



Volume 4 No: 2 (2019)

**Assessment of the Tunisian Olive Oil Value Chain in
the International Markets: Constraints and
Opportunities**

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January 2019



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ISSN 2550-3359



Citation

Zlaoui Mariem, Dhraief Mohamed Zied, Jebali Ooussema and Benyoussef Salah. (2019). Assessment of the Tunisian olive oil value chain in the international markets: Constraints and Opportunities. FARA Research Result Vol 4(2): PP36

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ISSN: 2550-3359

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Acknowledgments

The authors gratefully acknowledge the financial support for this research provided by FARA and ZEF. We would also like to thank our colleagues from the National Institute of Agronomic Research of Tunisia (INRAT), who provided insight and expertise that greatly assisted the research.

Our deepest appreciation goes to all the persons who provided us the possibility to complete this report, including producers, exporters, olive oil industry and technical support institutions.

Abstract

Olive growing is a strategic sector in Tunisia; it is one of the main activities in agriculture. In fact, it contributes to the achievement of national goals of economic growth, food security, job creation, increased export earnings and preservation and enhancement of natural resources. Cultivating olives in Tunisia is done by heritage among small family farms representing 28% of the total area cultivated.

Tunisia has a long tradition in exporting olive oil, however, the adopted development strategy was always focused only on improving productivity and the main goal was a quantitative target "produce more to export more".

Since 1995, following the accession of Tunisia to the World Trade Organization and the association agreements with the European Union, the aim has been to produce competitive goods in the international market. In this new context of competitive advantage, all efforts were directed towards the liberalization of exports and the establishment of an export promotion program accompanied by significant privileges and benefits for exporters (grants and loans from the CEPEX for transportation, market research, participation in exhibitions, publishing promotional materials etc.) and support structures (technical centers and inter-groups).

Despite these measures, Tunisian olive oil is still considered as a commodity and it is promoted solely on the basis of its physical characteristics while the symbolic attributes are generated on developed countries. In fact, there are few geographical indications for agricultural products in Tunisia, and in most of the cases, these products rarely cross borders.

Despite the fact that Tunisia is the fourth producer of olive oil worldwide and the third exporter, especially to Italy and Spain, a geographical indication for Tunisian olive oil cannot succeed overseas.

The objective of the research is to put forth the main problems that need to be solved before Tunisian olive oil can effectively use designation of origin and geographical indication (GI) to go to international markets. These constraints will be established based on information gathered through a survey of olive oil exporters and producers. Policies that focus on quantity will need to be complemented by specific measures based on quality at all levels of the industry in order to lead exports of this key product to reach its full potential.

Keywords: Geographical Indication, olive oil, exports, Tunisia, quality.

Introduction

Context and justification

Tunisia has a strong tradition in the field of trade and exports with other nations. Pliny the Elder wrote that the establishment of the monarchy was to be counted on the Egyptians while the establishment of democracy was to the credit of the Athenians. As for the trade, according to him, it had without context its expansion to the Carthaginians. Until the end of the second century BC, the Carthaginians monopolized the empire of the seas, covering the Mediterranean basin well beyond the Columns of Hercules (Strait of Gibraltar). Carthaginian sailors, skilful and experienced, were the first to reach certain distant lands and to maintain commercial relations there.

Heiress of Carthage, Tunisia continues to give trade a privileged place in its economy. It has adopted a liberal legislation, adapted structures and modern means to develop its exchanges and promote its regional products.

In this vein, Tunisia has put in place an incentive system so that companies can find in the export niche a way forward for their growth. A multitude of incentives have been put in place such as tax incentives, investment incentives in foreign markets, support organizations and funding arrangements.

Tunisia is a country with more than 3000 years of history, and the olive tree has never ceased to be part of it. It all started with the arrival of Phoenicians in Tunisia, and since that time the olive tree (*Olea Europea*) has become the symbol of all the civilizations that once ruled this country from the glorious Carthage, through the unforgettable Roman Empire, the Germanic tribes of Vandals, Byzantine and the Numidians, until the arrival of the Arab-Muslim conquerors. Olive oil is an integral part of the history and traditions of the Old World's population (the Mediterranean Basin); it is found in all traditional recipes from Syria to Portugal.

Olive oil is a food of high quality due to its multiple benefits to human health; it is part of the Mediterranean diet. Thus, the ever-increasing demand for this product has been the initiator of an undeclared "Economic War" among all the world's producing countries, each of them wants the largest share of a market worth billions of dollars. Tunisia has one of the biggest potential; it has 20% of the world olive acreage (COI, 2016), with a global market share estimated at 6% (COI, 2016). This makes Tunisia the largest producer and exporter of Olive oil in the Southern Mediterranean region. In addition, olives and olive oil sector represent more than 50% of the total agricultural products exported. It generates 50 million daily jobs every year (INS, 2015) especially during harvesting season; which spreads from November to March each year. This increases the importance of the sector, considered strategic for sustainable territorial development, especially in the marginal areas where the olive trees are the only source of income for hundreds of families. In this context, a strategy was developed in 1998, aiming primarily the promotion of the olive oil product through the modernization of the production methods to improve its quality and increase the value of its exports (Cours des comptes, 2016). Despite this high potential, and with all the strategies put in place by the Government to promote the Tunisian

olive oil, the sector still suffers from several failures, the most important are at the level of the production, processing but also during the export.

In Tunisia, the major part of the olive oil is exported in bulk which leads to huge losses in currency for the Government. On the other side, the Tunisian olive oil is losing its value on the international market because it is generally mixed with the European olive oil and sold as their own national production. This means that the government has to work on a more efficient marketing strategy; which includes a national and international marketing campaign with both public and private stakeholders; the National Office of Oils (ONH), Tunisia's Exports Promotion Center (CEPEX), the Olive Tree Institute (Institut de l'Olivier), in addition to all the private sector stakeholders, the producers, manufacturers and the exporting companies. In order to put in place the most efficient strategy, a diagnosis of the Olive oil value chain has to be done, which will highlight its strengths, weaknesses, opportunities and the threats that are inhibiting the flourishing of this very prolific sector.

Study objectives and expected results

The objective of this study is to analyze the Tunisian olive oil value chain through its characterization, to highlight its major strengths and weaknesses and to identify the most important bottlenecks that brake the development of this commodity on international markets. The characterization will facilitate the development of stakeholder-driven strategies to improve the olive oil marketing, the added value and the access to international profitable markets.

Through the identification of the major constraints and opportunities, a clear national strategy can be written so that public authorities can lead this value chain to reach its full potential and succeed overseas.

Organization of the report

The report is organized into 5 sections. Apart from the introduction, section two presents a literature review of conceptual definitions and a brief description of the methodology. Section three presents the olive oil sector in Tunisia, focusing on the value chain and describing the different stages.

Section four presents the results and discussion, with a focus on the weaknesses of the olive oil value chain. The study's conclusions, decision and policy implications regarding the keys to succeed overseas for the Tunisian olive oil are described in the last section.

Literature Review

According to Humphrey and Oetero (2000), the value chain concept is derived from two main analytical approaches. The first source is the business and industrial organization literature, exemplified by the work of Porter who defines a "value chain" as "the activities performed in competing in a particular industry" (1990), defined at the level of the individual firm. The second approach derives from the world systems literature on commodity chain where Gereffi (1994) defined "Global commodity chains" as they have three dimensions: (1) an input-output structure (i.e. a set of products and services linked together in the sequence of value-adding economic

activities); (2) territoriality (i.e. spatial dispersion or concentration of production and distribution networks, comprised of enterprises of different sizes and types; and (3) a governance structure ‘i.e. authority and power relationships that determine how financial, material, and human resources are allocated and flow within a chain’.

These value chain approaches have been utilized by development practitioners and researchers to analyze markets in developing countries and to examine the inter-relationships between diverse actors involved in all stages of the marketing channel (Kaplinsky, 2004; Giuliani et al., 2005; Bair and Peters, 2006; Pietrobelli and Saliola, 2008, Beneberu and al, 2012).

Typically, the “value chain” describes the full range of value-adding activities required to bring a product or service through the different phases of production, including procurement of raw materials and other inputs, assembly, physical transformation, acquisition of required services such as transport or cooling, and ultimately response to consumer demand (Kaplinsky and Morris, 2002). As such, value chains include all of the vertically linked, interdependent processes that generate value for the consumer, as well as horizontal linkages to other value chains that provide intermediate goods and services.

As such, value chains include all of the vertically linked, interdependent processes that generate value for the consumer, as well as horizontal linkages to other value chains that provide intermediate goods and services (see figure 1) Value chains focus on value creation typically via innovation in products or processes, as well as marketing and also on the allocation of the incremental value.

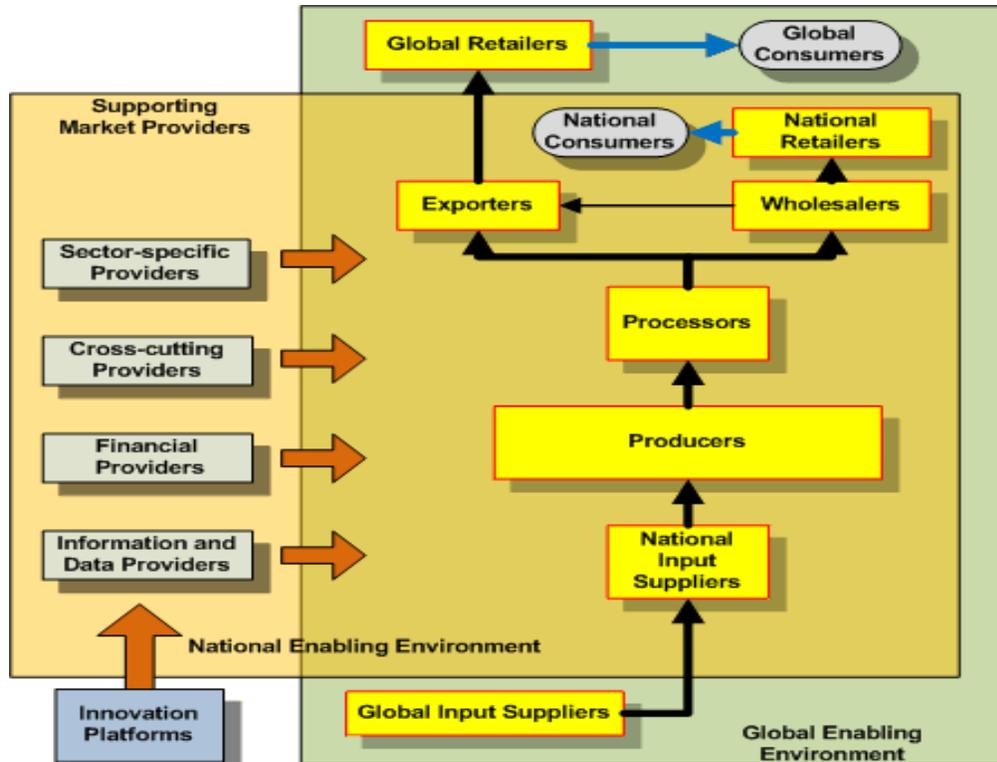


Figure 1: An Overview of the Value Chain System from suppliers to consumers (World Report Fall, 2006)

In this study, the objective is to assess the olive oil value chain in order to enhance the Tunisian olive oil to its full potential on the international market. This analysis will allow highlighting the major constraints and opportunities for this product.

The product differentiation approach through signaling quality (i.e : Designation of origin as example) can be a tool for rural development by preserving local resources and by granting local producers a decent income with access to new markets and niche or maintaining markets remunerative. Signaling quality for agricultural and food products by their place of harvest or manufacture can also be used to differentiate products in international markets compared to mass products. The Mediterranean countries, aware that the differentiation or the use of identifiers allows them to better promote their products, are engaged in the establishment of an appropriate legislative and regulatory framework.

Hervieu (2007) points out that to build quality related to the origin several important factors must be mobilized. First, producers of the specific product should be organized because the approach of signaling quality is part of an overall framework for rural and agricultural development. Then, a good strategy should be build through the selection from the official quality marks (PDO, PGI, label or certification).

It has been shown by Rastoin et al. (2005) that establishing an appellation or indication of origin provides a distinctive capability to penetrate the high-end market to the extent that the company has a good understanding of marketing and customer relations. In this work, we investigate the signaling of the specific quality of Tunisian olive oil, through the establishment of a brand, an appellation of origin or an indication of source.

