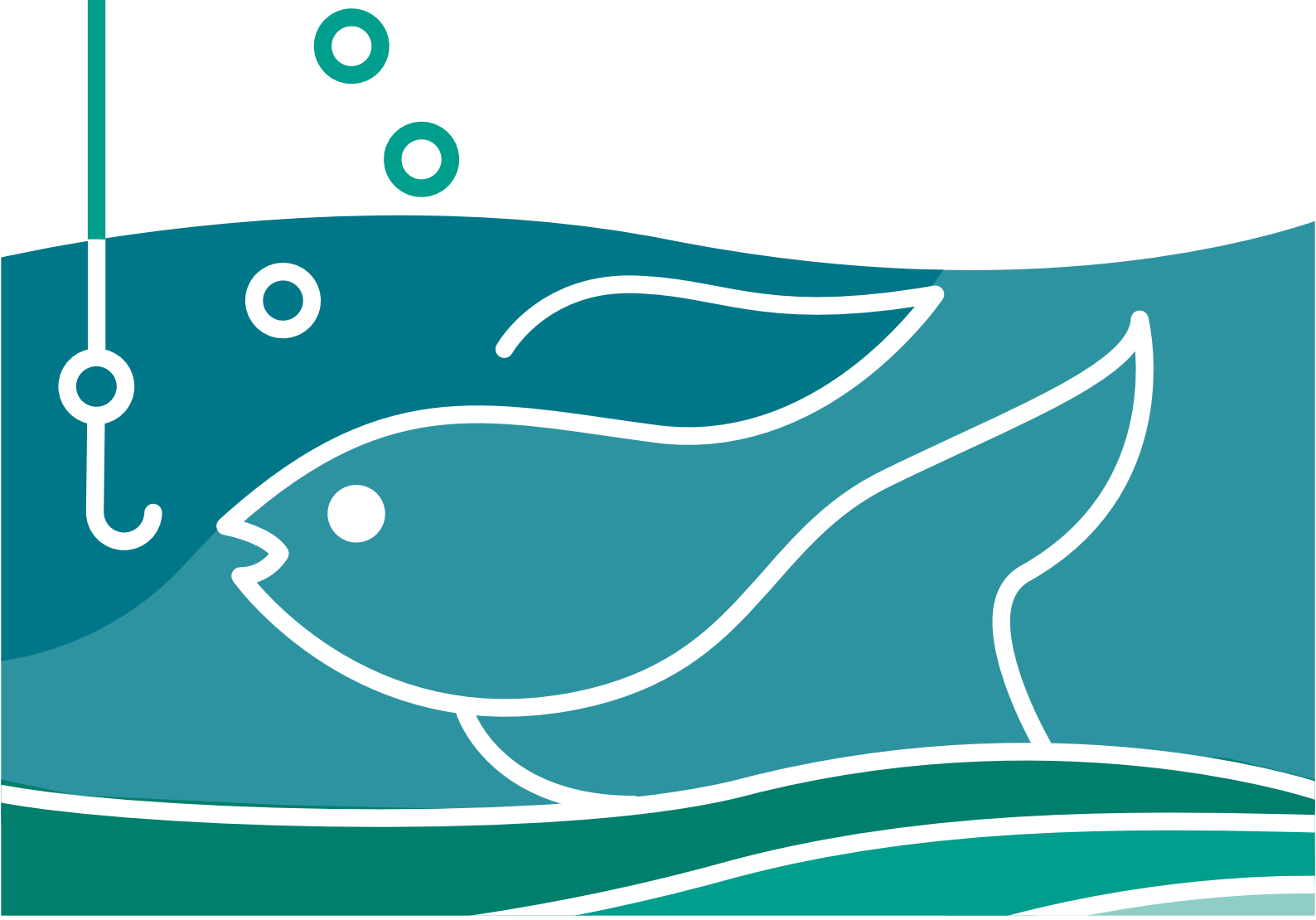
Assessment of the Commercial Seafood Chain in Lebanon



Food and Agriculture Organization of the United Nations

Republic of Lebanon
Ministry of Agriculture

Assessment of the Commercial Seafood Chain in Lebanon

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ACRONYMS

DFW:	Department of Fisheries & Wildlife-Ministry of Agriculture
EEZ:	Exclusive Economic Zone
FAO:	Food and Agriculture Organization of the United Nations
MOA:	Ministry of Agriculture
CAS:	Central Administration of Statistics - Lebanon
HORECA:	Hotel/Restaurant/Café
IMF:	International Monetary Fund
FTE:	Full Time Equivalent
GDP:	Gross Domestic Product
USD:	United States Dollar
LL:	Lebanese Pound

The conversion factor utilised in the analysis was the following:
US$ vs. LBP 1507.5 (Banque du Liban, 2017)

http://bdl.gov.lb/tabs/index/6/289/Daily-Exchange-Rates.html

All dollar amounts are U.S. Dollars unless otherwise indicated.
All the monetary figures are without taxes unless otherwise specified.

Executive Summary

A first ever mapping and analysis of the commercial seafood chain in Lebanon was conducted in 2017. This study was carried out to better understand the existing fisheries market in Lebanon in order to map the flows of products throughout the different stages of the commercial seafood chain. This allowed for the identification of critical factors, challenges, and opportunities to improve the efficiency of the chain in Lebanon.

There was no essential structured information available on the populations of the entities involved in the seafood market in Lebanon. Thus, part of the study required the collection of this data. Field missions were conducted in order to make initial appraisal of the sector and to collect the necessary information to organize a structured survey that allowed for a complete assessment of the sector.

The Lebanese seafood market is predominantly import dependant (90%) with around 35,000 tons imported annually. Export quantities are limited at less than 100 tons, and the local production is negligible, about 4 thousand tons from fisheries and 1,200 tons produced by inland aquaculture production. This makes the apparent market total about 40,000 tons and the consumption per capita equal to 8.9 Kg.

The targets of the survey were the small-scale (Fishmongers and Street Vendors), medium-scale (Auctioneers, wholesalers, importers, and fishmongers/wholesalers) and the large-scale players (Importers, distributors, Branding-distributors, Chain supermarkets, Grocerant, and Processors). From the survey, the total estimated number of business entities ranged from 460 to 759, with the small-scale making up about 80 % of the total number. However, the small-scale represents only around 20% of the total volume sold. Sale volumes were dominated by the medium scale at 45% and the large-scale players at 35%. The figures for the total value of the sales, which ranged from LL182 Billion to LL268 Billion ($300 Million – $430 Million) while the employment, estimated in terms of Full Time Equivalent (FTE), ranged between 3.7 and 5.7 thousand people. The contribution to employment from the small-scale players was about 40% while for the medium it ranged between 25% and was 35% for the large scale. This indicates that all the three categories of players were important for the employment in the sector.

The apparent distribution of the import and local production (fisheries and aquaculture) are matched to their main destinations within the Lebanese value chain. Large-scale players mainly receive imported products while, overall, very few exports are produced in Lebanon. Furthermore, the import market is controlled by a limited number of players, while, on the other hand, the local production was scattered with many individuals locally marketing the production. It is important to note that, for imports, the majority of the fish and fishery products come from aquaculture and demersal fisheries, particularly from Turkey (20%), Thailand (20%), Vietnam (14%), and Egypt (8%). For the imported species, seabream/seabass, tilapia, red mullet, and shrimps were the most important chilled species. Hake, Pangasius, shrimps, and tuna were the most prevalent imported frozen species.

Aside from the local production of pelagic species, the remaining locally produced species are niche products with higher prices than the imported species. On the other hand, the starting

price for the imported species is low, but then the mark-up along the value-chain is generally higher. Between the importer-fishmonger the mark-up was about 15-20% and then about 30-0% between the fishmonger and the final purchase. For the price transmission in the value-chain, for the local production (about 10% of the total), the starting price would be higher, but then the mark-up is lower both between the auctioneer – wholesaler and the wholesaler- final purchaser.

Eight critical factors were identified as the primary concerns. These were: (1) High prices; (2) Limited local production; (3) Product spoilage; (4) High energy costs; (5) Political, bureaucratic and logistical barriers; (6) Employment low levels of attractiveness; (7) Unregulated Street vendors "Hungare"; and (8) Inadequate skills and facilities.

Relative to the cost of living and with respect to the value of landings, in general, the average price per kilogram of local production was found to be relatively high compared to the European prices and this was a natural result of the highly unbalanced context of demand and supply, in which most of the demand is met by imports.

The reasonable price and the resulting market domination of seabass and seabream would suggest that there might be room for some competition in the market from other species that would also be so well accepted by the consumers. Imports in the country are mostly controlled by a few players with very little competition. Improving the access and availability of import pathways for the medium-scale players through government initiatives would help to increase the number of players in the import pool and break-up the control currently held by a few large importers.

A more consistent supply of local products, while retaining the good prices currently charged, would decrease the reliance on imported seafood and bring more diversity to the market.

In the South, aquaculture products are perceived to be of lower quality; and thus, working with consumers on their perceptions could improve the market demand for aquaculture products

The small-scale actors accounted for a key role in terms of provision of occupation and, in particular, the provision of work for the lowest skilled and lowest paid workers in the seafood chain. The main issues for the small-scale players appeared to be the informal nature of the work, the lack of training on proper handling and availability of processing facilities for the workers. A particular focus on formalizing workers in this category while providing training on hygiene and product handling would meet some of the outstanding training requirements for this category.

All three categories had a similar trend in age structure for all workers with an average of 70% of the employees being over the age of 25. Women's employment was generally limited and the reason stated in the interviews for this was; "the profession is not suitable for women since it is physically demanding". Nevertheless, women were found in some of these operations, particularly in administrative, marketing and accounting departments although their salaries might be lower than men by 10 – 20 %.

This report includes s a number of recommendations on action to be taken for better understanding of and support to the commercial seafood chain in Lebanon.

1 INTRODUCTION AND BACKGROUND

1.1 STUDY BACKGROUND

FAO has prepared the Country Programming Framework 2016-2019 document defining the development priorities for collaboration between the Government of Lebanon and FAO in the field of agriculture, food security, and natural resources. It is a joint framework; which guides the FAO partnership and support with the Government of Lebanon contributing to national priorities, regional priorities and corporate results.

The development of the value chains was decided within one of the main government priority areas: Government Priority 2 "to improve performance of the agricultural sector contributing to the economic, social, environmental and sustainable rural development" through supporting improved and innovative sustainable agricultural production, sustainable land, forest and water management, and agricultural value chains development.

Under a FAO Technical Cooperation Program (TCP) project (TCP/LEB/3601 C2) in support of the Country Programming Framework (2016- 2019), innovative actions were planned to be undertaken to increase the efficiency of seafood value chains. The two main objectives set out for the project include

i. to better understand the existing fisheries market in Lebanon in order to map the flows of products throughout the different stages of the commercial seafood chain, from production to marketing
ii. to identify critical factors, challenges and opportunities to improve the efficiency of the fishery commercial seafood chain in Lebanon.

The expected outputs of the assessment are mapping the structure of the market and performing the seafood commercial chain analysis per group and mapping consumer behaviour. The target population was defined from within the stakeholders group and then divided into three main categories of players including large-scale, medium-scale and small-scale (fishmongers) within the commercial seafood chain.

1.2 INTRODUCTION TO SEAFOOD VALUE-CHAIN ANALYSIS

Value chains are the main structure in the core of diversified and specialized economic activities linking natural resources, production and distribution systems to market needs (Porter, 1985) (Macfadyen, et al. 2011). The traditional definition of a value chain is as a "complex set of interrelated activities required to produce a good or service and distribute it to consumers" (Hayter and Patchell 2011, p. 15). Further, a value chain exists when all the actors in the chain operate in a way that maximizes the generation of value through the chain (M4P, 2008).

The value chain approach is flexible and is mainly a descriptive tool to look at the interactions between di□erent economic agents. Value chain analysis allows for di□erent entry points depending upon the objective of the analysis (M4P, 2008). As a descriptive tool, it has various advantages in so far as it forces the analyst to consider both the micro and macro aspects involved in the production and exchange activities. At the heart of the analysis is the mapping of actors and key linkages. By systematically understanding these linkages within a network, one can better prescribe policy recommendations and, moreover, further understand their reverberations throughout the chain (Rosales, et al. 2017).

Many authors have stated that there is no 'correct' way to conduct a value chain analysis: rather, the approach taken fundamentally rests upon the research question that is being answered (Kaplinsky and Morris, 2001).

At its most basic level, a value-chain analysis systematically maps the economic agents participating in the production, distribution, marketing and sale of a product (or products) (Macfadyen et al., 2011).

Value chain analysis can play a key role in identifying the distribution of benefits amongst economic agents in the chain. Each firm in the chain may be categorized within one out of a set of strategic groups, each of which follows the same strategies and is exposed to similar competition with respect to limited production factors and customers (Porter, 1985).

1.3 STRUCTURE OF THIS REPORT

This report is structured with six sections. The introduction, methodology and an overview of the national context are all provided in section one – three, respectively. In the fourth section, the results are presented by three categories – small, medium, and large-scale players. The results are discussed in section five and recommendations based on the outcomes of the project are presented in section six.

2 METHODOLOGY

The activity was divided into three stages: planning, data collection and data entry; analysis.

STAGE 1: PLANNING

In this study, the target population was the main actors specialized in selling seafood in Lebanon. This group included:

- processors
- importers
- distributors
- wholesalers
- auctioneers
- chain supermarkets
- fishmongers
- fishmongers-street vendors

The first challenge of the study was that the population was unknown, and in some cases, the population was not well defined. Most of the actors were concentrated in the five coastal governorates of Lebanon and the internal governorates were excluded.

As no structured information was available on the existing seafood market of Lebanon, nor on the population of business, two missions were conducted in order to make an appraisal of the sector and to collect the necessary information to organize a structured survey that would allow for a complete assessment of the sector that included the first understanding of the population. The estimation of the population was one of the primary objectives of the study and provided the motivation for the strategy that was followed for the data collection to obtain the best possible information with the available resources.

The two missions were conducted in order to gather and then re-confirm the collected data and the test and finalized the questionnaire. In-depth face-to-face interviews were carried out during the two missions. More specifically, a preliminary phase of questionnaire assessment and sector appraisal was carried out by the National and International Consultants during the first mission in February 2017. The second mission that took place in May 2017 involved the finalization of the questionnaires and an initial phase of interviews was conducted with a focus on the large-scale players group.

