

Open Sea Aquaculture
in the Eastern Mediterranean

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Executive Summary

D25 is related with Task 7.3 “*Market Analysis, Marketing & Sales Management*”. This task is twofold. On one hand, this study will investigate the market characteristics, market structure and marketing practices of aquaculture products of Cypriot aquaculture farms in Cyprus. On the other hand, is to identify market characteristics, market structure and wholesale prices in four possible export markets namely, Israel, Egypt, Jordan, and Lebanon.

This information was then be used to obtain useful insights whether it is viable for existing Cypriot aquaculture farms to expand and export to these markets and/or whether is viable for new investors to enter the aquaculture industry in Cyprus. The data provided in this deliverable was obtained by a market research analysis report for the four candidate export countries conducted by AMBIO SA, from the Cypriot Department of Marine Research (DFMR), from the FAO annual reports and from personal contacts with two Cypriot aquaculture companies, KIMAGRO, and Blue Island.

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# Introduction

The aim of WP25 - Task 7.3, “Market Analysis, Marketing & Sales Management”, is on one hand to investigate Cyprus market size, structure and marketing practices and on the other hand, to investigate the main export markets including Jordan, Lebanon, Egypt, and Israel. This study will focus on the four species chosen in Deliverable D19, and together with the findings of Deliverables D23 (Targeted finfish economic Characteristics), D24 (Operations / Mooring Scenarios) and D26 (Legal / Regulatory Framework) will become the basic input information for Deliverables D27 and D28 that include the risk and economic analysis together with a proposed business plan for aquaculture companies. The latter will be greatly affected by possible growth opportunities identified in both the local market and/or possible export markets. As a result, the information provided by Deliverable D25 will be decisive with respect to the results of the risk and economic analysis.

The report focuses on 4 aquaculture products/species namely:

1. European sea bass
2. Gilthead sea bream
3. Meagre
4. Red porgy

The information provided in this deliverable was obtained by a market research analysis report for the four candidate export countries conducted by AMBIO, [1], from the Cypriot Department of Marine Research (DFMR), [2], from the FAO annual reports and from personal contacts with two Cypriot aquaculture companies, namely KIMAGRO, [3], and Blue Island plc, [4].

The main objectives of this market analysis are to:

1. Estimate the market size per country.
2. Identify the market leaders and key market players per country, per market, per species, per category.
3. Identify the main product category characteristics per market and consumer preferences (fish species, size, quality, process level or configuration of products desired, special characteristics).
4. Identify procedures for importing fish by sea transport for each country and to report possible taxes, charges and fees.
5. Provide business strategies for Cyprus aquaculture companies based on a comparative assessment of the four countries under study.

# Cyprus Market

## Market Characteristics

Cyprus has a population of 876,000 and a per capita GDP of $30798, [5]. Total fishery production in 2019 was about 9,588 tonnes. The bulk of production comes from aquaculture, 84%, and the remaining 16% from fisheries, [6]. The Cyprus coastline is widespread over 648 km but because of the Turkish invasion Cypriot authorities control less than half. A large part of the edible fish produced by the aquaculture sector is oriented toward the domestic market. In 2019, imports of fish and fishery products were valued at USD 109 million, compared with USD 40 million in exports. Although imports account for the largest share of the total domestic supply of fish for human consumption, domestic fish production still represents a valuable source of animal protein and food for the population. Annual per capita fish consumption averaged about 25 kg in 2019, [6].

The Cyprus aquaculture companies mainly breed Gilthead seabream and Seabass. In 2020 it was estimated that the total production of seabream was at 6,826 tonnes as reported by the Cyprus Department of Fisheries and Marine Research, [2]. Among those, 4710 tonnes were distributed in the domestic market while the remaining 2,656 tonnes were exported to other countries. Similarly, a total of 3,792 tonnes of seabass were produced out of which 1,759 tonnes were distributed locally while the remaining 2,033 tonnes were exported. Meagre and shrimps are also cultivated in Cyprus but in very small quantities compared to seabass and seabream. In 2020 Cyprus aquaculture farms have produced a total of 6 tonnes of meagre 16 tonnes of shrimp. The total value of aquaculture production in Cyprus in 2020 was estimated at 57 million euros. Table 1 provides the total domestic fish production for the years 2015 to 2020, and Table 2 provides the estimated value of production in euros, [2].

Table : Total aquaculture production in Cyprus, [2].

|  |
| --- |
| **Total Aquaculture Fish Production (tonnes)** |
| **Year** | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
| Gilthead Seabream | 3,826 | 5,136 | 4,950 | 4,880 | 5,326 | 6,826 |
| European Seabass | 2,413 | 1,442 | 2,255 | 2,465 | 2,782 | 3,792 |
| Meagre | 11 | 10 | 0 | 0.28 | 0 | 6 |
| Red Porgy | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 6,250 | 6,588 | 7,205 | 7,348 | 8,108 | 10,624 |

Table : Total value of aquaculture production in Cyprus, [2].

|  |
| --- |
| **Total Aquaculture Value (€)** |
| **Year** | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
| Gilthead Seabream | 21,153,198 | 26,478,803 | 24,002,701 | 23,177,900 | 25,660,942 | 33,103,502 |
| European Seabass | 11,437,522 | 9,091,639 | 13,072,026 | 15,885,564 | 16,981,885 | 23,797,042 |
| Meagre | 59,572 | 30,007 | 0 | 1,485 | 0 | 68,023 |
| Red Porgy | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 32,650,292 | 35,600,449 | 37,074,727 | 39,064,949 | 42,642,827 | 56,968,567 |

## Market Structure

There are nine aquaculture farms in Cyprus. Table 3 below provides their names and the fish species produced.

