumption increased by a CAGR of 1.8%.
Population	• Greece's population declined since 2005, attributed to low fertility rates, financial crises, emigration, and an aging population. • There were 762,000 migrants, 7% of Greek population, mainly from Eastern European countries like Albania, Bulgaria, and Romania. Illegal immigrants from North Africa and Syria continue entering Greece from Turkey's border.
Consumers	• Fruits and nuts are extensively available in shops, supermarkets and street markets. Greek consumers are selective, quality-minded, and willing to

	experiment with new tastes and flavours in dishes using nuts. • Within the tree nuts, almonds, shelled walnuts, pistachios, cashews and hazelnuts were preferred by Greek consumers and by the food industry. • Pistachios, cultivated on Aegina islands, are abundant from August to October. They are roasted or raw, slightly smaller than other pistachios, but more flavourful and sweeter. • Amygdalota are popular almond cookies. Koulouri, Greek sesame bread rings, are a popular treat, resembling a bagel with sesame seeds.
Industrial segment	• The Greek food and beverage industry, with 15,700 companies and €12.82 billion sales in 2021. The largest subsectors include bakery products, oils and cereal products, accounting for 50% of production value. • Other food products include sugar, cocoa, chocolate, confectionery, condiments, ready-to-eat meals, and beverages. Small businesses employ up to 19 people, with medium and large businesses generating over 70% of production value.
Imports	• Greece is a smaller EU importer of edible nuts. In 2022, imports were 43 thousand tonnes, valued at € 157 million. Greece is the largest importer of sesame seeds in the EU. • Between 2018 and 2022, large increases were registered in the imports of cashew nuts (+13.1%), peanuts (+10.8%), walnuts (+8.6%), macadamias (+5.6%) and mixed nuts (+5.6%). • In 2022, an average of 21% of Greek imports were sourced from EU countries, especially from the Netherlands and Germany. • Compared with other EU countries Greece was a large importing country from Africa, especially of sesame seeds from Nigeria, Sudan and Mozambique. While 72% of macadamias were imported from South Africa.

POLAND	Market potential and opportunities
Size	• Poland is a mid-sized EU market for edible nuts. Apparent consumption was estimated at 114 thousand tonnes in 2022, valued at € 493 million. In the same year, Poland represented 3.7% of the EU market. The per capita consumption of 2.76 kg per person was well below the EU average of € 4.32. • Between 2018 and 2022, Polish consumption increased by a CAGR of 4.9%.
Population	• Poland's population in 2023 was 37.6 million, with Polish 96.9%, Silesian 1.1%, German 0.2%, and Ukrainian 0.1% as main ethnic groups. The future population is expected to contract by 20-30%. • Since the war in 2021, Poland has received 1.5 million refugees from Ukraine.
Consumers	• Inspired on reality TV cooking programmes, new exotic and healthy dishes are

	introduced using nuts. Polish people are generally open to new taste sensations. • The most popular tree nuts among Polish consumers in 2018 were almonds, pistachios, hazelnuts, walnuts, cashews and macadamias. • Peanuts (coated), almonds and hazelnuts with added flavours are also popular. • Along with the growing concern about health, well-being and an expected growing Polish economy, consumers are likely to spend more on healthy snacks that is natural and can be consumed "on the go." Edible nuts fit in well here.
Industrial segment	• Poland's agri-food industry, with over 1,270 companies in 2021, produced and exported products worth over €33 billion. The industry, which contributes 5% of Poland's GDP, consists of 30,000 enterprises, with 85% being small companies. • Health-conscious consumers are increasingly seeking energy bars made from cereals, nuts, and dried fruits. While foreign companies dominate the market, more Polish companies increasingly start producing these products. • Chocolate manufacturers are seeking high-quality ingredients to extend shelf life and look for high-quality nuts. This leads to Polish importers placing larger orders and increasing demand for direct shipments from non-EU countries.
Imports	• Poland is a mid-sized EU importer of edible nuts thanks to its processing industry's demand and a rising demand from Polish consumers. In addition, Poland has become a dynamic *business hub* especially for peanuts at the heart of Europe. • In 2022, Poland imported 152 thousand tonnes of edible nuts worth € 494 million. For an Eastern EU country, it is a large importer of peanuts, cashews, almonds, mixed nuts and sesame seeds. • Large increases were in the imports of almost all nuts between 2018 and 2022, especially of cashew nuts (+15.3%), pistachios in shell (+14.2%), pistachios shelled (+15.9%), walnuts (+12.9%) and mixed nuts (+13.7%). • Compared with other EU countries Poland was a large importing country from Africa, especially of sesame seeds from Nigeria, Mozambique and Somalia. While 36% of macadamias were imported from Kenya and South Africa.

7.3.2 Opportunities for Cashew nuts and other types of nuts

The best opportunities for Mozambican exporters and cooperatives are for **cashews nuts (shelled)**. Almost all EU Member States showed very positive trends in imports in the past 5 years. The fastest growth was in the imports of the largest EU markets such as Germany (+5.9% between 2018 and 2022), France (+9.0%), Italy (+12.7%), Spain (+13.9%), Netherlands (+3.2%) Poland (+15.2%), Greece (+13.2%), Austria (+7.9%), Portugal (+13.2%) and almost all Eastern EU Member States.

An overview of imports of Cashew nuts can be found in Annex 2 – Table 2.

Other nuts

However, there are also opportunities for other nuts in the EU market. Comparing trends between 2018 and 2022, demand for most types of nuts in the majority of countries decreased in 2020 and caught up slowly by 2022. This could be mainly attributed to cuts in consumer expenses in 2023 and its effects on the buying patterns of the bakery, confectionery and other industries. This trend was observed in the imports of the main EU trading countries Netherlands and Germany with import levels recovering slowly for most nuts.

However, future projections may be derived from the rapid increase in imports over the past two years in several countries. Besides cashew nuts, there are opportunities for other nuts in the following EU member states:

- → **Almonds (shelled)** with the fastest growth in imports between 2018 and 2022 by Italy (+6.7%), Netherlands (+6.4%), Poland (+7.6%), Greece (+3.8%), Germany (+1.5%) and many of the Eastern EU member states.

- → **Groundnuts (shelled)** with the fastest growth in imports by Poland (+6.7%), France (+4.8%), Italy (+5.3%), Greece (+10.8%), Bulgaria (7.0%), Denmark (+3.6%) and Portugal (+22.2%).

- → **Macadamias (shelled)** with the fastest growth in imports by France (+22.7%), Greece (+5.6%), Austria (+4.4%), Bulgaria (+37.4%) and Portugal (+27.3%).

- → **Mixed nuts (shelled)** with the fastest growth in imports by Germany (3.1%), Poland (+13.9%), Italy (+8.0%), Sweden (6.2%), Spain (3.4%), Romania (19.4%), Denmark (17.5%), Portugal (+14.3%) and Bulgaria (+10.2%).

An overview of imports of each type of nut can be found in Annex 2 – Tables 1, 3, 4, 5 and Table 6 for sesame seeds as well as in Chapters 3.4.1 – 3.4.11

For 2023/2024 there are opportunities for Mozambican exporters for exporting groundnuts and almonds to the EU. There were shortages in the supplies from India and USA due to a lack of rainfall during the hot summer of 2023. Main reasons were climate change and El Niño which had a significant effect on yields in both countries.

The opportunity of processing in Mozambique

Contributing to reducing emissions and large cost savings for buyers can be achieved. The EU proposed twelve proposals to achieve a 55% CO2 reduction target by 2030. One proposal was to impose carbon pricing on goods produced outside the EU, making imports more costly.

Now, the Raw Cashew Nuts are first exported to Vietnam for basic processing and then further processed in the Netherlands or Germany before being exported to the final market in Europe. If the edible nuts are processed in Mozambique and exported directly to the EU, approximately 12,000 km of emissions will be saved and importers, processors and supermarkets will also save on their payments to offset carbon credits.

In-house packaging
Product grading at times is a real issue and there could be an opportunity to set up a packing house providing an independent service for producer groups to QC and to uniformly pack for export. The pack house could act as independent quality control.

7.4 Conclusions and Recommendations

7.4.1 Conclusions

The EU as an interesting potential market
So far, Asia, USA and nearby countries such as South Africa and UAE were the main export markets for Mozambican nuts and sesame seeds. Exports to the EU were 4,756 tonnes in 2022 (mainly sesame seeds and shelled cashews). This represented just 2% of Mozambique's exports. Mozambique has a long experience in cultivation and processing, mainly of cashew nuts and was in 2022 the 13th largest supplier of shelled cashews to the EU. For macadamias it was 7th largest supplier and for sesame seeds the 9th largest supplier.

Still, Mozambique is a lesser-known supplying country among EU buyers, which presents opportunities to introduce the country as a new African supplier. There are good chances for exporters and cooperatives that can meet EU market access requirements.

With only 16% of land suitable for farming currently being cultivated – combined with a 1,500-mile coastline that enables export to European markets via ocean ports – Mozambique boasts considerable potential for large-scale farming for exports. Besides, Mozambican exporters can benefit from the EU-SADC EPA agreement.

Even if the population is declining, Europe is still the 2nd largest market for tree nuts in the world representing 31% of the global tree nut market after Asia-Pacific (32%). In 2022, the edible nuts market in the EU 27 and the UK represented a value of € 13,183 million with an estimated volume of 2,153 thousand tonnes. This implies a large potential market for Mozambique.

The tradition of eating nuts has been in Europe for centuries and the market will grow in the long run when taking the driving forces in Chapter 7.3.1 into account and the emerge of new consumer groups:

- **Younger consumers** (Generation Z) are more open to organic and natural products, including nuts and seeds, particularly in Germany, France, Netherlands, Belgium, UK, Scandinavian countries and Eastern EU countries.
- **The ageing population**, which is projected to reach 64 million by 2100, continues to consume vegetables, fruits, legumes, nuts and seeds, in order keep up good health. In the majority of EU countries, Health Ministries actively promote the consumption of nuts.
- **The increasing immigrant population** is bringing more global influences to European cuisine through ethnic restaurants and shops, and immigrants themselves are significant consumers of nuts.

Suggested EU markets

The best EU markets for a first entry are Germany, France, Spain, Italy, the Netherlands, Poland, Greece (particularly for sesame seeds), Belgium, and the United Kingdom. The Scandinavian and Eastern European Union markets can then be considered. The Netherlands and Germany are significant re-exporters of edible nuts and sesame seeds to international markets.

Therefore, contacting directly importers and processors in the other countries mentioned would be optimal for maximising profit margins and establishing relationships with buyers in the countries of final consumption.

For all types of nuts, importers and supermarkets are increasingly working with smallholder farmers or farmer groups, particularly in African countries. This was confirmed by a number of Dutch and Belgian importers interviewed. Some importers find cooperation good, but professional experience is needed. Improvements include quality improvement, limiting MRL, aflatoxin and mycotoxin levels reducing the interceptions. Successful companies in Africa are those with close links, focusing on cultivating, EU regulations, harvest timing, and logistics.

Competitive issues in the edible nuts market

Consistency of quality, product innovation, and variety of products or product mixtures, brought about by research and development, are competitive issues in the market for edible nuts.
To work effectively with a shorter supply chain, some importers interviewed mentioned a lack of professionalism and expertise. Exporters should be more knowledge around growing, sourcing of quality seeds, inputs, crop husbandry and quality control systems.

7.4.2 Challenges for Mozambique

In order to succeed a long-term approach will be essential and the competitiveness of Mozambique must be improved in addressing the following problems and challenges:

Climate change: Increased cyclones, flood and drought risk is likely to have a negative impact on key value chain crops, thereby disrupting local markets and producers' income. Therefore, it is essential for smallholders to diversify more into cash crops such as cashew nuts, almonds, pecans, macadamias and sesame seeds.

Remote areas, poor infrastructure and resources. Smallholder farmers are scattered in remote areas. They are often illiterate, have a low level of education and their knowledge is based on traditional methods. The infrastructure is poor and their access to financial resources is poor. The small and fragmented land holdings make it difficult for farmers to scale up their production through mechanization.

Dependence on traders. Smallholders frequently rely on traders or primary purchasers who often do not provide adequate cultivation advice. Prices and volumes fluctuate frequently, leaving insufficient grounds for individual decisions regarding investments.

Seeds. Farmers often use seeds from the last harvest. There is a need for seed varieties that are uniform in size or colour

Quality level. Cashew production faces low quality levels because of aging trees, pests and diseases. Key challenges for production include replacing aging trees with improved root-stock and stepped-up anti-fungal spraying.

Poor post-harvest practices encourage aflatoxin contamination rather than prevent or limit it.

Risk of interceptions due to hight levels of MRLs or aflatoxin. Proper use of IPM is needed combined with regular trainings on crop management, using organic pesticides (Sulphur, Bio-spray) or using right doses of chemical pesticides/insecticides.

Low yields in terms of quantity and quality. All factories in Mozambique achieve lower yields than their counterparts in India and Vietnam due to a lack of mechanisation experience, worker expertise, and factory organisational flow.
In June 2023, the number of cashew processing units in Nampula province, Mozambique's largest production area, decreased from 37 to 6.

Lack of transparency for EU buyers as the supply chain is long and complex with many middlemen bypassing exporters. Prices to small holders are often too low resulting in low motivation.

7.4.3 Recommendations

Most of the problems related to cultivation, processing and value chain improvement are tackled in the Promove Agribiz programme (see box 10 in Section 7.1.2).

Particularly with regard to EU exports, the following recommendations can be made:

- **More high-quality agricultural inputs and education** in effective agricultural practises are required on the farm level, particularly in:
  → Minimizing aflatoxin contamination - see also Practical tips in section 7.1.1

- → Use of bio pesticides and Minimizing MRLs – see also Practical tips in Chapter 6.1.1
- → Better control of each batch by exporters before exporting through pesticide analysis and on the levels of aflatoxin, mycotoxine etc. in nuts by an accredited laboratory. INNOQ could carry out straightforward test for exporters or cooperatives which should be done quickly at an affordable price. The results should be sent to potential buyers.