The first mission had the aim of collecting information on the:

a. Total number of the stakeholders involved in the commercial seafood chain;
b. Total number and the description of the auction markets;
c. Rough estimation of the volume and typology of products that enter the commercial seafood chain;
d. Main pathways of the commercial seafood chains.

This first mission, which was conducted over three days, was organised to cover the entire extent of the country. The first day of the mission was conducted in the North (Tripoli and Aabdeh); the second day in the South (Tyr, Saida, Sarafand) and the third day in Beirut. All of the main auction markets were visited and the relevant stakeholders interviewed. Moreover, three of the main seafood importers and the people responsible for seafood purchases in the main supermarket chain were also interviewed.

This first appraisal revealed that the volume of seafood imported in the country was a magnitude of order greater than the local production, while the export volume was negligible. There were seven port-based auction markets; which were operated by about

20 auctioneers. Inside these markets there were also about 50-70 fishmongers operating for retail sales while the total number of fish shops in the five coastal governorates was estimated at about 150-200. It was also estimated that there was a total number of approximately 200-400 street-vendors operating in the same area.

The second mission aimed to refine the survey questionnaire, validate information collected in the first mission, re-interview some stakeholders, and interview new stakeholders. The second mission resulted in additional findings and refinement of information that included refinement of the target population and development of the questionnaires for the respective segments. The business within the population was sorted into three groups. This grouping was made based on expert judgement based on common characteristics, as income statements, which are typically used to make these types of groupings, were not available. The groupings also facilitated the practical organization of the data collection.

a) The definition of the target population from the group of businesses

The target population was divided into three main groups:

- A) Large-scale seafood actors
  - Importers/other distributors
  - Branding-distributors
  - Chain supermarkets
  - Convenient store (with fresh seafood
  - Grocerant
  - Processors

- B) Medium-Scale seafood actors
  - Auctioneers/wholesalers/importers
  - Wholesalers
  - Fishmongers/wholesalers

- C) Small-scale seafood actors
  - Fishmongers/restaurant
  - Fishmongers inside the auction market
  - Fishmongers near or related to the auction market
  - Fishmongers
  - Fishmonger-street vendor "Hungare"

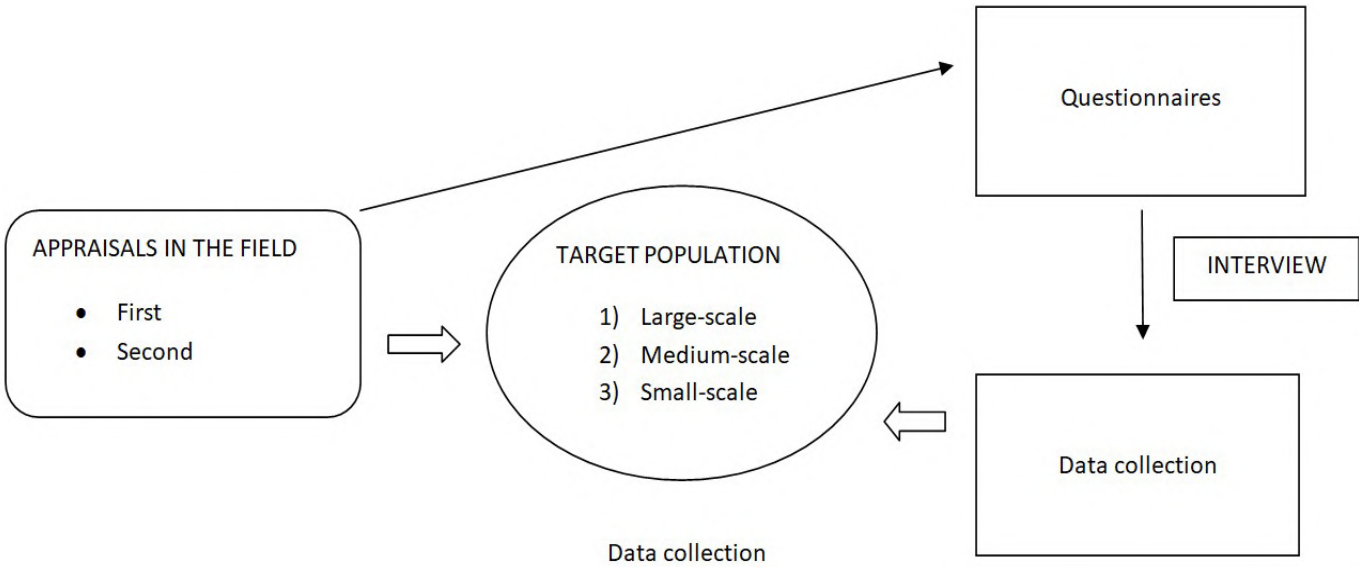
The definition of the number of business was further refined ex-post, through the survey.

b) The finalization of the questionnaires for each group

Three questionnaires - one per group – were devised, tested, and finalized. The core of the questionnaires was the same, but certain elements were customized as suited to the businesses within each category. The complete questionnaires are presented in Appendix 2.

In summary, the target population was defined ex-ante through the appraisals in the field and then further refined ex-post through the data collected in the questionnaire according the population refinement cycle, as described in the below Figure 1. The second stage of the refinement cycle was fundamental for resolving cases where some of the business incorrectly categorized themselves during the initial contact made prior to the start of the interviews. For example, some had stated that they were importers while they were actually wholesalers and/or fishmongers who purchased from the Beirut (Quarantina) Central Fish Market.

Figure 1. The population-refinement cycle



The table below (Table 1) summarizes the sampling scheme followed with the groups, their respective categories, range values for the populations and the number of interviews carried out by group-category.

Table 1 Population and sample

Group		Category	Population (range) Min	Population (range) Max	No. of interviews
Large-scale	A	Distributors/ Processors/ Importers	20	29	15
	B	Chain supermarkets	4	7	4
	C	Grocerant	2	3	1
		Total	26	39	20
Medium-scale	A	Auctioneers/wholesalers	24	29	9
	B	Auctioneers/wholesalers/importers	8	10	8
	C	Wholesalers/importers/fishmongers	12	15	5
	D	Wholesalers/fishmongers	23	25	4
		Total	67	79	26
Small-scale	A	Fishmonger (inside the Beirut (Quarantina) Central Fish Market)	20	45	3
	B	Fishmonger (inside the auction market)	16	17	4
	C	Fishmonger (near or related to the auction market)	9	12	7
	D	Fishmonger	100	170	72
	E	Fishmonger-street vendor "Hungare"	200	370	37
	F	Fishmonger/restaurant	22	27	18
		Total	367	641	141

Limits of the survey

Difficulties were encountered in fully mapping the commercial seafood chain due to many factors summarized as follows:

i. Due to the small population size, confidentiality of individual responses was a concern. Some of the questions were on very sensitive topics related to revenues and the response rate for these questions was low. Some interviewees refrained from providing financial information particularly regarding sales prices and volume figures. This was particularly true for the large-scale group, where, moreover, some of the information was considered to be of too much strategic importance to share.

ii. The product flow through the commercial seafood chain was mapped for all three categories; however, the limitation in the responses had an impact on the ability to map the values alongside. As part of the mapping exercise, each of the respondents was asked about the steps in the commercial seafood chain around them. Although they were asked to describe the entire chain, most focused on their nearest neighbour in the chain. They would know whom they buy from (or sell for) and whom they then sell to, however they may not know beyond these steps. In cases where the sale is not to the final consumer, the respondents often did not know the mark-up applied by the next step in the chain. These gaps in the study data could only be filled after subsequent years' data collection.

iii. The groups and, more in general, the estimation of the population was made based on expert judgments (ex-ante) together with estimations from the respondents (ex-post). Official data for all of the business were not readily available for the purpose of this analysis. For the reasons stated above, the estimation of the population may be biased and so the figures presented in the report are often presented as range values rather than precise estimates. As the focus was on specialized businesses, a number of business with mixed activities where selling seafood only made up a portion of the activity were excluded.

iv. The coverage rate was not appropriate for some categories as the size of the population was adjusted with the responses obtained during the survey. Further, the samples were not collected randomly and the statistical quality indicators were not calculated. The estimates were often presented as ranges. Data collection was conducted as a large, national-level exercise where data collectors worked throughout the coastal governorates. The data collection team was composed of well-trained experts, with long experience in fisheries socio-economic data collection but without experience in the collection of commercial seafood data.

STAGE 2: DATA COLLECTION AND DATA ENTRY

Data collection in the field

The data collection was conducted by a team of 11 fisheries data collectors, as presented in Appendix 3. The data collection was organized for each of the groups as described in the following table (Table 2):

Table 2 Population and sample

Population Group	Data collection period	Number of data collectors	Estimated population range	Number of completed questionnaires
Large-scale	May-June 2017	3	26-39	20
Medium-scale	June-August 2017	4	67-79	26
Small-scale	June-August 2017	8	376-641	141

The bulk of the interviews was carried out in the period from June to September 2017 and was conducted by local staff. Most interviews took place at the facilities of interviewees, while some interviews were carried out at the MOA offices, and this was particularly the case for some of the auctioneers/importers of the Beirut (Quarantina) Central Fish Market.

Difficulties encountered in the field

The main difficulties encountered were non-responses and a lack of cooperation from the interviewees. Even personal visits with set appointments did not result in interviews being carried out. This was particularly problematic in the large-scale group. There was an overall lack of cooperation in Beirut (Quarantina) Central Fish Market by authorities who refused field site visits despite the public nature of the facility. For the small-scale group there were difficulties locating and interviewing "Hungare" due to their fear that information will be forwarded to Tax Authorities. In general, a lack of trust by some of the respondents around the purposes of the interview, the voluntary nature of the survey and concerns about confidentiality reduced their willingness to respond. This was compounded for respondents who were probably conducting unlicensed operations.

In many cases the respondents felt that information on revenue was very sensitive/that it was too personal to share with the data collectors and, moreover, they did not keep records of that information so they were unsure in their reporting. This resulted in the application of an ad-hoc data collection methodology and the use of more qualitative data collection to provide the first outline of the situation.

Data entry

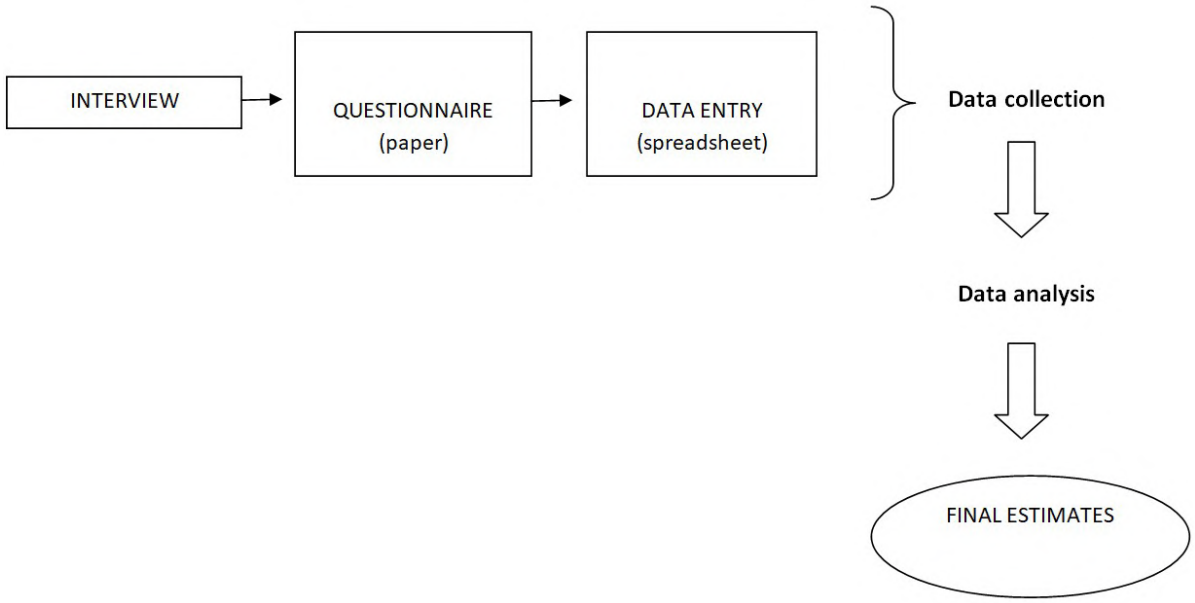
The data entry was conducted in a two-step process. In the first phase, all data from the questionnaires was entered onto a data entry spreadsheet. These data entry spreadsheets were prepared and organised along with the questionnaires, at the end of the second field mission. The two-step process, questionnaire-based interviews and data entry, allowed for more thorough

data quality checks as the data collectors had to interact with the data twice. Moreover, it was suggested that the data entry be done the same day that the interview was carried out, as this allowed for a better and more precise values. The data entry phase allowed for a cross-checking of the data if any missing or anomalous values were spotted the data collector could try to find a way to correct it. Each interviewer was responsible for completing the data entry spreadsheets for the individual interviews they conducted. A second overview and revision, when required, of the data was conducted by the field coordinator for the survey once they received all of the data. The data was checked for validity with the different interviewers responsible for completing the individual interviews.

STAGE 3: DATA ANALYSIS

Following the data entry, all of the questionnaires were collated into a single spreadsheet by group of respondents. During this final stage, the data were analysed in order to generate the estimates presented later in this report. The first step of the analysis was to correctly categorize the questionnaires into the most appropriate category and then the spreadsheets were edited and standardized to follow the same template. This work was a significant part of the process as there were many instances where the questionnaires had been modified, probably due to the large number of variables per questionnaire, as the seafood commercial chain questionnaire is necessarily more complicated. As a matter of routine, the data also needed to be edited as a result of typing errors.

Figure 2. Description of the data flow from interview through to final estimates.



Concluding Notes:

- This project was able to meet the objectives of the 'semi-qualitative' analysis by providing a first mapping of the complexity of the commercial seafood chain and highlights critical factors, challenges and opportunities to improve the efficiency of the commercial seafood chain.
- Despite the lack of cooperation by a certain number of respondents and the outward hostility of some civil servants at public facilities, the interviewers were still able to do a fairly good job.

3 OVERVIEW OF THE NATIONAL CONTEXT

3.1 NATIONAL MACRO-ECONOMIC CONTEXT

The Lebanese Republic is in Western Asia, located on the eastern coast of the Mediterranean. A country with a population of approximately four million, it was created when the French mandate expanded the borders of the former autonomous Ottoman Mount Lebanon district, forming in September 1920 the Lebanese Republic. Lebanon subsequently became an independent country in 1943 (UNDP 2017).