Table : Aquaculture companies in Cyprus and the type of the fish they culture.

|  |  |  |
| --- | --- | --- |
| No | Company Name | Fish Type Production |
| 1 | BLUE ISLAND PLC  | Gilthead Seabream, European Seabass, Meagre |
| 2 | EAST MEDITERRANEAN AQUA TECHNIQUE (EMAT) LTD | Gilthead Seabream, European Seabass, Meagre |
| 3 | OCEANIS AQUACULTURE LTD | Gilthead Seabream, European Seabass, Red Tuna |
| 4 | ICHTHYS ECO-FARM LTD | Gilthead Seabream, European Seabass |
| 5 | TELIA VASILIKO LTD | Gilthead Seabream, European Seabass |
| 6 | KIMAGRO FISHFARMING LTD | Gilthead Seabream, European Seabass |
| 7 | KITIANA FISHERIES LTD | Gilthead Seabream, European Seabass |
| 8 | SEAWAVE FISHERIES LTD | Gilthead Seabream, European Seabass |
| 9 | TELIA AQUA MARINE LTD | Gilthead Seabream, European Seabass |

The nine aquaculture farms act as wholesalers of their products supplying the main supermarkets but at the same time they own a very large network of retail stores on the island. In addition, demand for fish products seems to be close to its peek while population growth is minimal. Given this, one could characterize the Cyprus market to be a saturated market in terms of the main aquaculture products produced locally, namely seabream and seabass. Since last year, there is also competition from Greek aquaculture companies that are now able to send fresh products to Cyprus quickly and easily at lower prices, [3]. One additional financial obstacle potential new aquaculture companies in Cyprus might have to face is the increased cost of infrastructure. Government subsidies given in the past, might occur in the future, but they might prove insufficient to cover a significant portion of total infrastructure cost. At the same time, these companies will have to compete with the existing aquaculture farms that have invested much less for similar set ups. As a result, it seems that it will be quite hard for new players to enter the local market and obtain a sizable market share. Hence, it is expected that new aquaculture farms should base their viability on exports. The latter stresses the importance of a market research report that would identify possible export opportunities in neighboring countries and pinpoint potential problems that may arise.

## Potential market price for targeted fish species

Among the four (4) species which are the focus of this market analysis, the European Sea bass and Gilt-head seabream are the most preferred species in the Cyprus market. Unfortunately, the two other species, Meagre and Red porgy, are not considered main preferences for the Cypriot consumer. Meagre is a relatively new addition in the market with limited availability, 6 tonnes per year, [2], with a high retail price compared to seabream and seabass. In addition, currently there is no local production of red porgy from aquaculture, [2], while the available quantities from fisheries have a very high retail price as well. For these reasons, consumption for these species is limited.

It was estimated that in 2020 Seabream aquaculture consumption in Cyprus was about 4,170 tonnes, [2]. For Seabass, the total consumption from aquaculture was about 1,759 tonnes, [2]. All consumed quantities were produced locally.

Table 4 below summarizes the current wholesale price for seabream and seabass for the Cypriot market.

Table : Main product category characteristics in Cyprus.

| **SOURSE** | **Product Category** | **Fish Size****(Kg)** | **Fish quality** | **Process level or configuration of product desired** | **Wholesale purchase price\*****(EURO/Kg)** |
| --- | --- | --- | --- | --- | --- |
| **KIMAGRO** | **European Sea bass**  | 600gr | Fresh Whole fish  | The fish is cleaned off the guts upon request | 8.00 |
| **Gilt-head bream**  | 600gr | Fresh Whole fish  | The fish is cleaned off the guts upon request | 6.00 |

# Israel Market

## Market Characteristics

Israel has a population of 9,000,000 (9 million) and a per capita GDP of $51,430, [7]. Fish production in Israel is divided into two main categories, marine (the Mediterranean and the Red seas) and freshwater (Lake Kinneret-Sea of Galilee). Total fishery production in 2019 was about 19,000 tonnes. The bulk of production comes from aquaculture (89%), capture production from the Mediterranean accounts for 9%, and inland water fisheries for 2%, whereas catches from the Red Sea are marginal, [8]. The Israeli Mediterranean coastline is widespread over 205 km, with six main fishing ports. The edible fish produced by the freshwater aquaculture sector is oriented toward the domestic market. In 2019, imports of fish and fishery products were valued at USD 673 million, compared with USD 21 million in exports. Although imports account for the largest share of the total domestic supply of fish for human consumption, domestic fish production still represents a valuable source of animal protein and food for the population. Annual per capita fish consumption averaged about 26 kg in 2019, [8].

Short coastline and high labor costs are major limiting factors in Israel’s fish culture, [1], which is evaluated by its efficiency in utilizing these resources which is profit per unit of land, unit of water, and man-days of work. However, recent developments in engineering technology have evolved as a result of the modifications and development of existing farming facilities and the development of new farming concepts (e.g. off-shore submerged net cage technology). As a consequence of these developments, aquaculture in Israel is now characterized by a wide range of new and innovative production activities of both marine and freshwater species, co-existing in different environments and using a variety of production technologies; from extensive fish production systems to highly intensive raceways, super – intensive recirculated systems or net cage fish farming, [1]. Currently, local fish production does not meet the local demand, and the gap is met by importing fish/fish products. As local aquaculture production continues to increase, it is uncertain if this gap will decrease in the future.