- **Improving management in the quality of edible nuts and sesame seeds**
  - → Check post-harvest conditions and hygiene (healthy and clean), free from abnormal smells and tastes, live insects and dirt.
  - → Providing training on food safety – see Chapter 6.1
  - → Trainings on quality standards of each type of nuts – see Chapter 6.1.2
  - → The nuts must be packed in bags that preserve the hygienic, nutritional, technological and organoleptic qualities of the product – see further - see Chapter 6.3
  - → During storage they should be kept dry, away from light, cool and well ventilated.
  - → Cashew nuts from different harvest periods must not be mixed, as the oldest nuts would downgrade the whole batch.

- **Improving information to all stakeholders in Mozambique on the EU market**
  - → Offer capacity-building trainings and support highly motivated farmers/cooperatives/ exporters who are dedicated to the commercialisation of nuts from Mozambique.
  - → Provide training in identifying the best sales partner and sales channels depending on cashews, macadamias, peanuts etc. with good prospects for the EU market.
  - → Evaluate a possible extension of the cultivation/processing seasons to capitalise on abrupt shortages in cashew nut supplies (July to October) – see Chapter 3.6.
  - → Presenting Mozambique as a back-up supplier for Macadamias in case of Kenian quality problem, or for sesame seeds during difficulties in supplies from Niger, Sudan or Ethiopia due to political tensions.
  - → Diversify supply in cultivation, processing and segments to bring the nuts more into line with demand or applications in segments (see Chapter 1.5). For example:
    - Split or broken cashew nut kernels could be interesting to EU processors supplying ingredients to breakfast cereal, snack/energy bar, confectionery companies, vegetarian meal processors or to manufacturers of cosmetic products.
    - Class II cashews could be interesting to processors of juices or pastes. Snack manufacturers introduce lactose-free cashew milk due to their nutritional value.
    - Class II peanuts can be used to processor of coated peanuts.

- **More attention to the processing of cashew apples** and de-oiled shells for bio-fuel.

7.4.4 Identifying and finding business partners

INDIRECT OR DIRECT?

The first decision you need to make as an exporter from Mozambique is whether to approach your new market directly or indirectly.

You might ask yourself the following questions:

- What is your potential customer's purchasing policy, its sales philosophy (for example, organic or fair trade) and does it operate in different countries?
- Do you have the sales staff (relationship management), logistics (stock management, rapid delivery) and human resources (order control, customer service) needed to deal directly with them?
- What are the costs (margins involved) of each sales channel?
- What risks (e.g., loss of control) do you run when dealing with your chosen channel?

INDIRECT
An indirect approach means that all export activities are handled by an importer, distributor or intermediary (trader or agent). For the major food industries, distribution is always through agents, importers or specialist distributors/processors.
If you are new to the market, the best way is to start working with an importer or distributor as a business partner. To get a foothold in the market, you need the expertise of a local business partner who speaks the right language, who can help you with import procedures and compliance with market requirements, and who can provide you with more knowledge about market potential and competition. Once you have gained more experience in this market, you can consider sourcing directly to supermarkets, for example.

DIRECT
If you decide to enter the market directly with industries or retailers, you should be aware that you may need to take care of stocks in the export market so that you can deliver quickly.

If you're thinking of selling to supermarkets, you need to bear in mind that:

- Supermarkets need edible nuts of consistent quality. As an exporter from Africa to large European supermarkets or hypermarkets (via importers), you need to be able to guarantee a supply of your nuts of consistent and satisfactory quality and deliver them exactly when required. Some exporters set up offices/representatives in EU countries, responsible for logistical support, customer service and after-sales.
- They need mass supplies with well-organised deliveries. However, many exporters are unable to cope with the large volumes and stringent requirements of supermarkets. German discount shops work to very tight schedules, with daily deliveries planned well in advance. Similarly, in the UK, supermarkets are increasingly playing the role of food importers.

IDENTIFYING POTENTIAL BUSINESS PARTNERS

Find business partners. You can find them in Annex 3 ‘Directory – Addresses of Companies in the 9 selected markets.
You can also find them via trade fairs (catalogues), local professional organisations, chambers of commerce, directories on the Internet or professional trading platforms such as:

- https://inc.nutfruit.org/ (with an online trading platform for Members)
- https://www.mundus-agri.eu/
- https://www.tridge.com/.

Look for interesting business partners by consulting their company website (organisation, type of products, region, what kind of customers they sell to, and most importantly checking their address, locate them via Google and check their financial stability).

Create interest and build the relationship. Tell interested business partners that you are studying their market.

→ **Contact them** and tell them that you'll be visiting their market soon and that you'd like to show them your new range of products, which are more focused on their market.
→ **Try to get an appointment for a visit or Zoom meeting (Skype).** Often you have to contact them several times.
→ **Communicate with them in the right language.** It's important that you communicate well with the buyer. Do you both speak the same language? **Be sure to speak English** or otherwise hire an English speaker. In France, English is spoken but French is preferred.
→ **Follow up after the initial contact** (in person or in writing) and keep the relationship "active" by keeping them informed about your company and new product developments.

CONVINCING BUYERS

Negative image. Unfortunately, the African continent is still associated with poverty, corruption, political instability and so on. This image is reinforced by news stories that are sometimes exaggerated by the Western media, but there are interceptions, rejections by the EU Customs and there are cases of scams, cheating or poor-quality products due to disease or poor packaging. However, this negative image is slowly changing as the professionalism in African countries grows and agribusiness develops.

Suspicion and caution
As an exporter, you will be measured against your competitors by your professionalism. One of the first rules to follow when starting a business relationship is not to ask for payment in advance to cover production or transport costs. Although there are many reasons for the various shortages, EU buyers are generally "suspicious" of exporters from African countries.

→ **Improve your image.** If a buyer refers to an unfortunate experience, simply acknowledge that bad practices do exist. Then try to engage with the buyer by explaining that you are aware of such practices especially by traders and other middlemen. You can be more professional and provide evidence (e.g., testimonials) that this is certainly not the case with your company and that the quality/flavour of your product is excellent.
→ **Stand out from the crowd** by presenting your nuts in such a way as to emphasise their originality from Mozambique, from Nampula or another specific region/district.
→ **Show that you respect** international **regulations** and that you can comply with quality standards.

→ **Website**. Make sure your website gives a complete picture of your company, its identity, its product information, impressions of your production and processing, certifications, activities in terms of social and sustainable practices.

- → **Product specification sheet + Labo test**. Provide clearly written product specification sheets (see example in Annex 5) preferably combined with a test report from an accredited laboratory.
- → **Show that you work transparently** and demonstrate how you work through visuals (short videos, photos), testimonials on LinkedIn. Invite buyers to visit you.

Supply strategies in developing countries

Broadly speaking, there are two types of procurement strategy:

- → **Contract farming**: The foreign company supports selected producer groups or cooperatives and provides seed, start-up capital and technology for the production of nuts or the plant with the materials needed for the (semi) processing of graded nuts, flour or other products. They can do this without a binding contract. This form of supply is often used by Indian and Chinese companies. Some companies undertake to contribute to a community social project (schools, hospitals, etc.).

- → **Sustainable Sourcing** has become more common among large Western companies in order to improve their image with their shareholders and customers in terms of corporate responsibility. Sustainable sourcing takes a much broader perspective than contract farming, which focuses mainly on quantity, quality, price, deadlines and suppliers. A fair sourcing project takes into account the long-term impact on people, profits and the planet. These projects require total transparency of the supply chain. A MOU (Memorandum of Understanding) is drawn up which includes a project description, duration, organisation chart of parties involved, target quantities, fixed price levels for 1 year, number of technical trainings, penalties in case of side-selling and other details. Technical assistance will be provided by the importer and by the involved NGO.

7.4.5 Price setting and Negotiation

When setting your price, bear in mind the following factors that influence its level:

- → Sales channels with typical profit margins at each level and retail category (organic shop, supermarket or discounter).

For example, if you sell via the organic/fair trade channel, a buyer's bargaining power may be less aggressive than when selling to a supermarket.

- → The prices of other nuts at retail level, Internet sales, or at world bulk level by comparing the average values/tonne of different nuts supplying countries which can be found via ITC statistics.
- → Prices on international trade platforms will also give you an idea.
- → Production costs, incoterms, import duties, VAT levels and other costs.
- → The most "reasonable" or "tactical" price level according to some of your local contacts in the field (agents) or other exporters in Mozambique.

RECOMMENDATIONS FOR NEGOTIATING PRICES

To do

- → Bear in mind that your negotiating position will be stronger if there is a shortage, which is why you need to check the latest harvest forecasts regularly.
- → Carefully examine the margin levels of intermediaries before making offers to a potential buyer.
- → Be prepared to inform buyers (importers, distributors, supermarkets, etc.) of your prices when you meet them.
- → Put together a price list and product sheets to give buyers the impression that you're have already thought through your pricing. Otherwise, they will immediately try to negotiate.
- → Be prepared to recalculate prices at meetings in line with the changes they require (for example, by quantities or different grading).
  If it's too complicated, don't promise anything, but tell them you'll look into it and let them know then by email. You will then be able to explain, step by step and with a good argument, why you can't reduce your price.
- → Give importers or industries a quote/estimate, as they buy in larger quantities. Here, you need to cover the appropriate Incoterms (FOB, CIF etc..).
- → The estimate is your firm offer, including to Indians or Chinese, some of whom will always try to negotiate afterwards. Issue the invoice on the basis of the approved quotation.
- → Justify higher prices with greater product performance and benefits.
  It makes sense that superior customer service or special care in treatment would be offset by higher prices.

Offer a competitive price:

- → Consider whether there are advantages in working with colleagues to share the cost (of the material) first).
- → Consider other sales channels that are less price-sensitive.
- → Examine your payment terms and your relationship with your bank.
  If the buyer is very price-sensitive, consider whether they are the right buyer for your target market.

What not to do

- → Don't give discounts quickly**.** This does not mean that you automatically sell more, or more profitably, and this can reduce your credibility with buyers. Don't forget price is also an indicator of quality.
- → Don't sell at any price**.** This could have negative consequences for your profitability in the short, medium and long term. Buyers never pay more for a product later for a same shipment once they've paid a low agreed price with you.

7.4.6 Promotion

In many EU markets, buyers and consumers are not familiar with Mozambique as an exporter of nuts, as the majority of cashew nuts originate from Vietnam, macadamias from South Africa, and peanuts from Argentina. In this regard, buyers should be aware that Mozambique was the

thirteenth largest supplier of shelled cashews to the EU in 2022, the ninth largest supplier of sesame seeds, and the seventh largest supplier of macadamia nuts. In addition, it should be known that the majority of South African macadamias are sourced from Mozambique.

To get across this message across, raising awareness of edible nuts and sesame seeds will be a crucial step in establishing Mozambique's reputation in the EU.

The following promotional tools are available:

Use your strengths through joint promotion
This could be supported in part by a recognisable collective brand for edible nuts and seeds from Mozambique and a map of Mozambique's agricultural regions and varieties.

Trade Shows and Conferences
This is one of the most important tools if you are starting to export. In this sector, trade shows are often the place where new trends in food and drink for the coming season are presented.

The following visits to trade fairs and conferences could be considered:

- **The International Nut Council** - https://inc.nutfruit.org/ with the opportunity to network with other companies and importers around the world
- **INC Congress** in May 2024 - https://congress.nutfruit.org/vancouver/
- **Food Ingredients** (Germany) - https://www.figlobal.com in November 2023, Frankfurt.
- **Anuga** (Germany) - https://www.anuga.com/ in October 2023 in Cologne.
- **Biofach** (Germany) - https://www.biofach.de/en in February 2024 in Nuremberg.
- **Sial** (France) - https://www.sialparis.fr/ in October 2024 in Paris.
- **Alimentaria** (Spain) - https://www.alimentaria.com/en/ in March 2024 in Barcelona
- **Food Expo** (Poland) - https://warsawfoodexpo.pl/en/ in May 2024 in Warsaw.
- **Greece Food Expo** (Greece) - https://warsawfoodexpo.pl/en/ in March 2024 in Athens.

If you are attending physically you will need to consider the attraction of a trade show to reach potential new customers against the relative cost of attending. Some of the trade shows are offering virtual networking services through their own platforms.

Although you won't be able to sell anything and the majority of attendees will be salespeople, it will be still worthwhile to attend an international trade show. You can view the products of competitors and network with other industry professionals. You can visit the stands of the trade press and trade associations, who are useful information sources. If you do not have a chance to go there yourself, you can ask a consultant or student to go there.

When you are exhibiting, think about:

→ *The design of your stand,* ensuring that it is visitor-friendly and presents your products in the best possible light.
→ *Communication, advertising, advertorials and invitations* at least one month before the start of the show to ensure that your key target customers will visit your stand.

→ *That you have the appropriate material in English* to distribute and enough information on the stand to answer any questions.
→ *That you are organised to follow up all questions* and possible interest by having business cards of everyone who visited your stand.

Storytelling
Tales and personal stories are an important trend in retail to generate sympathy, involvement and transparency in the value chain.

You can generate a variety of intriguing stories for use in brochures, newsletters, websites, social media, and YouTube videos. The stories should be derived from actual discussions that you (as an exporter) have with local farming families discussing their improved living conditions, particularly in the case of sustainable sourcing. Farmers can discuss how cultivating a cash crop and working directly with exporters increases their income, health, and ability to send their children to school.

QR code for traceability

Some importers tend to introduce a traceability attribute for nuts that can be traced back to its source by scanning the lively QR code on the retail pack – see example in Chapter 4.2.

The code links to online information from farmer-level traceability to the end-consumer, giving consumers the footprint information on the journey of the nut from pre-harvest till marketplace shelf. Consumers are now more knowledgeable about food safety, hygienic management, and environmentally friendly farming practises.