Concerning the methodology, survey on producers, exporters, olive oil industry and technical support institutions were scheduled. Questionnaires were tailored to each type of operator.

Unfortunately, not all the interviews were done due to logistical problems on the ground. In this report, we will mainly focus on interviews made with the support structures.

The Olive Oil Sector in Tunisia

Tunisia is the most important southern Mediterranean country in the field of olive production and export after the European Union. For Tunisia, olive growing is the main agricultural activity and its socio-economic role is of paramount importance.

Concerning olive production, 309000 producers (60% of all farmers), derive all or part of their income from growing olive trees. Concerning the processing, Tunisia counts more than 1750 oil mills, 15 refining units, 10 extraction units for olive oil, and about 20 bottling plants and soap factories. More than 200 private traders alongside the National Oil Office produce an average of 132000 tons of exports on a production of 165000 tons (approximately 67%).

Support structures and supervision of the sector is made by the Ministry of Agriculture through its Regional Commissions for Agricultural Development; the Research Institutes and an active profession under the Tunisian Union of Agriculture and Fisheries (U.T.A.P.) and the Tunisian Union of Industry, Commerce and Handicrafts (U.T.I.C.A.).

Production Level

Olive oil resources

The total area planted to olive trees in Tunisia is approximately 1.8 million hectares (DGPA, 2017), which represents 79% of the total area planted to trees and 36% of the total arable areas in the country (ONH, 2017). The total number of olive trees is 88 million, spread over 310 thousand farms; 32% in the North, 46% in the center of the country and 22% in the south (ONH, 2017).

The olive trees in Tunisia are relatively young, 75% are in full productive period and their ages vary between 20 and 70 years. The remaining quarter is divided into two categories; the youngest trees between 1 and 20 years old estimated at 18% of total. The remaining 7% are older than 70 years (ONH). The plantation density of olive trees in Tunisia varies according to the climatic conditions, especially the rainfall of each zone. The maximum density is observed in the northern regions of the country where it can reach 100 trees per hectare in a zone of satisfying rainfall. In the Central regions and due to less rainfall the olive trees density varies from 50 to 60 tree per hectare. And for the same reasons the number of olive trees per hectare in the south cannot exceed 20 in a region known nationally for its aridity (Table 1). Thus, the production system varies from one region to another depending on the climatic conditions and the social factor, i.e. the know-how of each community. The average plantation density of the country is 40 trees per hectare.

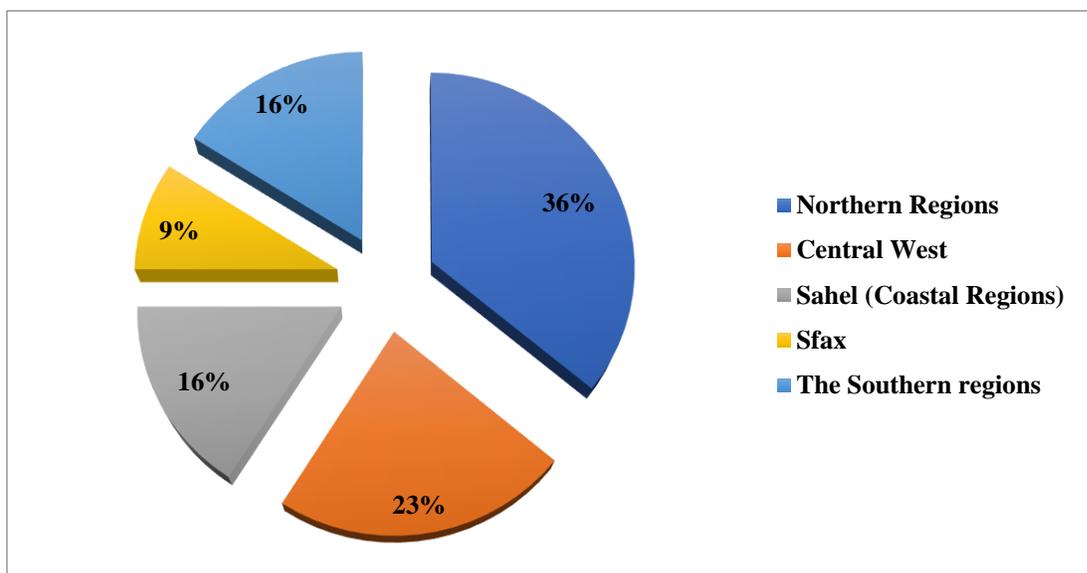
Concerning the irrigation, approximately 95% of the area is rain-fed in Tunisia (DGEDA), and that is because of an ancestral heritage stating that olive trees tolerate dryness the most because of a root system that can reach several meters deep in the soil.

Table 1 Planting density of olive trees by region

	The North	The Center	The South
Density of plantation	100 trees/ha	50-60 trees/ha	17-20 trees/ha
Pluviometry	400-600 mm	300-350 mm	200-250 mm

Source: ONH

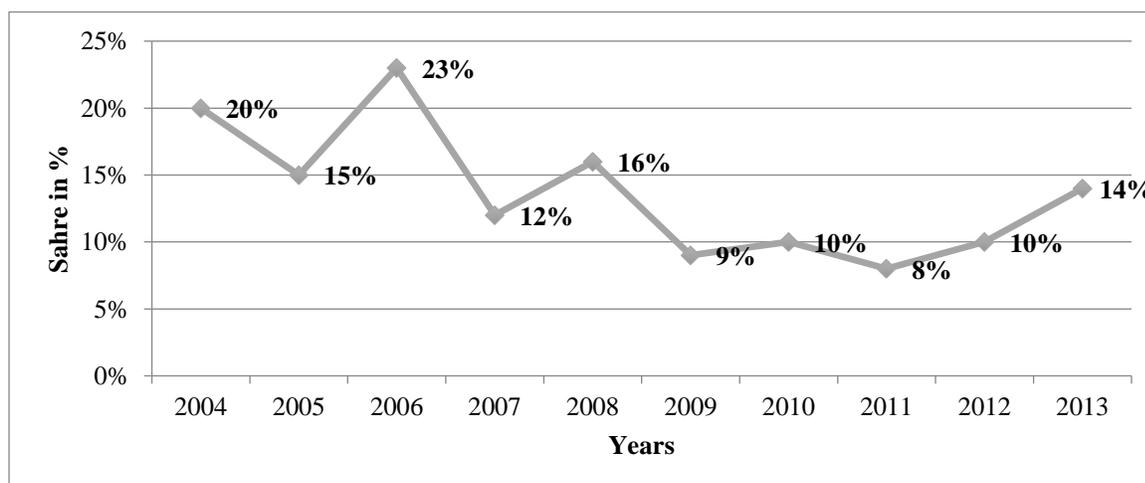
Olive trees are omnipresent throughout the Tunisian territory, and its regional distribution depends mainly on a social factor; in some regions traditions and habits make the olive tree an integral part of family life. Depending on these factors, the repartition of the olive trees all over the country is as following; The northern regions especially the North-west region represents 36%, the second most planted region with olive trees is the central west (Kairouan, Sidi Bouzid, Kasserine, and Gafsa) by 23%, then the coastal regions known as Sahel in Tunisia (Sousse, Monastir, Mahdia) representing 16%, followed by the southern regions (Zarzis, Gabes, Medenin) 16%, finally the Governorate of Sfax which monopolizes alone 9% of the national plantation.



Source: ONH based on data from the General Directorate of Agricultural Production (DGPA)-2015
Figure 2: Olive trees planting distribution by region

The importance of the sector in the national economy

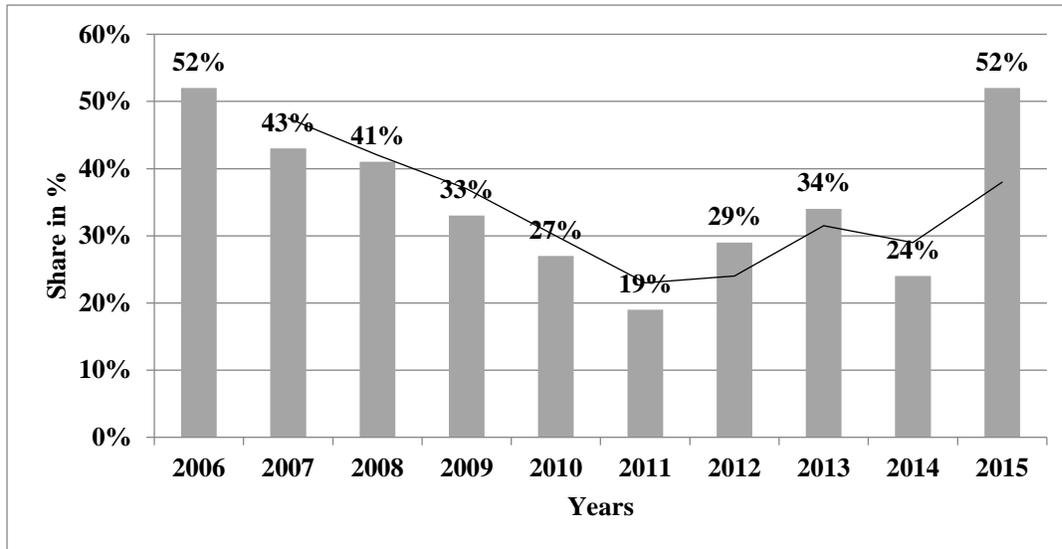
The olive sector in Tunisia has a great economic impact. In fact it creates, more than 50 million working days each year (COI), most of them are women and youth as casual labor force during the harvesting season which spreads from September to March every year. The share of olive oil production in Tunisian agricultural production (in values) was 14% in 2013 according to the National Institute of Statistics (INS) (Figure 3).



Source: ONH, 2015

Figure 3: Evolution of olive oil production share in Tunisian agricultural production

In addition, the share of olive oil exports in national agricultural and agri-food exports was estimated to 52%, and its share in global exports nationwide was 7% in 2015 according to INS and ONH.



Source: ONAGRI

Figure 4: Evolution of the share of olive oil exports in agricultural and agri-food exports

