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An Overview of the Seafood Consumption and Processing Sector in Some Mediterranean Countries

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ABSTRACT

In this review current situation and the evolution of the seafood processing sector and consumption patterns of fisheries products in some selected Mediterranean countries are presented. Seafood consumption per country is a good indication of volume of the seafood trade. European Mediterranean countries consume almost 7.5 million tonnes of seafood each year; these countries just produce 2.75 million tonnes of domestic seafood products annually and import 1.8 million tonnes of fisheries products from non-European Mediterranean countries every year. There is a significant difference in seafood consumption between European Mediterranean countries and those of African Mediterranean countries. A wide array of factors causes these differences in consumption patterns including cultural and gastronomic habits, demography and standards of life, as well as general logistics constraints such as deficiencies in road transportation and lack of wholesale food markets and processing facilities. A balance of this trade should be established and the solution can be transferring the processing technologies by using the EU funds and supports for these non-European Mediterranean countries.

K E Y W O R D S: Seafood, consumption, trade, exports, canned fish

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1. Introduction

Seafood can be defined as freshwater and marine animals, excluding mammals, which are regarded as food for human consumption. Fisheries products have proven to be one of the most valuable sources of protein and essential micronutrients for a balanced nutrition and healthy life (Basurco et al., 2014). Fatty acids are also essential for physiological functions especially in childhood (brain and heart) stage and can be regarded as another advantage and reason for consumption of seafood.

Seafood processing industry enjoyed an increase in income (mainly turnover, 98%) in 2012 compared to past years. Increase seemed to be due to slightly improving economic conditions in some EU Member countries. Following the global financial crisis in 2008 many countries reported improvement in several socioeconomic indicators for 2008-10 period. These included turnover, net profit and employment. Furthermore; for 2012/13 period, several expert reports reveal a better situation than in 2010/11 which can be seen in the data for 2012. However, in other areas, the trend was less positive. Generally speaking; the overall net investment decreased by 22% compared to 2011 (Döring and Borello, 2014). While some countries such as Germany and Spain witnessed an increase in investments and activities, Denmark and Poland suffered a decrease regardless of improvement in some indicators (e.g. net profit). Above mentioned data was collected under the Data Collection Framework (DCF), originating from Commission Regulation (EC) No. 665/2008 of the 14 July 2008 and Commission Decision (2008/949/EC). DCF report covering 2015-2016 period, has not been published yet.

The Mediterranean Sea is connected to the Atlantic by the Straits of Gibraltar and touches two continents: Europe and Africa. But generally speaking mostly countries; such as Greece, Italy, Spain, France and Turkey are remembered as Mediterranean. Actually 23 countries have a coastline on the Mediterranean Sea, including countries from North Africa. In this study a regional overview regarding the processing sector from selected Mediterranean countries including North African is presented.

In general, since the 1960s there has been a positive trend i.e. an improve in per capita supply of fisheries products in several countries of the Mediterranean region (FAO, 2013). As a result, during the past decade, seafood consumption has increased by about 8% for the whole region (Franquesa et al., 2008; Döring and Borello, 2014). The average per capita seafood supply in the Mediterranean reached nearly 20 kg in 2009, showing a great deal of variation among countries. It is worth mentioning that per capita supply in Mediterranean EU member countries was nearly three-fold (33.4 kg) the North Africa (12.5 kg) countries. Moreover; per capita supply of seafood in Mediterranean EU member countries showed to be almost four times higher than supply in other Mediterranean countries (8 kg). Exceeding 58 kg per capita supply, Portugal is the top producer, followed by Spain (42 kg). On the contrary per capita supply in Algeria, Palestine, Syria and Montenegro is less than 5 kg (FAO, 2013). A wide array of factors causes these differences in consumption patterns including cultural and gastronomic habits, demography and standards of life, as well as general logistics constraints such as deficiencies in road transportation and lack of wholesale food markets and processing facilities (Basurco et al., 2014). For instance, in number of non-European Mediterranean countries with important fisheries sectors, such e.g. Morocco, Tunisia or Turkey, consumption of fisheries products is quite variable between coastal and inland regions. Per capita consumption in coastal cities was reported as 15 kg for Izmir city (Caylak, 2013) and 18 kg for Çanakkale city kg (Colakoglu et al., 2006). On the other hand in Manisa, the per capita was found to be as 7.7 kg (Dereli et al., 2016). Although Manisa city is located in the Aegean Region this city is 35 km away from the Aegean coastline. It is worth to mention that overall per capita consumption of seafood in Turkey was 6 kg per in 2015 (TUİK, 2016).