ANNEX 1 – EXECUTIVE SUMMARY

PRODUCTS AND MARKETS

This market study covers tree nuts and groundnuts (peanuts) referred to in this study as **edible nuts** as well as **sesame seeds**. Within the tree nuts, the most promising nuts are cashew nuts, macadamia nuts, almonds, Brazil nuts, pecan nuts and mixed nuts. Within the EU, the selected markets are Germany, France, Spain, Italy, Netherlands, Belgium, Greece and Poland. Because of its size, the UK market is also covered.

GLOBAL SCENARIO

Production. From 2013 to 2022, global production of tree nuts increased significantly from 3,343 to 5,374 thousand tonnes. During this time period, a CAGR of 4.9% was recorded, resulting in a production increase of over 2 million tonnes. Tree nut production (kernel basis) has been primarily concentrated in high- and middle-income economies such as the USA (almonds, pistachios, walnuts) and Turkey (hazelnuts, pistachios). Important African countries tree nut producers were Côte d'Ivoire, Burkina Faso, Mozambique and Tanzania which were mainly cashew nuts, while South Africa and Kenya are significant producers of Macadamias and Pecan nuts. The global production value was estimated at € 32,083 million of which cashews were taking up the largest part 22% (€ 6,962 million). In 2022, global peanut production reached 50.71 million tonnes, being almost 10 times larger than tree nut production. China, India, Argentina, Nigeria and Senegal were the main producers.

The total global edible nuts market was estimated to be worth € 55,532 million and 44,172 thousand tonnes in 2022. By volume, peanuts represented 87.4% of the total. In contrast, tree nuts comprised 72% of the market's value. The Asia Pacific market held the largest share at 36.5%, valued at € 20,469 million, with a CAGR of 8.4% between 2020 and 2022. North America was the second largest market, with the USA accounting for 78%, followed by Canada and Mexico. Europe remains the third largest market for edible nuts and the second largest for tree nuts.

THE EU MARKET

Relative to its population of 448 million in 2022, tree nuts consumption is large compared to a population of 4,300 million in Asian Pacific. Despite the declining population, there has been a tradition of eating nuts in EU countries for centuries. The average per capita consumption of nuts eaten as a snack was 4.79 kg/year. Therefore, the EU remains a very significant world market for tree nuts and peanuts.

In 2022, the EU market for edible nuts was worth € 13,183 million with an estimated volume of 2,153 thousand tonnes. The EU accounted for 24.1% of the global market. The largest markets for edible nuts were Germany (21.3%) and France (17.7%) mainly because of their large populations and presence of large food processors and snack industries. Italy, Spain, and the UK are also significant markets in this respect. Greece, Spain, and Italy are major markets for tree nuts, while the Netherlands is a major market for peanuts. Consumption in Eastern EU countries will increase when their economies improve.

Market development. The EU market continued to develop at a 2.2% CAGR between 2019 and 2022. Following the war in Ukraine, sharp rises in food and energy prices in 2022/2023, consumers cut on their spendings in nearly all EU countries and the UK with consumption on nuts slowing down in 2023 increasing by 0.6% compared to 2022.

It is expected that the edible nuts market will increase beginning in 2024, reaching € 14,343 million by 2026. In the coming years, the EU market will be driven by the rise of vegetarians, flexitarians and vegans among younger consumers (Generation Z) using nuts as a substitute for meat and as a flavour enhancer. Other market drivers are healthy diets, naturalness trends, and the growing immigrant population. The industry responds to the demand for health food through product innovation, new nut varieties, and new

applications in the use of nuts, and nut flour, as plant-based proteins in milk, sauces, desserts, in diet meals or gluten-free food.

EU imports of edible nuts 2,788 thousand tonnes, worth € 11,826 million in 2022 and represented 26% of global imports. Around 85% were tree nuts, while the value share of peanuts was 14.4%. Between 2018 and 2022 almost all countries in the EU increased their imports of edible nuts. EU imports rose by a CAGR of 2.0% in volume and by 2.9% in value.

The most important types of tree nuts that are consumed and traded in the EU are almonds, cashew nuts, hazelnuts, pistachios, macadamias, walnuts, pecan nuts and increasingly mixed nuts. Within the oil seeds, sesame seeds will be covered as they are most relevant for Mozambique. EU edible nuts imports were led by almonds which accounted for 18.2% of EU value imports in 2022, while pistachios and cashews accounted for 11.2% and 10.8% respectively. The share of nut mixes of 15.6% illustrates its popularity in the EU market. In terms of volume, EU imports were also led by almonds, followed by cashews, peanuts and mixed nuts. The largest increases were registered in cashews, walnuts and pistachios, while EU imports of macadamias showed a decreasing trend.

Almonds are often used in mixtures with other nuts (oil- or dry-roasted, salted, unsalted or smoked) and are an important ingredient for bakery and confectionery products such as marzipan, nougat or sugar-coated almonds. They are also used as a garnish for food dishes and a component in salads and (vegetarian) meals. In cosmetics, almond oil is used in facial skin care. In 2022, the EU imported 464 thousand tonnes of almonds of which 92.3% were shelled almonds and 7.7% were almonds in shell. By value, EU almond imports amounted to € 2,065 million. Spain and Germany were main importers and represented around 25% each.

Cashews are consumed as salted nuts, either individually or in nut mixtures. Plain cashews are used in meals, while cashews as a snack come in different roasting flavours.

In the industry, cashew nuts are more popular. Confectioners use cashew nut pieces and bits in chocolate snacks, while bakery uses splits and whole raw cashew nuts as spreads in cookies and pastries. Cashew nut spreads are promoted as a healthier alternative to peanut butter. Breakfast cereals are introducing cashew-nut-rich granola products, protein and fruit-nut bars as a substitute for sweet and chocolate-based treats, and vegetable dairy uses cashews in milk, yoghurt, and cheese. They are also used in ready-to-eat dishes, sauces and in salads as an alternative to the expensive pine nuts. Cashew kernel oil gains popularity in the cosmetic industry due to benefits for hair and skin.

In 2022, total EU imports of cashew nuts (shelled) was 191 thousand tonnes, valued at € 1,274 million. Between 2018 and 2022 all EU countries, except Belgium and Sweden increased their imports of cashew nuts. Total EU imports rose by a CAGR of 6.2% in volume.

Macadamias are primarily consumed as luxury snacks due to their rich taste and high price. They are used for chocolate snacks, as well as in the bakery industry for cakes, pastries, muffins, and biscuits. Macadamia butter is a new product in EU markets, made from macadamia nuts or being mixed with other nuts. They are tasty toppings on ice cream or on luxury desserts. Cereal manufacturers use macadamias although they are less used than other nuts like hazelnuts. Macadamia oil is widely recognized non-food macadamia product, used for cooking but is rarely marketed as a food product in Europe due to its high price. It is also used in cosmetic formulations, including shampoos, conditioners, and skin lubricants.

In 2022, total EU imports of macadamia nuts were almost 8 thousand tonnes, valued at € 118 million. Between 2018 and 2022, EU imports of macadamias decreased by a CAGR of 2.6% in volume which was primarily due to reduced consumer spending.

Peanuts are sold as roasted salty snacks in Europe. Around 30-40% is used by the confectionery industry, bakery, and is used for peanut butter production. Peanuts are used in chocolate-bars and in protein and fruit-nut bars as a vegetable source of protein. They are also used in ice cream toppings. In 2022, total EU imports of groundnuts (shelled) were 745 thousand tonnes, valued at € 1,099 million. Between 2018 and 2022, EU imports of groundnuts slightly increased by a CAGR of 0.9% in volume and by 5.5% in value. This is partly due to increased prices of peanuts coming from Argentina.

Sesame seeds are mainly used in food processing. Around 50% is used in the baking and confectionery industries. They are also used in sweet snacks, biscuits or desserts such as halva. Sesame oil extraction in the Asian and Mediterranean cuisine accounts for 10% of EU imports. Retail packed seeds for home use account for around 5%. Uniform, premium seeds are primarily used in decorative applications, while the seeds' physical appearance is less important for tahini or oil extracts. In 2022, total EU imports of sesame seeds were 138 thousand tonnes, valued at € 298 million. Between 2018 and 2022 volume imports decreased by 3.4%, from 159 thousand tonnes in 2018. In addition to Greece, Germany, Netherlands, Poland and France were large importers.

SELECTED MARKETS

Germany dominates the EU market for edible nuts, with an estimated 450,000 tonnes consumed in 2022, valued at € 3,213 million and a high per capita consumption of 5.41 kg per person. Between 2018 and 2022, German consumption rose by 1.4%. Nearly half of German people prefer healthy, all-natural snacks without artificial flavours. Germany's nut and snacking industry is open to new products. Cashews are increasingly used in savoury snacks and sweets. Germany leads EU organic market and is the EU's second-largest cereal market (after the UK). It is the largest EU importer of cashews, walnuts, pistachios, mixed nuts, and macadamias.

With Hamburg as one of the world's trading centres, Germany is a leading trader and re-exporter of edible nuts. In 2022, Germany imported 634 thousand tonnes of edible nuts worth € 3,293 million. Between 2018 and 2022, large increases (CAGR) were registered in the imports of cashew nuts (+5.9%), walnuts (+6.3%) and pistachios in shell (+6.2%). Germany imports of cashews mainly came from Vietnam. Cote d'Ivoire was the most important supplier from Africa. Macadamias mostly came from South Africa and Kenya. While Nigeria, Mozambique, and Egypt supplied 40% of German sesame seeds imports.

France is the 2nd largest EU market for edible nuts with a consumption of 273 thousand tonnes, valued at € 2,309 million. More attention is given to vegetarian meals in which various types of nuts are used. Between 2018 and 2022, French consumption increased by a CAGR of 3.0%. France has a growing population with many people coming Arab countries who frequently eat nuts. French people eat nuts as a snack at the apéritifs before the warm meal. But nuts are also used in chocolates, sweets (nougat), nut oil and in salads. Salted peanuts remain popular, but private label price reductions make tree nuts more accessible. France's food processing industry is known for its innovation in bakeries and confectionery.

In 2022, France imported 263 thousand tonnes of edible nuts valued at € 1,221 million. Between 2018 and 2022, large increases (CAGR) were registered in the imports of cashew nuts (+9.0%), peanuts (+4.8%) and macadamias (+22.7%). In comparison to other EU countries, France was a major importer from Africa, particularly from its former colonies in West and North Africa. Cashews were imported Vietnam (63%) and from Cote d'Ivoire (9%).

Spain is among the largest EU markets for edible nuts. Consumption was estimated at almost 266 tonnes in 2022, valued at € 1,553 million. Spain accounted for 11.8% of the value of the EU market. The per capita consumption of 5.59 kg per person was among the highest in the EU. Between 2018 and 2022, Spanish consumption rose by a CAGR of 0.5%. Retirees, young couples without children, and

independent young people consume edible nuts above average. Nuts are often bought impulsively at the large number of kiosks. More recognition of health benefits and private labels will drive the future market. Spain's agri-food processing industry has a leading position in the EU. Being the major almond producer, it faces climate change adaptation. In 2022, Spain imported 289 thousand tonnes of edible nuts worth € 1,155 million which were mainly almonds (shelled) from the USA and increasingly of almonds in shell. Spain is also a large importer of walnuts, pistachios, peanuts and cashews. Spain was a small importer of edible nuts from Africa, except for macadamias which mainly came from South Africa and Kenya. For sesame seeds Egypt and Nigeria were main suppliers. Spain exported mainly almonds and mixed nuts to other EU countries.

Italy is a leading EU market for edible nuts. In 2022, consumption was estimated at almost 294 tonnes in 2022, valued at € 1,792 million and represented 12.6% of the EU market. The per capita consumption of 5.01 kg per person was among the highest in the EU. Between 2018 and 2022, Italian consumption rose by a CAGR of 1.4%. The pandemic has accelerated a healthy eating trend among Italian people, attracting vegan, vegetarian, flexitarian, and superfood alternatives to younger Italina people and to athletes. Cashew nuts and pine nuts are increasingly used in salads and in vegetarian meals. Demand from the industrial sector for edible nuts comes mainly from the large number of small confectioners, bakeries, ice cream and a few cereal manufacturers. Almonds are used for the production of liqueur (*Amaretto*) and in a large variety of desserts.

Italy is among the top EU importers of edible nuts and imported 298 thousand tonnes of edible nuts worth € 1,439 million in 2022. The high value of imports is because of high imports of hazelnuts, walnuts and almonds. Imports of pistachios, and increasingly cashew nuts were high. A large part (20%) of cashew imports came from Cote d'Ivoire. Macadamias came from South Africa and Kenya.

The Netherlands is a mid-sized EU market and a large trader of edible nuts, especially of groundnuts. Consumption was estimated at 137 thousand tonnes in 2022, valued at € 346 million. The Netherlands represented 2.6% of the EU market. The per capita consumption of 5.82 kg per person was the highest in the EU. Edible nuts represent almost one third of the savoury snack market, which is high in comparison to other EU countries. Dutch people consume a large number of coated and flavoured peanuts and the Netherlands is the first EU producer of peanut butter. Tree nuts are often served with drinks. The well-known nut bars found in almost every Dutch shopping centre offer a range of natural, roasted and mixed nuts.

In 2022, the Netherlands imported 555 thousand tonnes of edible nuts worth € 1,603 million. Around 63% of this volume were peanuts. It is the second largest cashew nut importer in the EU being re-exported to other EU countries. Around 70% of cashews came from Vietnam and 12% came from India. Between 2018 and 2022, large increases were registered in the imports of walnuts (+13.4%), almonds (+6.4%) and cashews (+3.2%). Burkina Faso was the main African supplier of cashews (4%). Small cashew suppliers were Togo, Côte d'Ivoire and Ghana. South Africa, Kenya and Mozambique were large suppliers of macadamias.