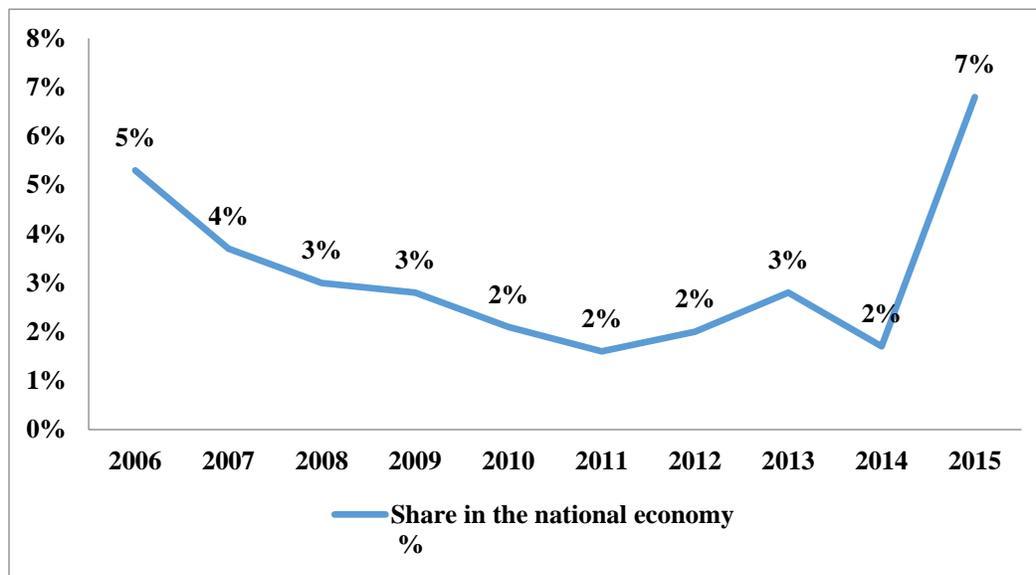


Figure 5: Share of the Olive oil sector in the Tunisian National economy

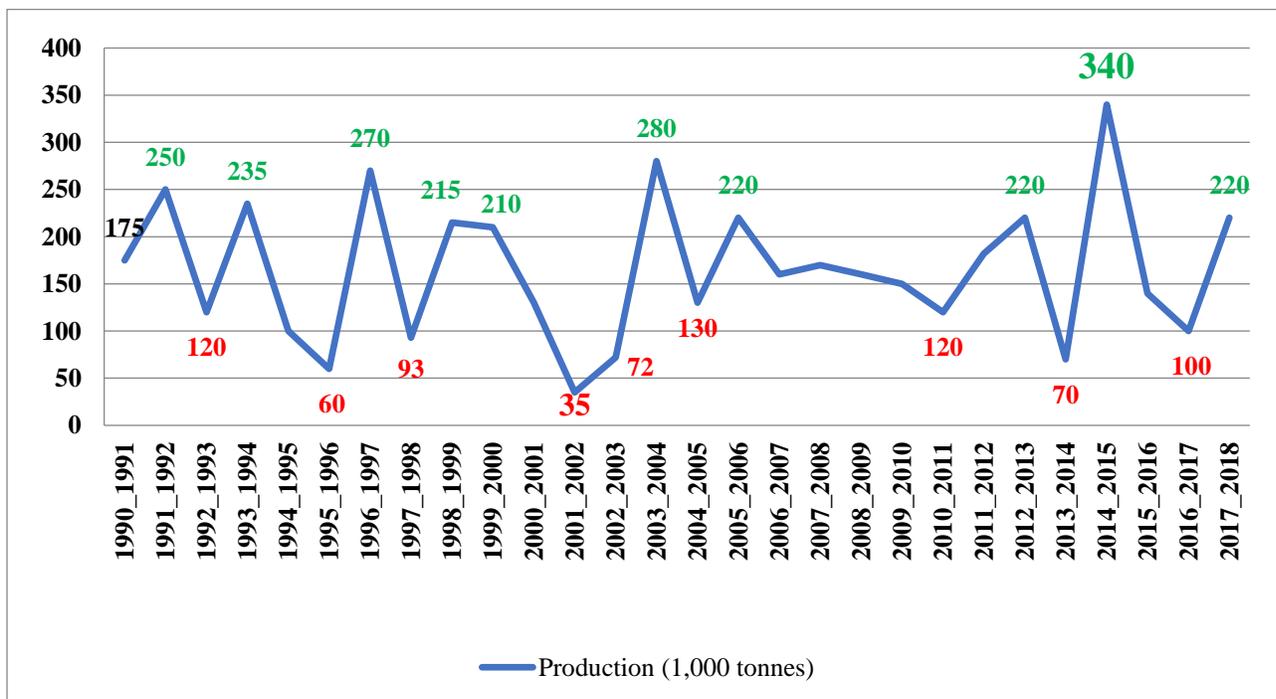
According to the International Olive Council (COI), 82% of the national production was exported in 2016. The average national production from 2003 to 2016 was estimated to 172.4 thousand tons of olive oil. The Average Annual Growth Rate (TCAM) of the sector during this period of time is estimated to 1%. The average national consumption is 37.2 thousand tons showing an annual decrease of 2%. Tunisia's share in the world production was 5% in 2016, showing an annual

increase of 1%. Regarding the export indices, the COI has estimated the average national exports of olive oil to 135 thousand tons during the decade 2003-2013, with an annual increase of 3%. And the national share in world exports of olive oil was 15% in 2016.

Tunisia is one of the countries to have undergone a significant transformation of the olive sector. Tunisian plantations represent 20% of the world's olive-growing area, and it is also one of the largest producers with a 6% share in the global market (Politique Tunisie, 2012). The national production of Tunisian olive oil depends essentially on two factors that are; the climate and genetic alternation that olive trees possess. Yet these two factors are not the main reason of the continuous fluctuation of the national productions. In fact, the olive growing in Tunisia is marginalized in most of the regions, or it is conducted extensively; i.e. farmers do not use many inputs and in most of the cases olive trees undergo very few interventions; plowing, pruning, and irrigation in periods of intense drought. Olive trees in Tunisia are more or less conducted in organic.

Tunisia produced 172,800 tons of olive oil per year over the period 1990 / 91-1999 /2000 (Figure 6) which, compared to the annual 150,700 tons in the 2000s, correspond to a decrease in the annual growth by 12.79%.

However, if we focus on the four seasons between 2005/06 and 2009/10, when production averaged 282,000 t / year, Tunisia was ranked the world's second largest producer of olive oil, just behind the European Union (EU). And this shows the great potential of the Tunisian olive oil sector, if all the different stakeholders execute a national strategy aimed at minimizing the fluctuation of the annual olive yields.

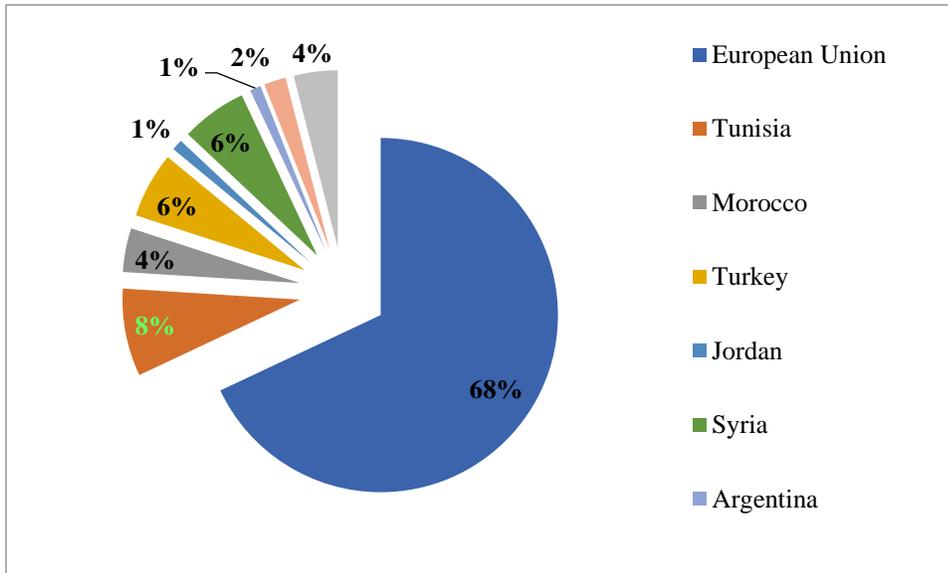


Source: International Olive Oil Council, November 2017

Figure 6: Tunisian olive oil production (in thousand tons)

The average production of Tunisian olive oil over the last 10 years (2006-2016) is estimated to be 176 000 tones with a minimum of 70 000 tones and a maximum of 340 000 tones recorded respectively during the 2013/14 and 2014/15seasons (ONH, 2017).

This level of production guarantees Tunisia its second world ranking after the EU.



Source: ONH, 2017

Figure 7: Distribution of the global production of olive oil from 2011/12 to 2015/16

Genetic variability

Tunisia is a country with a large genetic variability, and the olive tree is no exception. This variability is essentially due to a historical factor, Tunisia was at the crossroads of the trade routes between the East, Africa and Europe.

However, two varieties, Chemlali and Chetoui, are the main varieties grown in Tunisia, although there are others, called secondary, more specific to small areas like the Oueslati, Chemchali, Zalmati, Zarrazi, Gerboui and Sayali, and other varieties grown in more restricted areas.

Table 2 The main varieties of olive in Tunisia by region and by use

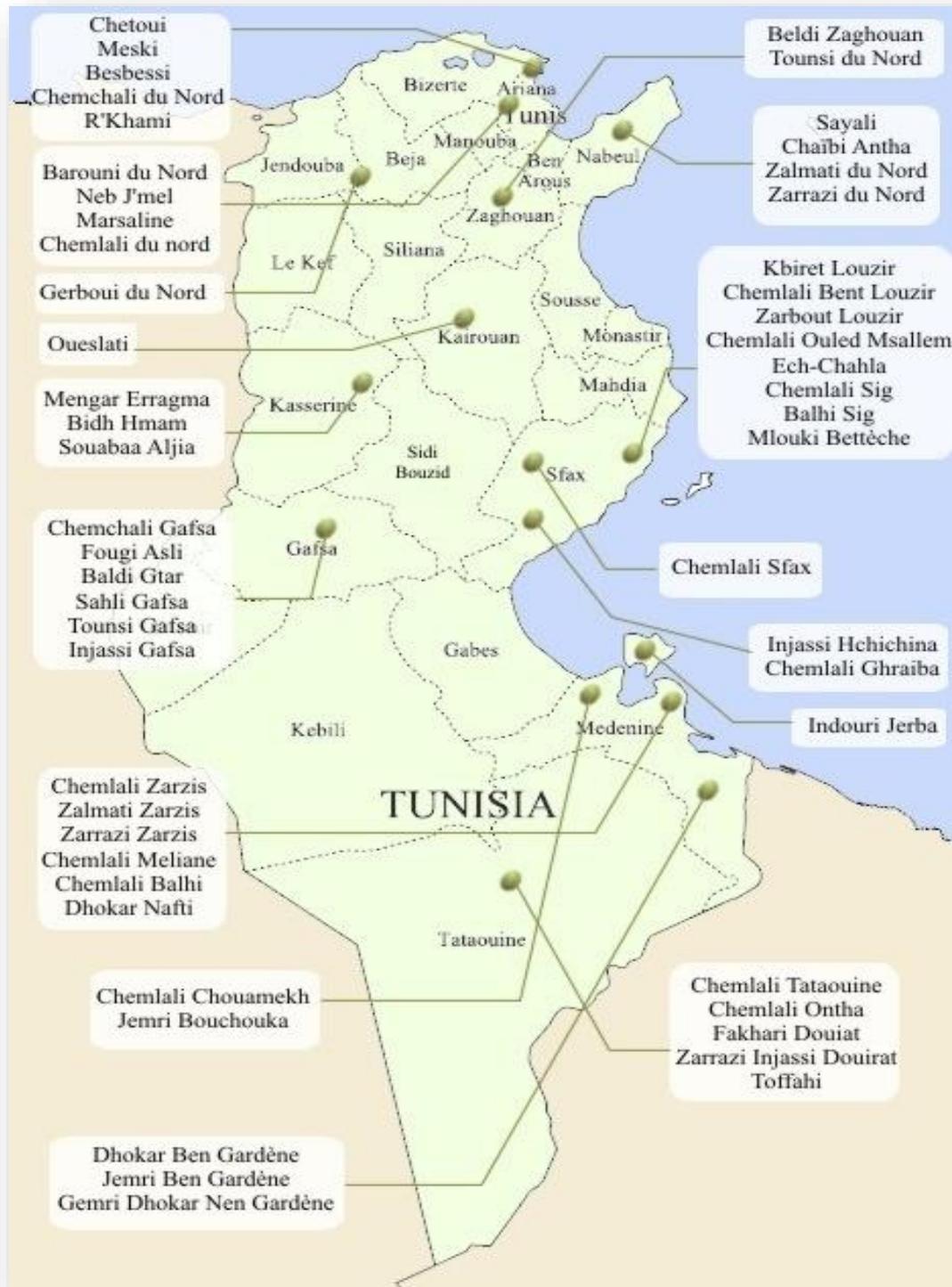
Variety	Region	Type of Variety
Chemlali	This variety is cultivated in warm coastal zone and in the low steppe. It is present in nearly 85% of the olive plantations and participates in more than 80% in the national production of olive oil.	Dual purpose: table olive / oil

Chétoui	Present in the coastal region, valleys and highlands of the North. This variety is grown in nearly 15% of Tunisian olive groves.	Dual purpose: table olive / oil
Oueslati	This variety is a specificity of the region of Kairouan (Oueslatia, Hafouz, Nassarallah), and of Silianna (Makther, Kessra, Bargou)	Dual purpose: table olive / oil
Zarazi	Cultivated in the South, mainly in oases, sometimes with some local areas.	Dual purpose: table olive / oil
Jerboui	Present in the regions of Beja, Jendouba and Kef	Dual purpose: table olive / oil
Zalmati	Located mainly in South East regions (Zarzis and Djerba)	Dual purpose: table olive / oil
Chemchali	Located mainly in South Western regions (Gafsa and Tozeur)	Dual purpose: table olive / oil
Meski	Grown in the northern regions; Bizerte, Beja, Manouba ...	One purpose; table olive
Besbessi	A characteristic variety of the region of Beja	One purpose; table olive

Source: ONH, Tunisian Olive Oil

Except varieties cited in the table 2, each Tunisian region has specific varieties, whose organoleptic qualities are unique. Figure 8 shows us in detail the genetic wealth of the country from the north to the Sahara in the south where olive trees are still cultivated despite the successive years of drought.