Country based knowledge

According to Eurostat, Croatia, France, Greece, Italy, Slovenia, Spain and Portugal (European Mediterranean) are among the world's top consumers of seafood in the Mediterranean. In 2014, These countries spent around €34.57 billion on seafood products, which account for 63 per cent of the EU total (Eurostats, 2014). Spain, Italy and France account for more than half of the EU consumption, despite having only around a third of the EU's population. Mediterranean EU countries have an annual mean consumption of 33.4 kg of seafood per capita compared to an overall EU average of 22.9 kg and a global average of 19.2 kg per capita. In Portugal, the figure is even higher reaching 56.8 kg, while Spain has the next highest per capita consumption at 42.4 kg (Eurostat 2014). To give an idea of the volume of the trade, European countries consume almost 7.5 million tonnes of seafood each year – yet the domestic production is only around 2.75 million tonnes (WWF, 2017). Therefore; much larger amount of seafood consumption must be met by imports: which is nearly 5 million tonnes every year (FAO, 2011).

In this part of the review some countries were selected to provide an insight of sea food processing sector in the Mediterranean countries. To this end, Greece, Spain, France and Italy were selected from North part of Mediterranean Sea (EU members) and Morocco and Algeria from North African region.

Greek Seafood processing sector

In 2007, seafood processing sector was composed of about 160 enterprises. These enterprises were located either in areas with traditional processing activities (Northern Greece) or in big landing sites and consumer centers (Athens, Thessaloniki and Kavala). The majority of the fish processing facilities in Greece are categorized as small industry units, engaging few employees: 55 % of enterprises have 10 employees or less, while 37 % of enterprises employ 11 - 49 employees. In terms of employment, 2 265 jobs were created in 2011 (EMFF, 2013). Though small-scaled compared to other EU Member countries, Greek processing and marketing of fisheries and aquaculture products represents important sectors that add value and support the main primary sectors, by serving as channels for the promotion of sales of capture fisheries and aquaculture products. Freezing, processing (filleting, salting, drying, smoking, marinating, cooking, canning) of fish, and de-shelling of mussels are the main activities conducted. In 2012, 147 active small and medium-sized seafood processing enterprises were in operation, employing 2 330 people. In 2012 The Greek Operational Programme (OP) covered the six "Union Priorities" defined in the European Maritime and Fisheries Fund (EMFF), one of these priorities being the fostering marketing and processing activities. Greece is the fifteenth largest economy in the EU countries, accounting for 1.2 percent of the EU's GDP in 2015. The Greek economy showed an annual economic deficit of 1.1 percent in 2015. Growth was projected to turn positive in the second half of 2016, after a deep and prolonged recession, as recovering confidence boosts investment and consumption and improved competitiveness raises exports. According to Eurostat, seafood consumption in Greece was recorded as 19.6 kg per capita (Eurostat 2014), with this consumption rate Greece is placed in the 20th stage within EU countries. In other words, Greek people spent nearly 1,3 billion Euro in 2015 including out of home consumption (EUMOFA, 2016). Greece imported 70 000 tones of seafood from other EU countries and spent 0.19 billion euro for these imports. With Gilthead seabream production, Greece became the 5th main aquaculture producing country after Spain, UK, France and Italy in EU thanks to total farmed fish production of 104 000 tones in 2014 (Eurostat, 2014).

Spanish seafood processing sector

Spain is one of the largest markets worldwide for seafood. In 2016, Spain was the fourth largest importer of seafood in the world after the United States, Japan and China. Spain not only has the largest fish processing industry in Europe, but also has a high per capita consumption and a high per capita expenditure on fish and fisheries products. Furthermore, Spanish seafood production through capture fisheries and aquaculture is not sufficient to meet the domestic demand. Seafood imports remain to be an important source of supply to balance domestic demand-supply patterns. Top imported seafood items from United States in 2016 included lobsters, surimi, Alaska Pollock and squid (USDA, 2017).

In Spain, the capture fisheries and aquaculture products manufacturing industry enjoy a great deal of socio-economic importance, especially in areas highly dependent on fisheries, such as Galicia, Cantabria and the Basque Country. In these and other regions, there has been an important development in industrial activity of fisheries products that placed Spain to lead production in the European Union and to be the second largest producer of canned fish and seafood in the world, and the first of the EU in the frozen fish sector (USDA, 2017).