The total value of imported fresh or frozen Gilt-head bream in 2019 was priced at $18 million while the total value of fresh or frozen European Sea bass in 2019 was priced at $17 million, [8]. The major importing countries for Gilt-head bream and European Sea bass are Turkey (for fish between 300-400gr) and Cyprus (for fish 400-600gr), [1].

## Market structure

There are three major market leaders in Israel for wholesale of aquaculture products. These are MasterFood, Neto, and Dagat Ha’aretz with approximately a 30% market share for each company, [1]. Distribution and sales to consumers are conducted by different companies. The top five fish market players for distribution and retail were identified as David’s Fish Company, La Criée Israel, Superfish, Shukadagim and Sea 2 Door, [1].

For market wholesale leaders and key market retail players, the market research report [1] provides contact information, the fish product categories for the species under study that each company is trading and the country of origin of products.

## Potential market price for targeted fish species

Among the four (4) species which are the focus of this market analysis, the European Sea bass and Gilt-head are the most preferred species in the Israeli market. Unfortunately, the two other species, Meagre and Red porgy, are not considered main preferences for the Israeli consumer and for this reason consumption is limited.

It is estimated that Seabream consumption in Israel is about 7,000 tonnes per year, of which local production is about 3,000 tonnes, [8], and the rest is imported. For Sea bass, the total consumption is also about 7,000 tonnes per year and Israel mainly relies on imports as local production is limited to 500 tonnes per year, [8].

In Table 5, we summarize information obtained by the main market leader Masterfood including fish species, fish quality, the wholesale purchasing price and retail price, [1]. Notice that we have subtracted 25 cents per kilogram for insurance and freight costs from the original table included in the market research report [1], as reported by KIMAGRO [3]. In Table 6 we also report wholesale prices for exports in Israel as reported by the Cypriot aquaculture company KIMAGRO, [3].

Table : Main product category characteristics per market in Israel, [1]. (Fall 2022)

| **Market leaders** | **Product Category** | **Fish Size****(Kg)** | **Fish quality** | **Process level or configuration of product desired** | **Wholesale purchase price\*****(EURO/Kg)** |
| --- | --- | --- | --- | --- | --- |
| **MasterFood** | **European Sea bass**  | 300-400gr400-600gr600-800gr800-1.000gr+ 1.000gr | Fresh Whole fish  | The fish is cleaned off the guts upon request | 6.507.257.758.7510.50 |
| **Gilt-head bream**  | 300-400gr400-600gr600-800gr800-1.000gr+ 1.000gr  | Fresh Whole fish  | The fish is cleaned off the guts upon request | 5.655.905.905.905.90 |

\*: Wholesale prices do not include transportation or taxes and are based on the following exchange rate 1.00 Israeli Shekel = 0.282071 Euros, <https://www.xe.com/currencyconverter/convert/?Amount=1&From=ILS&To=EUR> , November 8, 2022.

Table : Wholesale prices for exports in Israel reported by KIMAGRO. (Fall 2022)

| **Product Category** | **Fish Size****(Kg)** | **Fish quality** | **Process level or configuration of product desired** | **Wholesale purchase price\*****(EURO/Kg)** |
| --- | --- | --- | --- | --- |
| **European Sea bass**  | 600gr | Fresh Whole fish  | The fish is cleaned off the guts upon request | 7.5 |
| **Gilt-head bream**  | 600gr | Fresh Whole fish  | The fish is cleaned off the guts upon request | 5.75 |

Notice that the wholesale price of Seabass compares favorably with the total operational production cost for seabass estimated in deliverable 2.3. The latter, indicates the opportunity of expanding even more sales of Cypriot aquaculture farms to Israel. On the other hand, Israel is a small market and cannot absorb unlimited quantities of additional production. Given that the total imports of seabass in Israel for 2019 was in total of 6,500 tonnes, a 10% increase in demand for example would only result to a total of 650 additional tonnes, which is not substantial. Also notice that the wholesale price of Gilthead seabream is marginal comparing with the total operational cost estimated in deliverable 2.3, signaling that Cypriot fish farms should favor seabass for possible expansions in production.

## Taxes, importing procedures/ requirements

A detailed description of the processes, import regulations and permits that need to be fulfilled is included in the market research report conducted by AMBIO, [1]. This includes commercial documents, port requirements and custom documentation, certificate of origin declaration and many more. Despite the large number of procedures to be followed, the process is quick once done appropriately and this is crucial for imports that are time-sensitive such as fresh fish.

The total taxes, charges and fees for fish imports was calculated at 2.36 euro per kilo, [1].

However, according to KIMAGRO, the imports taxes to Israel for fresh fish was used to be 7.5 Shekel (ILS) (1 Shekel = 0.27 Euro), i.e. 2.025 euro. However, recent change in this policy reduced the taxes to 5 Shekel, 1.35 euro (Kimagro, Fall 2022).

# Egypt Market

## Market Characteristics

Egypt has a population of 111.5 million and a per capita GDP of $3,876, [9]. Fish is an important food source in Egypt and accounts for 25.3 percent of the average household’s protein intake. Aquaculture is the primary source of fish production in Egypt, which in 2019 recorded production of over 2.04 million metric tonnes. This represents the 81% of the country’s total fish production with fisheries accounting for the remaining 19%, [10]. The sector employs 816,000 people, 150,000 in aquaculture and aquaculture support sector and 666,000 in fisheries, [10]. Tilapia is the most farmed fish species in the country, [10]. The majority of the country’s fish production is consumed domestically, providing the equivalent of ‘*one fish per person per week’*. Despite the large domestic production, Egypt imported fish and fish products worth more than a billion US dollars in 2019. Annual per capita fish consumption averaged about 24 kg in 2019, [9].