Greece is a smaller EU market for edible nuts and a large market for sesame seeds. Apparent consumption of edible nuts was estimated at almost 51 thousand tonnes in 2022, valued at € 205 million. Greece represented 1.6% of the EU market. Between 2018 and 2022, Greek consumption increased by a CAGR of 1.8%. Fruits and nuts are extensively available in shops, supermarkets and street markets. Greek consumers are selective, quality-minded, and willing to experiment with new tastes and flavours in meals using nuts. Amygdalota are popular almond cookies. Koulouri, Greek sesame bread rings, are a popular treat. Bakery products, oils and cereal products were important sub-sectors. Greece is a producer of pistachios and a smaller EU importer of edible nuts. In 2022, imports were 43 thousand tonnes, valued at

€ 157 million. Compared with other EU countries Greece was a large importing country from Africa. Sesame seeds came from Nigeria, Sudan and Mozambique. While 72% of Greek macadamia imports came from South Africa.

Poland is a mid-sized EU market for edible nuts. Apparent consumption was estimated at 114 thousand tonnes in 2022, valued at € 493 million. In the same year, Poland represented 3.7% of the EU market. The per capita consumption of 2.76 kg per person was well below the EU average of € 4.32. Between 2018 and 2022, Polish consumption increased by a CAGR of 4.9%. Inspired on reality TV cooking programmes, new exotic and healthy dishes are introduced using nuts. Poland is a mid-sized EU importer of edible nuts thanks to its processing industry's demand and a rising demand from Polish consumers. In addition, Poland has become a dynamic business *hub* especially for peanuts at the heart of Europe. In 2022, Poland imported 152 thousand tonnes of edible nuts worth € 494 million. Being the biggest Eastern EU country, it is a large importer of peanuts, cashews, almonds, mixed nuts and sesame seeds. Compared with other EU countries Poland was a large importer from Africa, especially of sesame seeds that mainly came from Nigeria, Mozambique and Somalia. Around 36% of macadamias were imported from Kenya and South Africa.

MOZAMBICAN EXPORTS TO THE EU

Exports to the EU were 4,746 tonnes in 2022 which was still small. The EU accounted just for 2% of total Mozambique's worldwide exports of 242 thousand tonnes of edible nuts. Mozambican exports to the EU increased by a CAGR of 4.3%, from 4,004 in 2018. This was mainly due to more exports of shelled cashews to Portugal, Belgium, Sweden, Germany and Netherlands, and of sesame seeds to Germany, Greece and Poland.

MARKET OPPORTUNITIES

Mozambique, a lesser-known African supplier, offers opportunities for EU buyers to introduce the country as a new African supplier. With 16% land suitable for farming and a 1,500-mile coastline, Mozambique has potential for large-scale farming exports. Besides, Mozambican exporters can benefit from the EU-SADC EPA agreement. Mozambican exporters have the best opportunities for shelled cashew nuts. Raw cashew nuts processed in Mozambique and directly exported to the EU can reduce emissions by 12,000 km and offset carbon credits, saving costs for EU buyers. There are good opportunities for peanuts being less available in the USA and India in 2023/2024 due to climate change and El Niño. Opportunities are also for sesame seeds, macadamias, almonds, Brazil nuts and pecans.

CHALLENGES FOR MOZAMBIQUE

- Climate change is expected to negatively impact key value chain crops. More diversification for smallholders into cash crops such as edible nuts will be needed.
- Smallholder farmers often work on small plots in remote areas and often rely on traders.
- Cashew production faces low quality levels. Key challenges include replacing aging trees with improved root-stock and stepped-up anti-fungal spraying.
- Poor post-harvest practices increase risk of interceptions; IPM, crop management training, organic pesticides, and appropriate doses of chemicals are needed.
- Mozambique's factories struggle with mechanization, worker expertise, and organization.
- The value chain is complex with too many middlemen. Prices to small holders are often too low resulting in low motivation and there is a lack in transparency for EU buyers.

RECOMMENDATIONS

Most challenges are tackled in the Promove Agribiz programme. Other recommendations:

→ Exporters should control pesticides and aflatoxin levels of each batch of nuts through accredited laboratories (INNOQ) providing simple, reliable tests at affordable prices.
→ Trainings on good post-harvest practices, food safety and quality standards are essential.
→ Nuts should be packed in hygienic, nutritional, technological, and organoleptic bags, and should be stored in dry, cool and well-ventilated areas.
→ Offer capacity-building trainings and support motivated farmers/cooperatives/exporters.
→ Evaluate a possible extension of the cultivation/processing seasons to capitalise on abrupt shortages in cashew nut supplies (July to October). Increase processing of cashew apples.
→ Mozambique could be a backup supplier for Macadamias and sesame seeds amid Kenian quality issues and political tensions in Niger, Sudan or Ethiopia.
→ Diversify supply in cultivation, processing, and segments to align nuts better with demand or applications.
For example:
  - Split or broken cashew nut kernels could be interesting to EU processors supplying ingredients to breakfast cereal, snack/energy bar, confectionery companies, vegetarian meal processors or to manufacturers of cosmetic products.
  - Class II cashews could be interesting to processors of juices or pastes. Snack manufacturers introduce lactose-free cashew milk due to their nutritional value.
  - Class II peanuts can be used to processor of coated peanuts

→ More attention to the processing of cashew apples and de-oiled shells for bio-fuel.

ANNEX 2 – DETAILED TRADE STATISTICS

Table 1. EU 27 imports of Almonds (shelled), 2018 – 2022
Volume in tonnes and value in € thousand

EU 27	2018		2020		2022		
	Volume	Value	Volume	Value	Volume	Value	CAGR *
TOTAL	**387,202**	**2,067,697**	**421,718**	**2,332,220**	**428,434**	**2,065,847**	**2.5%**
Spain	106,014	495,482	99,480	485,301	108,225	451,650	0.5%
Germany	95,867	530,193	106,740	615,427	101,949	517,969	1.5%
Italy	47,790	254,433	59,221	311,184	61,976	292,619	6.7%
France	39,467	242,128	41,888	276,893	40,437	236,497	0.6%
Netherlands	29,825	157,889	38,589	207,735	38,238	180,171	6.4%
Belgium	14,667	81,198	13,822	80,238	15,677	76,845	1.7%
Poland	6,332	39,075	8,498	50,748	8,491	47,320	7.6%
Denmark	8,042	42,843	9,342	52,254	8,245	39,432	0.6%
Greece	6,899	37,173	8,836	47,292	7,994	39,261	3.8%
Sweden	5,848	33,741	6,598	38,577	6,130	31,245	1.2%
Portugal	4,253	24,099	3,588	20,068	4,312	21,200	0.3%
Estonia	841	5,729	1,710	11,561	4,053	21,766	48.2%
Czech Republic	3,886	22,452	4,718	27,545	4,042	21,645	1.0%
Austria	3,958	27,047	4,290	31,560	3,616	25,441	-2.3%
Lithuania	1,515	8,813	1,811	10,055	2,105	11,308	8.5%
Ireland	2,139	6,547	1,586	6,766	1,953	6,402	-2.2%
Bulgaria	1,723	9,851	1,919	10,856	1,929	10,339	2.9%
Slovakia	1,569	9,385	1,621	9,420	1,772	8,995	2.4%
Croatia	1,117	6,893	1,637	9,323	1,467	8,031	7.1%
Romania	1,038	6,722	935	6,133	1,361	7,720	7.0%
Cyprus	969	5,863	899	5,191	1,218	6,957	5.9%
Hungary	978	5,970	992	5,945	864	4,556	-4.1%
Finland	924	6,333	1,274	8,666	670	4,995	-7.7%
Latvia	517	3,021	541	3,089	541	2,827	1.1%
Luxembourg	315	2,422	457	3,160	486	2,989	11.5%
Slovenia	423	2,861	485	2,984	449	2,479	1.5%

Malta	286	1,533	241	1,249	235	1,190	-4.8%

*CAGR = Compound Annual Growth Rate 2018 – 2022 (based on volume) Source: ITC Trademaps (2023)

Table 2. Main supplying countries of Almonds (shelled) to the EU, 2018 – 2022
Value in € thousand

SUPPLYING COUNTRIES	2018	2019	2020	2021	2022
	Value	Value	Value	Value	Value
TOTAL	**2,067,697**	**2,400,790**	**2,332,220**	**1,994,917**	**2,065,847**
USA	1,324,749	1,479,913	1,457,034	1,186,190	1,261,508
Spain	363,732	463,532	417,940	414,951	408,508
Germany	67,147	83,652	89,262	83,649	83,654
Italy	64,069	78,048	85,432	71,383	71,120
Australia	74,461	66,932	71,362	57,587	70,186
Netherlands	52,006	63,125	66,105	62,819	69,101
Portugal	7,543	16,382	13,588	17,424	20,815
Belgium	5,552	6,654	7,693	19,304	10,866
France	11,618	14,345	13,749	12,584	8,613
Greece	4,228	6,532	6,138	5,352	6,204
Morocco	5,853	6,170	6,371	4,786	5,421
Poland	1,650	3,008	7,038	6,851	4,366
Slovakia	6,520	6,610	7,427	2,942	3,450
Afghanistan	175	8,149	1,928	1,461	3,438
Lithuania	1,599	2,110	3,465	2,769	3,221
Sweden	2,222	5,149	6,547	5,529	2,776
Chile	6,992	5,813	2,081	2,301	2,658
Viet Nam	5,457	7,663	2,794	1,939	2,635
Austria	2,463	3,682	4,366	4,292	2,071
Cyprus	87	10	55	1,656	2,057
Pakistan	810	3,563	1,419	2,188	1,915
United Kingdom	35,938	40,248	35,616	2,807	1,898
Denmark	3,843	4,005	4,133	3,051	1,689
Turkey	2,385	4,395	930	2,118	1,568
Uzbekistan	936	1,907	2,995	2,855	1,028
OTHER AFRICAN COUNTRIES					
Tunisia	517	308	725	992	755

South Africa	144	2	266	75	135
Côte d'Ivoire	2	3	5	25	114

Source: ITC Trademaps (2023)

Table 3. EU 27 imports of Cashew nuts (shelled), 2018 – 2022
Volume in tonnes and value in € thousand

EU 27 IMPORTS	2018		2020		2022		
	Volume	Value	Volume	Value	Volume	Value	CAGR *
TOTAL	**150,405**	**1,313,485**	**194,322**	**1,260,224**	**191,218**	**1,273,871**	**6.2%**
Germany	47,646	418,911	64,890	430,256	59,944	409,385	5.9%
Netherlands	37,849	324,956	48,507	300,432	42,987	288,449	3.2%
France	11,450	108,502	14,544	105,257	16,195	115,800	9.0%
Italy	8,377	59,564	13,114	64,025	13,428	70,758	12.7%
Spain	7,311	64,897	8,789	62,956	12,301	87,733	13.9%
Poland	5,231	48,439	7,866	52,592	9,230	60,939	15.2%
Belgium	11,503	98,650	9,996	58,177	6,425	35,410	-13.6%
Luxembourg	2,743	25,155	3,070	23,119	3,571	21,819	6.8%
Czech Republic	1,315	12,352	2,367	16,507	3,272	22,664	25.2%
Greece	1,883	15,883	2,512	16,373	3,088	20,721	13.2%
Austria	2,032	20,686	2,853	22,939	2,761	21,736	7.9%
Lithuania	1,271	10,083	2,367	14,307	2,305	14,750	16.1%
Portugal	1,326	12,081	1,443	10,453	2,175	15,420	13.2%
Sweden	2,863	24,966	2,826	19,491	2,069	14,383	-7.8%
Bulgaria	926	6,681	1,284	7,352	1,813	11,518	18.3%
Finland	1,185	11,966	1,523	12,164	1,480	9,531	5.7%
Slovakia	956	8,468	972	6,654	1,459	10,143	11.1%
Denmark	1,264	10,960	1,543	9,647	1,241	7,989	-0.5%
Estonia	505	3,976	459	2,705	1,193	4,161	23.9%
Hungary	555	5,034	704	5,053	858	6,059	11.5%
Ireland	590	6,001	618	5,336	812	6,242	8.3%
Romania	488	4,812	541	3,896	729	5,156	10.6%
Slovenia	411	3,915	529	3,725	547	3,845	7.4%
Latvia	233	2,003	377	2,312	541	3,611	23.4%
Croatia	227	2,222	314	2,284	407	2,988	15.7%
Cyprus	183	1,633	253	1,765	302	2,064	13.5%
Malta	82	723	61	445	87	630	1.4%

*CAGR = Compound Annual Growth Rate 2018 – 2022 (based on volume)

Source: ITC Trademaps (2023)

Table 4. Main supplying countries of Cashew nuts (shelled) to the EU, 2018 – 2022
Value in € thousand

SUPPLYING COUNTRIES	2018	2019	2020	2021	2022
	Value	Value	Value	Value	Value
TOTAL	**1,313,485**	**1,275,685**	**1,260,224**	**1,216,990**	**1,273,871**
Vietnam	680,270	683,952	728,912	733,085	766,343
Germany	63,707	64,934	73,791	77,948	97,500
Netherlands	104,529	88,045	81,397	85,347	96,635
India	310,226	269,396	213,986	151,236	83,397
Côte d'Ivoire	7,713	14,274	18,254	38,731	79,433
Brazil	25,654	33,812	33,868	19,535	18,726
Burkina Faso	8,586	14,115	13,453	16,766	18,688
Honduras	12,256	12,289	2,447	1,336	14,629
Nigeria	1,444	2,725	3,317	5,139	9,183
Spain	3,642	3,381	2,693	4,764	8,522
Indonesia	7,653	4,407	5,705	12,342	7,686
Benin	1,638	4,918	6,341	4,610	6,213
Mozambique	9,272	13,288	9,112	7,725	5,808
Togo	1,893	3,531	4,026	5,043	5,630
Italy	5,307	4,574	4,785	4,312	5,326
Ghana	4,301	5,351	5,559	5,883	3,989
Guinea-Bissau	2,632	1,795	2,288	2,128	3,246
Tanzania	1,014	1,532	1,285	2,220	3,044
Lithuania	1,252	2,230	3,070	2,720	2,717
Austria	1,508	1,252	1,481	2,094	2,504
Belgium	3,059	3,111	1,799	1,087	2,181
USA	1,160	598	1,376	1,227	1,867
France	1,660	1,146	1,091	2,217	1,820
China	2,042	1,200	2,182	1,766	1,648
United Kingdom	29,630	23,037	21,470	6,911	1,598
OTHER AFRICAN COUNTRIES					
Kenya	48	126	612	948	721