Spain leads the European countries in terms of the consumption of seafood, with consumption of 42.4 kg per capita annually (Eurostat, 2014), after Portugal. Despite Spain's economic recovery and good macroeconomic indicators, recent changes in the eating habits of many consumers, who had to adjust to the economic recession and the high unemployment rate, continued to constrain the consumption of more expensive products, such as seafood and crustaceans, both in the retail and foodservice channels. Spanish consumers consider fresh fish as superior quality to processed alternatives. In Spain, seafood is consumed regularly, often several times a week, and many traditional dishes include fish and other seafood. Spain is also one of the largest seafood exporting countries in Mediterranean region. Especially exports to EU member states are significant and remain to be the main export destinations for the Spain. Certain segments of the Spanish seafood processing industry, namely cannery, is the main engines for the trade flows of Spain in the international trade of fish and shellfish products, whether on the side of imports or exports (Döring and Borello, 2014).

French seafood processing sector

The French seafood processing sector is engaged in production of a wide range of products including: fresh and refrigerated fish fillets, prepared dishes with fish, crustaceans and mollusks, smoked salmon, prepared or conserved crustaceans and mollusks, surimi and canned fish, of which 42% is canned tuna. The French seafood processing industry heavily relies on imported raw material. Salmon, shrimp and white fish (cod and pollock) are the main imported items by the French processing sector (Döring and Borello, 2014).

The seafood processing sector is only a small part of food processing sector in France: the turnover of the seafood processing sector accounts for approximately only 3% of the turnover of the whole food processing industry. 2012 reports indicate that, the French seafood processing sector is composed of 295 enterprise which employ 16.184 people (15.971 full-time equivalents) and reach a total turnover of €4.86 billion (Döring and Borello, 2014, Agri Mer, 2015). According to the French data collection office France Agri Mer, the turnover of these enterprises is about €3.82 billion (78.6% of total turnover). The monetary values of processed seafood products by French seafood processing industry are reported as follows for 2012; fresh and refrigerated fish fillets-valued at €629 million, ready-to-eat dishes with fish, crustaceans and mollusks €624 million, smoked salmon-€579 million, prepared or conserved crustaceans and mollusks €291 million, surimi €222 million and canned fish €254 million, of which canned tuna is valued at €106 million (Döring and Borello, 2014). Average annual consumption per capita is nearly 34.6 kg/year (Eurostat 2014). French household spent totally € 7065 million for seafood in 2014. This household spending was the combination of canned products (15%), frozen products (22%), chilled delicatessen (32%) and fresh seafood products (33%). Apparently, French people prefer canned products prepared by sardine (15%), mackerel (15%), tuna salads (4%), tuna fish (50%) and other products (16%). As far as frozen products are concerned French prefer mainly frozen fish (49%) followed by bivalves, cephalopods and crustaceans (23%). On the other hand, French consumers prefer to consume fresh fillets (52%) rather than fresh whole fish (%16) (AgriMer, 2015).

Italian seafood processing sector

The Italian seafood processing industry is mainly composed of canning enterprises engaged in production of canned and preserved tunas: in the 2012 the production of canned tuna was reported to be 66.5 thousand tonnes in volume and €1.48 billion in value. Along with the tuna sector, there are also a significant number of enterprises engaged in processing anchovies, sardines and shellfish. With respect to canned and preserved tuna; canning sector continues to heavily depend on imports of frozen tuna and tuna loins. Canned tuna is also the main export item, comprising 15.3% of exports in volume and 21.3% in value (ISMEA, 2013). Italy is the sixth-largest market for fish and seafood suppliers in the world, and the third-largest among European Union countries, just after Spain and France. Italy imported US$5.6 billion worth of seafood products in 2015. Spain, the Netherlands, and Denmark were Italy's top three suppliers, and the top imported products were prepared or preserved tuna, skipjack or bonito (Chen, 2016). Fish and other seafood products are perceived as healthy food items among Italian consumers and are also important components of the Mediterranean diet. Italian cuisine traditionally includes a large variety of fish and other seafood dishes. However, consumers' total expenditure on seafood has decreased by 1.07% from 2010 to 2015, and expenditure on seafood per capita has declined by 1.62% over the same period. This contraction of expenditure may be the result of Italy's economic downturn, combined with a growing foreign-born population with varied food choices, and a shift in food preference amongst younger consumers (Chen, 2016). Average annual seafood consumption per capita is reported as 25.4 kg/year in Italy (Eurostat, 2014). It is also important to underline that 3.6 kg/year per capita consumption of seafood in Italy were packaged/processed fish and seafood products in 2014 (Inside Italy, 2014).