Egypt is now producing through, large-scale aquaculture projects, most of the fish species of the Mediterranean and Red Sea and plans to reach self-sufficiency in fish and increase its exports. For imports, Egypt focuses on species that are not available in those seas or the Nile River such as Mackerel, Sardine, Basa, and herring. Egypt is now exporting the Red Porgy, Seabream, and Sea Bass fish species. Current practices for aquaculture in Egypt include extensive, semi-intensive, and intensive aquaculture systems, integrated aquaculture systems, aquaponics, rice-field aquaculture, desert aquaculture, and mariculture. With a rapidly increasing population, low employment and rising fish prices, Egyptian government decided to embark on large-scale integrated fin fish and shrimp aquaculture projects which aim at becoming self-sufficient, minimize imports, job creation, reduce seafood prices in the local market and export high-value species to earn hard currencies. The question remains, however, if these two mega projects, when fully implemented, along with other small-scale aquaculture projects across Egypt would achieve the developmental objectives these projects promise as well as reduce prices of fish to local consumers, [1].

## Market structure

The top-4 fish market leaders in Egypt identified in the market research report are the Egyptian Company for Fish Marketing 35%, Al Radwan Fish market 30%, Spinneys Supermarkets 15% and Seoudi Supermarket 10%, [1]. Unlike the market structure in Israel, Egyptian market leaders are also involved in retail either directly or through associated companies. Despite this, the retail structure is not solely controlled by wholesalers. Carrefour and METRO are two important market players in Egypt. They operate a series of supermarkets throughout Egypt; and they both offer a wide variety of fresh (whole and fillet), frozen (fillet mostly), and canned fish. These companies do not import fish and/or fish products directly but, rather depend on imports from market leaders or buy directly from local fisheries.

For market wholesale leaders and key market retail players, the market research report provides contact information, the fish product categories for the species under study that each company is trading and the country of origin of products.

## Potential market price for targeted fish species

Among the four (4) species which are the focus of this market analysis, the Gilt-head and Red porgy are the most desired species in the Egyptian market. Recently, the 2 other species, European Sea bass and Meagre, are gaining importance among the sizable Iraqi expatriates in Egypt. The demand for fresh fish is higher than that for frozen fish, because of the perceived health benefits of fresh fish.

Table 7, provides wholesale and retail price information obtained from market leaders, per fish species and process level, [1].

Table : Main product category characteristics per market in Egypt, [1]. (Summer 2022)

| **Market leaders** | **Product Category** | **Fish Size****(Kg)** | **Fish quality** | **Process level or configuration of product desired** | **Wholesale purchase price\*****(EURO/Kg)** |
| --- | --- | --- | --- | --- | --- |
|
| **The Egyptian Company for Fish Marketing** | **Gilt-head bream** | 0.5-0.7 | FreshWhole fish | The fish is cleaned off the guts upon request | 5.15 |
| **Red porgy** | 1.00 | FreshWhole fish | The fish is cleaned off the guts upon request | Not Available |
| **Spinneys Supermarkets** | **Gilt-head bream** | 0.8-1  | Fresh Whole fish  | The fish is cleaned off the guts upon request | 5.89 |
| **Red porgy** | 1 | FreshWhole fish | The fish is cleaned off the guts upon request | Not Available |
| **Meagre** | 1 | FreshWhole fish | The fish is cleaned off the guts upon request | 3.88 |
| **European Sea bass**  | 1 | FreshWhole fish | The fish is cleaned off the guts upon request | 7.03 |
| **Seoudi Supermarket** | **Gilt-head bream**  | 1-1.5  | Fresh Whole fish  | The fish is cleaned off the guts upon request | 8.54 |
| **Red porgy** | 1.00  | Fresh Whole fish | The fish is cleaned off the guts upon request | Not Available |
| **Meagre** | 1.5 | FreshWhole fish | The fish is cleaned off the guts upon request | 5.68 |
| **European Sea bass**  | 1 | FreshWhole fish | The fish is cleaned off the guts upon request | 6.51 |
| **Al Radwan Fish market** | **Gilt-head bream**  | 0.6-1 | Fresh Whole fish  | The fish is cleaned off the guts upon request | 3.76 |
| **Red porgy** | 1  | Fresh Whole fish | The fish is cleaned off the guts upon request | Not Available |
| **Meagre** | 1 | FreshWhole fish | The fish is cleaned off the guts upon request | 4.56 |
| **European Sea bass**  | 1 | FreshWhole fish | The fish is cleaned off the guts upon request | 6.97 |

\* Wholesale prices do not include transportation or taxes and are based on the following exchange rate 1.00 US Dollar = 0.99540036 Euros, https://www.xe.com/currencyconverter/convert/?Amount=1&From=USD&To=EUR, November 9, 2022

Notice the clear preference on fresh whole fish. Also observe that the reported prices reflect the prices during the summer months in Egypt. It is fair to say that demand for fish products in Egypt is the highest during the summer because it is the tourist season and the season in which there are special feasts that Egyptians consume a lot of fish. Given this, one could normally assume that summer prices are the highest of the year. Despite this, observe that the wholesale price of Gilt-head Seabream and red porgy of size 500-700gr, and the price of meagre of size 1000gr are lower than the total operational production cost of Cyprus fish farms as computed in deliverable 2.3. In the case of seabass, Egyptian companies usually trade fish of size 1000gr. Although table 7 gives a slightly higher wholesale price (about 7 euros per kg) from the total operational production cost of Cyprus fish farms which was computed at 6.07 euros per kilogram, notice that our calculations were made under the assumption of 600gr harvesting size. In case Cyprus aquaculture companies make a shift to harvesting size of 1kg for seabass, the operational cost will definitely rise considerably, possibly surpassing 7 euros per kilogram. Notice also that the wholesale prices for meagre and red porgy are much less than the reported total operational cost for the corresponding species as reported in Deliverable 2.5. The low prices in Egypt are justified mainly because of the low operational costs (low employee wages, the use of cheap raw fish feed from the river Nile area, low energy costs). These observations suggest that for the four species under study it will be impossible at this stage for Cyprus aquaculture to penetrate in the Egyptian market.