Madagascar	557	415	328	371	479
South Africa	3	1	98	221	310
Senegal	329	397	240	263	243

Source: ITC Trademaps (2023)

Table 5. EU 27 imports of Groundnuts (shelled), 2018 – 2022
Volume in tonnes and value in € thousand

EU 27	2018		2020		2022		
	Volume	Value	Volume	Value	Volume	Value	CAGR *
TOTAL	**718,472**	**886,613**	**761,016**	**982,342**	**745,215**	**1,099,265**	**0.9%**
Netherlands	333,008	399,125	371,689	466,262	348,186	502,334	1.1%
Germany	117,049	145,464	121,811	157,382	103,100	146,118	-3.1%
Poland	60,480	76,570	64,931	84,342	77,699	111,091	6.7%
France	29,473	39,582	34,156	49,443	35,557	55,474	4.8%
Spain	40,385	51,683	32,577	46,610	32,577	61,618	-5.2%
Italy	22,562	30,233	21,841	29,761	27,711	42,423	5.3%
Belgium	28,290	37,638	24,515	33,052	20,666	32,353	-7.6%
Greece	11,862	14,835	12,541	16,840	17,851	27,673	10.8%
Bulgaria	10,643	12,094	13,153	15,893	13,955	19,234	7.0%
Hungary	8,602	11,392	8,048	10,712	9,324	12,988	2.0%
Denmark	6,204	8,147	7,591	10,410	7,136	11,513	3.6%
Romania	5,529	7,392	6,160	8,527	6,948	10,417	5.9%
Austria	7,964	6,992	5,646	5,921	6,780	8,840	-4.0%
Luxembourg	8,722	12,421	8,632	11,760	6,497	9,306	-7.1%
Portugal	2,681	3,490	3,961	5,420	5,987	8,969	22.2%
Lithuania	3,940	4,453	4,784	6,063	5,921	8,546	10.7%
Czech Republic	4,247	5,463	4,114	5,171	4,549	7,025	1.7%
Sweden	2,589	3,047	3,112	4,104	3,046	5,238	4.2%
Slovakia	2,878	3,683	2,784	3,591	2,960	4,407	0.9%
Croatia	1,654	2,147	2,027	2,508	2,672	3,550	12.7%
Finland	3,217	3,258	2,639	2,778	2,404	4,316	-7.0%
Ireland	1,432	1,419	1,701	1,952	1,598	2,333	2.7%
Cyprus	1,323	1,786	702	1,071	640	1,122	-16.6%
Latvia	964	1,274	851	1,177	538	845	-13.6%
Estonia	2212	2,219	503	745	385	637	-35.1%
Slovenia	374	566	412	644	383	640	0.6%
Malta	188	238	135	203	145	255	-6.3%

*CAGR = Compound Annual Growth Rate 2018 – 2022 (based on volume)

Source: ITC Trademaps (2023)

Table 6. Main supplying countries of Groundnuts (shelled) to the EU, 2018 – 2022
Value in € thousand

SUPPLYING COUNTRIES	2018	2019	2020	2021	2022
	Value	Value	Value	Value	Value
TOTAL	**886,613**	**887,814**	**982,342**	**905,196**	**1,099,265**
Argentina	466,252	476,841	644,775	588,626	674,941
Netherlands	199,807	196,471	202,850	199,941	202,344
Brazil	74,232	69,537	59,543	49,229	69,159
China	74,882	74,153	67,749	63,166	60,336
USA	73,406	56,845	41,310	36,148	52,239
Germany	22,731	17,596	23,735	23,039	22,893
Nicaragua	29,692	29,392	23,691	20,907	30,909
India	12,999	16,210	20,229	9,050	15,617
Egypt	2,948	4,272	2,378	12,220	8,078
South Africa	11,871	11,885	12,343	16,289	7,761
Chile		49	58	1,615	3,979
Spain	1,408	1,065	3,702	6,516	3,835
Austria	2,038	2,338	2,640	2,915	3,463
Hungary	2,108	2,088	2,377	2,473	2,684
Poland	4,695	5,605	4,906	2,243	1,798
Türkiye	200	43	73	911	1,488
Paraguay	4,224	3,421	176	1,230	1,483
Viet Nam	293	667	1,732	1,866	1,416
Belgium	5,689	7,233	3,630	4,219	1,364
Greece	727	742	935	1,249	1,127
United Kingdom	4,418	4,482	9,581	4,271	1,014
Italy	348	346	480	637	634
Lithuania	583	640	555	456	628
Bulgaria	923	1,452	1,726	1,173	622
France	229	308	354	725	606
OTHER AFRICAN COUNTRIES					

Togo	10	82	46	59	363
Burkina Faso		2	3	7	77
Côte d'Ivoire	513	39	4	38	44
Uganda	3	4	6	15	34
Cameroon	5	21	23	58	33

Source: ITC Trademaps (2023)

Table 7. EU 27 imports of Macadamias (shelled), 2018 – 2022
Volume in tonnes and value in € thousand

EU 27	2018		2020		2022		
	Volume	Value	Volume	Value	Volume	Value	CAGR *
TOTAL	**8,992**	**143,721**	**8,734**	**141,342**	**7,997**	**118,403**	**-2.9%**
Germany	3,398	53,829	3,865	62,854	3,303	48,686	-0.7%
Netherlands	2,480	40,671	2,189	34,224	2,244	32,992	-2.4%
Spain	789	10,859	592	10,367	756	12,126	-1.1%
France	273	5,080	922	14,486	618	7,896	22.7%
Italy	359	5,019	215	2,731	288	3,079	-5.4%
Luxembourg	426	6,863	316	5,670	184	3,772	-18.9%
Poland	136	2,562	126	2,167	147	2,281	2.0%
Greece	78	1,425	79	1,226	97	1,757	5.6%
Slovakia	18	63	19	255	69	978	40.0%
Austria	54	1,003	52	969	64	1,100	4.4%
Belgium	739	12,000	141	2,461	48	667	-49.6%
Czech Republic	64	1,210	63	1,195	46	853	-8.6%
Lithuania	20	362	34	453	35	529	15.0%
Bulgaria	7	146	24	400	25	449	37.4%
Portugal	8	153	12	222	21	321	27.3%
Sweden	23	475	28	555	11	171	-16.9%
Slovenia	19	307	0	10	10	169	-14.8%
Denmark	79	1,296	32	631	6	97	-47.6%
Ireland	4	42	2	44	6	134	10.6%
Romania	6	126	9	111	6	78	0.0%
Finland	3	61	7	166	5	118	13.6%
Cyprus	3	56	2	32	3	42	0.0%
Hungary	1	15	1	22	2	40	18.9%
Croatia	0	14	0	17	1	17	97.8%
Estonia	1	10	3	53	1	30	0.0%
Latvia	3	61	1	17	1	17	-26.1%

Malta	1	13	0	4	0	3	-49.8%

*CAGR = Compound Annual Growth Rate 2018 – 2022 (based on volume) Source: ITC Trademaps (2023)

Table 8. Main supplying countries of Macadamias (shelled) to the EU, 2018 – 2022
Value in € thousand

SUPPLYING COUNTRIES	2018	2019	2020	2021	2022
	Value	Value	Value	Value	Value
TOTAL	**143,721**	**151,149**	**141,342**	**144,176**	**118,403**
South Africa	49,799	58,714	63,170	56,176	45,517
Kenya	24,042	16,204	22,579	32,479	21,419
Australia	36,650	43,792	25,955	20,438	16,593
Netherlands	11,773	9,424	11,785	10,669	11,370
Guatemala	3,233	4,339	1,682	1,705	6,749
Germany	3,115	4,784	6,618	7,033	5,979
Mozambique	2,536	1,300			3,468
Malta	0	0	0	0	2,479
Malawi	4,326	2,263	3,712	7,747	2,220
China	981	366	3	2,751	719
Spain	356	456	340	352	691
Slovakia	0	49	137	446	559
Zimbabwe	14	7	1	13	527
United Kingdom	1,398	2,690	1,908	176	433
Austria	52	155	256	259	348
Saudi Arabia		0	0		320
Greece	78	116	154	96	270
Bulgaria	4	39	60	183	239
Viet Nam	421	1,517	320	88	217
Italy	197	43	106	101	194
Switzerland	3	0	0	70	124
Belgium	47	330	441	393	118
France	152	29	110	48	95
Poland	305	29	107	59	75
USA	3,241	1,785	1,356	2,098	75
OTHER AFRICAN COUNTRIES					

Rwanda					35
Tanzania	13	4	6	13	10
Uganda	3		5	5	6

Source: ITC Trademaps (2023

Table 9. EU 27 imports of Nuts and seeds, incl. mixtures, 2018 – 2022
Volume in tonnes and value in € thousand

EU 27	2018		2020		2022		
	Volume	Value	Volume	Value	Volume	Value	CAGR *
TOTAL	**282,081**	**1,468,539**	**314,709**	**1,823,380**	**312,862**	**1,845,248**	**2.6%**
Germany	87,598	422,610	97,068	527,064	96,866	519,851	3.1%
France	37,137	245,013	38,763	269,739	39,646	263,587	1.6%
Netherlands	26,128	128,906	24,761	156,279	23,428	153,008	-2.7%
Belgium	25,222	113,466	27,312	136,022	20,820	129,714	-4.7%
Poland	11,646	48,853	18,710	92,034	19,499	102,904	13.9%
Italy	10,361	67,100	11,019	81,390	14,044	98,456	8.0%
Austria	15,523	98,132	18,813	122,917	13,762	100,001	-3.1%
Sweden	9,993	57,779	10,442	63,243	12,689	80,011	6.2%
Spain	10,607	58,202	11,924	77,099	12,166	73,370	3.4%
Romania	5,946	24,661	9,541	38,268	12,068	49,706	19.4%
Czech Republic	7,900	30,397	6,403	38,852	6,261	39,186	-5.7%
Denmark	3,193	21,782	4,129	25,605	6,092	29,332	17.5%
Portugal	2,629	15,471	3,421	20,072	4,477	23,255	14.3%
Hungary	3,039	14,224	3,009	16,228	3,678	20,030	4.9%
Finland	3,407	18,723	3,609	24,279	3,250	23,374	-1.2%
Bulgaria	2,166	8,541	2,688	12,633	3,192	15,786	10.2%
Slovakia	3,486	15,234	3,654	19,010	3,001	16,871	-3.6%
Ireland	2,880	14,774	3,550	15,222	2,979	17,683	0.8%
Greece	2,387	11,862	2,414	13,677	2,963	17,806	5.6%
Latvia	1,756	6,839	2,019	7,721	2,196	11,955	5.8%
Estonia	1,921	9,278	2,099	10,128	2,113	11,591	2.4%
Croatia	2,396	9,786	2,135	10,908	2,088	12,644	-3.3%
Lithuania	2,028	9,302	2,580	11,358	2,054	10,578	0.4%
Luxembourg	936	6,465	2,670	20,741	1,548	11,737	13.4%
Slovenia	1,112	7,118	1,139	8,088	1,232	7,971	2.6%
Cyprus	475	2,605	559	3,108	496	2,920	1.0%

Malta	209	1,413	278	1,695	254	1,923	5.0%

*CAGR = Compound Annual Growth Rate 2018 – 2022 (based on volume) Source: ITC Trademaps (2023)

Table 10. Main supplying countries of Nuts and Seeds, incl mixtures to the EU, 2018 – 2022
Value in € thousand

SUPPLYING COUNTRIES	2018	2019	2020	2021	2022
	Value	Value	Value	Value	Value
TOTAL	**1,468,539**	**1,607,052**	**1,823,380**	**1,847,007**	**1,845,248**
Turkey	484,558	543,902	601,045	617,429	586,365
Germany	275,218	307,381	359,627	343,862	380,585
Netherlands	111,339	116,692	128,390	131,155	143,145
Spain	83,829	92,058	109,590	114,264	113,121
Italy	60,110	70,968	82,130	106,283	99,869
Luxembourg	69,980	58,653	90,229	86,417	62,349
Belgium	53,426	48,101	49,006	49,215	44,024
Viet Nam	10,935	17,105	26,128	31,360	35,712
Poland	16,420	19,589	27,876	27,206	34,631
Austria	28,667	31,788	30,015	32,508	32,549
France	30,749	33,631	35,213	26,539	30,688
USA	44,093	54,659	48,409	38,501	30,569
China	19,806	21,013	22,242	24,788	23,227
Hungary	14,190	15,970	19,227	19,457	20,393
United Kingdom	23,216	23,940	28,850	17,982	18,893
Slovakia	6,799	7,277	8,704	8,177	15,375
Russia	14,253	13,702	18,374	18,470	13,899
Moldova	3,030	5,532	9,171	10,364	12,552
Greece	5,479	9,434	10,353	12,462	12,268
Lithuania	7,104	7,435	9,241	9,459	11,325
Czech Republic	5,479	9,308	10,557	10,927	11,291
Lebanon	10,230	11,788	11,847	11,376	11,104
Denmark	7,777	7,092	7,143	8,926	9,554
Georgia	9,595	5,398	5,988	6,430	7,092
Bulgaria	1,427	1,725	3,590	5,539	6,830

OTHER AFRICAN COUNTRIES					
South Africa	450	280	660	772	707
Burkina Faso	428	689	530	386	430
Benin	1	6	18	2	333
Togo	2	4	26	226	287
Mozambique	990	314	1317	331	250