Moroccan seafood processing sector

The seafood processing sector is a leading industry in the Moroccan economy. The annual fisheries production is over one million tonnes constituting 3% of the country's Gross Domestic Products (OBG, 2015). Exports averaged US $ 1.4 billion corresponding to 15% of total exports and over 50% of Moroccan exports of food items. The capture fisheries sector creates around 170.000 direct as well as 490.000 indirect jobs, in total about 660.000 jobs. The Moroccan fishery resources are diverse, characterized by the dominance of pelagic and cephalopod species which represent a high portion of Moroccan seafood exports. Moroccan capture fisheries production is mainly coming from coastal and artisanal fisheries activities. The average annual seafood consumption per capita was 11.2 kg/year in 2009 (FAO, 2007). And still varies between 8.5 and 12 kg per year. In 2009 and 2010, Moroccan seafood exports were mainly those of processed products namely; canned pelagic (sardines and mackerel) and semi-canned anchovy. Frozen seafood is also a significant export item being mainly cephalopods (octopus) and white fish. Octopus and squid are mainly exported to Spain and Japan. Demand for these species are relatively stable, hence the volume of catches remained unchanged in recent years. Morocco is the second-largest producer of sardines with nearly half of global sardine's harvest in the world, coming from this country. Around three quarters of landings going to industrial use. For human consumption, production is focused on canned sardines. For fresh or frozen sardines, Portugal, Spain and Italy are the main European importing countries. The fishery sector is heavily export-oriented, processing 70% of landings and selling 80% of its production to 126 countries, with EU being the largest export destination (OBG, 2016). Among the European countries, France and Spain are the main importers of Moroccan processed and fresh fish respectively. Looking into Asian markets, Japan is the leading market for octopus and cuttlefish, making up about 70% of exports of the species. The remaining are exported mainly to Spain (Atmani, 2003). Rest of the catches are either consumed locally or exported to other European countries. In 2014, processed seafood exports generated 15 billion dirhams. Due to a long history in canning process, the country is inexperienced in freezing, and often uses outdated and unsuited freezing operation for the respective species. The desire to shift to frozen and fresh products is preferred because of their higher market value. The National Federation of Seafood

Processing and Valorization Industries (FENIP), is a network that helps and represents members in the processing sector. The market value of export is derived mainly from frozen products (41%), canned and semi-processed products (38%), and fresh products (13%) (Ministry of Economy and Finance, 2012). The Moroccan seafood processing industry is the largest among North African Mediterranean countries, enjoying a growth rate of over 75% in the past decade. Moroccan production reached over 505.000 tonnes in 2009, constituting 90% of fish and fisheries commodities produced in North African Mediterranean countries. Moroccan seafood production relies on national capture fisheries, most of catch coming from the Atlantic (95%), and about 84% of catch includes pelagic fish species (sardine, anchovies, mackerel and tuna) (Basurco et al., 2014). Cephalopods (octopus and squid), demersal and other marine fish (hake, sturgeon, bream, flatfish, monkfish, etc.) species constitute the rest of the capture fisheries production. It is worth mentioning that a large volume of catch from the North Atlantic coast and the Mediterranean Sea are traded as fresh fish for direct human consumption, both locally or export markets, particularly to Spain. Morocco is the second major exporting country of fish and fisheries products of the whole Mediterranean region after Spain. More than half of Moroccan seafood is exported to EU countries. Fisheries exports constitute about 50% of agricultural products and about 12% of the whole country's exports. However, bulk of the Moroccan seafood production is still composed of pelagic fish processed into low added value products. Moreover; 28% of the Moroccan fisheries production processed to fishmeal and fish oil and about 26% to whole frozen fish. In Morocco, 275 processing facilities are engaged in various processing activities, namely; 176 in freezing, 44 in canning, 31 in curing/salting and 24 in fish meal and fish oil production (FAO, 2004; FAO, 2013). Vast majority of the processing enterprises are located on the Atlantic coast. Along with marine algae processing plants (i.e. production of Agar) there are a significant number of fresh fish packaging and export companies.