Lebanon is a predominantly mountainous country, with an area of 10,452 km2. Nearly half the population lives in Greater Beirut area. The Lebanese coastline is about 220 km long (Table 3). The land rises steeply from the coast in the North, while in the South it forms a very narrow coastal plain. The continental shelf is narrow, especially in the middle (DFW 2013). Lebanon has also a large hydrological network of 2,000 rivers including a dozen running through the Lebanese coast and which consequently play an important role in the quality of marine coastal waters. The coastal zone has a very high population density as 55% of the total population lives there, across a territory that hosts 33% of all built-up areas (GFCM, 2014).

Lebanon is the second smallest country in the Middle East and in the Arab World. Due to its small size, population density and limited natural resources (water, soil, and vegetation), Lebanon turns to the rest of the world to import resources and goods it lacks and to export its goods and services (CAS 2017).

Lebanon has a free-market economy and a strong laissez-faire commercial tradition. Although the government promotes foreign investment, the investment climate suffers from many restrictions, delays, and obstacles. The Lebanese economy is service-oriented; main growth sectors include banking and tourism. The population increased by 37% since 2011 according to the Government of Lebanon, which estimates that Lebanon hosts 1.5 million Syrian refugees, including 1.05 million registered with UNHCR. Lebanon has one of the highest levels of debt in the world (as a percentage of GDP). In 2015 and 2016, total government debt resumed its upward trajectory from a stable level of 133% of gross domestic product (GDP) in 2013 and 2014 to 138% in 2015 (UNDP 2017). Public debt continued to rise to 157.5% of GDP at end-2016, due to low growth and a relatively high cost of debt financing (World Bank 2017a).

One of the key issues facing Lebanon is the economic and social impact of the Syrian crisis, now in its seventh year. According to government and independent sources, up to 1.5 million Syrians, about a quarter of the Lebanese population, have taken refuge in Lebanon since the conflict started in March 2011 (World Bank, 2017).

In 2017, GDP growth was estimated to average around 1 percent (UNDP 2017). In 2004, around 28 percent of the Lebanese population was considered poor and 8 percent extremely poor (World Bank. 2017b).

Although the World Bank classifies Lebanon as an "upper middle income" country with GDP of US$ 50.5 billion (Table 3), yet it estimates that 27% of its population lies below national poverty lines (Poverty headcount ratio at $5.50 a day (2011 PPP) being at 2% of the population).

Furthermore, the official minimum salary lies at around US$450/month, but the results of the MOA's socio-economic surveys of the marine fisheries sector shows that the average monthly income of the fishers was around US$ 283 in 2016 i.e. 38% less than the minimum salary set by the government; however, it does not place them, as a category, at below the poverty lines. Public data on unemployment is lacking, and the latest estimate of 2012 puts it at 10%; however, the influx of Syrian refugees is known to have affected the labour market due to them competing with Lebanese and bringing salaries downward. However, Syrian refugees have not tried to compete with the mainstream Lebanese fishers due to their lack of experience in the field since they predominantly come from inner parts of Syria. Nevertheless, it is claimed by many people in the fisheries communities in Akkar region of Lebanon that many daily workers muster around US$3.35/day; which definitely puts them under the poverty line.

Agriculture contribution to GDP did not exceed 4.5% in 2016; while the added value (% GDP) of marine fisheries did not exceed 0.00028 %. There is also scarcity of data for employment in the agriculture sector that Central Administration of Statistics (CAS) put it at 6.3% in 2009. However, CAS did not include seasonal workers who might be Syrians. Nevertheless, the General Agriculture Census put the number of people working in agriculture at 216,609. Thus, the share of fisheries in the agriculture labour market is 1.8% if seasonal workers are included and is 4.8% if they were not.

Table 3. Macroeconomic summary for Lebanon

Characteristics	2015	2016
Area	10,452 sq.km	
Shelf area	1,200 sq.km	
Length of continental coastline	220 km	
Total population	4.425 million ***	4.467 million ***
Income Level	Upper middle income*	
GDP	USD 49.5 billion**	USD 50.46 billion ***
GNI	USD 48.9 billion **	USD 46.13 billion *
GDP per capita , current prices	USD 11,178 ***	USD 11,295 ***
Gross domestic product per capita, PPP (constant 2011 international $)	USD 13,492*****	USD 12,974*****
GNI per capita (current US$)	USD 7,720*	USD 7,680 *
GNI per capita, PPP (current international $)	USD 13,780	USD 13,860 *
Official minimum wage per month	US$450	US$450
Wage in the fisheries sector per month	USD 300****	USD 283****
Poverty headcount ratio at $5.50 a day (2011 PPP) (% of population)	2% (2011)*	
Population below national poverty line	27% *	
Unemployment total (% of total active labour force) (2012)	10% (2012)***	
Agriculture GDP	USD 1.5 billion **	
Fisheries (Marine) GDP	USD 27,842,000****	USD 21,880,000
Agriculture, value added (% of GDP)	3% **	4.5%*
Fisheries (Marine) added value (%GDP)	0.00038%	0.00028%
Employment in agriculture (% of total employment)	6.3%***** (number 80,129 in 2009******) (number 216,609 in 2010 *******	
Employment in fisheries	3,608 ****	3,811****

*** World Bank 2017** https://data.worldbank.org/country/lebanon
**** CAS 2017** http://www.cas.gov.lb/index.php/national-accounts-en
***** IMF 2017** http://www.imf.org/external/pubs/ft/weo/2017/02/weodata/weorept.aspx?sy=2015&ey=2022&scsm=1&ssd=1&sort=country&ds=.&br=1&c=446&s=NGDP_R%2CNGDP_RPCH%2CNGDP%2CNGDPD%2CPPPGDP%2CNGDP_D%2CNGDPRPC%2CNGDPRPPPC%2CNGDPPC%2CNGDPDPC%2CPPPPC%2CPPPSH%2CPPPEX%2CNGSD_NGDP%2CPCPI%2CPCPIPCH%2CPCPIE%2CPCPIEPCH%2CTM_RPCH%2CTMG_RPCH%2CTX_RPCH%2CTXG_RPCH%2CLP%2CGGR%2CGGR_NGDP%2CGGX%2CGGX_NGDP%2CGGXCNL%2CGGXCNL_NGDP%2CGGSB%2CGGSB_NPGDP%2CGGXONLB%2CGGXONLB_NGDP%2CGGXWDN%2CGGXWDN_NGDP%2CGGXWDG%2CGGXWDG_NGDP%2CNGDP_FY%2CBCA%2CBCA_NGDPD&grp=0&a=&pr1.x=31&pr1.y=8
****** DFW 2017. 2016.** Socioeconomic surveys of fisheries sector. Internal reports.
*******FAO 2017. FAOSTAT-Lebanon** http://www.fao.org/faostat/en/#country/121
******** CAS 2017. Labour Force Statistics.** http://www.cas.gov.lb/index.php/demographic-and-social-en/laborforce-en
*********MOA 2017. General Agriculture Census 2010.** http://www.agriculture.gov.lb/html/نتائج_الاحصاء_الزراعي_الشامل_2010/liban.html

The contribution of the fishery sector to the national economy remains very limited. Capture fisheries production in 2010 was estimated at 3,800 tons, 93 percent of which is from the Mediterranean and the remaining from inland fisheries (DFW 2013); while MOA's catch monitoring puts the production at 3,611 and 4,273 tons in 2015 and 2016 simultaneously.

Overall, Lebanon is a significant net importer of fish and fishery products. The demand for fish in Lebanon is high with imports of fresh, chilled, and frozen fish reaching 22,420 tons at around USD 94 million in 2016 (Lebanese Customs 2017). The apparent per capita fresh, chilled, and frozen fish seafood consumption in 2011 was 6.03 Kg (Pinello & Dimech 2013) and 6.2 kg (including local aquaculture products and excluding canned products) in 2016 as compared to World per capita consumption of seafood at 18.89 kg in 2013 (FAO 2017). Lebanon is not approved for fish exports to the European Union.

3.2 LEGAL AND INSTITUTIONAL CONTEXT

The Ministry of Agriculture (MOA) was created in 1943. Within it, the Department of Fisheries & Wildlife (DFW) is responsible for the management of the fisheries sector. Decree No. 5246 "Organization of Ministry of Agriculture" issued on 30/6/1994 defined the role of DFW that included among others:

- Marine and freshwater fisheries and game hunting affairs.
- Applied research on aquaculture and establishment of training centres in different locations and at its Oceanography & Fisheries Institute at Batroun.
- Fishing licenses.
- Establishing and modernizing fishing ports and fish handling facilities in coordination with the Ministry of Transportation.
- Regulating the fishing sector by assigning fishing seasons and protected areas.
- Organizing and regulating diving clubs and protected areas.
- Improving the livelihood of fishermen by organizing cooperatives and syndicates.
- Carrying applied research on aquaculture.
- Developing and modernizing fishing techniques.
- Providing training on fishing boats.
- Preparing extension programs.

Furthermore, the MOA owns the Oceanography and Fisheries Institute at Batroun and the Anjar & Chouaifat Aquaculture Centres. In addition, it provides technical support to regional Departments of Rural Development and the Forestry and Fisheries centres (DFW-MOA; personal communication).

The first Law regulating the fisheries sector is Law No. 1104 (issued by Decision) on 14/11/1921. Since 1921, several Laws, decrees, and decisions related directly to fisheries were promulgated; with the most relevant being Law No. 2775 "Monitoring of coastal marine fishing" passed in 1929. This Law manages the fishing sector by:

- Identifying fishing – Delimiting Coastal Fisheries – Monitoring Coastal Fisheries – Designated staff.
- Various Prohibitions – Prohibited places- Prohibited times - Types of overfishing.
- Fishing gears – prohibited gears.
- Measures related to the organization and monitoring of fisheries and fishing by several vessels.
- Special provisions related to safeguarding juvenile fish and conservation of fish and shellfish - Minimum sizes of fish and shellfish to be fished, transported, and sold.
- Prohibited baits – various prohibitions.
- Arrangements and precautions related to fishing operations.
- Measures for practicing fishing by rod and line.
- Fees for fishing licenses and fishing gears.
- Penalties.

A number of Minister Decisions was also issued that cover a variety of fisheries and conservation matters. Appendix 5 lists, in chronological order, all Lebanese regulations that pertain to the fisheries sector.

Furthermore, a new Fisheries and Aquaculture Law was drafted by FAO, GFCM, and MOA. It was discussed by some stakeholders. The draft Law was sent to the Council of Ministers for approval and forwarding to the Lebanese Parliament for discussion and ratification.

However, the role of DFW ends at the landing of fisheries products, although Minister Decision 15/1 on 21/1/2004 "Legal sizes relating to fishing, transporting, buying, and importing fish, shellfish, and crustaceans in Lebanon" permits DFW staff to inspect local and imported fish sizes along the whole value chain.

Nevertheless, the Directorate of Animal Resources of the Ministry of Agriculture, through its various departments, is mandated through the regulations in effect to inspect imported fish species in accordance with the several regulations. The Decree that organizes the Ministry of Agriculture mandates several departments with various issues of import/export, inspection, processing, and storage of foodstuff of animal origin (Table 4). Furthermore, several Decision/ Resolutions by the Minister of Agriculture specify import of chilled and frozen (whole, processed, and prepared) fisheries products, inspection, sample taking, & examination, and registration of storehouses, processing plants and fish transportation vehicles. Table 4 also includes a list of some banned products and validity of canned products. In addition, it includes a provision on feeds for aquaculture:

Table 4. Regulations for imported foodstuff from animal origin.

Regulation	Number	Date	Title (and some provisions)
Decree	4962	13/3/1982	Designating laboratories licensed to perform required research and tests.
Decree	5246	20/6/1994	The organization of the Ministry of Agriculture and identifying its Cadre and conditions of employment in some of the functions for this Cadre and the ranks and salaries of its professional staff o Article 78: ▪ Department of Animal Production ▪ Department of Veterinary Services o Article 86: ▪ Department of Animal Economics ▪ Department of animal processing and marketing o Article 90: ▪ Department of Export & Import ▪ Department of Veterinarian quarantine
Decision	229/1	12/5/2009	Ban on use of slaughterhouses remains in feeding fish.
Decision	239/1	16/5/2009	Conditions for import of animal products
Decision	573/1	22/12/2009	To impose recording the cooling temperature during the all the shipping period
Decision	496/1	21/9/2010	Organizing procedure of taking and transporting samples of imports. - Article 1: all imported live animals and their products and fish and its products, and ..... are subject to inspection and examination before permitting entry into Lebanon.
Decision	726/1	11/11/2010	Validity of canned animal products. - Article 1: the validity of canned animal products shall not exceed 2 years.
Decision	334/1	28/3/2011	Ban on import of animal and plant products from Japan. - Article 1: temporary ban on import of animal products including fish.
Decision	567/1	21/6/2011	Conditions to import agricultural products and imports from Japan in reference to radiation. - Article 1: animal products including fish, ..., should be accompanied by a certificate that shows the radiation levels issued by a laboratory approved by the Ministry of Economy & Trade and certified by competent Japanese authorities.
Decision	637/1	13/7/2011	Permission of import of plant and animal products from Japan according to specific conditions.
Decision	720/1	8/8/2011	Conditions for import of processed and prepared animal products. - Article 1:definitions: ▪ Prepared animal food products: prepared food products-raw materials of animal origin of livestock meat or poultry or fish or aquatic uncooked or partially cooked and are not intended for final consumption. It does not include meat refrigerated or frozen or parts preserved in brine. ▪ Processed animal food products: products-manufactured food of animal-origin raw materials and are ready for consumption. - Article 2 The import of animal food products - manufactured or processed from the country of origin directly or from a port or airport adjacent to the country of origin and accompanied by a bill of lading indicating that the destination of the goods is Lebanon - is permitted. - Article 6-allows importing of animal food products manufactured in the country of origin in case of re-exporting them from a second country on condition the following conditions: 1. that the item is allowed to be imported to Lebanon. 2. to be exported to the second country in containers intended for sale in final form. - Article 7 allows import of animal food products-manufactured or processed by transit, provided that these goods are accompanied with a veterinary health certificate issued by the veterinary quarantine in this free zone where landings occurred and also attached a copy of the Principal veterinary health certificate and certificate of origin approval from the veterinary authorities in the free zone where they were landed. - Article 8 It is prohibited to receive any consignment of animal products - if it is proved that they were destined for another country, and were not landed there, whatever the reasons.