Indeed, the cultivars Oueslati, Zalmati, Zarrazi, Chemchali, Jerboui, Fakhari, Toffehi, Chemcheli Zarzis, Chemleli Jerba, Tounsi, Chemcheli Zarzis, Marsaline, Sayali and Jemri are just some examples of the possibilities offered by the Tunisian olive grove.



Source: ONH,2017

Figure 8 Location of Tunisian olive varieties

Processing

Processing Olive oil

The International Olive Oil Council (IOC) trade standard defines the different categories of olive oil. By definition, Olive oil is the oil derived solely from the fruit of the olive tree (*Olea europaea* L.) excluding oils obtained by solvent or by re-esterification processes and any mixture with oils of other kinds.

The virgin olive oil

International standards defines Virgin Olive Oils as being oils obtained from the fruit of the olive tree only by mechanical processes or other physical processes under thermal conditions that do not result in alteration of the oil. This latter do not undergo on any treatment other than washing, decantation, centrifugation and filtration.

Virgin oils are kept according to their organoleptic and chemical characteristics in the following categories:

Table 3 Different types of virgin olive oil

Extra Virgin Olive Oil	Virgin olive oil with a free acidity, expressed as oleic acid, not exceeding 0.8g per 100g.
Virgin Olive Oil	Virgin olive oil with a free acidity, expressed as oleic acid, not exceeding 2g per 100g.
Ordinary Virgin Olive Oil	Virgin olive oil with a free acidity, expressed as oleic acid, not exceeding 3.3g per 100g.

Source: IOC, Tunisian Olive Oil.

Refined Olive Oil

This oil is obtained from a virgin olive oil by refining techniques that do not involve changes in the initial glyceride structure. Its free acidity, expressed as oleic acid, does not exceed 0.3 g per 100 g (IOC, Tunisian Olive Oil).

Olive Oil

Olive oil is the oil consisting of the cutting of refined olive oil and virgin olive oils fit for consumption. Its free acidity expressed in oleic acid is at maximum 1g per 100g (IOC, Tunisian Olive Oil).

Pomace Oil Olive

Olive-pomace oil is the oil obtained by treatment with solvents or other physical processes, olive pomace, excluding oils obtained by re-esterification processes and any mixture with olive oils from other nature. It consists on the cutting of refined olive-pomace oil and virgin olive oils fit for consumption. Its free acidity expressed as oleic acid is at most 1 g per 100 g. This cut cannot, under any circumstances, be called "olive oil" (IOC, Tunisian Olive Oil). The Pomace Oil Olive is marketed in three forms that are defined in the following table:

Table 4 Different types of olive oil marketed

Crude olive-pomace oil	It is olive-pomace oil intended for refining for use in human food or for technical purposes.
The refined olive-pomace oil	It is the oil obtained from crude olive-pomace oil by refining techniques not involving modifications of the initial glyceric structure.
Olive pomace oil	It is the oil consisting of the cutting of refined olive-pomace oil and virgin olive oil fit for consumption, it can not be referred to as 'olive oil'.

Source: ONH,2017

Olive oil is classified according to the international customs nomenclature (harmonized system) in chapter 15: Fats, oils, waxes, etc... The nomenclatures relating to olive oil are as follows:

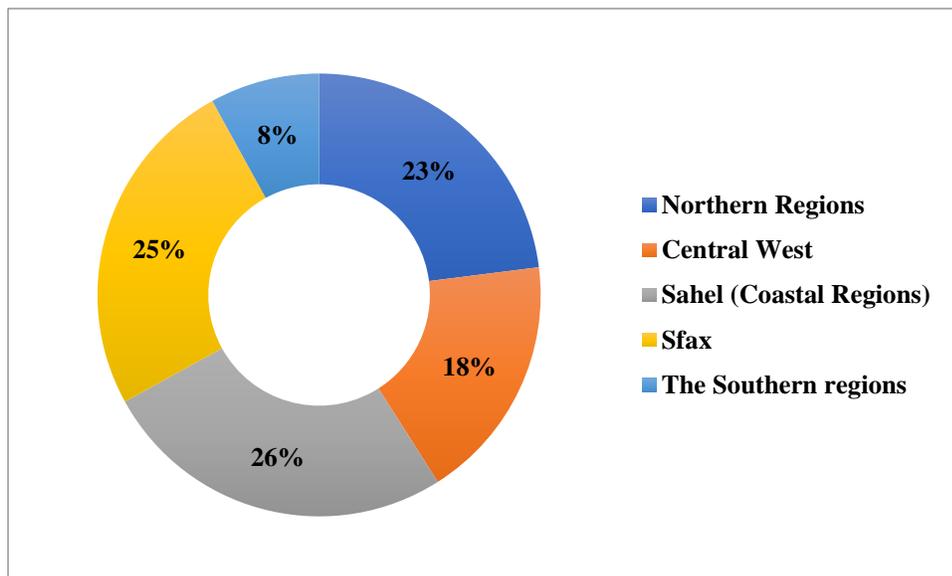
- **1509109001:** extra virgin olive oil packaged with a net weight less than or equal to 4.5 kg
- **1509109002:** super extra virgin olive oil presented otherwise
- **1509109003:** extra virgin olive oil in containers of a net weight less than or equal to 4.5 kg
- **1509109004:** extra virgin olive oil presented otherwise
- **1509109005:** fine virgin olive oil in containers of a net weight less than or equal to 4.5 kg
- **1509109006:** fine virgin olive oil presented otherwise.
- **1509109008:** current virgin olive oil
- **1509109009:** other virgin olive oils
- **1509101001:** lampante virgin olive oil
- **1509900001:** refined olive oil
- **1510001008:** raw olive-pomace oil
- **1510009001:** refined olive-pomace oil.

The industrial fabric

Since Tunisia is the country of the olive trees by excellence, a modern industrial network should exist in order to valorise the enormous production potential with an annual average of 165 thousand tones, spread over almost the entire country. The industrial fabric for olive oil is composed by 1679 oil mills with a theoretical capacity of 43 053 tons per day distributed all over the country (ONH, 2017).

More than half of the oil mills are concentrated in two regions namely Sfax and the Sahel (Sousse, Monastir, and Mahdia) since these latter are the most productive, followed by the northern regions (Tunis, Manouba, Ariana, Ben Arous, Bizerte, Beja, Jendouba, Kef, Siliana, Zaghouan, and Nabeul) which concentrates 23% of the country oil mills. 18% are located in the central west

region of the country (Kairouan, Kasserine, Sidi Bouzid and Gafsa). And the remaining 8% are located in two governorates: Gabes and Medenine. But it must be emphasized that there are oil mills in the Tunisian “*Jrid*” zones; Tozeur and Kebili as well as in the city of Tatouine but with a small number as these regions are specialized in the production of Dates mainly “*Deglet Ennour*” (Figure 9).



Source: ONH, 2017

Figure 9: Daily crushing capacity by region

This well-distributed oil mills network is supported by other industrial units for different purposes for the refining of oils or for the valorisation of certain by-products, or conditioning units. These units are distributed as follows:

- 10 units of extraction for olive oil residue with a capacity greater than the quantities actually processed;
- 15 refining units whose main activity is seed oil because of the low demand of the Tunisian consumer in refined olive oil;
- 40 packaging units with a total capacity of more than 165 000 tons per year of all food-grade oils (vegetable oil and olive oil), including 10 units specialized exclusively in olive oil.

Storage capacity for olive oil

In order to better develop its resources, Tunisia has developed a number of olive oil storage facilities in all key production areas. Currently, Tunisia has an olive oil storage capacity of 365 000 tons among which 150 000 or 41% are held by the National Office of Oil and spread over the regional centers of Tunis, Sfax, Sousse, Sidi Bouzid, Kairouan and Zarzis (ONH, 2017).

The remaining quantity is held by private olive oil industrials who have achieved a considerable expansion of the storage capacity recorded in recent years through the creation of additional

storage units in existing oil mills and the establishment and installation of new oil mills with new storage units or setting up new storage units only (ONH, 2017).

Conditioning of olive oil

Olive oil is usually packaged in light-opaque glass bottles or in metal cans or drums treated with a food-grade varnish. The capacities are variable from 25 cl to 1 liter for glass bottles and from 1 to 5 liters for boxes and metal drums. For export applications are increasingly oriented towards small capacity bottle opaque glass 25cl, 50cl, 75cl and metal boxes of 75cl to 1 liter. The activity of packaging and bottling of olive oil is part of the oils and fats and primary processing industries.

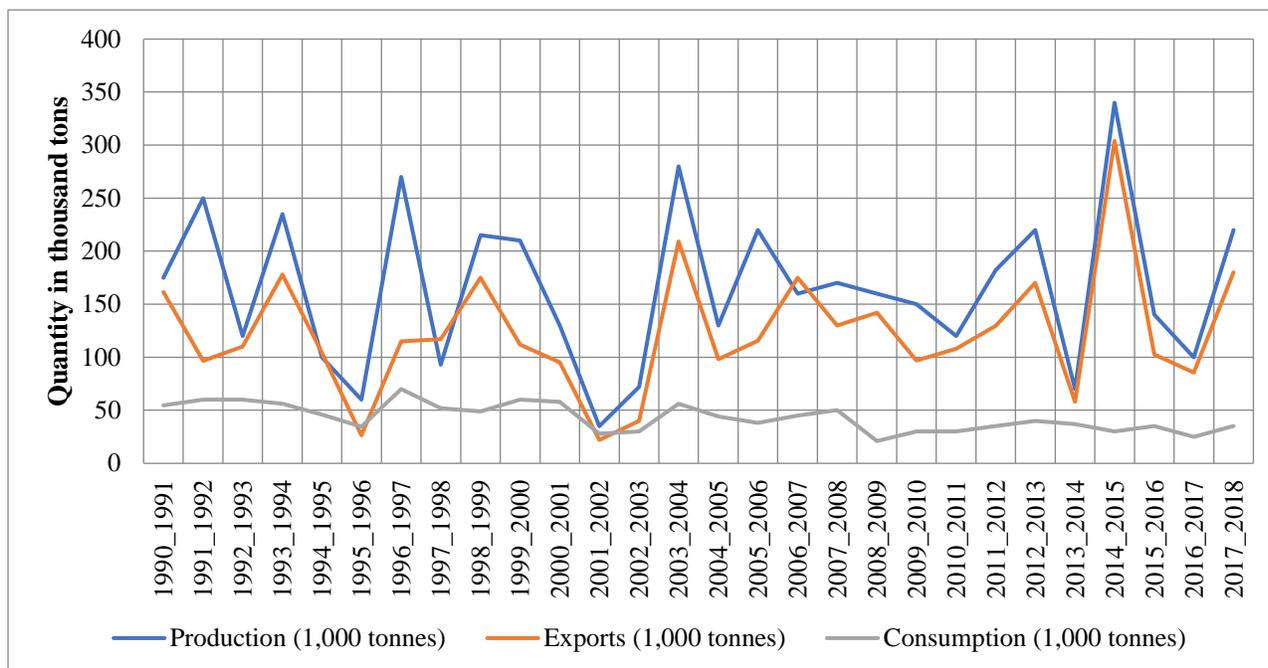
Distribution

Tunisia is the most integrated Mediterranean producer and exporter in the world market for olive oil. The rate of integration, estimated by the ratio between the quantities exported and the quantities produced is generally high. Despite its fluctuations from one year to another, because of the annual variations in production, this rate is generally higher than the rates of the competing countries (Karray and Kanoun, 2013).

Tunisia is a country with a very high potential. However, this potential is not exploited to its maximum because of several constraints in all the levels of the olive oil value chain. As example, if we look to the campaign 2014/2015, the quantity of olive oil produced was 340 000 tons. 91% of the production was exported (312 000 tons) but only 6,41 % was exported in packaged bottles.

The value of the olive oil exported was 1995 Million tunisian dinars, which represents more than 50% of the total value of exports of agri-food products. 73% of the quantities exported are destined to the European market, 18% to the United States.