Algerian seafood processing sector

The Algerian capture fisheries production has been stable between 100 000 and 105 000 tonnes since 2011. Bulks of the catch are small pelagic species. Inland capture fisheries production is not reported. Aquaculture production is still marginal with the production of 2200 tonnes in 2013, consisting of 1 560 tonnes of carps grown in freshwater, 350 tonnes of gilthead sea bream from brackish water and a very small amount of mussels and oysters. Most of the harvest is sold fresh in local markets. Exports of fish and other fisheries products are rather limited and decreased by 57 percent during 2008–2013, due to declining capture fisheries harvest. Nevertheless, an increase of 22% is reported for 2015 amounting to US$ 7.0 million in value. During 2008-2014, Algeria's imports of fisheries products increased by 336%, reaching US$ 136.1 million in value in 2014. The annual per capita consumption of seafood is rather low, estimated to be about 3.9 kg in 2012. Fisheries sector in Algeria, provided 43 700 jobs in 2013 (FAO, 2016). Seafood processing sector is still developing in the country. Mostly fresh and frozen products are exported to the EU countries. Fisheries and aquaculture development are under the responsibility of the Ministry for fisheries and aquatic resources that was created in 2000 to support fisheries development as a potential livelihood sector.

Conclusion

Seafood processing industry is following the global trends and continued to grow in the Mediterranean countries in the last 50 years. This is more evident in the North African and other non-European Mediterranean countries, with the desire to reduce the current gap with European Mediterranean countries in terms of per capita seafood consumption. In the last decade North African Mediterranean countries have been the supplier of fresh fisheries products to EU countries. Instead of exporting raw material, North African Mediterranean countries need to promote and improve the efficiency, performance and competitiveness of their fisheries processing industries to offer new and added value products to consumers. Processing is required not only to prevent deterioration, ensure safety and extend shelf life of seafood products, but also more importantly, to preserve and ensure the quality and nutritional value of these products. With this aim The European Union's aid programme to fishery and aquaculture launched a capacity building scheme in February 2017 in Algeria. Valued at €15 million, the programme is fully financed by the EU to contribute to sustainable development of the fishery and aquaculture sectors including sea food processing. The EU's initiative falls under a programme to support the economy's diversification via the fishery sector including aquaculture and processing. The objective is to boost the capacities of actors in the aquaculture and fisheries sectors. It also aims to promote and valorize these sectors by contributing to the sustainable management of stocks, products' quality and improve their distribution and marketing. On both sides of the Mediterranean Sea, countries are using the common stocks but evaluation of these resources differ among them. While the consumption rates of EU Mediterranean countries are high, consumption of fisheries products in African Mediterranean countries remains to be low and needs to be promoted. North African Mediterranean countries are a major supplier of fisheries products and trade of these products is of socioeconomic significance for these countries. In 2014, European Mediterranean nations imported about 1.8 million tonnes of fisheries products from developing countries in the region (Morocco,Turkey, Mauritania, Tunisia, Egypt, Algeria, Libya). Furthermore; about 335.000 tonnes of fish was caught by EU fishing fleets under licenses issued by these countries in their territorial waters. Local fishing vessels target high value species to be sold as fresh products in European Mediterranean markets (EUMOFA, 2014). This trade continues in two directions: the European Mediterranean countries also export fish, mostly smaller quantities of processed or canned product were preferred in this trade. And significant amount of European Mediterranean nations export not only for human consumption but also for Aquaculture sector of African Mediterranean countries. A trade balance should be established and the solution can be transferring the processing technologies by using the EU funds and supports for these non-member countries. This knowledge and fund transfer may also help the conservation of stocks while increasing the quality and value of the products.

References

AgriMer. (2015). The fisheries and aquaculture sector in France.Can be available at; http://www.franceagrimer.fr/content/download/38117/350792/file/Chiffres%20cl%C3%A9s%20anglais%20valid%C3%A9_anglais-TR.pdf

Atmani, H. (2003). Moroccan Fisheries A Supply Overview. Retrieved from Report of the Expert Consultaion on International Fish Trade and Food Security. Can be available at; http://www.fao.org/docrep/006/y4961e/y4961e0g.htm

Basurco, B., Carballo, J.E., Lem, A. (2014). Seafood in Mediterranean Countries. Mediterranean 2014,CIHEAM publication, pp. 174-202.