Regulation	Number	Date	Title (and some provisions)
Decision	812/1	9/9/2011	Conditions on import of agricultural products and inputs from Japan in reference to radiation levels.
Decision	952/1	26/10/2011	Hygienic conditions for transport of fresh, chilled and frozen fish. - Article 1: all fresh, chilled and frozen fish transport vehicles require permit from Ministry of Agriculture. - Article 3: Transport vehicles should: ▪ Used to transport fish only and be clearly marked for this purpose. ▪ Cold chamber should be made of noncorrosive metal. ▪ Cold chamber should be closely tight prevent leakage in and out ▪ Be able to maintain temperature of 2-4C for fresh and chilled fish and -18 to -20C for frozen fish. ▪ Should have a temperature-recording instrument.
Decision	964	26/10/2011	Regulation of import of chilled and frozen fish and aquatics organisms. - Article 2- every establishment wishing to import chilled and frozen fish and aquatic organisms should register at the Directorate of Animal Resources- Department of import and export. - Article 4: sets the specifications and conditions of packaging and transport.
Decree	469/1	28/5/2012	Regulation of procedure to take sample of imports and examining it.
Decision	540/1	15/6/2012	Hygienic registration of warehouses of foodstuff of animal origin.
Decision	547/1	16/6/2012	Amending article 9 of Decision 496/1 of 21/9/2010; Organizing procedure of taking and transporting samples of imports. - Article 1: Article 9 of Decision 496/1 of 21/9/2010; Organizing procedure of taking and transporting samples of imports is amended to become "Fresh foods like fish are permitted to enter on condition that the importer submits a commitment attested by notary public that he will be given a warning if the foods are not edible. And will not be permitted to import from same source if violation is repeated within one year.
Decision	897/1	22/9/2012	Condition for the hygienic registration of food factories of animal origin. - Article 2: Definitions: food products of animal origin is every food products of animal origin destined for human consumption including fish and aquatic organisms and also includes food products whereby raw material of animal origin is a primary ingredient of the final products as far as quantity and particular specifications are concerned.
Decision	264/1	23/3/2013	Conformity of fish label with attached documents. - Article 1: the label on fish packages should carry fish name that should be compatible with Arabic, English and scientific name and in all attached certificates particularly the health certificate, origin certificate and bill or else the merchandise cannot enter the country.
Decision	787/1	12/8/2013	Amendment of Decision 720/1 of 8/8/2011: conditions for import of processed and prepared animal products. - Article 1: first paragraph of article 4 is amended to become "maximum expiry of imported animal products is processed: 3 years maximum and prepared: 2 years maximum.

Furthermore, there are overlapping and complementing jurisdiction for the import/export and trading in foodstuff with other ministries and public institutions e.g. Ministry of Finance (taxation and VAT), Ministry of Economy & Commerce (Consumer Protection) and Prime Minister Office whereby the Institution for Consumption Markets handle the Central Fish Auction at Quarantina. The new Food Safety Law is awaiting its implementation decrees to start its implementation. Table 5 below list some of the associated regulations that also affect the trade in seafood products:

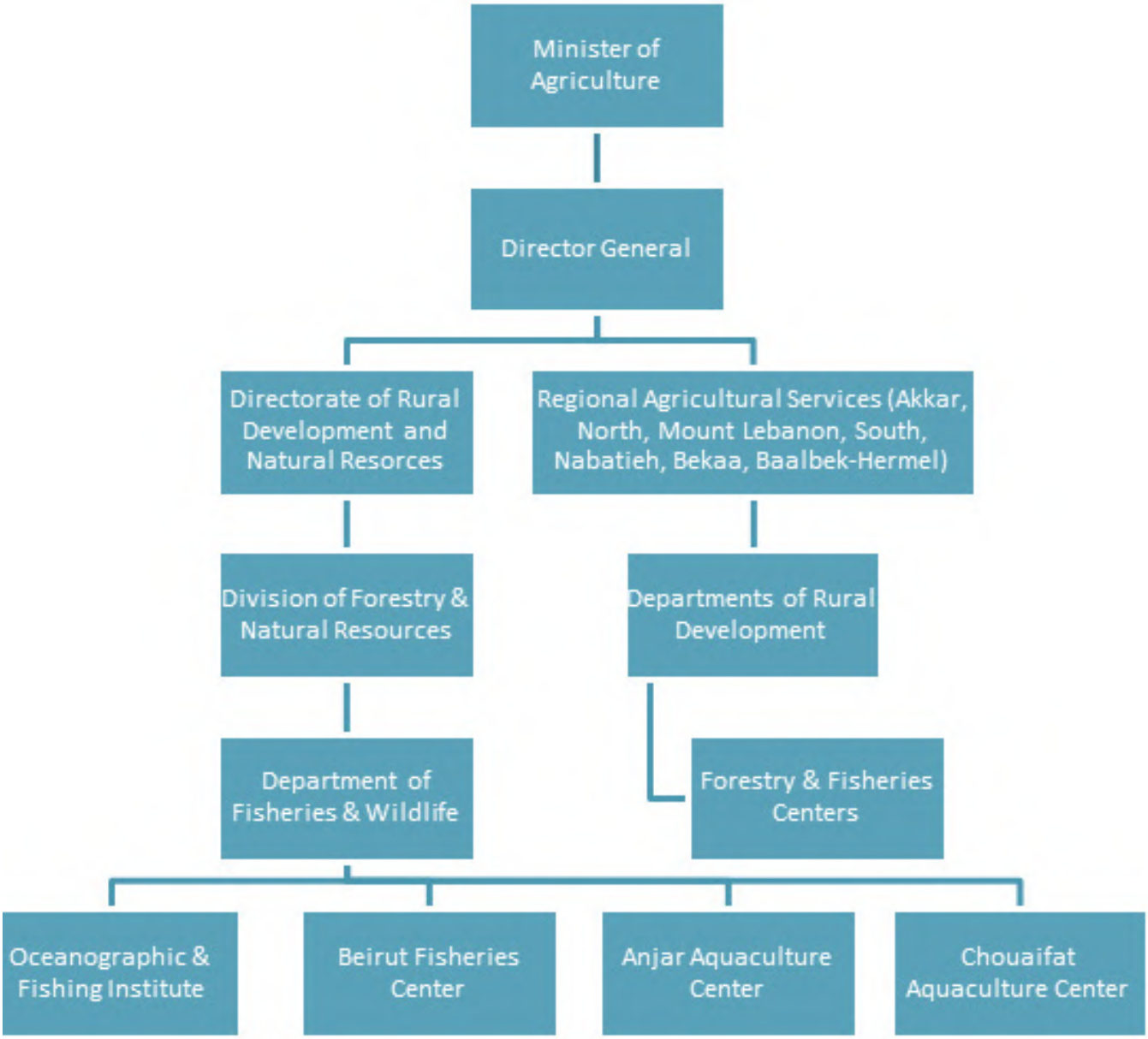
Table 5. Regulations affecting trading of seafood products

Regulation	Number	Date	Title (and some provisions)
Regulation		26/9/1904	Regulation of Auctioneers & Brokers
Legislative Decree	304	19/12/1942	Terrestrial Commerce Law
Law		3/7/1962	Establishment of a public entity called "the Lebanese Standards Institution"
Decree	12253	2/4/1969	Conditions for canned and preserved foods
Decree	5735	29/9/1994	Establishment of a Public Institution named Public Institute of Popular Markets and Consumer Protection - Article 3: the Institute will establish and manage popular markets….. ▪ Establish permanent and temporary popular markets in all Lebanese regions…
Decree	6274	20/1/1995	Approval of full –time basis for the CEO of the Public Institution of Popular Markets and Consumer Protection.
Decree	6790	20/5/1995	Renaming the Institution of Public Institute of Popular Markets and Consumer Protection. - Article 1: the name of the Public Institution of Popular Markets and Consumer Protection is amended to become Public Institute of Consumer Markets.
Ordinance	1	26/2/2001	Necessity of separation between local and imported fish. Due to importation of chilled and frozen fish and due to that some fishmongers are selling imported fish as local ones; and since this negatively affects fishermen and expose consumers to fraud at the same time. Thus, to preserve public interest. The fishmongers of all kinds of fish are obliged to display name of fish, its price and source and the separation of each type in manner that lifts ambiguity among citizens; or else they will be prosecuted by competent authorities. Thus, the Consumer Protection Service is instructed to enforce this ordinance and giving citations to sue infringers in front of competent courts.
Law	379	14/12/2001	Value Added Tax Law
Decree	7283	26/1/2002	Value Added Tax- Regarding things exempted from the tax - Article 2- exempted from the tax pursuant to articles 17 and 18 of law deliveries and items listed below inside Lebanese territory, and import operations: "1. livestock and poultry and live fish, livestock, cattle, pigs, sheep, goats and poultry chickens and ducks, geese and turkeys and other pets, live fish denotes fish destined for consumption. - Article 5: all types of meat and limbs and intestines and fish and Molluscs suitable for consumption belonging to bovine, poultry and fish mentioned in Article 2; being fresh, chilled or frozen or prepared for temporary preservation for the purpose of later sale like salted , in brine, dried, or smoked except cooked meat or preserved meat and smoked fish.
Decree	7341	31/1/2002	Value Added Tax- Regarding things exempted from the tax
Law	659	4/2/2005	Consumer Protection Law
Law	265	15/4/2014	Amending some provisions of Law 659 0f 4/2/2005: Consumer protection Law
Law	35	24/11/2015	Food Safety Law

3.3 FISHERIES ADMINISTRATION

The management of Lebanese fisheries is the responsibility of the Ministry of Agriculture, which contains the Department of Fisheries & Wildlife that governs the sector assisted by the regional decentralized Departments of Rural Development. Below is the organogram (Figure 3) of the fisheries related entities at the Lebanese Ministry of Agriculture (DFW, 2013).

Figure 3: Organogram of Department of Fisheries & Wildlife-Ministry of Agriculture (Source: DFW 2013)



3.4 DESCRIPTION OF THE PRODUCTS

3.4.1 Marine capture production

The number of fishing vessels reached 2,680 in 2004 (Majdalani, 2005) and 2,762 in 2011 (DFW 2013). The fishing fleet operates from 44 ports and landing sites (30 Official ports) that are mostly small, crowded, & need breakwater (new or upgrade). In 2012, the average fishing vessel length was 7.04 m (DFW 2013). The estimated number of fishers was 6,500 in 2004 (Majdalani, 2004).

Lebanese fisheries are classified as small-scale, artisanal, and traditionally based on bottom stationary gear (trammel nets and longlines), purse seine nets, and beach seines. Bottom grounds are mainly rough with intensive rocky patches, good for stationary demersal gear. The fishing industry is reliant on the exploitation of small pelagic species Fishing operations are mostly carried out at depths of up to 50 meters. Most of the fishing nets have small mesh sizes i.e. less than 2x2 cm. The national production is almost entirely consumed locally (Majdalani, 2005). Fishing techniques are mostly based on passive gears such as gillnets, trammel nets, longlines, and purse seines (Sacchi & Dimech 2011). Fishing operations, with the exception of longlines, are mostly carried out at depths of up to 50 m. Most gillnets and trammel nets have small mesh sizes (<2x2 cm). Gillnets represented more than 50 % of the fishing gears used in Lebanon (Majdalani, 2005).

The Lebanese continental shelf is narrow; less of 1,200 km2 to 200m depth and rarely extends beyond an 8 km strip from the coast, except for North Lebanon (GFCM, 2014). Bottom grounds are mainly rough with intensive rocky patches, good for stationary demersal gear.

The fishing industry is reliant on the exploitation of small pelagic species. Fisheries in Lebanon are small-scale fisheries and are based on bottom stationary gear (trammel nets and longlines), purse seine nets (and lampara), and beach seines. Fishing operations, with the exception of longlines, are mostly carried out at depths of up to 50 m (Majdalani, 2005). The national production is almost entirely consumed locally. (DFW 2013)

The Lebanese coast is subject to intense pressure from urbanization, fishing, shipping, and other related marine-based industries. Thus, emphasis needs to be given to strengthening coastal zone management and protecting the marine environment. Industrial activity in coastal areas of Lebanon continues to be a significant source of contaminants into main fishing areas, but legislation is being put into place to reduce levels of contamination. The lack of related enforcement capabilities remains an important issue.

Lebanon is a Party to the 1982 UN Convention on the Law of the Sea and to the UN Compliance Agreement since 1995. Moreover, Lebanon is an active member of the General Fisheries Commission for the Mediterranean GFCM (DFW, 2013).

The concentration of effort on a narrow coastal strip has led to an overexploitation of coastal species. The yield reduction paved the way for the recurrence to harmful practices, such as the use of small mesh and hooks and explosives, which thrive as a result of an outdated legislation and the lack of enforcement (Sacchi & Dimech, 2011).

Another adverse anthropic impact on the coastal ecosystem is that of marine pollution due to problems of urban and industrial waste management and the lack of an effective sanitation network. Most of Lebanese industries are located besides the rivers and without efficient wastewater treatment plans for the various sources of industrial pollution (fertilizers, food industries, mills, tanneries and textile industries, oil refineries, etc.) which is dumped into the sea as a result of torrential floods (C.E.D.R.E, 2002; Nassif, 2004; Houri & El Jeblawi, 2007). On the other hand, the Lebanese coastal zone is densely populated around coastal slums in major cities (MOE-UNDP, 2010). Nevertheless, in general terms there are moderate inshore eutrophication and heavily eutrophied local systems. In the south and north of the Lebanese coast, where the human settlements are scattered and modestly inhabited, there is in principle no risk of substantial eutrophication (Abboud Abi Saab et al., 2008; World Bank 2009).

The management of the Lebanese fisheries and aquaculture sectors is the responsibility of MOA, which includes a Department of Fisheries & Wildlife. At local and professional level, the fisheries sector in Lebanon is represented by about 33 fishermen cooperatives and 86% of the 9,000 fishers hold a personal license. There is no national collective labour agreement and there are seven fishers syndicates/unions representing fish workers.

Scarcity of financial resources and clear and effective policy management have led to neglect the potential of the fishery and aquaculture sectors and induced a gradual decline in their productivity as well that of the standard of living for fishermen and fish workers involved in ancillaries activities.

On the other hand, the limited knowledge of market and fish consumption patterns or potentialities in new harvested or cultivated products, together with the lack of a strategic vision to define priorities, hamper the creation of job opportunities.