Figure 10 shows the cyclical production of the olive oil which leads to a fluctuation in the quantities produced due to the phenomenon of biological alternation of the olive tree, but also to the extremely harsh climatic conditions. As example, the production was 35000 tons in 2001/2002, while it went up to 280000 tons in 2003/2004, and the same situation again between the two seasons 2013/2014 and the record of 340000 tons in 2014/2015.



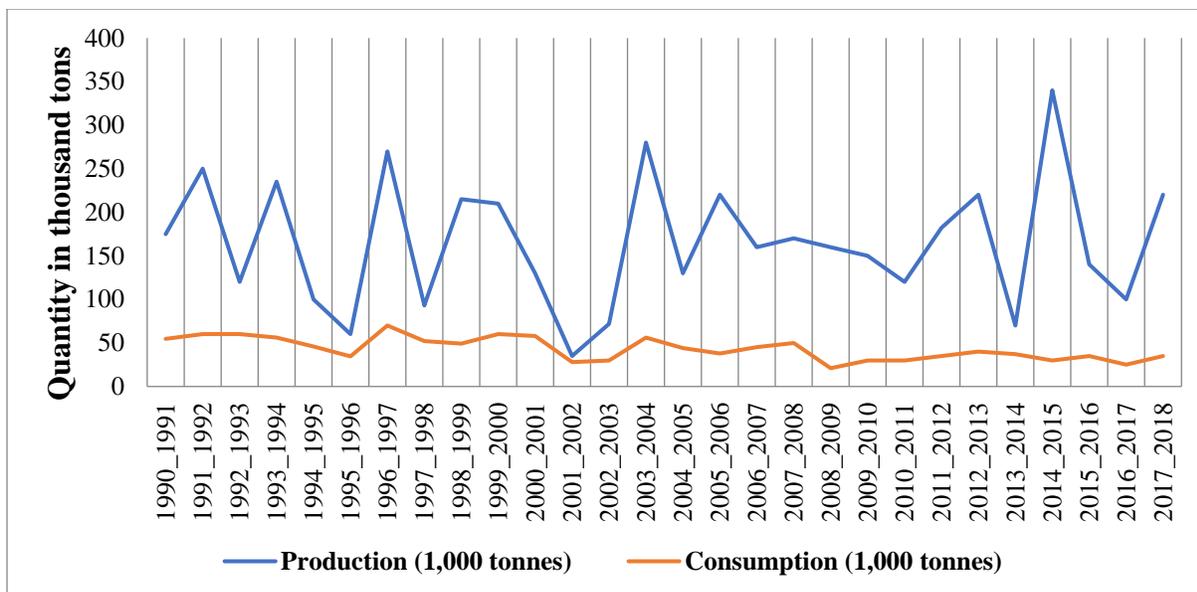
Source: IOC, 2018

Figure 10 Tunisian Olive Oil: Production, National Consumption, and Exported Quantities (1990-2018)

National consumption

Although Tunisia is the world's second largest producer of olive oil and the national average production is largely sufficient to meet national needs, most of the production is exported (Figure 11). In fact and since 1962, the Tunisian Government has pursued a policy of replacing olive oil with seed oils in its domestic market. The purpose of this policy was to allow, on the one hand, the entry of foreign currency to the country through the export of olive oil, and on the other hand to preserve the purchasing power of low-income households by the use of seed oil imports which are less expensive than olive oil (Chebil and Sai, 2003). This substitution policy has ended up creating new consumption habits among the Tunisians who use more seed oils (soybeans, corn, rapeseed, etc.) than olive oil.

The average national consumption of the Tunisian olive oil varies slightly according to the national production. Yet, this average is decreasing constantly; from 54.2 thousand tons (1990 to 2000), to 40 thousand tons (2001 to 2010) and it is estimated to decrease to 33.37 thousand tons (2011 to 2018) (Figure11). This is explained by the decrease of the purchasing power of the Tunisian citizen especially during the actual economic crisis. In addition to a national strategy that encourages the export of olive oil in order to reduce the deficit of the trade balance.

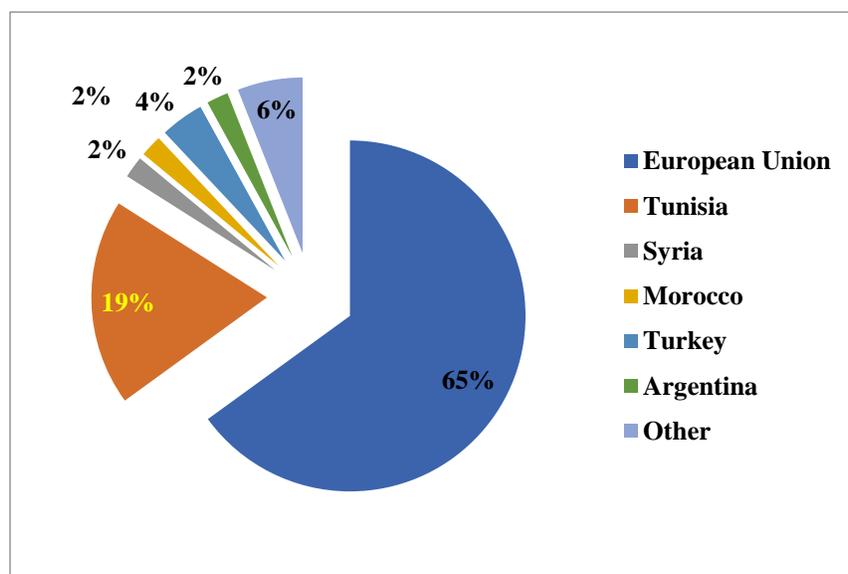


Source: IOC, 2018.

Figure 11: Evolution of national consumption in olive oil (1990-2018)

Exportation

Tunisia occupies a leading position in the world olive oil market, mainly due to its high production potential. This place is due to the Governmental policies that encourage olive oil exportation. The country is now the world's second largest exporter of olive oil after the European Union with a market share of 19% between 2001 and 2016 (Figure 12). The EU is a coalition of several international producer countries in particular: Spain, Italy and Greece, and this confirm the great potential of Tunisia.

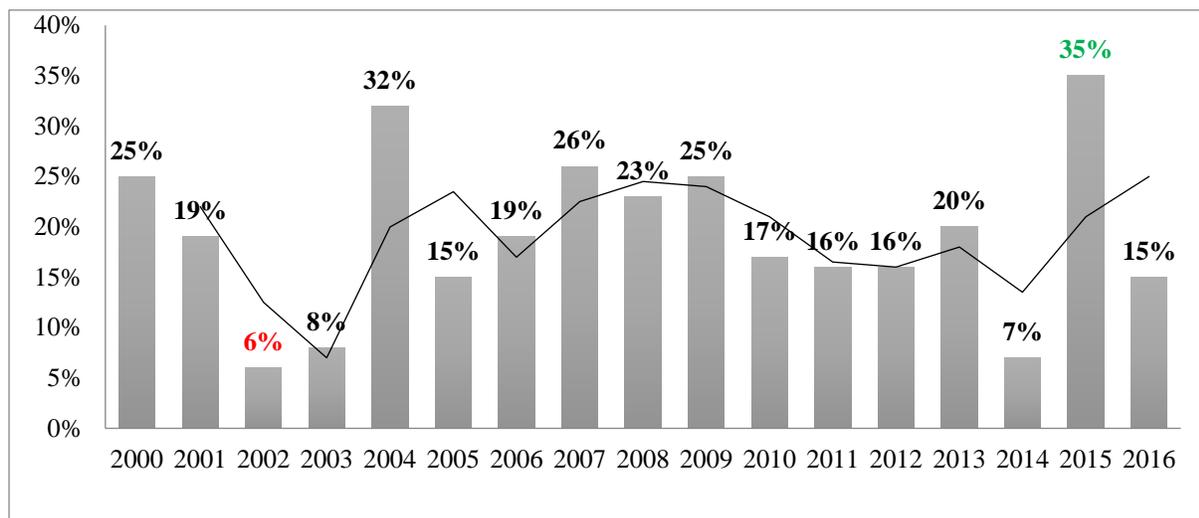


Source: ONH, 2017

Figure 2: Distribution of Olive Oil world exports (EU/world) (2001-2016)

75% of the annual production of olive oil is exported every year since the beginning of the 1990's. Tunisia exported on average 165 000 tons/year during the period 2005-2009. Tunisian exports fluctuate according to the production which is variable according to the climatic conditions. In the 1990's the average 75% of the national production was exported, in the years 2000's, this average has slightly decreased to reach 73.3% and from the year 2011 until 2018 there has been a noticeable increase in the quantity exported to reach 81.4%. This is explained by the new measures taken by the Government to better promote the exportation of olive oil.

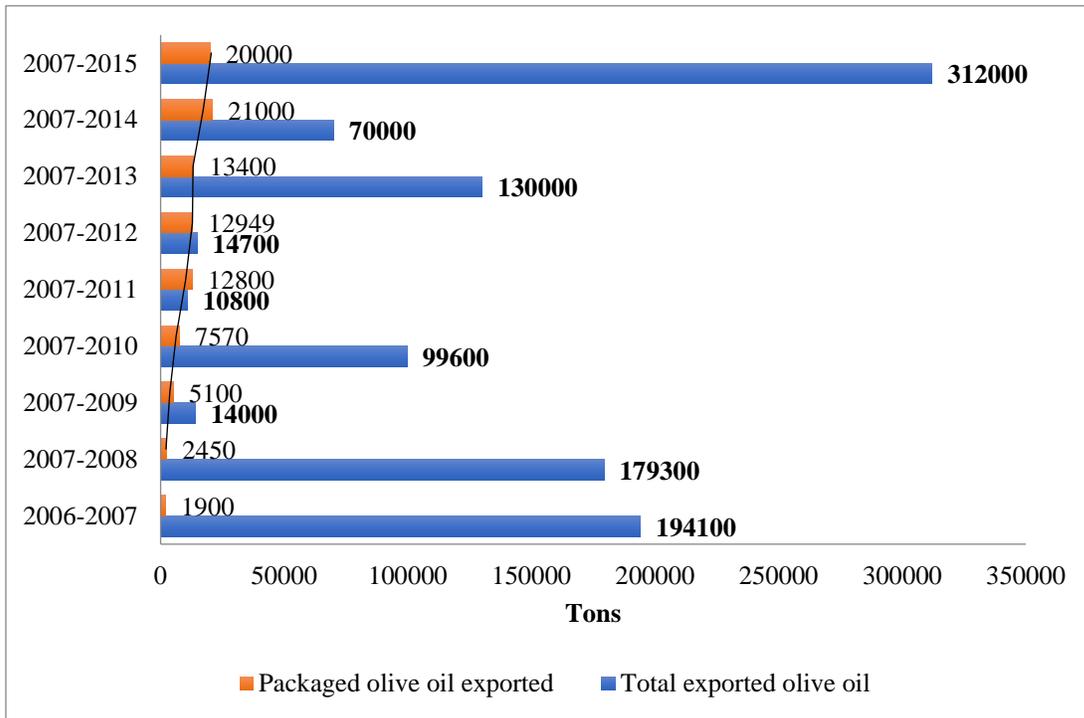
The characteristic fluctuation of the national production does not only affect the quantities exported but also it affects the share of Tunisia in the world market. On average the national market share is 19%. But in some exceptional seasons, this average felt to its lowest level recording 6% in 2002; the highest share recorded was 35% of the global market in 2015. In general, Tunisia's share of the global market is rising as confirmed by the moving average in the figure 13.