## Taxes, importing procedures/ requirements

A detailed description of the processes, import regulations and permits that need to be fulfilled is included in the market research report conducted by AMBIO, [1]. This includes commercial documents, port requirements and custom documentation, certificate of origin declaration and many more. Unfortunately, Cyprus aquaculture companies report that in past attempts to export products in Egypt they faced considerable delays in getting the appropriate clearance from the custom’s port services. These delays constitute a severe obstacle for importing time-sensitive products such as fresh fish. Egypt’s Ministry of Finance issued the Decree 38/2021 in 2021 on pre-shipment registration - Advanced Caro Information (ACI) - that seeks to modernize and automate customs administration, simplify procedures, and reduce clearance times, [1]. Whether this direction will indeed make a difference it remains to be seen.

The total taxes, charges and fees for fish imports were calculated in the market research report at 3702.24 EGP/ ton which is equivalent to 0.143 euro per kilogram (exchange rate 3/12/2022), [1]. Observe that the taxes in Egypt are significantly lower than the ones in Israel and Jordan.

# Jordan Market

## Market Characteristics

Jordan has a population of 10,000,000 (10 million) and a per capita GDP of $4,405, [11]. In Jordan, water resources, whether they are sea coasts, only 27km long, or inland water bodies, are very limited. The lack of access to the sea and the scarcity of adequate quality water resources is hindering any major growth in local fish production. Furthermore, local fish products are not as trusted compared to imported fresh fish/fish products. This is because the aquaculture industry in Jordan is fragmented, new, and without rigorous quality control or monitoring. Therefore, local fish and aquaculture production are very limited (less than 10% of consumption). The total production of fish was only 2,620 tonnes in 2019, 74% from aquaculture and 26% from fisheries, [12]. As a result, Jordan relies on imports of fish and fish products. The country imports fish in all forms: fresh, frozen, canned, salted, and smoked. In 2019 fish and fish product imports were valued at $110 million, [12]. During the past years, the demand for consumption of seafood has increased due to its perceived health benefits. As a result, several seafood-specialized restaurants now operate, and local fish production and fish imports have increased. Despite this, annual per capita fish consumption is still quite low compared to the other three countries included in this market research. It only averaged at about 5.4 kg in 2019, [12].

## Market structure

The top 4 fish market leaders in Jordan as identified in the market research report, [1], are the *Sea pride company for import &* export with 35% market share, *The Ocean for Fresh Fish* with 30% share, *Al-Mayar for seafood* with 10% share and *Baracoda fresh fish* with 10% share. Notice that the first two market leaders comprise 65% of the wholesale market share.

As already noted, fish consumption in Jordan is quite low, [12]. Because of this, most market leaders in Jordan are also involved in retail with the form of operating fish restaurants. As fish has proven nutrition benefits, the companies want to expedite the increase in fish consumption by running fish restaurants as ambassadors of their products, [12]. The company *The Ocean for Fresh Fish* for example that controls 30% of wholesale, operates a large and growing series of specialized fish restaurants throughout Jordan (almost twenty at this point). It is also important to note that it is estimated that 40% of the total consumption is attributed to supermarket sales while 60% to HORECA sales (Hotel, Restaurant and Catering). The large HORECA share should be taken into account in case market penetration is decided by Cyprus aquaculture farms as extra requirements on quality and fish size might also apply.

The AMBIO market research report, [1], also provides a list of additional major retailers in the fish market in Jordan. These companies operate a large series of supermarkets throughout Jordan and they offer a wide variety of fresh (whole and fillet), frozen (fillet mostly), and canned fish.

## Potential market price for targeted fish species

Among the four species which are the focus of this market analysis, the Gilt-head and European Sea bass is the most requested species in the Jordanian market. Recently, the two other species, namely Mearge and Red porgy, are gaining popularity among the sizable Iraqi and Egyptian expatriates in Jordan, [1]. The demand for fresh fish is higher than for frozen fish also in Jordan, as was also reported for the other countries under study.

Table 8, provides wholesale and retail price information obtained from market leaders, per fish species and process level, [1].