Ecological context:

The Levantine Sea is a sub-basin located in the south-eastern corner of the Mediterranean covering the area bordered by Crete, south of Turkey, Syria, Lebanon, Palestine, Egypt and part of Libya, including Cyprus (Carpentieri & Colloca, 2005). In front of the Nile Delta (off Port Said at the entrance of the Suez Canal), the shelf widens to 130 kilometres. This area is characterized by very low production and oligotrophic conditions. The high temperatures prevailing in the eastern Mediterranean, especially compared to its western basin, give this region a tropical character with regard to planktonic biota.

Within the Mediterranean, there is a gradient of increasing species diversity from east to west. The number of species among all major groups of plants and animals is much lower in the eastern Mediterranean than in the western and central parts of the sea. The southeast corner, the Levant Basin, is the most impoverished area.

They further commented that such poor biodiversity of the Levantine basin and Lebanon Sea has begun to increase since the opening of the Suez Canal in 1869. During the last decades, at least 300 Indo-Pacific species, known as Lessepsian migrants, have entered the Levantine basin giving to its communities a mixed Mediterranean-Red Sea species composition. About 60 Red Sea species have colonized successfully the Levantine basin, some of them replacing native species, thus becoming important components of commercial fisheries.

MOA catch data for 2016 indicated that 17 species/families accounted for 80 % of catch and that sardines and anchovies (Clupeidae) are the most important commercial species representing around 30% of production (Table 6). Previous years showed similar trends.

Table 6. Lebanese Marine Fish Catch Profile 2014 – 2015.

Species			Catch (ton)/year		
Scientific name	English name	Arabic name	2014	2015	2016
Clupeidae	Herrings, Sardines	سردين	326	517	1,263
Pagellus acarne	Axillary seabream	ذكر جربيدي, نقط	83	304	271
Euthynnus alletteratus	Little tunny	بلميدا	274	344	255
Diplodus sargus	White seabream	صرغوص, فليسات	153	257	239
Liza aurata	Golden grey mullet	بوري دهبان, سيلوني	44	128	169
Boops boops	Bogue	غبّص	226	65	157
Siganus rivulatus	Marbled spinefoot	بو شوكة ابيض, مواسطة, عقّيص	535	232	155
Sardinella aurita	Round sardinella	سردين, رنغا مرقطة	15	105	141
Oblada melanura	Saddled seabream	منوري	113	101	128
Pagellus erythrinus	Common pandora	جربيدي	173	151	117
Pagrus caeruleostictus	Blue spotted seabream	فرفور, احمر, فرّيدي	45	121	95
Seriola dumerili	Greater amberjack	جرو انتياس, زرزور		96	95
Caranx crysos	Blue runner	تراخول	29	60	85
Siganus luridus	Dusky spinefoot	ابو شوكة اسود, مواسطة, بلشفيك	25	70	78
Scomberomorus commerson	Narrow-barred spanish mackerel	ابو سن,غزال	9	49	67
Sphyraena chrysotaenia	Yellowstripe barracuda	مليفة, زعرا	73	74	62
Portunus pelagicus	Blue swimming crab	سلاطعين	11	53	38
Other species			712	887	859
Total			**2,931**	**3,611**	**4,273**

Source: DFW-MOA: Catch Data-Flouca Web.

Fishing practices/systems

Fishing vessels are almost entirely the multipurpose artisanal crafts of the Eastern Mediterranean known locally as Flouca (a small 3 - 15 m fishing craft, made of wood (78%) and/or fibreglass (15%), shapes are diverse, generally undecked; and with/without inboard or outboard engines) (Majdalani, 2005).

In 2016, the average fishing vessel length of licensed fishing vessels was 7.31 m and the fishing vessels length distribution as reported by DFW in 2017 is shown in Table 7.

Table 7: Lebanon fishing vessels length distribution (DFW 2016)

Fishing Vessels Length class	Number of vessels
<6 m LOA	510
6-12 m LOA	1,407
12-18 m LOA	45
Total	**1,962**

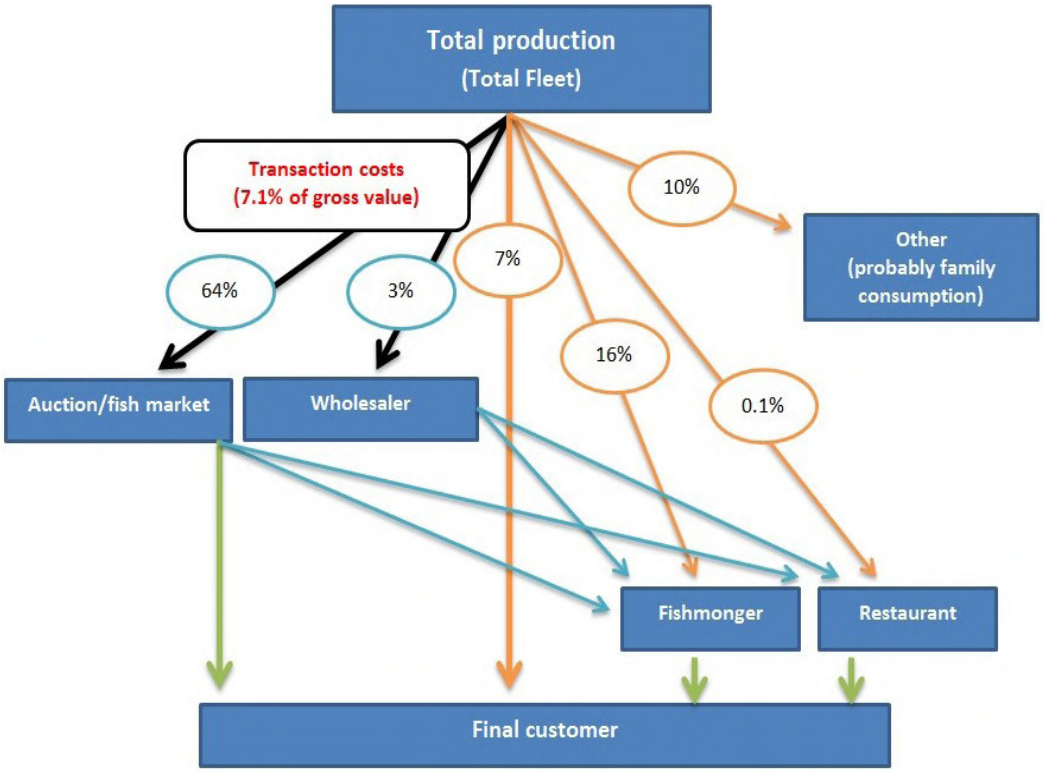
Fishing techniques are mostly based on passive gears such as gillnets, trammel nets, longlines, and purse seines (Sacchi & Dimech 2011). Fishing operations, with the exception of longlines, are mostly carried out at depths of up to 50 m. Most gillnets and trammel nets have small mesh sizes (<2x2 cm). Gillnets represented more than 50 % of the fishing gears used in Lebanon (Majdalani 2005).

Data of 2004 (Majdalani, 2005) showed that most (78%) vessels were undecked with average GRT of less than 5 tons. Around 92% were motorized mainly (75%) with inboard diesel engines. Few vessels have GPS, while the rest have very limited navigational or safety equipment (Majdalani 2004; Sacchi & Dimech, 2011). Although the construction of the vessels is quite good, they are not built to face rough seas, fish in offshore waters and are not equipped to keep the catch in good conditions (Sacchi & Dimech 2011). The fleet is built almost exclusively for small scale and inshore activity, with some vessels equipped with old low quality echo sounders to detect fish. Their net winches are not fitted to haul gillnets deeper than 50 m, without the risk of damage or loss of the gear (Sacchi & Dimech, 2011).

Fish utilization

Local production is sold fresh for human consumption. Recently, some private initiatives were launched to fillet and smoke part of local aquaculture rainbow trout production. The shrimp farm in Aabdeh, Akkar is the only business that freezes its products (DFW, 2013).
Around 67% of the first-sales occur through indirect sales, while 23% through a direct transaction. Nearly 64% of indirect sales pass through the auction markets (Pinello & Dimech, 2013). Figure 4 shows the flow of the first sale dynamics.

Figure 4: the main first sale market (ex-vessel) channels for the production in Lebanon Source: Pinello & Dimech 2013



Fish Markets

The apparent per capita seafood consumption in 2011 was 6.03 Kg (Pinello & Dimech 2013), which is less than one third of the World per capita apparent consumption of 18.6 kg for the same year (FAO 2016).

In 2005, there were fish halls for sorting, packing, and selling fish at 16 port/landing sites along the Lebanese coast. There were fish auctions at the ports of Dora, Ouzaii, Saida, Tripoli and Sour (Majdalani, 2005; PescaMed, 2011).

Local fish production is marketed to consumers, besides auctions, on port stalls, by licensed and/ or unlicensed shops/supermarkets and fish stalls, directly by fishermen, and by street vendors. Smoking and filleting of about 300 tons/year of salmon (imported) and trout and freezing of around 20 tons of shrimps is practiced. The only canning plant in Lebanon was decommissioned due to lack of supply of sardines and tuna (Majdalani, 2005). No market survey on consumption patterns was ever conducted. The Central Fish Market (Quarantina-Beirut), which is managed by the Institution of Consumption Markets, attracts fish from all over Lebanon particularly sardines/ anchovy locally called Bizri i.e. juvenile and most imported fishes.

DFW staff have been collecting catch and effort data including prices as stated by fishers; who have the tendency to underscore their revenues although fish sales is exempted from income tax and VAT. Table 8 shows the average prices for locally caught marine fish species as collected by MOA for the years 2014-2016. The table shows that Alexandria pompano, common dentex, grouper, red mullet, surmullet, bluespotted seabream, red purgy, shrimp, Atlantic bonito, and goldbeard goatfish lead locally caught fish in prices of fish per kilogram.

Table 8: Prices of locally caught fish species (2014-16)

Species			Average Prices/kg					
Scientific name	English name	Arabic name	2014		2015		2016	
			L.L	US $	L.L	US$	L.L	US$
Alectis alexandrinus	Alexandria pompano	جمل	14,861.50	9.91	16,087.90	10.73	25,853.20	17.24
Alepes djedaba	Shrimp scad	سكسوك, حبلص, فار تراخول	10,000.00	6.67		0.00	11,674.80	7.78
Anguilla anguilla	European eel	حنكليس	6,937.00	4.62		0.00	1,534.20	1.02
Argyrosomus regius	Meagre	مسقار	7,000.00	4.67	13,284.70	8.86	8,266.00	5.51
Atherina boyeri	Big-scale sand smelt	بزري, رڤو, كبيارة	2,798.10	1.87		0.00	1,000.00	0.67
Auxis rochei	Bullet tuna	بلمود	3,000.00	2.00	2,511.10	1.67	4,061.50	2.71
Balistes carolinensis	Grey triggerfish	خنزير غمق, ابو ريشة, مبرد	10,454.40	6.97	13,068.20	8.71	13,161.80	8.77
Belone belone	Garfish	ارفيدا		0.00	3,210.90	2.14	7,796.50	5.20
Boops boops	Bogue	غبّص	5,828.90	3.89	8,169.60	5.45	7,927.60	5.29
Bothus podas	Wide-eyed flounder	صول, مداس بو عيون		0.00		0.00	5,000.00	3.33
Bycatch (landed, used catch)	Bycatch - landed, used catch		28,862.20	19.24	21,333.60	14.22	3,000.00	2.00
Caranx crysos	Blue runner	تراخول	11,187.70	7.46	11,892.80	7.93	10,223.40	6.82
Clupeidae	Herrings, Sardines	سردين	2,763.50	1.84	2,289.90	1.53	2,052.80	1.37
Conger conger	European conger	زرمباية	3,000.00	2.00		0.00		0.00
Coryphaena hippurus	Common dolphin fish	لمبوكة, بو دريس	14,014.60	9.34	9,895.20	6.60	9,110.90	6.07
Dentex dentex	Common dentex	بصّاص	35,835.70	23.89	24,318.30	16.21	31,371.60	20.91
Dentex macrophtalmus	Large-eye dentex	بحلق	6,990.80	4.66	10,287.50	6.86	12,665.60	8.44
Dentex maroccanus	Morocco dentex	جربيدي ابو سن		0.00	15,000.00	10.00	18,746.80	12.50
Dicentrarchus labrax	European seabass	براق	20,154.10	13.44	18,923.20	12.62	17,738.50	11.83
Diplodus cervinus	Zebra seabream	حدّاد, ضبع	16,531.40	11.02	14,263.20	9.51	14,034.50	9.36
Diplodus sargus	White seabream	صرغوص, فليسات	10,998.70	7.33	10,807.30	7.20	11,121.50	7.41
Diplodus vulgaris	Common two-bended seabreamc	خرقن	5,731.10	3.82		0.00		0.00
Engraulis encrasicolus	European anchovey	بزري لاطشو, ابو حنك, مونة		0.00		0.00	1,670.20	1.11
Epinephelus aeneus	White grouper	لقز رملي	42,683.00	28.46	36,958.60	24.64	33,872.90	22.58
Epinephelus costae	Goldblotch grouper	زبير	26,720.70	17.81	15,806.20	10.54	28,167.90	18.78
Epinephelus marginatus	Dusky grouper	حفش, قربة	26,846.20	17.90	22,673.20	15.12	25,351.80	16.90
Etrumeus teres	Red-eye round herring	رنغا مبرومة		0.00	2,124.20	1.42	3,706.10	2.47
Euthynnus alletteratus	Little tunny	بلميدا	6,041.90	4.03	4,328.00	2.89	4,992.00	3.33
Exocoetidae	Flying fish	طيران		0.00	3,000.00	2.00		0.00
Fistularia commersonii	Bluespotted cornetfish	شليمون, نربيش, زمّور	5,244.10	3.50	5,013.70	3.34	5,127.40	3.42
Helicolenus dactylopterus	Blackbelly rosefish	اشترب مياه غميقة		0.00		0.00	16,284.70	10.86
Hemiramphus far	Black-barred halfbeak	بو دبّوس	3,840.20	2.56	3,391.20	2.26	4,000.00	2.67
Kalamar	Kalamar	كلمار	11,399.10	7.60	13,101.50	8.73	12,444.50	8.30