Source: IOC, 2016

Figure 3: Evolution of the proportion of Tunisian exports of olive oil in world exports excluding intra-Community trade (2000-2016)

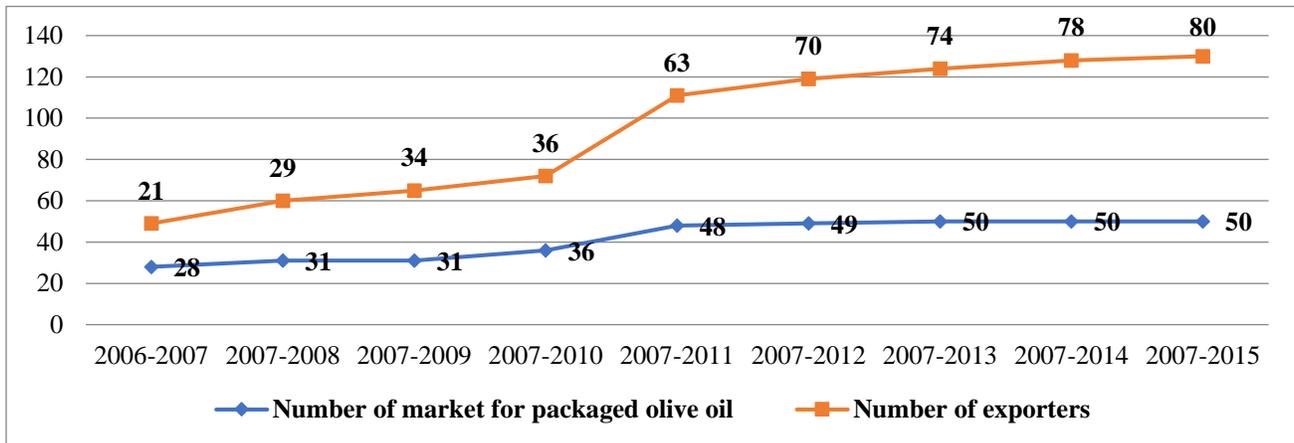
Despite the different strategies put in place by the Government, Tunisia does not fully benefit from the real value of its olive production. In fact, the vast majority of the quantity exported is in bulk, which means that the sector has a great deal of added value. In the 2006/2017 season, less than 1% of the exported quantities was packaged and was defined as Tunisian product. Fortunately, the Tunisian exporters now tends to export more packaged quantities of olive oil, the latter shows a continuous annual increase and reached 20000 tons during the period 2007-2015 (Figure 14).



Source: ONH,2017

Figure 44: Quantities of Olive oil exported by category

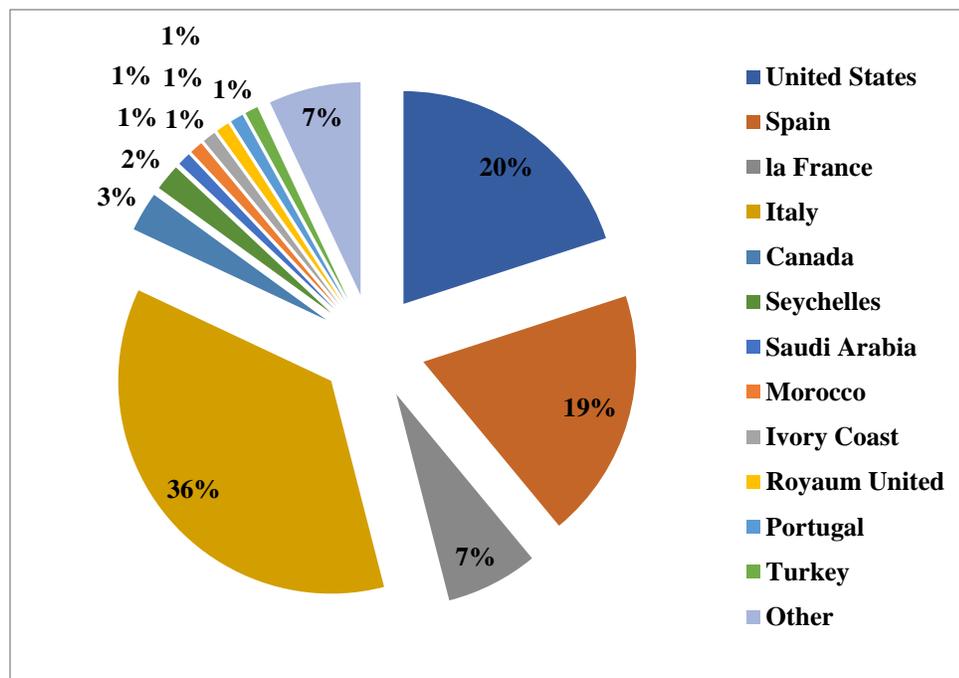
One of the essential reasons for this continuous increase is the development of the industrial fabric as well as the increase in the number of Tunisian exporters alongside to the conquest of new global markets which promotes the export of packaged olive oil. Actually, Tunisian exporters are targeting 50 markets for the packaged olive oil, in 2006/2007 this number was only 28 which means an annual growth of 2.4 markets per year. But this figure is now stagnant for five years. In the other hand, the number of exporters evolves in exponential way, it has quadrupled in less than a decade from 21 in 2007 to 80 in 2015 (Figure15). With the increasing number of export markets and the increase of the number of exporters, this has had the effect of increasing the quantity of packaged olive oil exported. Yet this is not enough to take full advantage of the whole potential of the country.



Source: ONH, 2017

Figure 5 Evolution of the number of exporters and markets for packaged olive oil
Analysis of the exports of olive oil (2016)

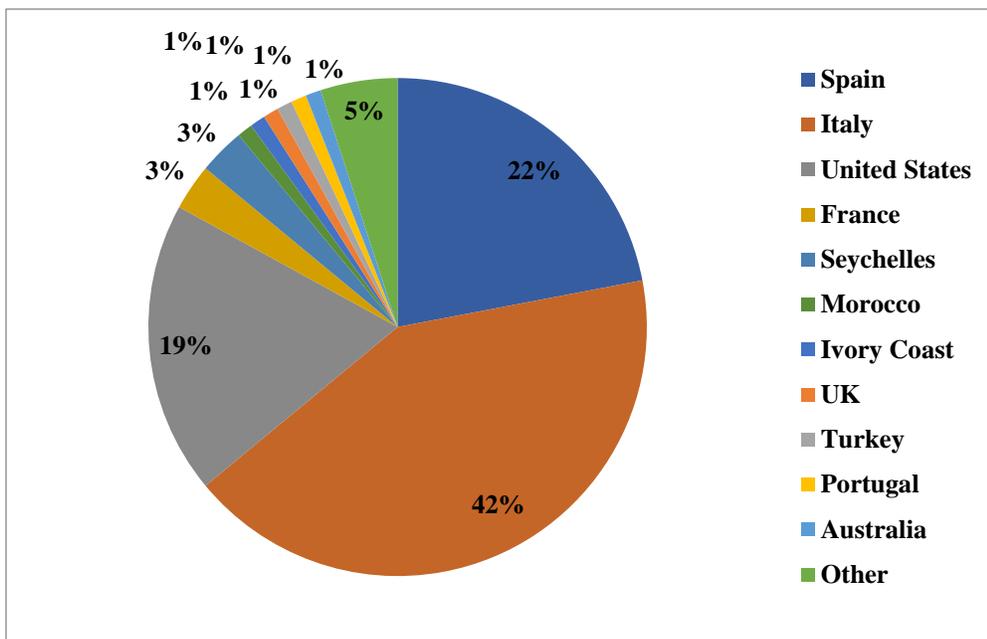
Tunisian olive oil is recognized internationally both by major producers and major consumer markets around the world. Indeed, even the biggest producers of the world import Tunisian olive oil. If we focus on the exports of 2016, we can notice that in addition to traditional markets such as Europe and North America, Tunisian olive oil was able to conquer, by virtue of its quality, more than 57 new destinations in the Middle East, Asia, Africa, Australia, and South America. Bulk olive oil is exported to 32 destinations. Packaged olive oil is also continuing to conquer new markets, and is currently distributed in 53 countries across 5 continents (Figure 16).



Source: ONH, 2017

Figure 6: Distribution of total exports of olive oil in 2016

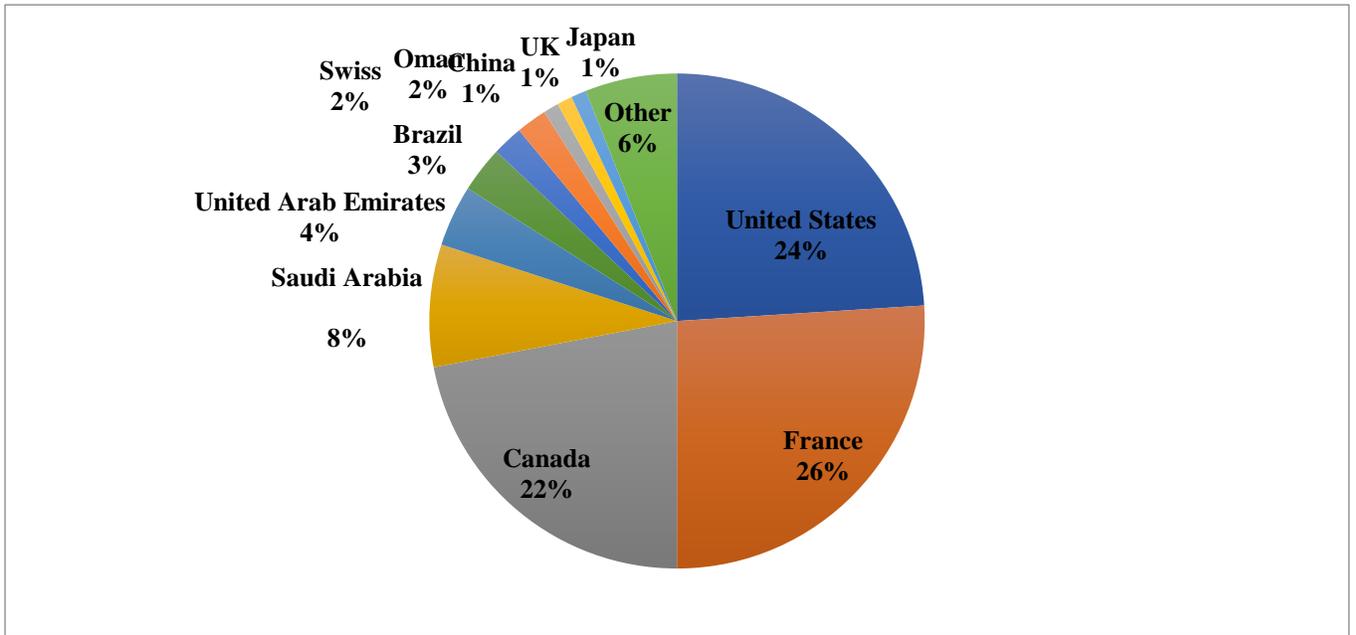
Because of its large production potential, Tunisia is constantly conquering new markets; local, regional and worldwide. This is mainly due to a strong estimate of the value of Tunisian oil considered one of the best in the world. The Tunisian exporter targets several types of market depending on the nature of the oil exported; bulk or conditioned. The major part of the Tunisian export is bulk oil, and the European Union is the biggest beneficiary with more than 65% of the total. The exports are shared over three countries which are: Italy 42%, Spain 22% and France with only 3%. The second largest market besides the European Union is the United States with a share estimated to 19% despite the fact that it is a relatively recent market. The great potential of the African market remains not exploited by Tunisian exporters except to countries which are Seychelles and Ivory Coast, as for the Asian market with a unique target: Turkey. The Australian market is not yet developed due essentially to logistic constraints (Figure 17).



Source: ONH, 2016

Figure 7: Distribution of exports of olive oil in bulk 2016

Target markets for packaged olive oil are more diversified than the markets for olive oil exported in bulk. The latter is aiming primarily rich countries where the purchasing power of citizens is high enough to consume goods with a very high added value. Almost 75% of the exportations are going for three main markets; France 26%, the United states with 24% and Canada 22%. The Gulf country's share is estimated to be 13% divided on two large markets; KSA (8%) and UAE (4%) and a very small share for the Sultanate of Oman estimated at 1%. China and Japan are the only two Asian countries targeted by the Tunisian exporters, yet their share is still low 1% to each one of them. On the other side, Brazil is a growing market this past decade, it has reached 3% (Figure 18).