Table : Main product category characteristics per market leaders in Jordan, [1]. (Summer 2022)

| **Market leaders** | **Product Category** | **Fish Size****(Kg)** | **Fish quality** | **Process level or configuration of product desired** | **Wholesale purchase price\*****(EURO/Kg)** |
| --- | --- | --- | --- | --- | --- |
|
| **Baracoda fresh fish** | **European Sea bass**  | 0.600-0.800  | Fresh Whole fish  | The fish is cleaned off the guts upon request | 9.33 |
| **Gilt-head bream** | 0.500  | FreshWhole fish  | The fish is cleaned off the guts upon request | 5.**45** |
| **Meagre** | 2.5-3.00  | Fresh Whole descaled-gutted fish  | The fish is cleaned off the guts upon request | 3.43 |
| **Sea pride company for Import & Export** | **European Sea bass**  | 0.350-0.500  | Fresh Whole fish  | The fish is cleaned off the guts upon request | 4.98 |
| **Gilt-head bream** | 0.500-0.600  | Fresh Whole fish  | The fish is cleaned off the guts upon request | 4.48 |
| **Meagre** | 2.5-3.5  | Fresh Whole fish  | The fish is cleaned off the guts upon request | 2.49 |
| **Red porgy** | 0.350-1.400  | Fresh Whole fish  | The fish is cleaned off the guts upon request | 3.49 |
| **Al-Fanar Fish** | **European Sea bass**  | 0.5 | Fresh Whole fish  | The fish is cleaned off the guts upon request | 5.36 |
| **Gilt-head bream** | 0.5-0.8 | Fresh Whole fish  | The fish is cleaned off the guts upon request | 5.82 |
| **Meagre** | 2.5-3.5 | Fresh Whole fish  | The fish is cleaned off the guts upon request | 2.33 |
| **Red porgy** | 0.5-1.2 | Fresh Whole fish  | The fish is cleaned off the guts upon request | 3.13 |
| **Al - Mayar for seafood** | **European Sea bass**  | 2.5 | Fresh Whole fish  | The fish is cleaned off the guts upon request | 6.48 |
| **Gilt-head bream** | 0.5-0.6 | Fresh Whole fish  | The fish is cleaned off the guts upon request | 7.19 |
| **Meagre** | 2.5-3 | Fresh Whole fish  | The fish is cleaned off the guts upon request | 6.23 |
| **Red porgy** | 0.5-1 | Fresh Whole fish  | The fish is cleaned off the guts upon request | 5.03 |

\* Wholesale prices do not include transportation or taxes and are based on the following exchange rate 1.00 US Dollar = 0.99540036 Euros, https://www.xe.com/currencyconverter/convert/?Amount=1&From=USD&To=EUR, November 9, 2022.

\*\* Not available means that the respondent did not feel comfortable sharing this data with us.

The average wholesale price for seabass of 500-600 gr is at €6.56 per kilogram while the average wholesale price for seabream is at €5.74 per kilogram. For meagre and red porgy, the corresponding average prices are €3.62 and €3.88 per kilogram respectively. The seabream wholesale price is very close to the total operational cost estimated in deliverable 2.3, while the average wholesale price of meagre and red porgy is way below the total operational cost. As a result, these species are not suitable for exports. On the other hand, seabass seems to offer marginal profits but, possible investments targeting exports in Jordan will need further investigation and market research. Investors should also take into account that the reported prices reflect the prices during the summer months in Jordan, the time during which this study was conducted. The demand for fish products during this period is maximum because of the tourist season, and because during this period Jordanians living abroad return to visit their families. Jordan imports fresh fish mainly from Turkey at a lower price than the price offered by Cypriot fish farms. On the other hand, Cyprus exports to Israel at higher prices than Turkey, marketing Cypriot aquaculture products as of higher quality. The latter may suggest a marketing strategy that could also be used in other countries as well as people are sometimes willing to pay more to get better product quality.

Also observe that at a first glance it strikes the eye the fact that there seems to be a large variation in prices in the sense that for similar product prices differ considerably in different wholesalers. It is not clear why this fact takes place. Notice also the clear preference on fresh whole fish.

## Taxes, importing procedures/ requirements

A detailed step by step description of the processes, import regulations and permits that need to be fulfilled is included in the market research report [1]. This includes commercial documents, port requirements and custom documentation, certificate of origin declaration and many more. Despite the large number of procedures to be followed, no significant delays in the clearing processes have been reported. The latter suggests that the importing process can be done quickly, which is crucial for imports that are time-sensitive such as fresh fish.

The total taxes, charges and fees for fish imports as calculated in the market research report, [1], is estimated at 969.85 JD / tonne that is estimated at 1.30 euro per kilogram. (exchange rate 3/12/2022)

# Lebanon Market

## Market Characteristics

Lebanon has a population of 6,900,000 (6.9 million) and in 2019 a per capita GDP of $8,985. Unfortunately, due to the long-lasting political instability the per capita GDP has dropped to $4186 in 2021 as is reported by the World Bank [13].

The total local production of fish was only 3559 tonnes in 2019, with only 26% from aquaculture and 74% from fisheries, [14]. As a result, Lebanon relies on imports of fish and fish products. In 2019 fish and fish product imports summed up to $150 million, [14]. The majority of the fish and fishery products come from aquaculture from Turkey (20%), Thailand (20%), Vietnam (14%), and Egypt (8%), [1]. During the past years, the demand for seafood has increased considerably. Despite this, annual per capita fish consumption is still quite low. It averaged at about 8.7 kg in 2019 but an upward trend has been recorded in the years up to 2019. Unfortunately, the high drop of buying power of Lebanese people because of the political instability will most likely put on hold or even decrease fish consumption.

The Lebanese seafood market is predominantly import-dependent (90%) with around 35,000 tons imported annually, [14]. The import market is controlled by a limited number of players, while, on the other hand, the local production was scattered with a large number of small companies marketing their production locally, [1].