Species			Average Prices/kg					
Scientific name	English name	Arabic name	2014		2015		2016	
			L.L	US $	L.L	US$	L.L	US$
Lagocephalus spadiceus	Puffer fish	نفاخ اصفر		0.00	8,000.00	5.33		0.00
Lichia amia	Leerfish	عريان	4,294.20	2.86	5,163.90	3.44	7,415.60	4.94
Lithognathus mormyrus	Sand steenbras	مرمور	11,647.70	7.77	15,225.00	10.15	14,772.50	9.85
Liza aurata	Golden grey mullet	بوري دهبان، سيلوني	6,192.10	4.13	5,290.10	3.53	5,370.50	3.58
Liza ramada	Thinlip grey mullet	بوري طوبارة	5,504.50	3.67	5,036.20	3.36	9,907.30	6.60
Merluccius merluccius	European hake	عرموط		0.00	16,271.20	10.85	17,642.30	11.76
Micromesistius poutassou	Blue whiting	عرموط, مرلان	15,694.50	10.46	17,197.30	11.46	17,315.80	11.54
Mugil cephalus	Flathead grey mullet	بوري لبت,كبّانة	4,666.70	3.11	4,612.00	3.07	5,037.40	3.36
Mullus barbatus	Red mullet	سلطان رملي، يهودي	41,367.10	27.58	35,610.20	23.74	48,102.50	32.07
Mullus sumuletus	Surmullet	سلطان صخري، سلطان إبراهيم	53,355.30	35.57	57,565.20	38.38	53,400.80	35.60
Mycteroperca rubra	Mottled grouper	لقز صخري, اريدية	25,958.10	17.31	29,061.50	19.37	31,666.50	21.11
Nemipterus randalli	Randall's threadfin bream	غسّانة	12,749.80	8.50	12,118.70	8.08	13,040.80	8.69
Oblada melanura	Saddled seabream	منوري	7,993.90	5.33	9,386.30	6.26	7,043.70	4.70
Octopodidae	Octopuses	اخطبوط	8,064.20	5.38	8,216.30	5.48	9,948.40	6.63
Pagellus acarne	Axillary seabream	ذكر جربيدي, نقط	9,680.60	6.45	9,877.70	6.59	8,712.80	5.81
Pagellus bogaraveo	Blackspot(=red) seabream			0.00		0.00	13,205.90	8.80
Pagellus erythrinus	Common pandora	جربيدي	18,461.70	12.31	16,240.70	10.83	20,169.40	13.45
Pagrus caeruleostictus	Blue spotted seabream	فرفور, احمر, فرّيدي	25,486.30	16.99	25,034.80	16.69	25,555.00	17.04
Pagrus pagrus	Red porgy	قجاج احمر	24,497.80	16.33		0.00	25,000.00	16.67
Pelates quadrilineatus	Fourlined terrapon	قريق	11,678.80	7.79	5,963.80	3.98	11,413.20	7.61
Penaeidae	Penaied shrimps	قريدس	51,534.40	34.36	40,061.10	26.71	61,320.40	40.88
Phycis blennoides	Greater forkbeard	خرّاية	15,000.00	10.00	13,227.40	8.82	12,900.30	8.60
Pomadasys incisus	Bastard grunt	اسطارة		0.00	6,984.50	4.66	10,000.00	6.67
Pomatomus saltatrix	Blue fish	غمبار	10,209.50	6.81	13,070.40	8.71	10,070.80	6.71
Portunus pelagicus	Blue swimming crab	سلاطعين	9,094.90	6.06	8,060.00	5.37	7,317.80	4.88
Pseudocaranx dentex	White trevally	حمام, ذكر تراخول	2,500.00	1.67		0.00	12,589.20	8.39
Sarda sarda	Atlantic bonito	غزال بلميدا	22,871.10	15.25	5,000.00	3.33	22,595.80	15.06
Sardinella aurita	Round sardinella	سردين, رنغا مرقطة	9,752.80	6.50	1,981.90	1.32	2,995.20	2.00
Sardinella maderensis	Madeiran sardinella	سردين عريضة, ماديرا		0.00		0.00	2,485.80	1.66
Sargocentron rubrum	Redcoat	نيلون	1,109.80	0.74	1,270.70	0.85	2,436.70	1.62
Sarpa salpa	Salema	صلبن	5,000.00	3.33		0.00		0.00
Saurida undosquamis	Brushtooth lizardfish	شكارمو, سقّاية غمق	8,663.70	5.78	11,375.00	7.58	15,000.00	10.00
Scomber japonicus	Chub mackerel	شكمبري	5,698.00	3.80	3,237.20	2.16	5,000.00	3.33
Scomber scombrus	Atlantic mackerel	اسكمبري	6,585.10	4.39	3,602.20	2.40	4,660.60	3.11
Scomberomorus commerson	Narrow-barred spanish mackerel	ابو سن, غزال	20,519.40	13.68	23,559.20	15.71	20,264.90	13.51

Species			Average Prices/kg					
Scientific name	English name	Arabic name	2014		2015		2016	
			L.L	US $	L.L	US$	L.L	US$
Scorpaena porcus	Black scoprionfish	اشترب	11,107.50	7.41	5,679.10	3.79	13,529.90	9.02
Scorpaena scrofa	Red scorpionfish	اشترب احمر	15,000.00	10.00	14,447.90	9.63	15,628.60	10.42
Scyllarides latus	Mediterranean slipper lobster	كركند	45,108.80	30.07	40,000.00	26.67	50,000.10	33.33
Seriola dumerili	Greater amberjack	جرو انتياس, زرزور	15,894.90	10.60	16,627.50	11.09	17,400.10	11.60
Serranus cabrilla	Comber	خوانس, كرشعون		0.00	13,543.60	9.03	5,000.00	3.33
Serranus scriba	Painted comber	واوي, كرشعون	18,353.30	12.24	10,077.70	6.72		0.00
Siganus luridus	Dusky spinefoot	ابو شوكة اسود, مواسطة, بلشفيك	7,399.60	4.93	6,111.10	4.07	6,757.40	4.50
Siganus rivulatus	Marbled spinefoot	بو شوكة ابيض, مواسطة, عقّيص	9,083.90	6.06	7,845.00	5.23	8,787.20	5.86
Sillago sihama	Silver sillago	مليفا صخري	14,896.20	9.93	25,344.00	16.90	21,480.70	14.32
Solea aegyptiaca	Egyptian sole	سمكة موسى, صول	6,985.40	4.66	11,193.60	7.46	7,959.90	5.31
Sparisoma cretense	Parrotfish	زلاق	12,499.70	8.33	9,972.90	6.65	10,439.80	6.96
Sparus aurata	Gilthead seabream	اجاج	18,265.50	12.18	12,936.50	8.62	12,424.10	8.28
Sphyraena chrysotaenia	Yellowstripe barracuda	مليفة, زعرا	18,193.50	12.13	12,569.30	8.38	18,823.30	12.55
Sphyraena sphyraena	European barracuda	سفرنا	14,320.20	9.55	15,682.50	10.46	18,582.10	12.39
Spicara maena	Blotched picarel	زمريدي زرقاء, فول, عصفور	3,000.00	2.00	4,308.10	2.87		0.00
Spicara smaris	Picarel	زمريدي بيضاء, عصفور	3,000.00	2.00	4,494.30	3.00	6,000.00	4.00
SQUID	Squid	صبيدج	13,340.10	8.89	14,427.30	9.62	13,934.20	9.29
Stephanolepis diaspros	Reticulated leatherjacket	خنزير, بو ريشة, مبرد	13,145.60	8.76	10,720.70	7.15	14,667.80	9.78
Terapon puta	Small-scaled terapon	زمرور, برّو	4,760.00	3.17	4,085.30	2.72	2,390.60	1.59
Tetrapturus belone	Mediterranean spearfish	ام حربة		0.00	12,000.00	8.00		0.00
Trachinidae	weeverfishes	درقن	3,000.00	2.00		0.00		0.00
Trachinotus ovatus	Pompano	عطعوط	5,501.90	3.67	3,825.90	2.55	2,920.10	1.95
Trachurus mediterraneus	Mediterranean horse mackerel	عصيفر, ترغلوس	5,000.00	3.33	3,600.10	2.40	6,490.00	4.33
Trachurus trachurus	Atlantic horse mackerel	عصيفر, ترغلوس	8,480.50	5.65	4,980.50	3.32		0.00
Trichiurus lepturus	Largehead hairtail	سيف	4,941.20	3.29	4,541.40	3.03	4,744.00	3.16
Triglidae	Gurnards, searobins	دجاجة, فوزية, فيروز	5,000.00	3.33		0.00		0.00
Umbrina cirrosa	Shi drum	كربال, جرّوش	14,512.40	9.67	13,768.40	9.18	13,454.40	8.97
Upeneus moluccensis	Goldband goatfish	سلطان مزوق, ابو زيح اصفر	30,316.50	20.21	34,606.20	23.07	26,142.10	17.43
Upeneus pori	Por's goatfish	سلطان حردون	25,000.00	16.67		0.00		0.00
Xiphias gladius	Swordfish	ام حربة, سنغا, سكافية	10,361.70	6.91	15,000.00	10.00	9,294.60	6.20
Xyrichtys novacula	Pearly razorfish	جردون, فارة, ابو تاج	10,863.80	7.24	12,302.70	8.20	13,079.30	8.72

3.4.2 Marine aquaculture production

There is only one onshore marine shrimp farm (Penaeus vannamei) is in operation in Aabdeh, Akkar in north Lebanon (NASO 2017). This farm spreads over an area of 8 ha and have four 1-ha ponds with paddle wheel aerators. It is estimated that it produces 20-25 tons per annum. The farm manager reported that 20 g shrimp are sold live for USD 10-12/kg. However, it is known that products of this farm are frozen to be sold later when prices are better.

The culture of other species remains experimental and/or limited e.g. catfish and tilapia. MOA and American University of Beirut (AUB) have conducted some trials on seabass and seabream culture in raceways. However, interest by the private sector remains high, particularly for marine finfish species. Moreover, FAO and CNRS-Lebanon have commissioned some consultants to examine the prospects of aquaculture in Lebanon. Three reports were produced:

- Sustainable aquaculture development and support to the fishery sector by Roberto Ugolini. CNRS-Lebanon, 2011
- Aquaculture in Lebanon by Laurent Gennari, 2012. FAO, Rome.
- Cage Culture by Fabrizio Piccolotti, 2013. FAO, Rome.

These reports concluded that despite that Lebanon has no protected bays to be used in marine aquaculture, yet there is potential for this industry through the use of submersible cages. Lebanon remains not prepared for mariculture since it needs legal framework and a good research facility that can support investments in this sector.

3.4.3 Inland aquaculture

Inland aquaculture has been practiced in Lebanon since the 1930s (El-Zein, 1997). More than 90 percent of aquaculture production in Lebanon is rainbow trout, Onchorhyncus mykiss. They are grown in semi-intensive growing systems that were introduced in 1958 (NASO, 2017). There were 275 farms in 2012 (DFW 2013). According to the MOA's data, aquaculture production in 2003 was 600 tons while the 2014 estimation was 1 200 tons.

Trout farms can be grouped into four different regions by virtue of the same water source. These farms are concentrated in four areas of Bekaa: Zahle – Qaa El-Rim (in Zahle Caza), Anjar (in in Zahle Caza), Yammouneh (in Baalbek Caza) and Hermel (in Hermel Caza). The rest are scattered in Bekaa mainly in Baalbek, West Bekaa and North-Lebanon in different hydrolytic isolated points.

Most of the farms are artisanal family owned businesses, small to medium in size. Forty-seven percent of the farms are small (surface area less than 500 m2), 38 percent of the farms are medium sized (501 – 1 500 m 2) and 15 percent are large (over 1 500 m2).

Medium size trout fish are sold live to restaurants, which have their own concrete holding tanks. Value added product is still lacking on the Lebanese market. Some farmers sell their products to supermarkets, but most sell it at their farms or restaurants. The marketable size is 250-350 g. Larger sizes (0.5-1 kg) are also demanded. However, no certification is yet available.

Consumption trends vary according to regions. Inhabitants of cities and coastal areas prefer marine fish, whereas inhabitants of Bekaa prefer beef and chicken to fish and they mostly consume trout. (NASO, 2017).

A large quantity of produced trout is being channelled through local restaurants at or close by to the production farms. It is also known that a good amount (some claimed to be 600 tons) used to be smuggled to Syria, but this stooped due to the internal strife in Syria. Prices of trout remain depressed as compared to marine fish due to lack of local demand and misperception that freshwater fish is of lower quality.

Some added-value initiatives started shaping up during the past years like:

- Feeding them with high carotenoid feed that will result in "salmon-pigmented" flesh. Those trout are then "fraudulently sold as salmon in some areas.
- Smoking filleting fillets.
- Packaging fillets that are sold

The second most cultured fish in Lebanon today is tilapia (Oreochromis niloticus). It was introduced into Lebanon in 1965 and became abundant in the Qasmeih River (South Lebanon). It became extinct during the civil war that started in 1975. In 2000, the MOA put out a tender for the construction of a hatchery and grow-out facility for tilapia and other warm freshwater fishes. The private sector was faster than the government to establish the first commercial hatchery and grow-out farm. A small farm (Hadath Fish Farm) was established near to the MOA's site. Recirculation, bio-filters, UV disinfectants, and greenhouses are among the new technologies introduced into Lebanon. These are already employed at Hadath Farm. One of the biggest challenges facing tilapia farming in Lebanon is the cold climate and sub-optimal water temperatures. Tilapias are tropical species, which grow poorly when water temperatures drop below 25 °C. It is claimed that the Hadath Tilapia Farm recycles over 98 percent of its water so as to maintain 'high-residence times,' allowing 'free' solar energy to heat the tank water inside a plastic greenhouse tunnel (the kind used for crop production in Lebanon). The technology is called the IFF "ONE TANK" Fish Farming System and is entirely air driven using one (plus coupled standby) low pressure centrifugal fan running at 7 000 Pa' sto drive one or more RBCs (Rotating Biological Contactor) for ammonia conversion, specially designed air lift aerators (in-tank water circulation and aeration) and airlift-pods (low head water pumps) used to pull water though a centrally located water reconditioning system. (NASO, 2017). The Hadath farm eventually was closed down.

After crop production, aquaculture is the second main economic activity of the Hermel, Yammouneh and Anjar areas and constitutes an income generating activity linked especially with restaurants and tourism in the areas. Restaurants usually serve trout at the table at a price of USD 10/kg. Trout cooking and meals are considered a specialty for the Hermel and Anjar communities. Most of the Lebanese prefer marine fish and still do not know about different recipes that could include trout. However, this source of fish is growing and is increasingly becoming known to the Lebanese consumer. It represents a good potential and an additional food source if higher production can be attained. This must be coupled with marketing strategies and advertising. This is particularly the case compared with the volume of imported meat quantities in general and fish in particular.