Caylak, B. (2013). İzmir ili Su Ürünleri Tüketimi ve tüketicileri üzerine bir araştırma. Çanakkale 18 Mart Üniversitesi Fen Bilimleri Enstitüsü, Master Thesis, pp. 36-42.

Chen, M. (2016). Inside Italy: the fish and seafood trade, Global Analysis Report, can be available at; http://www.agr.gc.ca/resources/prod/Internet-Internet/MISB-DGSIM/ATS-SEA/PDF/6787-eng.pdf

Çolakoğlu, F.A., İşmen A., Özen, Ö., Çakır, F., Yığın, Ç., Ormancı, H.B. (2006). Çanakkale İli'ndeki su ürünleri tüketim alışkanlıklarının değerlendirilmesi. Su Ürünleri Dergisi 23(1): 387-392.

Dereli, H., Çelik, R., Saygı, H., Tekinay, A.A. (2016). Manisa İli su ürünleri tüketim ve tercihleri üzerine bir araştırma. Yunus Araştırma Bülteni 16 (2): 115-128.

Döring R., Borello A. (2014). Scientific, Technical and Economic Committee for Fisheries (STECF) – The Economic Performance Report on the EU Fish Processing (STECF-14-21). Publications Office of the European Union, Luxembourg, EUR 27029 EN, JRC 93340.

EMFF. (2013). European Maritime and Fisheries Fund (EMFF), The Common Fisheries Policy (CFP), Greece Operational Fact sheet. Available at ; https://ec.europa.eu/fisheries/cfp/emff_en

Eumofa. (2014). European Market Observatory for Fisheries and Aquaculture Products; The EU Fısh Market 2014 Edition. Can be available at http://trade.ec.europa.eu/doclib/docs/2016/february/tradoc_154321.pdf

European Comission. (2017). Fisheries Partnership Agreeement. Can be available at https://ec.europa.eu/fisheries/cfp/international/agreements/morocco_en

Eurostat. (2014). Agriculture, forestry and fishery statistics 2014 edition. Luxembourg: Publications Office of the European Union, 2015. ISBN 978-92-79-43201-9.Can be available at: http://ec.europa.eu/eurostat/documents/3217494/6639628/KS-FK-14-001-EN-N.pdf/8d6e9dbe-de89-49f5-8182-f340a320c4bd

FAO. (2004). Profils des pêches et aquaculture par pays, Rome, FAO, Fisheries and Aquaculture Department (www.fao.org).

FAO. (2011). Fishery and Aquaculture Statistics Rome, FAO, Fisheries and Aquaculture Department. ISSN 2070-6057.

FAO. (2013), FAOSTAT. Food Balance Sheets, Rome, FAO, Fisheries and Aquaculture Department (http://faostat3.fao.org).

FAO. (2016). The State of World Fisheries and Aquaculture 2016. Contributing to food security and nutrition for all. Rome. p.200.

ISMEA. (2013). Check up settore ittico in Italia. Roma, Maggio 2013. Can be available at; http://www.c2p3.it/Documenti-e-Ricerche/ArtMID/676/ArticleID/1206/Check-up-2013-Ismea-Il-settore-ittico-in-Italia

Inside Italy. (2014). Inside Italy: the fish and seafood trade, Global Analysis Report, can be available at; http://www.agr.gc.ca/resources/prod/Internet-Internet/MISB-DGSIM/ATS-SEA/PDF/6532-eng.pdf

Ministry of Economy and Finance. (2012). Moroccan Fishery Products Exports on the World Market. Can be available at; https://www.finances.gov.ma/Docs/2012/depf/7405_etude_aout2012.pdf

Oxford Business Group. (2015). The Report Morocco 2015. Can be available at; https://www.oxfordbusinessgroup.com/morocco-2015

TUİK. (2016). Su ürünleri İstatistikler 2015. Türkiye İstatistik Kurumu. Can be available at; http://www.tarim.gov.tr/sgb/Belgeler/SagMenuVeriler/BSGM.pdf

USDA. (2017). Foreign Agricultural Service, Fish and Seafood Market Brief. Available at: https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Fish%20and%20Seafood%20Market%20Brief_Madrid_Spain_4-10-2017.pdf

WWF. (2017). Seafood and the Mediterranean; Local tastes, global markets. Ed: Jeffries E. Report. Can be available at ; http://www.fishforward.eu/wp-content/uploads/2015/06/WWF_Seafood-and-the-Mediterranean_final.pdf