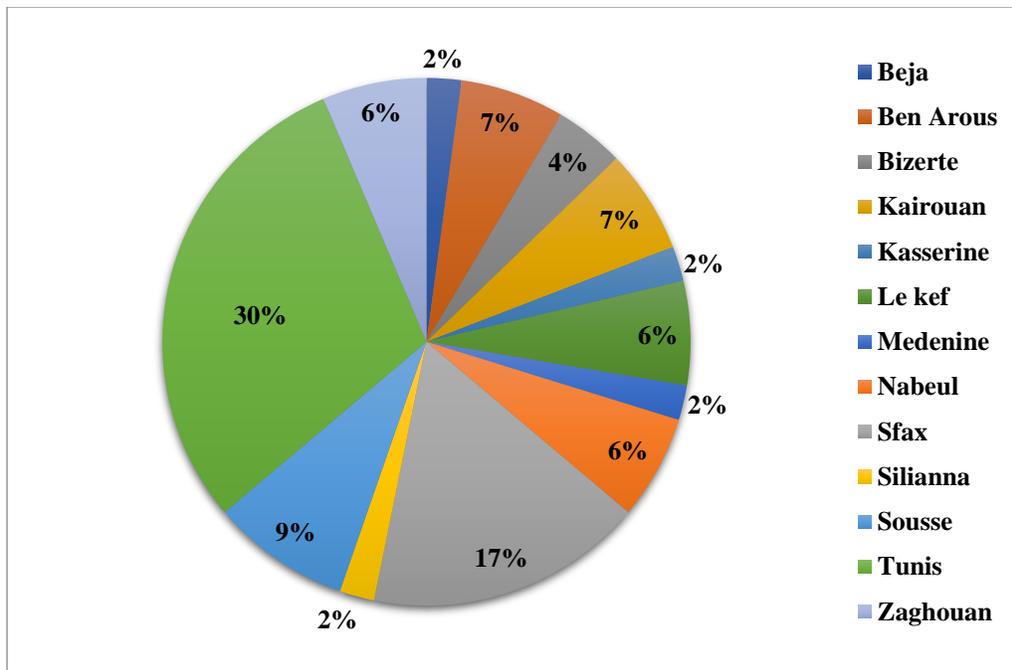
Source: ONH, 2016

Figure 8: Distribution of exports of packaged olive oil 2016

Regional distribution of olive oil packaging companies

The packaging industry of olive oil is relatively new in Tunisia due to the general trend of exporting oil in bulk. This situation hindered the development of an industrial fabric at the national level which is not well distributed among the producing regions. Most companies are mainly concentrated in the coastal areas and near the most productive areas or close to industrial areas.

The capital monopolizes the one-third (30%) of oil packaging companies, but if we add Ben Arous as being a region of the capital; the total sum will rise to 37%. Sfax is the second most important region where we find 17% of the industrial fabric, followed by Sousse with 9%. The other packaging companies are located in almost all the olive producing regions: In the north in Bizerte, Beja, Kef, Siliana, Zaghouan and Nabeul. In the centre Kairouan and Kasserine. And finally in Medenine in the south (Figure 19).



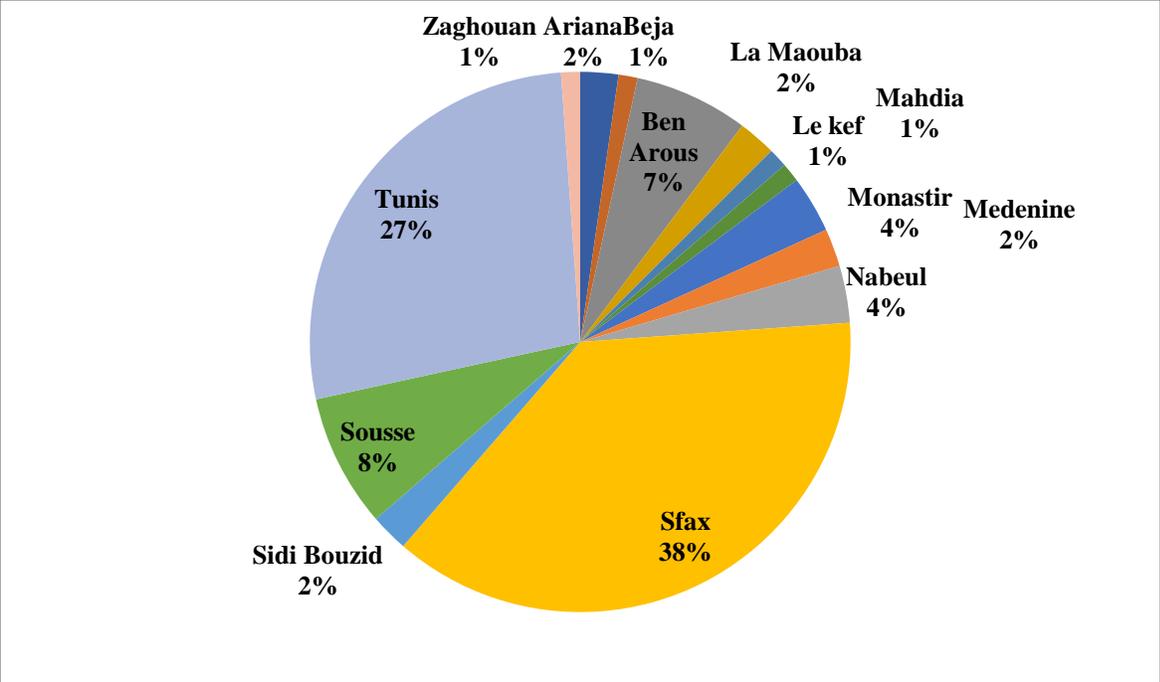
Source: Own elaboration from the data of Tunisian Olive oil, 2017

Figure 9: Regional distribution of olive oil packaging companies

Typology of olive oil exporters

There are several types of companies packing olive oil in Tunisia; the ones which only target the local and regional markets such as Algeria and Libya considered a minority with only 8%, while the majority are purely exporting companies. Half of these firms are certified at both national and international level, this means that the other half can only export their products to nearby countries. Fourteen companies (28%) are the winners of international prizes which confirm the superior quality of Tunisian olive oil.

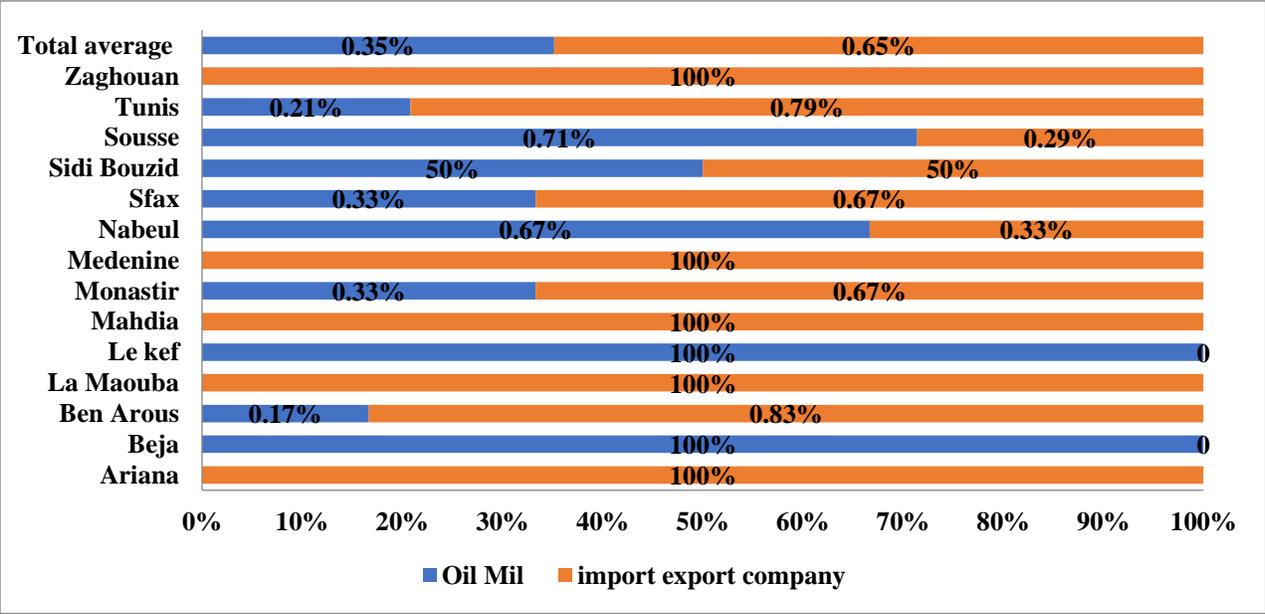
According to data provided by the National Office of Oil to the International Olive Council, the geographical distribution of olive oil exporters is heterogeneous; it is dense in the coastal region and the capital while it is almost absent in the interior regions of the country. This is explained by a less developed infrastructure in the interior regions but also by the habit of the exportation companies to be located nearby naval ports. It is in this specific context that Sfax is ranked the first region for the olive oil exporters (38%), followed by the Capital Tunis, Ariana, Ben Arous and Manouba whose total percentage is 38%. The Sahel region namely Sousse, Monastir and Mahdia occupies the third place with a total of 13% of the national exportation companies. The rest of them are located in the northern region, the central regions and in the south but with a diminished presence (Figure 20).



Source: Own elaboration from the data of IOC & ONH, 2016

Figure 20: Regional distribution of olive oil exporters

The company exporting olive oil in Tunisia can be producers, oil mills, or Import/Export Companies. Figure 21 highlights this typology based on Data collected by the ONH and delivered to the IOC. In average, 35% of the exporters are oil mills or producers owners of oil mills the rest are agri-food export companies.



Source: Own elaboration from the data of IOC & ONH, 2016

Figure 10: Exporters classification by type of company

Support structures and regulations

Governmental Support Structures

Recognizing the importance of promoting the export of olive oil, Tunisia has opted for a strategy based on forward-looking and promising initiatives and measures (ONH). These measures essentially affect the exportations measures.

The olive sector is supported by several governmental institutions which are:

- The Ministry of Agriculture
- Ministry of Industry and Technology
- Ministry of Commerce and Handicrafts
- The Technical Center for Organic Agriculture (CTAB)
- Agricultural Investment Promotion Agency (APIA)
- The Export Promotion Center (CEPEX)
- The Technical Center for Packaging (PACKTEC)

In addition to its institutional support, the Tunisian Government supports the export through various programmes. The first one is The Export Market Access Fund (FAMEX) which is a project of the Ministry of Commerce, financed by the World Bank, aiming to promote exports of packaged olive oil to growing markets and whose management has been entrusted to the CEPEX. The second programme is The Export Promotion Fund (FOPRODEX), a financial support mechanism put by the Tunisian Government at the disposal of exporters to enable them to access the international market and whose management has been entrusted also to the CEPEX. The third program is The Fund for the Promotion of Packaged Olive Oil (FOPROHOC): funds whose management has been entrusted to PACKTEC. This fund is governed by the Decree No°2006-2095 of July 24, 2006, fixing the procedures for intervention and operation of the FOPROHOC.

National Regulations

Olive oil as a high-quality food has a very elaborate regulatory framework. These regulations are essentially established by international bodies such as the International Olive Oil Council (OCI) with its specialized study groups (Chemicals and Standards Development Committee and the tasting panel leaders of which Tunisia is a member). Quality control can also be established by European bodies (C.E) or by national bodies such as institutes (INNORPI: National Institute for Standardization and Industrial Property) in collaboration with the National Office of Oil (ONH). Because of its history, the Tunisian olive oil has a universal reputation thanks to its taste and dietary qualities. The National Office of Oil (O.N.H.) makes sure to maintain this reputation by pursuing a quality approach based on:

1. Laboratories recognized and approved by the International Olive Oil Council, equipped with high technology devices,
2. A host of highly qualified engineers and technicians specialized in fat analysis,
3. A panel of tasters initiated and trained to the latest organoleptic evaluation methods set up by the International Olive Oil Council.

A continuous physico-chemical and organoleptic control is done in order to identify the quality and the defects of the oil to select virgin olive oils of quality.

The national laws are as follow:

1. Decree n°2009-3726 of 14 December 2009, regulates the picking and transport of olives.
2. The Order of the Minister of Industry dated from 31 October 2006, fix the minimum technical and sanitary conditions required in oil mills.
3. The Order of the Minister of Industry, Energy and Small and Medium Enterprises, the Minister of Trade and Handicrafts, the Minister of Agriculture and Water Resources and the Minister of Public Health of May 26; 2008, fix the categories and characteristics of olive oil.

International Standards

The Tunisian standards are in complete agreement with the international standards as Tunisia is a member of the IOC. In fact all the standards can be summarized as follow:

1. Trade Standards of the International Olive Council

- Decision Standard COI 2015
- COI STANDARD REV 8 - 2015

2. Quality Management Guides

- Guide to Quality Management of the Olive Oil Industry Mills
- Quality Management Guide for the Olive Oil Industry Packaging Companies
- Quality Management Guide for the Olive Pomace Oil Extraction Industry
- Quality Management Guide for the Olive Oil Industry Refineries

Source: IOC, ONH.