Several restaurants, particularly in the Bekaa Valley, have live tout holding raceways, so customers can select the fish which is then prepared. Around 60 restaurants in Anjar and Hermel areas serve fresh trout on their menus. Anjar is considered a tourist area where visitors from nearby villages, Beirut and other cities come for trout meals and enjoy the area with its landscape and water sites.

Recent investments have been made in the Anjar and Hermel areas to support for tourist activities such as the emergence of new hotels (2 hotels, one in Anjar and one in Hermel area) and enlarging and maintaining existing restaurants.

In Lebanon, the market is not selective for freshwater fish and fishery products, so grading and packaging are not important or carried out. Trout is usually sold chilled, whole or gutted. The farm price is USD 2-3/kg, whilst the retail price is USD 3-5/kg (NASO, 2017).

3.4.4 Imported products

Due to low local production, Lebanon is practically a net importer of fish and other aquatic organisms. Table 9 gives a summary of imports by category. Fresh and Chilled fish and prepared or preserved fish represent two thirds of imports followed by fish fillets and frozen fish that account for around 22% of imports.

Table 9: Volume (ton) of imported seafood

HS	Description	2013	2014	2015	2016	2017
3.01	Live fish	7	6	7	7	7
3.02	Fish, fresh or chilled, excluding fish fillets	9,110	9,550	10,429	12,157	12,761
3.03	Fish, frozen, excluding fish fillets and other fish	3,528	3,871	2,858	3,299	3,381
3.04	Fish fillets and other fish, fresh, chilled or frozen	5,133	4,829	4,135	4,280	3,740
3.05	Fish, dried, salted or in brine; smoked fish	16	9	11	17	10
3.06	Crustaceans, live, fresh, chilled, frozen, etc.	1,312	2,048	1,853	1,876	2,152
3.07	Molluscs, live, fresh, chilled, frozen, etc.	581	600	604	780	899
3.08	Aquatic invertebrates other than crustaceans	17	7	12	3	4
16.04	Prepared or preserved fish; caviar & caviar substitutes	9,938	11,581	10,108	10,883	11,154
16.05	Crustaceans, Molluscs & other; prepared or preserved	943	1,040	1,049	1,174	1,015
	Total	30,585	33,541	31,066	34,476	35,123

Source: Lebanese Customs http://www.customs.gov.lb/customs/index.html

Over the period 2013-17, the import bill varied between USD 137 million to around USD 154 million (Table 10). The fresh and chilled fish and prepared or preserved fish still represent more than two thirds of value of imports followed by crustaceans and molluscs that accounted for 20% % of imports.

Table 10: Value (Thousand USD) of various imported seafood items

HS	Description	2013	2014	2015	2016	2017
3.01	Live fish	293	206	205	185	227
3.02	Fish, fresh or chilled, excluding fish fillets	46,389	49,561	44,064	53,737	57,633
3.03	Fish, frozen, excluding fish fillets and other fish	7,041	7,382	5,373	5,314	5,856
3.04	Fish fillets and other fish, fresh, chilled or frozen	14,462	15,079	14,670	14,155	11,895
3.05	Fish, dried, salted or in brine; smoked fish	267	226	167	159	214
3.06	Crustaceans, live, fresh, chilled, frozen, etc.	12,242	19,786	16,989	16,151	18,098
3.07	Molluscs, live, fresh, chilled, frozen, etc.	2,563	2,663	2,732	3,729	4,524
3.08	Aquatic invertebrates other than crustaceans	188	196	235	180	144
16.04	Prepared or preserved fish; caviar & caviar substitutes	49,106	50,563	44,287	46,397	47,536
16.05	Crustaceans, molluscs & other; prepared or preserved	6,635	8,992	8,408	8,698	8,516
	Total	139,186	154,654	137,130	148,705	154,643

Source: Lebanese Customs http://www.customs.gov.lb/customs/index.html

Despite the fact that Lebanon imports seafood products (including prepared or preserved products) from more than 126 countries, yet the main partners are 10 countries (Table 11) supplying more than 80% of Lebanese imports of seafood products. Turkey remains the top exporter of seafood to Lebanon.

Table 11. Lebanon major trading partners in fisheries products. (Ton)

Country	2013	2014	2015	2016	2017
Turkey	5,495	5,261	6,471	7,322	7,516
Thailand	5,948	6,396	6,000	7,256	6,245
Viet Nam	5,993	6,280	5,258	5,156	4,333
Egypt	1,799	2,296	1,733	2,594	2,764
Morocco	1,898	2,728	2,373	1,544	2,468
Argentina	1,591	1,539	1,318	1,988	1,719
India	481	794	472	576	1,124
United Kingdom	1,035	784	771	807	989
Norway	248	660	912	924	887
Mauritania	352	329	505	548	485
Other	5,745	6,474	5,253	5,761	6,592
Total	**30,585**	**33,541**	**31,066**	**34,476**	**35,123**

It was observed that although the Lebanese Customs database is according to the HS (Harmonized System), yet the reported data is not species-specific for many items that are reported as "Other" i.e. no specific seafood species. This does not allow scrutinizing the exports to Lebanon per country. For example, for Turkey, the available data for fresh, chilled and frozen fish imports is as per the following Table 12; whereby the bulk of imports from Turkey is reported, by Lebanese Customs, as "Other Fish, Fresh or chilled". However, it is known that these some 7,400 tons in 2017 classifies as "Other Fish, Fresh or Chilled" were mainly aquaculture seabass and seabream.

Table 12. Turkey's exports (ton) of fisheries products to Lebanon.

HS	Description	2013	2014	2015	2016	2017
03.01.11	Live fish, Fresh water				0	0
03.01.19	live fish, Other				0	0
03.02.19	Other Salmonidae, fresh or chilled			F	0	
03.02.29	Other Flat Fish, Fresh or chilled	1				1
03.02.43	Sardines, fresh or chilled	8				
03.02.85	Seabream (Sparidae), Fresh or chilled	0				
03.02.89	Other Fish, Fresh or chilled	5,352	5,221	6,422	7,239	7,402
03.04.59	Other, fresh or chilled		0	0	0	
03.04.99	Not Translated, Other, Frozen			0		0
03.05.49	Other Smoked fish, including fillets	0	0	0	1	0
03.06.17	Other shrimps and prawns, frozen				4	1
03.06.21	N/A Crustaceans, Frozen			0		
03.06.27	N/A Crustaceans, Frozen	5	5	21	37	
03.06.36	Not translated, Crustaceans					17
03.07.41	N/A Molluscs	90	35	27	42	
03.07.42	Not translated Molluscs					74
03.07.43	Not Translated, Crustaceans Frozen					6
03.07.49	Not Translated, Other, Molluscs	38				

Thailand on the other hand exports mainly canned tunas and is the first exporter of canned tuna to Lebanon. In addition, it exports a variety of canned products as well as live fish (Table 13).

Table 13. Thailand's exports (ton) of fisheries products to Lebanon.

HS	Description	2013	2014	2015	2016	2017
03.01.11	Live fish, Fresh water	1	1	0	23	1
03.01.19	live fish, Other	0	0	1	16	0
03.01.99	Other live fish, Other	1	0	0		
03.04.69	Other frozen fillets		8	16	82	8
03.04.87	Tunas, Skipjack, frozen fillets	1		1	1	
03.04.89	Not Translated, Other, fillets, Frozen		0		7	0
03.04.99	Not Translated, Other, Frozen				0	0
03.05.39	Other Fish, fillets, dried, salted or in brine				0	
03.05.63	Anchovies (Engraulis spp.), Salted				18	
03.06.14	Crabs, Frozen	0	2			
03.06.16	Cold-water shrimps and prawns, Frozen					0
03.06.17	Other shrimps and prawns, frozen	27	2	8		3
03.06.19	Other Crustaceans, Frozen	25	13			
03.06.27	N/A Crustaceans, Frozen		0			
03.07.29	Scallops, Other	1	3			
03.07.49	Not Translated, Other, Molluscs	1	1	19		19
03.07.59	Octopus, Other, Frozen					21
16.04.11.00	Salmon, prepared or preserved			0		
16.04.13.10	Sardines in airtight metal containers	86	88	76	26	15
16.04.14.10	Tunas in airtight metal containers	5,501	5,829	5,432	6,643	5,750
16.04.14.90	Other Tunas, skipjack and bonito, Prepared or preserved			0		
16.04.15.00	Mackerel, prepared or preserved	17	18	18	18	
16.04.20.00	Not translated, Other prepared or preserved fish	38	113	138	136	145
16.05.10.00	Crab, prepared or preserved	242	269	241	345	204
16.05.21.00	Shrimps and prawns, Not in airtight container, prepared or preserved	1	12	27		
16.05.29.00	Shrimps and prawns, Other, Prepared or preserved	47	47	52	73	65
16.05.30.00	Lobster, prepared or preserved	9	10	10	8	9
16.05.40.00	Other crustaceans, prepared or preserved	4	3	2		
16.05.53.00	Mussels, prepared or preserved			1		
16.05.54.00	Cuttle fish and squid, prepared or preserved	1				1
16.05.55.00	Octopus, prepared or preserved	1	1	0	0	0
16.05.56.00	Clams, cockles and arkshell, prepared or preserved				0	
16.05.59.00	Clams, cockles and arkshell, Other, Prepared or preserved	1	3	2	6	2
16.05.69.00	Other aquatic invertebrates, Prepared or preserved	1	4	0	1	1

Imports from Vietnam show that frozen catfish fillets comes first with more than 2000 tons annually followed by canned tunas that is showing a downward trend. Other imports from Vietnam are basically in frozen fish fillets or whole. Processed shrimps and prawns quantities are also significant (Table 14):

Table 14. Vietnam's exports (ton) of fisheries products to Lebanon

HS	Description	2013	2014	2015	2016	2017
03.01.11	Live fish, Fresh water	0	0	0	0	0
03.01.19	live fish, other					0
03.02.72	Catfish, fresh or chilled			26	26	
03.03.29	Tilapias, catfish, carp, eels, Other, Frozen	50		50		
03.03.49	Other Tunas, Frozen			24		
03.03.54	Jack and horse mackerel, Frozen			1		
03.03.66	Hake, Frozen				13	
03.04.32	Catfish, fillets	317	143	135	148	121
03.04.39	Fish fillets, Other, fresh, chilled or frozen	208	72	123	130	0
03.04.49	Fresh or chilled fillets of other fish			24	24	
03.04.59	Other, fresh or chilled				14	
03.04.62	Catfish, Frozen fillets	2,736	2,813	2,292	2,204	1,575
03.04.69	Other fillets, Frozen	324	534	129	83	220
03.04.79	Other fish fillet, Frozen	50				
03.04.89	Not Translated, Other, fillets, Frozen	435	500	540	476	327
03.04.93	Tilapia, Catfish, frozen	25	26	104	284	203
03.04.99	Not Translated, Other, Frozen	245	75	27		35
03.06.12	Lobsters (Homarus spp.), Frozen			0	0	
03.06.16	Cold-water shrimps and prawns, Frozen	38	83	214	219	171
03.06.17	Other shrimps and prawns, frozen	285	331	331	390	338
03.06.19	Other Crustaceans, Frozen			0	8	
03.06.26	N/A Crustaceans, Frozen	0	0			
03.07.19	Oysters, Other	2	0			
03.07.29	Scallops, Other	3	4	1		
03.07.49	Not Translated, Other, Molluscs	3	1	0	16	10
03.07.59	Octopus, Other, Frozen	3	13	10		4
03.07.99	Other Molluscs, other	6	0	2	17	9
03.08.90	Aquatic invertebrates, Other	3	5	9	6	
16.04.14.10	Tunas in airtight metal containers	1,211	1,619	926	738	1,033
16.04.20.00	Not translated, Other prepared or preserved fish	47	63	51	66	51
16.05.10.00	Crab, prepared or preserved	0	7	0	0	0
16.05.21.00	Shrimps and prawns, Not in airtight container, prepared or preserved	78	91	93	42	94
16.05.29.00	Shrimps and prawns, Other, Prepared or preserved	71	128	130	227	121
16.05.40.00	Other crustaceans, prepared or preserved				4	4
16.05.59.00	Clams, cockles and arkshell, Other, Prepared or preserved	17	36	17	19	15
16.05.69.00	Other aquatic invertebrates, Prepared or preserved			1	1	

It is known that Egypt exports a variety of fish to Lebanon particularly meagre (aquaculture), flat fish and a wide assortment of fish. Customs data do not differentiate among fish species due to the type of the consignments that are a mixture of many species. Mussels started entering the picture since Egypt started focusing on it as an export product. Chilled Tilapia is gaining grounds due to the demand from Egyptian and some Far Eastern expatriates (Table 15).

Table 15. Egypt's exports (ton) of fisheries products to Lebanon.

HS	Description	2013	2014	2015	2016	2017
03.01.11	Live fish, Fresh water					0
03.02.19	Other Salmonidae, fresh or chilled					109
03.02.29	Other Flat Fish, Fresh or chilled	1,463	2,132	1,568	2,283	2,228
03.02.59	Other fish, fresh or chilled				4	
03.02.79	Tilapias, catfish, carp, Other, Fresh or chilled					98
03.02.71	Tilapias (Oreochromis spp.), fresh or chilled			35		
03.02.89	Other fish, fresh or chilled	246	121	78	288	309
03.02.90	Liver, eggs, fins, tails, etc., fresh or chilled	1	1	1	0	
03.03.19	Other Salmonidae, Frozen		0			1
03.03.29	Tilapias, catfish, carp, eels, Other, Frozen					11
03.03.69	Fish of the families Bermacerotidae, etc., Other, Frozen		20			
03.04.62	Catfish, Frozen fillets		5			
03.04.89	Not Translated, Other, fillets, Frozen	50				
03.04.99	Not Translated, Other, Frozen	21	1	37		
03.05.20	Livers and roes of fish, dried, smoked, salted or in brine	0				2
03.05.42	Herrings, fillets, dried, salted or in brine	1		1		
03.05.61	Herrings (Clupea harengus, Clupea pallasii)					1
03.06.16	Cold-water shrimps and prawns, Frozen					1
03.06.21	N/A Crustaceans, Frozen	0				
03.06.26	N/A Crustaceans, Frozen	4	2	1	2	
03.06.27	N/A Crustaceans, Frozen	0	14			
03.07.49	Not Translated, Other, Molluscs	14		13	16	5
16.04.31.00	Caviar, Prepared or preserved		3	7	4	1
16.04.32.00	Caviar substitutes, Prepared or preserved		1	1		0

Morocco's exports to Lebanon seem to focus on canned sardines and unspecified frozen fish species. It should be noted that 100 tons of frozen tunas were imported into Lebanon, but the species were also not specified (Table 16).