## Market structure

Imports in the country are mostly controlled by a few market players with very little competition. The top four market leaders in Lebanon as reported in the matket research report are *Sea Food Market* with 30% market share, followed by *Harkous Foods* with 20%, *Le Charcutier* 15% and *Spinneys Supermarket* with 15% market share. The market leaders are also main retailers as they operate a large number of retail stores. In the group of the main retailers one should also add *Happy Supermarket* and *Carrefour Lebanon,* [1]*.*

## Potential market price for targeted fish species

Among the four (4) species which are the focus of this market analysis, the Gilt-head and European Sea bass is the most requested species in the Lebanese market. The two other species, Mearge and Red porgy, are much less preferred by the Lebanese consumer. The demand for fresh fish is higher than that for frozen fish, as in the other three countries, [1].

Given that these prices fluctuate throughout the year, the prices shown here reflect prices during the summer months in Lebanon, the period during which this study was determined. The demand for fish products in Lebanon is the highest during the summer, because it is the tourist season, and because it is then that many expatriates return back to spend time with their families. Hence, the demand for fishery products during the remaining parts of the year is lower than in the summer, [1].

Prices in Lebanon are also affected by the long lasting (three years to date) political instability in the country and the huge drop in the value of the Lebanese currency. The fact that Lebanon relies mainly in imports of fish products combined with the low exchange rate of the Lebanese pound, make imported goods including fish and fish products very expensive for the average consumer.

Table 9, provides wholesale and retail price information obtained from market leaders, per fish species and process level as given in [1]. Notice once again the clear preference on fresh whole fish.

Table : Main product category characteristics per market in Lebanon, [1]. (Summer 2022)

| **Market leaders** | **Product Category** | **Fish Size****(Kg)** | **Fish quality** | **Process level or configuration of product desired** | **Wholesale purchase price\*****(EURO/Kg)** |
| --- | --- | --- | --- | --- | --- |
|
| **Sea Food Market** | **European Sea bass**  | 0.500-3.00 | Fresh Whole fish  | The fish is cleaned off the guts upon request | 7.8 |
| **Gilt-head bream** | 0.500-3.00 | Fresh Whole fish  | The fish is cleaned off the guts upon request | 3.2 |
| **Meagre** | 1.00  | Fresh Whole fish  | The fish is cleaned off the guts upon request | 7.00 |
| **Red porgy** | 2.400-3.00 | Fresh Whole fish  | The fish is cleaned off the guts upon request | **2.**6 |
| **Harkous Foods** | **European Sea bass**  | 0.500-2.75 | Fresh Whole fish  | The fish is cleaned off the guts upon request, and they can cook it. | **7.8** |
| **Gilt-head bream** | 0.500-3.00 | Fresh Whole fish  | The fish is cleaned off the guts upon request, and they can cook it. | **3.2** |
| **Meagre** | 1.00  | Fresh Whole fish  | The fish is cleaned off the guts upon request, and they can cook it. | **7.2** |
| **Spinneys Supermarket** | **European Sea bass**  | 0.500-3.00 | Fresh Whole fish  | The fish is cleaned off the guts upon request | **8.2** |
| **Gilt-head bream** | 0.500-3.00 | Fresh Whole fish  | The fish is cleaned off the guts upon request | **3.00** |
| **Meagre** | 1.00  | Fresh Whole fish  | The fish is cleaned off the guts upon request | **6.75** |
| **Red porgy** | 2.400-3.00 | Fresh Whole fish  | The fish is cleaned off the guts upon request | **2.8** |

\*: Wholesale prices do not include transportation or taxes and are based on the following exchange rate 1.00 US Dollar = 0.99540036 Euros, https://www.xe.com/currencyconverter/convert/?Amount=1&From=USD&To=EUR, November 9, 2022.

What strikes the eye in the data given in the table are the very low prices for Gilt-Head Seabream and Red porgy which are way below the total operational production cost for Cyprus fish farms. It seems that Lebanon is able to import these two species possibly from Turkey. Despite possible reduced costs of Turkish aquaculture such as reduced labor and mooring costs and use of non-fish oil fish feed, the reported prices are still impossible to explain. Given this, it seems that the Lebanon market for Seabream and red porgy is simply not an option for Cypriot aquaculture farms. The average price of Seabass on the other hand is €7.93 euros per kilogram may indicate that there is ground for Cyprus aquaculture farms to expand. The main concern at this point is not the wholesale selling price but the decreasing market size due to the political instability. Lastly, although the price of meagre is considerably high as well, the market size for this species is so small that Cyprus fish farms should not consider this as a target market.

## Taxes, importing procedures/ requirements

A detailed step by step description of the processes, import regulations and permits that need to be fulfilled is included in the market research report [1]. This includes commercial documents, port requirements and custom documentation, certificate of origin declaration and many more. The Lebanese Customs Administration’s website, [15], provides a searchable database that displays import duties by tariff number. With minor exceptions, European goods are exempted from customs fees following the European Mediterranean Association Agreement and the European Free Trade Association (EFTA) agreement, effective March 1, 2015. In addition, goods from several Arab countries are also exempted from customs fees following the Greater Arab Free Trade Area (GAFTA) Agreement, [1].

The total taxes, charges and fees for fish imports as calculated in the market research report [1] is estimated at 204998 LEP/ tonne that is estimated at 0.128 euro per kilogram. (exchange rate 12/12/2022). Despite the fluctuating exchange rate, notice that total charges are very low compared to other countries.

# Conclusions

The Cypriot market for seabass and gilthead seabream is considered a saturated market with the wholesale market leaders holding strong on their current market share positions using their extended retail networks to their benefit. In addition, local producers face since last year competition from Greek aquaculture farms that can at this point send fresh products to Cyprus quickly and easily at lower prices. At the same time, new aquaculture farms will have to face a considerable increase in infrastructure cost that potential government subsidies might prove insufficient to cover at a significant part. As a result, prospective new aquaculture companies should make their business plans not based to local consumption but rather to the possibility of exporting production overseas. Based on this observation, it would be reasonable to first explore the possibility of exporting to nearby countries such as Israel, Egypt, Jordan and Lebanon. As fresh fish seems to be a priority to consumers in terms of the four species in this study, the quick transportation and the low freight cost create an ideal setting for possible new export markets.