When Designing Tunisian Olive Oil as « *Liquid Gold* » Becomes Meaningless

Shifting from quantity to quality

Olive growing is a strategic sector in Tunisia; it is one of the main activities in agriculture. As described earlier, the olive products also operate in an industrial fabric containing more than 1650 oil mills, 10 olive oil extraction plants, 40 specialized olive oil conditioning units, several soap factories and activities using olive oil. This culture provides 20% of agricultural employment (40 million daily jobs per year) to which must be added the jobs created in industrial and commercial structures. Despite this structure, the sector of olive oil suffers from a lot of constraints.

Since the 70s, marked by the trade deficit, economic policy was oriented towards export promotion through a number of tax benefits. Foreign trade of agricultural and food products was mainly based on olive oil (39% of total exports) that played a significant role in food balance. This area is considered the main source of foreign exchange and key to food security of the population. The priority was to export olive oil to be able mainly to import grains. In this context, the adopted development strategy was focused only on improving productivity and goal remained a quantitative target "produce more to export more."

From 1995, following the accession of Tunisia to the WTO and association agreements with the European Union, the aim has been to produce competitive goods in the international market. In this new context of competitive advantage, all efforts were directed towards the liberalization of exports and the establishment of an export promotion program accompanied by significant privileges and benefits for exporters (grants and loans from the FOPRODEX for transportation, market research, participation in exhibitions, publishing promotional materials and the FAMEX for implementation by small and medium enterprises an export marketing plan) and boosting support structures (CEPEX, technical centers and inter-groups). Competitiveness is sought through competitive prices and quality products.

The olive oil value chain can be described as follow (Figure 22).

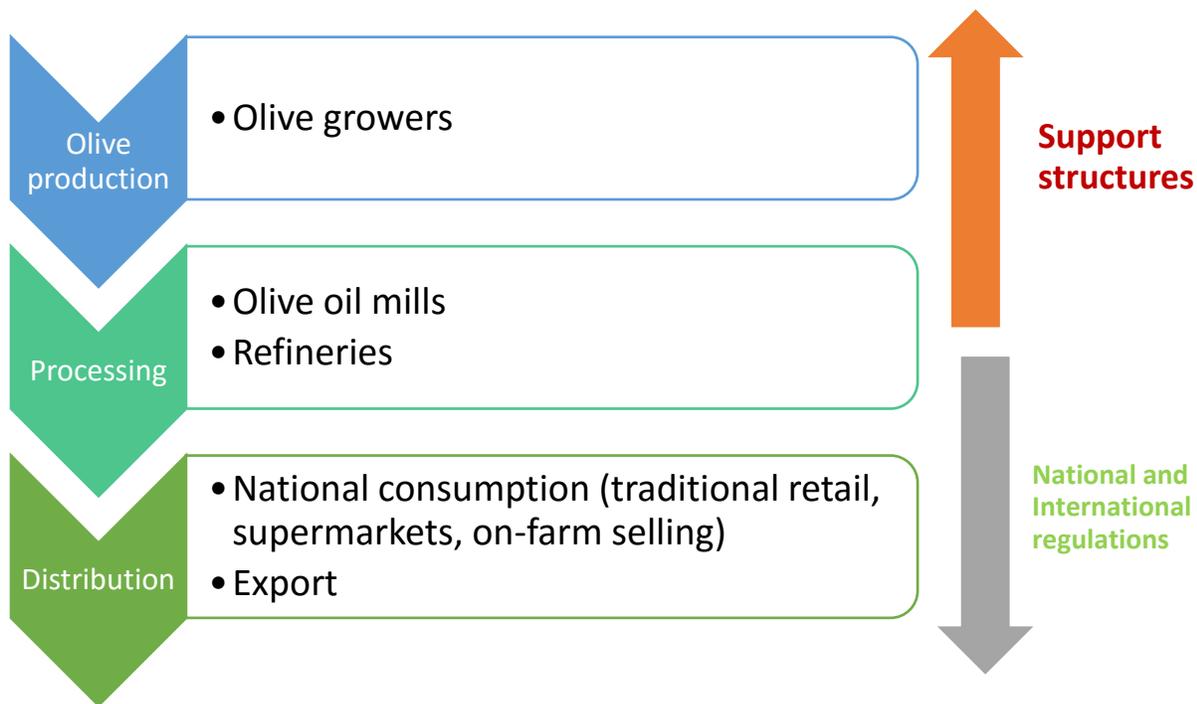


Figure 22: Olive oil value chain

Constraints for Tunisian olive oil

Despite a fairly comfortable place on the international market, unit prices of olive oil are largely unfavorable to Tunisia, compared to its main competitors. Italy sells olive oil from 57 to 60% more expensive than the Tunisian olive oil. This is also the case of Spain, with values ranging from 25 to 35%. This is mainly due to the fact that the Tunisian olive oil is still exported in bulk rather than in individual bottles.

This is the main obstacle to the creation of value in the export sector, especially as the Italian industrialists have often been accused of buying the Tunisian olive oil for resale stamped "Made in Italy" (CIHEAM,2009). The added value of this oil is therefore outside the country. Now, faced with global consumers increasingly demanding in terms of product safety, the question of the quality of products is now especially acute that a new European legislation came into force in July 2009 for labeling of virgin olive oil. The country of origin of the oil must be mentioned on the bottle with "non-EU" if the oil comes from third countries.

The economic challenge is, therefore, the development of quality signs by Tunisia. The country should invest more heavily in the differentiation of its oil through the recognition of its origins and qualities. Indeed, signaling quality is one way of enhancement of export products.

In this sense, the law n° 99-57 of 28 June 1999 relating to designations of origin for agricultural products gives the opportunity to have a distinctive sign as an appellation of origin or an indication of source. It applies to agricultural and food products whether of plant or animal origin and wines and spirits (JORT, 1999).

To identify the constraints related to signaling the quality of olive oil, surveys will be conducted on the second phase of the study (See questionnaire in Annex 1). Interview guides were developed to better frame the answers of the respondents. These guides include both closed and open questions. They allow respondents to respond spontaneously without being guided by predetermined answers, to collect any comments, criticisms or suggestions. The objective through this questionnaire is to see if the operators are moving towards the establishment of a strategy linked to signaling quality.

Nowadays, even though the olive oil sector continues to be competitive and to play an economic, social and environmental role, several weaknesses and threats still persist, and certain strengths and opportunities are not sufficiently exploited. In fact, the productivity of olive plantations is the lowest in the world which affects the level of production costs. The high variability in production from one year to the other affects significantly the regularity of export flows, which leads to significant fluctuations in the market share, income and cash position of the players in the sector. The added value created is often poorly distributed among the actors in the sector.

The lack of conditioning units is a major problem that needs to be solved, especially for the regions that are far from the coastal areas. How can we push to a strategy oriented to packaged olive oil instead of exporting in bulk while there is not enough conditioning units?

This sector suffers also from the individualistic behavior of the exporters/producers which leads to a lack of cohesion between the operators. The olive oil exporters are often seen as "opportunistic" because they are selling olive oil and do not think about long-term strategies that can ensure the sustainability of the sector.

Concerning the marketing costs; producing specific quality products generates a cost associated with the adoption of a specific production system and the use of a specialized labor. The local operators are then discouraged by the increase in production costs. Creating a national label to be promoted on foreign markets can be very expensive and dissuasive for olive growers or exporters. Especially as it has to compete with Italian and Spanish brands that have a strong tradition and are recognized internationally.

From the survey conducted with the support structure, one of the constraint highlighted was the low awareness of Tunisian olive oil on foreign markets. Indeed, even if the Tunisian olive oil is known by the Italian and Spanish importers, it remains completely unknown to final consumers. Tunisian olive oil will struggle on the international market compared to the Tuscan olive oil for example. The European consumer may not have confidence in the food produced in developing countries.

Keys to succeed overseas for the Tunisian olive oil

It is important to notice that the Tunisian olive sector is at a pivotal moment announcing a promising future. Having reached a great maturity that has been combined through the marketing of Tunisian brands in more than 57 countries; the current challenges are related to the strengthening of their positioning through elaborating branding strategies. Here are summarized some keys to succeed overseas for the Tunisian olive oil.

- Strengthening the competitiveness of Tunisian olive oil through the implementation of olive-growing policies based on increasing the productivity of olive plantations and improving the quality of olive oil. These policies will aim at preserving traditional markets and finding new ones.
- Improvement of know-how and improvement of olive growers' practices and decisions: the proportion of graduates from agricultural colleges and training centers at the asset level is very low, which translates into a low rate of supervision at the level of these farms and affects the technical and economic performance. The know-how of most assets based on inherited traditions does not give much importance to the economic considerations of optimizing the exploitation of the olive potential.
- Partnerships with importers/distributors on the destination market (joint ventures, strategic alliances).
- Supporting young olive growers through an adequate policy for farms: the aging of a large proportion of currently active farm managers, the multiple activities of others engaged in non-agricultural activities and the rural exodus are major handicaps for the future development of the olive-growing activity. The correction of this situation will be done by encouraging the development of new production methods oriented to young graduates.
- Promoting the sector, increasing the value added of the sector and its equitable sharing between the operators.
- Marketing through export consortia
- New ways of direct sales (international catalogues, Internet etc.)

Conclusion

Tunisia is the largest southern Mediterranean country producing olive and olive oil. If we exclude the European Union, Tunisia is the world's largest producer in the sector of olive oil, deploying major restructuring efforts, modernization and improvement of the quality of its oil, accompanied by a significant expansion of surfaces (Gharbi, Issaoui, & Hammami, 2013).

The olive tree has been an integral part of Tunisian culture and traditions for thousands of years. Adapted to the edaphic and climatic conditions of Tunisia, the olive tree extends over all the agricultural land and currently occupies 1.8 million hectares representing nearly 79% of the total arboreal area and 34% of arable land. Tunisia ranks first in the world in terms of arable land devoted to the olive tree (1/3 of arable land). Tunisian olives are produced mainly by small farmers. 72% of the olive farms do not exceed 10 hectares and 46% are less than 5 hectares. These small areas contribute to a large part of the national production of olive oil which fluctuates between 90000 and 200000 tonnes per year with exceptional peaks like those of 1996 and 2017 when it reached 300000 tonnes.

Tunisia is one of the countries to have undergone a significant transformation of the olive sector, which is essentially summarized in two main strategies; 1) the National Oil Office has no longer the monopoly on the collection and exportation of olive oil following the implementation of the law n°94-37 of 24 February 1994, 2) encouraging the private sector to invest in the olive oil production, transformation, industrialization and exportation. This strategy has ended up creating a Private Public Partnership whose impact on the sector is very positive.

In general, the olive oil sector in Tunisia has not yet reached its maximum potential. At the production level, the farmers are still using ancestral production systems. Concerning the collection and processing, the road is still long to modernize the whole sector with technological advances. For the exporters and despite continued support from the Government, this sector has still not managed to reach its peak. The country still exports more than 85% of its domestic production in bulk to its direct competitors, which means that the sector is losing its added value to external markets.

Exporting Tunisian olive oil has proven itself to be highly competitive. It is however promoted solely on the basis of its physical characteristics, and it is only importing countries that point out its symbolic or intangible advantages. This report seeks to put forth the main problems that need to be solved before Tunisian olive oil can effectively succeed overseas.

These constraints have been established on the basis of information gathered through a survey of the support structure of the value chain. Indeed, the absence of a joint effort to promote Tunisian olive oil, the lack of an acknowledged system for designation of origin, the low level of awareness of the quality of this product on the international market and the scarcity of processing units are all obstacles to the promotion of the Tunisian olive oil on the international market. Policies that focus on quantity will need to be complemented by specific measures based on quality at all levels of the industry if export of this key product is to reach its full potential.

The main keys to succeed are to bring together exporters, particularly through consortia to take collective action for quality identification. It is necessary that the government should be involved in order to increase the visibility and reputation of the Tunisian olive oil on foreign markets through commercial activities, the organization of fairs and the creation of a collective mark "olive oil from Tunisia." Private companies do not have the financial resources to promote private brands abroad.

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