Source: ITC Trademaps (2023)

Table 11. EU 27 imports of Sesame seeds, 2018 – 2022
Volume in tonnes and value in € thousand

EU 27	2018		2020		2022		
	Volume	Value	Volume	Value	Volume	Value	CAGR *
TOTAL	**159,013**	**245,357**	**163,634**	**285,197**	**138,643**	**298,036**	**-3.4%**
Greece	31,160	42,078	31,446	44,761	31,932	57,575	0.6%
Germany	33,499	52,481	38,254	69,772	30,190	66,384	-2.6%
Netherlands	27,595	42,383	25,198	43,596	19,621	42,328	-8.2%
Poland	13,388	19,266	12,516	21,775	10,363	23,399	-6.2%
France	12,565	21,740	12,695	25,809	9,383	22,436	-7.1%
Italy	8,857	13,107	9,891	15,523	7,967	16,374	-2.6%
Spain	6,298	10,914	8,022	13,702	6,880	15,398	2.3%
Romania	3,160	5,111	3,144	5,674	3,270	7,744	0.8%
Austria	3,568	6,517	4,032	8,614	3,111	7,732	-3.4%
Belgium	4,630	7,288	4,435	8,352	2,323	5,600	-15.8%
Bulgaria	1,933	2,803	1,792	2,818	1,904	3,801	-0.4%
Cyprus	1,893	2,710	1,831	2,955	1,898	3,896	0.0%
Sweden	1,263	2,393	1,484	3,644	1,398	4,350	2.5%
Denmark	2,023	3,867	2,130	4,682	1,356	3,529	-9.6%
Hungary	1,506	2,547	1,212	2,253	1,325	3,122	-3.1%
Croatia	766	1,306	930	1,623	1,154	2,572	10.9%
Czech Republic	1,020	1,789	854	1,710	726	1,843	-8.3%
Lithuania	641	1,039	859	1,369	701	1,594	2.6%
Latvia	271	474	256	521	565	1,100	20.2%
Ireland	789	1,434	533	1,218	511	1,878	10.2%
Slovenia	287	517	372	816	453	1,151	12.1%
Finland	536	1,211	646	1,496	440	1,221	-4.8%
Portugal	479	799	422	906	429	956	-2.7%
Slovakia	332	601	287	706	393	1,139	4.3%
Luxembourg	193	434	216	559	176	463	-2.2%

Estonia	236	366	55	141	101	281	-19.1%
Malta	125	183	122	203	78	166	-10.1%

*CAGR = Compound Annual Growth Rate 2018 – 2022 (based on volume) Source: ITC Trademaps (2023)

Table 12. Main supplying countries of Sesame seeds to the EU, 2018 – 2022
Value in € thousand

SUPPLYING COUNTRIES	2018	2019	2020	2021	2022
	Value	Value	Value	Value	Value
TOTAL	**245,357**	**304,380**	**285,197**	**298,793**	**298,036**
Nigeria	25,056	31,419	23,004	36,622	45,304
India	93,156	117,362	101,371	31,513	43,046
Turkey	4,508	5,450	15,465	30,267	23,526
Netherlands	20,215	23,571	21,581	20,640	21,825
Germany	12,839	12,985	12,819	15,870	20,855
Pakistan	2,124	5,030	1,463	17,610	15,943
Uganda	5,221	8,914	9,666	12,291	13,242
Guatemala	6,505	9,193	7,628	10,533	10,738
Mozambique	3,643	4,423	5,549	4,530	9,096
Brazil	0	762	2,290	6,392	8,191
Sudan	17,347	21,373	14,134	5,705	8,020
Egypt	1,747	2,479	4,828	8,937	7,821
Mexico	7,898	4,844	7,648	7,309	6,952
Somalia		1,557	1,108	11,412	6,165
Paraguay	4,740	3,676	5,634	14,041	5,968
Poland	2,915	1,880	2,189	4,560	4,272
China	987	2,558	7,555	7,622	3,967
Bolivia	1,539	1,920	2,607	3,717	3,583
Ethiopia	9,487	9,091	7,849	12,309	2,880
France	1,187	1,180	1,763	1,825	2,822
Greece	1,645	1,920	1,962	2,785	2,783
Burkina Faso	1,036	3,970	1,946	2,085	2,762
Austria	2,529	3,170	2,698	3,336	2,392
Bulgaria	534	858	491	1,112	2,152
Spain	1,061	862	1,278	1,659	1,983

OTHER AFRICAN COUNTRIES					
Mali	1,086	1,273	1,861	1,663	1,901
Chad		155	307	3,342	1,404
Tanzania	226	1261	432	1,026	901
Togo	1	162	84	81	569
Djibouti	85	42	0	128	245
Niger	219	951	284	268	146

Source: ITC Trademaps (2023)

ANNEX 3 - DIRECTORY OF EU COMPANIES AND TRADE ASSOCIATIONS

GERMANY

Name	Address	Contact
IMPORTERS / PROCESSORS		
ZIELER & CO. GmbH	Rote Brücke 29 22113 Hamburg https://en.zieler.de/nuts/	Tel +49 (0) 40-4192868-0 info@zieler.de
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Biotropic	Daimlerstraße 4 47167 Duisburg https://www.biotropic.com/index.php/en/	Tel +49 (0) 203 518 760 Mr. Alfred Haasse alfred.haasse@biotropic.com Mr. Dick Troost dick.troost@biortropic.com info@biotropic.com
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Schlüter & Maack GmbH	Stadthausbrücke 12 20355 Hamburg https://www.schlueter-maack.com/	Tel +49 (0) 40 – 32 81 10-0 info@schlueter-maack.de
Nutfields GmbH (Macadamia)	Am Quarzitbruch 7 65817 Eppstein http://nutfields.com/	Tel +49 (0) 6198 / 57736 0 info@nutfields.com
BioGourmet GmbH (Macadamia)	Ochsenweg 1 D-71729 Erdmannhausen www.bio-gourmet.com	Tel +49 (0) 7144 / 33423 – 81 Mr. Oliver Schuhmacher info@bio-gourmet.com
LIMBUA Deutschland GmbH (Macadamia)	Raunerweg 13 82211 Herrsching www.limbua-group.com	Tel +49 (0) 8152-929710 info@limbua-group.com
Dedere Deutschland GmbH (Trade platform)	Breslauer Strasse 10 64342 Seeheim-Jugenheim https://www.mundus-agri.eu/	Tel +49 (0) 6257 94295-30 Tel +49 (0) 6257 94295-31 registration@mundus-agri.eu
Kreyenhop & Kluge GmbH	Lebensmittelimport Industriestraße 40 - 42 Oyten https://kreyenhop-kluge.com/de	Tel +49 (0) 42 07 / 604 info@kreyenhop.de
Michael Priestoph GmbH	Friedensallee 120 22763 Hamburg https://www.priestoph.de/de/	Tel +49 (0) 40 / 30 70 13 – 0 info@priestoph.de
Nungesser AG	Mühlematt 1 Postfach CH-6343 Rotkreuz https://nungesser.com/en/start-en/	Tel +49 625 7960 9070 Tel +41 41 619 10 00 (Switzerland) Tel +32 3 808 23 41 (Belgium) Tel +48 22 755 79 59 (Poland) info@nungesser.com

More German importers and traders can be found at the German Company Directory 'Wer Liefert Was'
https://www.wlw.de/en/search?q=cashew%20nuts

FRANCE

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IMPORTERS / PROCESSORS		
Relais Vert SAS	ZA Bellecour 3 621 Allée BELLECOUR 84200 Carpentras www.philia-bio.com	Tel +33 (0) 4 90 67 23 72 contact@philia-bio.com contact84@relais-vert.com
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	92160 Antony https://dacobello.com/	d.vantelot@daco-france.fr Mr. Didier Vantelot
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Miamland	26, Route de Paris 77340 Pontault-Combault https://www.miamland.com/	Tel +33 (0) 970 26 80 70 contact@miamland.com
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Cap Industries	3 Rue du Bailliage 78000 Versailles https://www.capindustries.com/	Tel +33 (0) 1 39 53 01 62 bgiroud@capindustries.com
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Kreeks	Les Alouettes Route de La Rochelle 85000 LA ROCHE SUR YON https://www.kreeks.fr/en/	Tel + 33 (0) 251 37 05 82 https://www.kreeks.fr/en/contact/
Orienco	6 - 8 Rue Ferdinand De Lesseps 95190 Goussainville http://www.orienco.fr/	Tel +33 (0) 1 34 04 70 70 info@orienco.fr
Jean Hervé SAS (sesame, peanut, cashew butter etc.)	Rue de la république 36700 CLION https://www.jeanherve.fr/en/	Tel +33 (0) 2 54 38 66 03 directioncom@jeanherve.fr Mr. Benoit Gaudard
Mamie Bio (peanut butter etc.)	Vitamont Z.I. du Lidon Lieu-dit « Fon de Pommier » 47150 MONFLANQUIN https://www.vitamont.com/	Tel +33 (0) 5 53 36 50 63 https://www.vitamont.com/nous-contacter/

SPAIN

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Calconut	Polígono industrial Riodel, finca M E-2 03110, Mutxamel, Alicante https://www.calconut.com/en/	Tel +34 (0) 965 43 76 56 info@calconut.es
Amandras Francisco Morales S.A.	Ctra.de Camponubes, s/n. 14814 Zamoranos Priego de Cordoba https://www.almendrasfmorales.com/	Tel +34 (0) 957 55 60 06 info@almendrasfmorales.com
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Naturlider	Calle Ramón Y Cajal 15 (Pol Ind Las Monjas) 45224 Seseña Nuevo, Toledo https://www.naturlider.com/en/	Tel +34 (0) 91 517 18 22 comercial@naturlider.com
Hotel Foodservice S.A.	Polígono Industrial La Alberca, Av. Villajoyosa, 54 03530 La Nucia, Alicante http://www.hotelsa.es/	Tel +34 (0) 971 432 141 INFO@HOTELSA.ES

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Anaclerio Angelo Srl (trader)	Via S.G. Marello, 19 70129 Ceglie Del Campo (BA) http://www.anaclerio.it/	Tel +39 080 565 32 62 / 080 565 22 07 / +39 331/1461887 info@anaclerio.it
Campobasso	Via Casamassima, 58 70100 Valenzano (BA) https://www.aziendecampobasso.it/	Tel +39 080 467 36 72 https://www.aziendecampobasso.it/contatti/
Crea Srl.	Via Cuneo, 114 12010 Cervasca (CN) https://www.creasrl.it/	Tel +39 0171 611114 https://www.creasrl.it/contatti/
Damiano Organic	Via del Mare 98070 Torrenova (ME) https://www.damianorganic.it/	Tel +39 0941 958007 info@damianorganic.it
Disano Group	Via San Nicola, 7 95034 Bronte (CT) https://www.disanogroup.com/	Tel +39 095 691 405 contatti@disanogroup.com
New Factor	Via Ausa, 72 47852 Cerasolo Ausa di Coriano Rimini https://newfactor.it/	Tel +39 0541 759555 info@newfactor.it
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Nuts2 Holding B.V.	Stationsweg 35 3362 HA Sliedrecht www.nuts2.com	Tel +31 (0) 184 693694 info@nuts2.com impact@nuts2.com Mr. Gerard Klijn Mr. Kees Blokland
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Berrico Food Company B.V.	Dokweg 1 8243 PT, Lelystad https://www.berricofood.com	Tel +31 (0) 320 266 055 info@berricofood.com
Trouw B.V. **(sesame seeds)**	Piekstraat 63 -65 3071 EL, Rotterdam https://www.trouw-buckwheat.nl/products/#seeds	Tel +31 (0) 10 486 6332 info@trouw-buckwheat.nl
Catz International B.V.	Boompjes 40 3011 XB, Rotterdam https://www.catz.nl	Tel + (0) 10 411 34 40 driednuts@catz.nl https://www.catz.nl/contact/
Rhumveld Winter & Konijn B.V.	Rivium 1e straat 111 2909 LE Capelle aan den Ijssel	Tel + 31 (0) 10 233 09 00 rwk@rhumveld.com

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Menken N.V.	Boomssteen 38 2630 Aartselaar http://www.menken.be	Tel +32 3 870 89 60 info@menken.be
Ranson N.V.	Generaal Deprezstraat 4 8530 Harelbeke	Tel +32 56 23 70 70 info@ranson.be

	https://www.ranson.be/	
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AKIS	Makry Lithari, Aspropyrgos, 193 00, Attica http://www.akis.com.gr/index.php/en	Tel +30 210 5574713/4644 info@akis.com.gr http://www.akis.com.gr/index.php/en/contact
EK Fysseos S.A.	EK FYSEWS AE Industrial area of Ioannina https://ekfysews.gr/eng	Tel +30 265 1057610 info@ekfysews.gr
Floros Konstantinos	Agios Nikolaos Bourtzi Chalkida, 34100 http://www.firstnuts.gr/	Tel: +30 22210 55282 info@firstnuts.gr
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Menexopoulos S.A.	Arkadiou 6, 57009 Thessaloniki Bakoyannis Pavlos 100, 14452 Metamorfosi, Athens https://menexopoulos.gr/	Tel +30 2310752929 Tel+302105570200 contact@menexopoulos.gr sales@menexopoulos.gr
Moraiti Bros S.A.	A' Industrial Area Volos https://www.amigdalomoraitis.gr/en/	Tel +30 24210 95057 / 24210 95416 info@moraitisbros.gr info@amigdalomorraitis.gr
Ninos Ilias S.A.	Lamprou Katsoni 99α Moschato 183 44 https://www.ninosnut.gr/	Tel +30 210 940 9594 info@ninosnut.gr
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Barat S.A.	Melenikitsi Serron Postcode 62100 https://www.barat.gr/?language=en	Tel +30 23210 78574 / +30 210 9968542 info@barat.gr athens@barat.gr