Table 10 summarizes the major findings for the four markets under study. Red color represents *Not Favorable* conditions*,* green color represents *Favorable* conditions, while light blue represents *Moderate* conditions.

Table : Comparative fact sheet of the Israel, Egypt, Jordan and Lebanon.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **COUNTRY** | **POPULATION** | **GDP**  **(per capita in US dollars)** | **Yearly consumption per capita** | **SEABREAM** | **SEABASS** | **MEAGRE** | **RED PORGY** | **Local Industry growth potential** | **bureaucratic and other barriers for imports** | **Political stability** | **OTHER** |
| Demand | AVG WHLS [[1]](#footnote-2) | Demand | AVG WHLS | Demand | AVG WHLS | Demand | AVG WHLS |
| **ISRAEL** | 9 million | $51430 | 26kg | $$\uparrow $$ | €5.80 | $$\uparrow $$ | €7.50 | $$\downright $$ | N/A | $$\downright $$ | N/A | MODERATE | NO | YES | Exports of Seabass |
| **EGYPT** | 111 million | $3876 | 24kg | $$\uparrow $$ | €4.46 | $$\uparrow $$ | €6.84 (1kg) | $$\uparrow $$ | €4.71 | $$\downright $$ | €<2 | HIGH | YES | YES | N/A |
| **JORDAN** | 10 million | $4405 | 5.4kg | $$\downright $$ | €5.74 | $$\downright $$ | €6.56 | $$\downright $$ | €3.62 | $$\downright $$ | €3.88 | LOW | NO | YES | Cheap Turkey Imports |
| **LEBANON** | 6.9 | $4186 | 8.7kg | $$\downright $$ | €3.13 | $$\downright $$ | €7.93 | $$\downright $$ | €6.98 | $$\downright $$ | €2.70 | LOW | NO | NO | Cheap Turkey Imports |

Although, Israel is a relatively small country (population wise) as is Lebanon and Jordan, notice that the per capita gross domestic product is quite high. The latter is important as fresh fish products are considered in the upper level of the retail price scale. Another advantage of Israel is the fact that average yearly fish consumption is high, signaling that fish is important in the Israeli diet. Among the four species under investigation, only the wholesale price of seabass is attractive for Cypriot fish farms. The wholesale price for seabream does not favor exports while there is no demand for meagre and red porgy in Israel. Although there is an extensive technology advancement in aquaculture in Israel it is expected that the limited government support for local producers and the high production costs will not change the current import-local production equilibrium. Hence, it is possible that Cypriot fish farms could increase exports of seabass in Israel but, they should not expect major changes in export quantities as the Israeli market for seabass is small, about 6,500 tonnes per year.

Egypt is a very large market for fish products. It is both a large producer but at the same time a large importer. Egypt imports species that are not available in Mediterranean and Red Sea or the Nile River. Unfortunately, Egypt is now producing through, large-scale aquaculture projects, most of these fish species and plans to reach self-sufficiency in fish and increase its exports. The latter explains the very low wholesale prices of the four species under study making the country not an ideal market for penetration but a possible strong competitor for Cypriot exports. Another aspect that explains low prices is that Egypt uses large soil reservoirs for breading instead of sea cages and also uses cheap raw fish feed from the river Nile area in the place of fish oil feed used by Cypriot fish farms. The latter have impact on the end product quality and this is a key feature that Cypriot fish farms could use in marketing their products to other countries when faced with competitors from Egypt.

Jordan is a small market with a low but constantly increasing fish consumption. Local production is minimal and because of the very short coastline it is impossible to grow. Low per capita gross domestic product has kept wholesale prices for seabream and seabass to moderate values, making them not ideal for Cypriot farms at this point but certainly a possible future market in case prices continue to grow. Although fish consumption in Jordan is still low, its increasing trend gives hope for more imports. On the other hand, Jordan will always be a small market for Cypriot fish farms and new farms cannot ever rely on exporting major parts of their production to Jordan.

Lebanon is also a small market with low average yearly fish consumption. Because of the political instability in the country there is a constant drop of the per capita gross domestic product causing major changes in consumption preferences and priorities. It is expected that products in the upper level of the retail price scale such as fresh fish, will inevitably have reduced consumption. In fact, while the wholesale retail price for seabass and meagre are quite high, demand is very low. Most probably, it is the absence of cheap seabass and meagre together with the very low demand that soars the price. On the other hand, it seems that Lebanon can import seabream and red porgy possibly from Turkey at extremely very low prices. As a result, all the above suggest that Lebanon is not currently an attractive market for Cypriot aquaculture farms.

To sum up, it seems that existing aquaculture farms in Cyprus may have the opportunity to increase their sales of seabass in Israel to some extent. Unfortunately, the current realities do not make Lebanon and Jordan possible target markets while Egypt could also constitute a strong competitor for Cypriot aquaculture in the near future. Because of the current strong positions of the main market leaders both in local wholesale and retail, it is not expected that future established aquaculture farms will be sustainable. This is because they will need to solely depend on exports but unfortunately it seems that nearby target countries cannot meet large increase in supply at a favorable price.

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1. AVG WHLS is an abbreviation for *Average Wholesale price per kilogram*. [↑](#footnote-ref-2)