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Ros Sweet Sp. z o.o.	Przemysłowa Street 2 37-100 Łańcut https://ros-sweet.pl/	Tel +48 17 225 3009 office@ros-sweet.pl
Loper de Graaf Sp. z o.o.	Ornasowo, 83-130 Pelplin http://degraaf.pl/	Tel +48 585 361 519 obsługa_klienta@loperdg.pl
Polmarkus	62 Wyszyńskiego Street Pyskowice, 44-120 https://polmarkus.com.pl/	Tel +48 32 30 19 100 biuro@polmarkus.com.pl

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Community Foods Ltd	29-31 Eastways Witham Essex CM8 3YQ https://www.communityfoods.co.uk/	Tel +44 (0)20 8208 2966 enquiries@communityfoods.co.uk
Freeworld Trading	21 Annandale Street	Tel +44 (0) 131 557 5600

	Edinburgh EH7 4AW https://www.freeworld-trading.co.uk/products/	sales@freeworld-trading.co.uk
KP Snacks	The Urban Building, 3-9 Albert St, Slough SL1 2BE https://www.kpsnacks.com/	Tel +44 (0) 1753 217600 willottt@kpsnacks.com consumercare@kpsnacks.com
Premier Fruit and Nut	56-59 Leslie Park Road Crydon Surrey CR0 6TP http://premierfn.co.uk/	Tel +44 20 8676 1533 meena@premierfn.co.uk nshah@premierfn.co.uk
Primal Pantry	61 Grosvenor Street London W1K 3JE https://primalpantry.com/	Tel +44 (0) 1628 947440 hello@primalpantry.com
Meridian Foods	Manderson House, 5230 Valiant Court, Delta Way, Brockworth, Gloucester GL3 4FE https://shop.meridianfoods.co.uk/	Tel +44 (0) 1962 761935 sales@meridianfoods.co.uk
Rude Health	Kiln House, 212 New King's Road, Fulham, London https://rudehealth.com/	Tel +44 (0) 20 77313740 hello@rudehealth.com
Planish Drinks	Unit 24 2-4 Exmoor Street London W10 6BD https://www.plenishdrinks.com/	Tel +44 (0) 20 7603 8002 tom@plenishdrinks.com https://www.plenishdrinks.com/contact-us/

Other companies can be also found at : https://inc.nutfruit.org/members/

TRADE ASSOCIATIONS

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INTERNATIONAL	**INC – International Nut Council**	4 Carrer de la Fruita Seca, Poligon Tecnoparc 43204 Reus, Spain https://www.nutfruit.org/	Tel +34977 33 14 16 inc@nutfruit.org
EU	**FRUCOM**	Rue de Trèves 49-51, Box 14 1040 Brussels, Belgium https://frucom.eu/	Tel +32 2 231 06 38 info@frucom.eu
FRANCE	**Syndicat National des Commerces et Industries des Fruits Secs**	9 Boulevard Malesherbes 75008 Paris https://lesfruitssecs.fr/	Tel +33 **1 41 73 20 30** https://lesfruitssecs.fr/#contact
GERMANY	**Waren-Verein der Hamburger Börse e.V.**	Große Bäckerstraße 4 20095 Hamburg https://www.waren-verein.de/en/members/dried-fruit-and-edible-nuts/	Tel +49 40 37 47 19-0 info@waren-verein.de
NETHERLANDS	**Nederlandse Zuidvruchten Vereniging**	Louis Pasteurlaan 6 2719 EE Zoetermeer https://www.zuidvruchten.nl/	Tel +31 79 368 11 98 secretariaat@nzv-org.nl
SPAIN	**SAB-Almendrave (Spanish Almond Board)**	Diego de León, 54 –28006 Madrid https://www.almendrave.com/	Tel +34 91 542 50 17 Mr. Pere Ferré almendrave@almendrave.com
ITALY	**Fruitimprese**	Via sabottino 46 it – 00195 Rome https://www.fruitimprese.it/	Tel +39 06 3751 51 47 Mr. Pietro Mauro info@fruitimprese.it
BELGIUM	**Belgafood**	c/o Comeos av. Edmond van nieuwehuyse 8 b – 1160 Brussels	Tel +32 2 788 05 00
UK	**NDFTA – Nut and Dried fruit Association**	18 Lichfield Road, Woodford Green, Essex IG8 9ST https://www.ndfta.co.uk/	Tel +44 (0) 20 8506 2391 info@ndfta.co.uk

	SNACMA - Snack, Nut and Crisp Manufacturers Association	6th Floor 10 Bloomsbury Way London, WC1A 2SL https://www.snacma.org.uk/	Tel +44 (0)79 3914 7088 andrew@snacma.org.uk

ANNEX 4 – RECOMMENDED INTERNATIONAL CODE OF HYGIENIC PRACTICE FOR TREE NUTS

CODE OF HYGIENIC PRACTICE FOR TREE NUTS[1]
CAC/RCP 6-1972

SECTION I - SCOPE

This code of practice applies specifically to almonds (*Prunus amygdalus*) and walnuts (*Juglans* spp.) but is generally applicable to all tree nuts, including filberts (hazel nuts) (*Corylus* spp.), pecans (*Carya illinoensis*), brazils (*Bertholletia excelsa*), cashews (*Anacardium occidentale*), chestnuts (*Castanea* spp.), macadamia nuts (*Macadamia* spp.), etc.

This code of practice is intended to provide basic hygienic requirements for orchards, farm processing (shelling and hulling), and/or commercial shelling or inshell operations. It covers all tree nuts and tree nut products, including the blanched, diced, ground, and similar products, but does not include products where tree nuts are a minor ingredient.

SECTION II - DEFINITIONS

Blows means inshell nuts which are unusually lightweight due to extensive damage from physiological fungous, insect, or other causes and which can be removed, for example, mechanically by air flow.

SECTION III - RAW MATERIAL REQUIREMENTS

A. **Environmental Sanitation in Growing and Food Production Areas**

(1) **Sanitary disposal of human and animal wastes**. Adequate precautions should be taken to ensure that human and animal wastes are disposed of in such a manner as not to constitute a public health or hygienic hazard, and extreme care should be taken to protect the producta from contamination with these wastes.

(2) **Sanitary quality of irrigation water**. Water used for irrigation should not constitute a public health hazard to the consumer through the product.

(3) **Animal, plant pest and disease control**. Where control measures are undertaken, treatment with chemical, biological or physical agents should be done only in accordance with the recommendations of the appropriate official agency, by or under the direct supervision of personnel with a thorough understanding of the hazards involved, including the possibility of toxic residues being retained by the crop.

B. **Sanitary Harvesting and Food Production**

(1) **Harvesting**. Tree nut harvesting procedures generally include shaking the trees and picking the nuts off the ground. Where nuts are picked off the ground, the orchard preferably should not be used for grazing or holding cattle or other animals. If the land has been so used, the orchard should be worked immediately prior to harvesting (disced, rototilled, or soil turned in some manner) to lessen the hazard of faecal contamination of tree nuts. Where the exclusion of animals and subsequent working of the land are impracticable, other steps should be taken to protect the nuts from contamination during harvesting; for example, the spreading of protective sheets below the trees.

(2) **Equipment and product containers**. Equipment and product containers should not constitute a hazard to health. Containers which are reused should be of such material and construction as will facilitate thorough cleaning, and should be so cleaned and maintained as not to constitute a source of contamination to the product.

(3) **Sanitary techniques**. Harvesting and production operations, methods and procedures should be clean and sanitary. This includes the hulling and drying of nuts that are generally considered part of the harvest or farm operation. Hulling and drying equipment should be so constructed that it can be easily cleaned and maintained. When water is used in the cleaning process, it must be potable water.

(4) **Removal of obviously unfit materials**. Unfit nuts should be segregated during harvesting and production to the fullest extent practicable and should be disposed of in an appropriate manner. Following hulling it is recommended that all nuts be subjected to a defect separation and a quality inspection before they are utilized for further processing into human food. Nuts should not be used for such processing unless they are free from obvious faecal contamination, infestations, decomposition and other defects, such as broken shells, imbedded dirt, blows, etc., to an extent which would render them unfit for human consumption.

(5) **Protection of nuts from contamination**. Suitable precautions should be taken to protect the nuts from being contaminated by domestic animals, insects, mites (and other arthropods), vermin, birds, chemical or microbiological contaminants, or other objectionable substances during handling and storage. The nature of the nut and the methods of harvesting will indicate the type and degree of protection required. The nuts should be moved to suitable storage, or to the processing area for immediate processing, as soon as possible after harvesting and/or drying. Where nuts are likely to have become infested by insects or other arthropods, they should be treated with fumigants or other suitable means before storage or processing. Nuts held for processing should be stored in closed containers, buildings, or under suitable type of covering that protects them from domestic animals, insects, mites (and other arthropods), vermin, birds,

chemical or microbiological contaminants, debris, and dust. Fumigation methods and chemicals used should be approved by legal authorities having jurisdiction. High humidities which are conducive to proliferation of mould and development of mycotoxins should be avoided.

C. **Transportation**

(1) **Facilities**. Conveyances for transporting the harvested crop or raw product from the production area, place of harvest or storage should be adequate for the purpose intended and should be of such material and construction as will permit thorough cleaning and should be so cleaned and maintained as not to constitute a source of contamination to the product.

(2) **Handling procedures**. All handling procedures should be such as will prevent the product from being contaminated. Extreme care should be taken in transporting perishable products to prevent spoilage or deterioration. Special equipment should be used if the nature of the product or distances involved so indicate.

SECTION IV - PLANT FACILITIES AND OPERATING REQUIREMENTS

A. **Plant Construction and Layout**

(1) **Location, size and sanitary design**. The building and surrounding area should be such as can be kept reasonably free of objectionable odours, smoke, dust, or other contaminations; should be of sufficient size for the purpose intended without crowding of equipment or personnel; should be of sound construction and kept in good repair; should be of such construction as to protect against the entrance and harbouring of insects or birds or vermin; and should be so designed as to permit easy and adequate cleaning.

(2) **Sanitary facilities and controls**

(a) ***Separation of processes***. Areas where raw materials are received or stored should be so separated from areas in which final product preparation or packaging is conducted as to preclude contamination of the finished product. Areas and compartments used for storage, manufacture or handling of edible products should be separate and distinct from those used for inedible materials. The food handling area should be completely separated from any part of the premises used as living quarters.

(b) ***Water supply***. An ample supply of hot and cold water should be available and an adequate supply of hot water where necessary. The water supply should be of potable quality. Standards of potability shall not be less than those contained in the "International Standards for Drinking Water", World Health Organization, 1971.

(c) ***Auxiliary water supply***. Where non-potable water is used - for such purposes as fire control - it must be carried in completely separate lines, identified preferably by colour and with no cross-connection or back-siphonage with the lines carrying potable water.

(d) ***Plumbing and waste disposal***. All plumbing and waste disposal lines (including sewer systems) must be large enough to carry peak loads. All lines must be water-tight and

have adequate traps and vents. Disposal of waste should be effected in such a manner as not to permit contamination of potable water supplies. The plumbing and the manner of waste disposal should be approved by the official agency having jurisdiction.

Lighting and ventilation. Premises should be well lit and ventilated.
Special attention should be given to the venting of areas and equipment producing excessive heat, steam, obnoxious fumes or vapours, or contaminating aerosols

Good ventilation is important to prevent both condensation (which may drip into the product) and mould growth in overhead structures - which growth may fall into the food. Light bulbs and fixtures suspended over food in any step of preparation should be of the safety type or otherwise protected to prevent food contamination in the case of breakage.

(e) ***Toilet-rooms and facilities***. Adequate and convenient toilets should be provided and toilet areas should be equipped with self-closing doors. Toilet rooms should be well lit and ventilated and should not open directly into a food handling area. They should be kept in a sanitary condition at all times. There should be associated hand-washing facilities within the toilet area and notices should be posted requiring personnel to wash their hands after using the toilet.

(f) ***Hand-washing facilities***. Adequate and convenient facilities for employees to wash and dry their hands should be provided wherever the process demands. They should be in full view of the processing floor. Single-use towels are recommended, where practicable, but otherwise the method of drying should be approved by the official agency having jurisdiction. The facilities should be kept in a sanitary condition at all times.

B. **Equipment and Utensils**

(1) **Materials**. All food contact surfaces should be smooth; free from pits, crevices and loose scale; non- toxic; unaffected by food products; and capable of withstanding repeated exposure to normal cleaning; and non-absorbent unless the nature of a particular and otherwise acceptable process renders the use of a surface, such as wood necessary.

(2) **Sanitary design, construction and installation**. Equipment and utensils should be so designed and constructed as will prevent hygienic hazards and permit easy and thorough cleaning. Stationary equipment should be installed in such a manner as will permit easy and thorough cleaning.

(3) **Equipment and Utensils**. Equipment and utensils used for inedible or contaminating materials should be so identified and should not be used for handling edible products.

C. **Hygienic Operating Requirements**

(1) **Sanitary maintenance of plant, facilities and premises**. The building, equipment, utensils and all other physical facilities of the plant should be kept in good repair and should be kept clean and maintained in an orderly, sanitary condition. Waste materials should be frequently removed from the working area during plant operation and adequate waste receptacles should

be provided. Detergents and disinfectants employed should be appropriate to the purpose and should be so used as to present no hazard to public health.

(2) **Vermin Control**. Effective measures should be taken to protect against the entrance into the premises and the harbourage on the premises of insects, rodents, birds or other vermin.

(3) **Exclusion of domestic animals**. Dogs, cats and other domestic animals, should be excluded from areas where food is processed or stored.

Personnel health. Plant management should advise personnel that any person afflicted with infected wounds, sores, or any illness, notably diarrhoea, should immediately report to management. Management should take care to ensure that no person, while known to be affected with a disease capable of being transmitted through food, or known to be a carrier of such disease microorganisms, or while afflicted with infected wounds, sores, or any illness, is permitted to work in any area of a food plant in a capacity in which there is a likelihood of such person contaminating food or food contact surfaces with pathogenic organisms.

(1) **Toxic substances**. All rodenticides, fumigants, insecticides or other toxic substances should be stored in separate locked rooms or cabinets and handled only by properly trained personnel. They should be used only by or under the direct supervision of personnel with a thorough understanding of the hazards involved, including the possibility of contamination of the product.

(2) **Personnel hygiene and food handling practices**

(a) All persons working in a food plant should maintain a high degree of personal cleanliness while on duty. Clothing including suitable headdress should be appropriate to the duties being performed and should be kept clean.

(b) Hands should be washed as often as necessary to conform to hygienic operating practices.

(c) Spitting, eating and the use of tobacco or chewing gum should be prohibited in food handling areas.

(d) All necessary precautions should be taken to prevent the contamination of the food product or ingredients with any foreign substance.

(e) Minor cuts and abrasions on the hands should be appropriately treated and covered with a suitable waterproof dressing. Adequate first-aid facilities should be provided to meet these contingencies so that there is no contamination of the food.

(f) Gloves used in food handling should be maintained in a sound, clean and sanitary condition; gloves should be made of an impermeable material except where their usage would be inappropriate or incompatible with the work involved.

D. **Operating Practices and Production Requirements**

(1) **Raw material handling**

(a) ***Acceptance criteria***. The raw material should not be accepted by the plant if known to contain decomposed, toxic or extraneous substances which will not be removed to acceptable levels by normal plant procedures of sorting or preparation. Particular care should be taken to avoid contaminating either inshell nuts or nut meats with either animal or human faecal material, and if it is suspected that nuts have been so contaminated, they should be rejected for human consumption. Special precautions must be taken to reject nuts showing signs of mould growth because of the danger of their containing mycotoxins.

(b) ***Storage***. Raw materials stored on the plant premises should be maintained under conditions that will protect against contamination and infestation and minimize deterioration.

(c) ***Water***. Water used for conveying raw materials into the plant should be from such a source or suitably treated as not to constitute a public health hazard and should be used only by permission of the official agency having jurisdiction.

(2) **Inspection and sorting**. Prior to introduction into the processing line, or at a convenient point within it, raw materials should be inspected, sorted or culled as required to remove unfit materials. Such operations should be carried out in a clean and sanitary manner. Only clean, sound materials should be used in further processing.

(3) **Washing or other preparation**. Raw materials should be washed as needed to remove soil or other contamination. Water used for such purposes should not be recirculated unless suitably treated to maintain it in a condition as will not constitute a public health hazard. Water used for washing, rinsing, or conveying final food products should be of potable quality.

(4) **Preparation and processing**. Preparatory operations leading to the finished product and the packaging operations should be so timed as to permit expeditious handling of consecutive units in production under conditions which would prevent contamination, deterioration, spoilage, or the development of infectious or toxigenic microorganisms.

(5) **Packaging of finished product**

(a) ***Materials***. Packaging materials should be stored in a clean and sanitary manner and should not transmit to the product objectionable substances beyond limits acceptable to the official agency having jurisdiction and should provide appropriate protection from contamination.

(b) ***Techniques***. Packaging should be done under conditions that preclude the introduction of contamination into the product.

Preservation of finished product. The finished product of shelled nuts or nut meats shall be of such a moisture content that they can be held under normal conditions without significant deterioration by decay, mould, or enzymatic changes. Finished products may be (a) treated with chemical preservatives at levels approved by the Codex Committee on Food Additives as referenced in the Commodity standard; and (b) heat processed and/or packed in hermetically sealed containers, so the product will remain safe and will not spoil under normal conditions.

(6) **Storage and transport of finished products**. The finished product should be stored and transported under such conditions as will preclude contamination with or development of pathogenic or toxigenic microorganisms and protect against deterioration of the product or of the container.

(a) All finished products should be stored in clean, dry buildings, protected from insects, mites (and other arthropods), vermin, birds, chemical or microbiological contaminants, debris and dust.

(b) Optimum storage conditions:

(i) For optimum storage conditions store at approximately 1□C (34□F) with a relative humidity from 60% to 70%. In temperate countries, nuts in shells and kernels may be stored in sound, dry warehouses at ambient temperatures.

(ii) Where nut products are stored under conditions in which they may become infested by insects and/or mites, appropriate methods of protection should be used regularly. Nut products should be stored in such a manner that they can be fumigated *in situ* or that they can be removed elsewhere for fumigation in special facilities (e.g. fumigation chambers, steel barges, etc.). Cold storage can be used, either to prevent infestation in localities where insects are likely to be present in ordinary storage or to prevent insects damaging the nut products.

E. Sanitation Control Programme

It is desirable that each plant in its own interest designate a single individual, whose duties are preferably divorced from production, to be held responsible for the cleanliness of the plant. His staff should be a permanent part of the organization and should be well trained in the use of special cleaning tools, methods of disassembling equipment for cleaning, and in the significance of contamination and the hazards involved. Critical areas, equipment for cleaning and materials should be designated for specific attention as part of a permanent sanitation schedule.

F. Laboratory Control Procedures

In addition to any control by the official agency having jurisdiction, it is desirable that each plant in its own interest should have access to laboratory control of the sanitary quality of the nut product processed. The amount and type of such control will vary with the different nut products as well as the needs of management. Such control should reject all nuts that are unfit for human consumption. Analytical procedures used should follow recognized or standard methods, so results may be readily interpreted.

SECTION V - END PRODUCT SPECIFICATIONS

Appropriate methods should be used for sampling, analysis, and determination to meet the following:

A. To the extent possible in good manufacturing practice the products should be free from objectionable matter.

B. When tested by appropriate methods of sampling and examination, the product:

(a) should be free from pathogenic microorganisms; and

(b) should not contain any substances originating from microorganisms in amounts which may be toxic.

(c) The products should comply with the provisions for food additives and contaminants laid down in Codex commodity standards and with maximum levels for pesticide residues recommended by the Codex Alimentarius Commission.

ANNEX 5 – EXAMPLES OF PRODUCT SPECIFICATION SHEETS

Product specification

Cashew nuts Africa LWP 22,68kg

Item No.:	10560
Specification No.:	PS010560
Creation Date:	11-9-2018
Revision Date	21-6-2023
Version:	3

General information		
Product description	Cashew nuts large pieces (Anacardiuim occidentale) Africa	
Country of origin		
Shelf life	24	months after production
GMO	GMO free	
Intended use	Food (ingredient)	
Warning	Childeren may choke on this product	

Logistics information		
Packaging	Carton box with inner plastic bag	
Type of pallet	Euro	
Relative humidity	< 65	%
Storage temperature	< 25	℃
Storage advise	Cool, dry, out of direct sunlight and packed	

Ingredient declaration

ingredients:

CASHEW NUTS (100%).

Store cool, dry, out of direct sunlight and packed

Average nutritional value per 100gr:

Energy 2416 kJ/577 kcal, Fat 43,9 g, of which saturated fatty acids 7,8 g, Carbohydrates 26,9 g, of which sugar 5,9 g, Dietary fibres 3,3 g, Protein 18,2 g, Salt 0,03 g

Ingredients	Percentage	Tolerance	Country of Origin
Cashewnuts	100,00 %		
Total:	**100 %**		

All the above ingredients are present in the recipe of this product. If there's no percentage behind certain ingredients, this information is confidential and will not be released by the supplier.

Sensory properties	
Flavour	cashew nut
Odour	cashew nut
Colour	yellow, light brown, ivory, light grey
Texture	firm
Shape	pieces

Averages nutritional values (may vary with the season)		
Energy	2416 kJ/100 g	577,00 Kcal
Fat	43,9 g/100 g	
of which saturated fatty acids	7,8 g/100 g	
of which monounsaturated fatty acids	23,80 g/100 g	
of which polyunsaturated fatty acids	7,80 g/100 g	
Trans fatty acids	g/100 g	
Carbohydrates	26,9 g/100 g	
of which sugar	5,9 g/100 g	
Dietary fibres	3,3 g/100 g	
Protein	18,2 g/100 g	
Sodium	12 mg/100 g	
Salt	0,03 g/100 g	
Source:	USDA database	

This product is produced with natural raw materials and by natural variation, the composition may change. Adjustments will not automatically change the nutritional values given above.

Micro organism	Max-Tolerance		Method
Total plate count	500.000	cfu/g	ISO 4833
Yeasts	10.000	cfu/g	ISO 7954
Moulds	10.000	cfu/g	ISO 7954
Salmonella	Absent/25 g		ISO 6579
Escherichia coli	100	cfu/g	ISO16649-2

Mycotoxins	Max-Tolerance		Method
Aflatoxin B1	2	ppb	HPLC MS/MS
Aflatoxin B1+B2+G1+G2	4	ppb	HPLC MS/MS
Ochratoxin A		ppb	HPLC MS/MS
Patulin		ppb	HPLC MS/MS
Deoxynivalenol (DON)		ppb	HPLC MS/MS

Chemical values		
Moisture	Max. 5	%
Water activity		
Peroxide value		meq/kg fat
Free fatty acids		%
Sulphur dioxide and sulphites		ppm

Physical values		
Foreign bodies	Max. 0,05	%
Metal detection	Yes	
Ferro		mm
Non-Ferro		mm
SS		mm

Additional information

Manufacturing method	
Pesticides	according to EU-legislation
Heavy metals	according to EU-legislation
Radioactivity	according to EU-legislation
Size	6.3-8.0 mm
Additional information	

Allergens (1169/2011/EC)

+ = present / - = not present / o = may contain traces of

-	Cereals containing gluten and products derived from gluten containing grains*
-	Crustaceans and products derived from crustaceans
-	Eggs and products derived from eggs
-	Fish and products derived from fish
-	Groundnuts (peanuts) and products derived from groundnuts
-	Soy and products derived from soy
-	Milk and products derived from milk (including lactose)
+	Nuts and products derived from nuts**
-	Celery and products derived from celery
-	Mustard and products derived from mustard
-	Sesame seeds and products derived from sesame
-	Sulphur dioxide and sulphites (E220 t/m E228) > 10 mg/kg
-	Lupine and products derived from lupine
-	Molluscs and products derived from molluscs

* Wheat, Rye, Barley, oats, spelt and products thereof

** Almonds (Amygdalus communis L.), hazelnuts (Corylus avellana), walnuts (Juglans regia), cashew nuts (Anacardium occidentale), pecan nuts (Carya illinoinensis (Wangenh.) K. Koch), brazil nuts (Bertholletia excelsa), pistachio (Pistacia vera), macadamia nuts (Macadamia ternifolia)

Autorizaton

Name:	Lisanne Hissink	Signature
Quality department		
Date:	21-6-2023	

Legislation

This product is in compliance with the relevant Dutch Food Law and the EU Food Law.
This product is GMO free and doesn't need any labelling according to EC directives 1829/2003 and

1830/2003. This product is not exposed to irradiation.

It is the responsibility of the customer to investigate whether or not the product complies with the food regulations in the country where the end product will be sold.

Our specifications are prepared with the utmost care. However, we cannot guarantee the accuracy of this. Specification is subject to changes and typos. We do not manage sent specifications and these can be changed without notice.

As a customer, you are personally responsible for the use of the ingredient declaration.

PRODUCT INFORMATION
Sesame seeds (unhulled)

Product	**Organic sesame seeds roasted unhulled**
Code	**14096**
Country of agricultural origin	**Uganda, Egypt, Ethiopia**
Country of last processing	**The Netherlands**
Last update	**13-10-2022**
This product is	**Organic and not genetically modified or irradiated**

Production	
Ingredients	**Sesame seed**
Additives	**No additives**
Process	**Entering sesame seeds into machinery, roasting (at 165℃), cooling, sieving, dust removing, sieving, magnet, packing**

Sensorial properties	
Smell	**Product specific**
Colour	**Light Brown**
Taste	**Product specific**
Appearance	**Flat round seeds with a point**

Packing	
Net content	**25 kg**
Kind of packing	**Paper bag**
Pieces per pallet	**30**

Shelf life	
Storage conditions	**Cool and dry**
Minimum shelf life	**18 Months after production**

Nutritional values (per 100 gram)		(from supplier)
Energy	2339 kJ 559 kCal	
Protein (g)	17.7	
Fat (g)	50.4	Saturated: 6.8
Carbohydrates (g)	10.2	Sugars: 0.2
Dietary fibre (g)	11.8	
Salt (g)	0.1	

Analytical properties	
Moisture (%)	< 6
Purity (%)	99.9

Microbiological Properties (indicative)	
Total Plate Count (cfu/g)	< 100.000
Yeast (cfu/g)	< 10.000
Moulds (cfu/g)	< 10.000
E. Coli (cfu/g)	< 100
Salmonella (cfu/25g)	Absent

Allergy list (+ = present, - = absent and * = possible cross contamination)			
Cow's milk protein	-	Walnut	-
Lactose or milk sugar	-	Cashew	-
(Chicken) egg	-	Pecan nut	-
Soya protein (-derivatives)	-	Brazil nut	-
Gluten	-	Macadamia or Queensland nut	-
Wheat	-	Pistachio nut	-
Peanuts/groundnuts (-derivatives)	-	Coconut	-
Sesame	+	Hickory nut or kola nut	-
Sesame-oil	-	Lichee nut	-
Celery	-	Pili nut	-
Mustard	-	Sheanut	-
Fish	-	Pine nut or pinon nut	-
Shell-fish	-	Beech nut	-
Mollusc	-	Butternut	-
Lupine	-	Chestnut	-
Sulfite E220-E228	-	Ginko nut	-
Nuts (-derivates)	-	Chinquapin	-
Almond	-		-
Hazelnut	-		

Acceptable for:	
Vegetarians	Yes
Vegans	Yes
Lacto-vegetarians	Yes
Kosher-certified	No
Halal-certified	No
NOP-certified	No
Fairtrade IBD	No

Disclaimer:

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