Table 16. Morocco's exports (ton) of fisheries products to Lebanon

HS	Description	2013	2014	2015	2016	2017
03.02.29	Flat fish, Other					1
03.02.79	Tilapias, catfish, carp, Other, Fresh or chilled		0			
03.02.89	Other fish, fresh or chilled	0				
03.03.49	Tunas, Other, Frozen					125
03.03.69	Fish of the families Bermacerotidae, etc., Other, Frozen	370	536	223	243	349
03.03.89	Other fish, Frozen					22
03.04.39	Fish fillets, Other, fresh, chilled or frozen		0			
03.04.49	Fresh or chilled fillets of other fish		0	0		
03.06.16	Cold-water shrimps and prawns, Frozen		0			
03.06.19	Other Crustaceans, Frozen		0	0		
03.07.59	Octopus, Other, Frozen				9	
16.04.13.10	Sardines in airtight metal containers	1,525	2,188	2,147	1,541	1,968
16.04.13.90	Sardines, Other, prepared or preserved	0	0	0	0	20
16.04.14.10	Tunas in airtight metal containers	0	0	0		0
16.04.15.00	Mackerel, prepared or preserved	0				
16.04.16.00	Anchovies, prepared or preserved	3	4	3	1	1
16.04.20.00	Not translated, Other prepared or preserved fish	0	0	0	1	2
16.05.29.00	Shrimps and prawns, Other, Prepared or preserved	0	0			

Lebanon's imports from Argentina are all in the form of frozen fish (whole or fillets). Customs data identified only hake and tilapias. Hake has been gaining favourability in the past few years due to the fact that some Lebanese abstain from consuming catfish (Pangasius spp.) due to religious reasons. In addition, Lebanese Army deleted catfish (Pangasius spp.) from its menu couple of years ago. Frozen shrimps are also imported from Argentina (Table 17).

Table 17. Argentina's exports (ton) of fisheries products to Lebanon

HS	Description	2013	2014	2015	2016	2017
03.03.29	Tilapias, catfish, carp, eels, Other, Frozen	287	469	375	428	345
03.03.39	Other Flat Fish, Frozen	102				
03.03.49	Tunas, Other, Frozen			27		
03.03.66	Hake, Frozen	547	298	451	756	405
03.03.68	Blue whitings, Frozen			54		
03.03.69	Fish of the families Bermacerotidae, etc., Other, Frozen	356	568	352	459	218
03.03.89	Other fish, Frozen				81	84
03.04.39	Fish fillets, Other, fresh, chilled or frozen				1	
03.04.69	Other fillets, Frozen		27	24		2
03.04.74	Hake, fillets, frozen			2		
03.04.79	Other fish fillet, Frozen	164				537
03.06.16	Cold-water shrimps and prawns, Frozen	30	13	1	4	
03.06.17	Other shrimps and prawns, frozen	106	165	29	44	125
03.07.49	Not Translated, Other, Molluscs					2
03.07.99	Other Molluscs, other			1		

Imports from the United Kingdom (Table 18) show that Atlantic and Pacific salmon represent around 95% of the traded items. Furthermore, Table 18 shows that Lebanon imports many niche items from the UK particularly mussels.

Table 18. United Kingdom exports (ton) of fisheries products to Lebanon

HS	Description	2013	2014	2015	2016	2017
03.02.11	Trout, fresh or chilled		0			
03.02.13	Pacific salmon, fresh or chilled	542	306	249	243	265
03.02.14	Atlantic salmon, fresh or chilled	415	412	487	529	684
03.02.19	Other Salmonidae, fresh or chilled			0		
03.02.23	Plaice, fresh or chilled	11	7	7	9	12
03.02.29	Other Flat Fish, Fresh or chilled	0	0	0	1	1
03.02.31	Albacore or longfinned tunas, fresh or chilled	0				
03.02.32	Yellowfin tunas. fresh or chilled	0				
03.02.39	Tunas, Other, fresh or chilled	0	2	1		
03.02.43	Sardines, fresh or chilled			0		
03.02.90	Liver, eggs, fins, tails, etc, fresh or chilled	0	0	0		
03.03.19	Other Salmonidae, Frozen				0	0
03.03.25	Carp, Frozen	0				
03.04.39	Fish fillets, Other, fresh, chilled or frozen				3	2
03.04.41	Albacore or longfinned tunas, Frozen	50	44	15	4	1
03.04.44	Fish of families Bermacerotidae, etc, Fresh or chilled					1
03.04.49	Fresh or chilled fillets of other fish	0	1	0	0	1
03.04.59	Other, fresh or chilled		0			0
03.04.71	Cod, fillets, Frozen	0	0	1	1	0
03.04.72	Cod, fillets, Frozen			0	0	0
03.04.81	Pacific salmon, fillets. frozen				0	
03.04.99	Not Translated, Other, Frozen	0			0	0
03.05.41	Pacific salmon, Smoked	5	1	0	0	0
03.05.49	Other Smoked fish, including fillets			0	0	0
03.05.69	Fish, salted but not dried or smoked and fish in brine, Other	0	0			
03.05.79	Fish fins, heads, tails, maws and other edible fish offal, Other	1				
03.06.12	lobsters, Frozen					0
03.06.14	Crabs, Frozen	0				
03.06.15	Norway lobsters, Frozen	1	2		2	
03.06.16	Cold-water shrimps and prawns, Frozen		0			
03.06.21	N/A Crustaceans, Frozen	0				
03.06.22	N/A Crustaceans, Frozen	0	0		0	
03.06.24	N/A Crustaceans, Frozen	1	0	0	2	
03.06.25	N/A Crustaceans, Frozen	0	0	0	0	
03.06.27	N/A Crustaceans, Frozen	0		0	0	
03.06.29	N/A Crustaceans, Frozen	0	0			
03.06.31	Not translated, Crabs, Frozen				0	
03.06.33	Not translated, Crabs, Frozen					3
03.06.34	Not translated, Crabs, Frozen					0
03.06.35	Not translated, Crabs, Frozen					0

HS	Description	2013	2014	2015	2016	2017
03.07.11	Oysters, Live, fresh of chilled	0	0	0	1	1
03.07.19	Oysters, Other				0	
03.07.21	Scallops, Live, fresh of chilled	1	0	0	0	
03.07.29	Scallops, Other	1	1	1	2	0
03.07.31	Mussels, Live, fresh of chilled	5	8	9	9	10
03.07.39	Mussels, Other	0		0		
03.07.49	Not Translated, Other, Molluscs				1	
03.07.51	Octopus, Frozen	0	0	0		0
03.07.59	Octopus, Other, Frozen				0	1
03.07.71	Clams, Live, fresh of chilled	0				
03.07.99	Molluscs, Other			0		
16.04.11.00	Salmon, Prepared or preserved			0	0	0
16.04.13.10	Sardines in airtight metal containers	0	0	0		0
16.04.14.10	Tunas in airtight metal containers	0	0	0	0	0
16.04.16.00	Anchovies, prepared or preserved	0				
16.04.20.00	Not translated, Other prepared or preserved fish	0	0	0	1	0
16.04.31.00	Caviar. Prepared or preserved		0			
16.04.32.00	Caviar substitutes, Prepared or preserved	0				
16.05.10.00	Crab, Prepared or preserved	0	0	1	0	0
16.05.29.00	Shrimps and prawns, Other, Prepared or preserved				0	
16.05.30.00	lobster, Prepared or preserved		0			
16.05.40.00	Other crustaceans, Prepared or preserved		0			
16.05.51.00	Oysters, Prepared or preserved	0				
16.05.52.00	Scallops, Prepared or preserved	0	0	1	1	1
16.05.53.00	Mussels, Prepared or preserved	4	5	4	4	4
16.05.55.00	Octopus, prepared or preserved					0

Frozen shrimps and prawns represent around two thirds of India's exports of fisheries products to Lebanon (Table 19). Lebanon also imports some canned/prepared or preserved products from India e.g. mussels, octopus, lobsters and clams.

Table 19. India's exports (ton) of fisheries products to Lebanon

HS	Description	2013	2014	2015	2016	2017
03.01.19	live fish, other	0	1	1		
03.02.19	Other Salmonidae, fresh or chilled	0			1	1
03.02.29	Other Flat Fish, Fresh or chilled	10	7	4	3	41
03.02.89	Other fish, fresh or chilled		0			1
03.03.49	Other Tunas, Frozen				1	
03.03.54	Jack and horse mackerel, Frozen		19	3		
03.03.63	Cod, Frozen	37	23			41
03.03.69	Fish of the families Bermacerotidae, etc., Other, Frozen		20	2	26	
03.04.39	Fish fillets, Other, fresh, chilled or frozen			0		
03.04.59	Other, fresh or chilled		0			
03.04.71	Haddock, Fillets, Frozen		25			
03.06.11	Rock lobster and other sea crawfish, Frozen	4	5	6		2
03.06.12	Lobsters, Frozen			0	6	
03.06.16	Cold-water shrimps and prawns, Frozen	13	56		17	
03.06.17	Other shrimps and prawns, frozen	313	487	350	430	661
03.06.19	Other Crustaceans, Frozen	10	32	4	16	9
03.06.24	N/A Crustaceans, Frozen			0		
03.06.26	N/A Crustaceans, Frozen	3	0	9		
03.06.27	N/A Crustaceans, Frozen		10	1		
03.06.29	N/A Crustaceans, Frozen	5	4	9	9	
03.07.43	Not Translated, Crustaceans Frozen					30
03.07.49	Not Translated, Other, Molluscs	28	60	37	23	51
03.07.59	Octopus, Other, Frozen	58	35	47	44	84
03.07.99	Other Molluscs, other		10		0	0
16.04.20.00	Not translated, Other prepared or preserved fish	27	48	53	66	43
16.05.10.00	Crab, prepared or preserved			59		66
16.05.21.00	Shrimps and prawns, Not in airtight container, prepared or preserved		21	4	3	17
16.05.29.00	Shrimps and prawns, Other, Prepared or preserved	50	20	23	44	72
16.05.30.00	Lobster, Prepared or preserved			6	3	7
16.05.59.00	Clams, cockles and arkshell, Other, Prepared or preserved	47	31		0	
16.05.69.00	Other aquatic invertebrates, Prepared or preserved		25			

Around 90% of imports from Norway (Table 20) are salmon (Atlantic and Pacific) which are mainly fresh or chilled and also some frozen fillets.

Table 20. Norway's exports (ton) of fisheries products to Lebanon

HS	Description	2013	2014	2015	2016	2017
03.02.11	Trout, fresh or chilled				1	0
03.02.13	Pacific salmon, fresh or chilled	113	136	103	137	207
03.02.14	Atlantic salmon, fresh or chilled	112	460	639	627	633
03.02.19	Other Salmonidae, fresh or chilled	2	0	0	0	1
03.02.23	Sole, fresh or chilled		0			
03.02.29	Other flat fish, fresh or chilled	1	3	0		
03.02.51	Cod, fresh or chilled	0	0	0	0	0
03.02.90	Liver, egg, fins, tails, etc. fresh or chilled	0				
03.03.13	Atlantic salmon, Frozen					0
03.03.19	Other Salmonidae, Frozen					10
03.03.29	Tilapias, catfish, carp, eels, Other, Frozen	0				0
03.03.89	Other Fish, Frozen		0			
03.04.41	Pacific salmon, fillets. frozen	0	1	87	55	18
03.04.49	Fresh or chilled fillets of other fish	0	0	0		
03.04.71	Cod, fillets, frozen	0				
03.04.81	Pacific salmon, fillets. frozen			0		1
03.04.86	Herrings, fillets, Frozen			0		
03.04.95	Fish of the families Bermacerotidae, etc., Fillets, Frozen					0
03.04.99	Not Translated, Other, Frozen	16	56	80	103	13
03.05.41	Pacific salmon, Fish fillets, dried, salted or in brine	1	1	0	0	3
03.05.42	Herrings, fillets, dried, salted or in brine			0	0	0
03.05.43	Trout, Smoked		0			
03.05.49	Other Smoked fish, including fillets	0	0	0		
03.05.69	Other Fish, salted			0		
03.06.14	Crabs, Frozen	0				
03.06.19	Other Crustaceans, Frozen	0			0	
03.06.21	N/A Crustaceans, Frozen	0				
03.06.24	N/A Crustaceans, Frozen			0		
03.06.26	N/A Crustaceans, Frozen	0				
03.07.11	Oysters, Live, fresh of chilled		0			
03.07.21	Scallops, Live, fresh or chilled	1	1	1	1	0
03.07.29	Scallops, Other	0	0		0	
03.07.31	Mussels, Live,, fresh or chilled	1	0			
03.07.39	Mussels, Other	0				
03.08.29	Jellyfish	1	1	2		
16.04.11.00	Salmon, Prepared or preserved			0		
16.04.16.00	Anchovies, Prepared or preserved					
16.04.20.00	Not translated, Other prepared or preserved fish	0		0		
16.04.31.00	Caviar, prepared or preserved					0
16.04.32.00	Caviar substitutes, prepared or preserved		0	0		
16.05.10.00	Crab, prepared or preserved	0				

Mauritania is another major trading partner that mainly exports fresh or chilled flat fish and frozen tunas (Table 21).

Table 21. Mauritania's exports (ton) of fisheries products to Lebanon

HS	Description	2013	2014	2015	2016	2017
03.02.23	Sole, Fresh or chilled				0	
03.02.29	Other Flat Fish, Fresh or chilled	291	297	334	277	258
03.02.79	Tilapias, catfish, carp, Other, Fresh or chilled				3	
03.02.89	Other Fish, Fresh or chilled	32	4			
03.02.90	Liver, eggs, fins, tails, etc., fresh or chilled	2				
03.03.11	Sockeye salmon, Frozen			9		
03.03.19	Other Salmonidae, Frozen	26		14	1	
03.03.29	Tilapias, catfish, carp, eels, Other, Frozen				28	
03.03.39	Other Flat Fish, Frozen		24		49	
03.03.49	Other Tunas, Frozen				127	209
03.03.69	Fish of the families Bermacerotidae, etc., Other, Frozen			148		28
03.03.89	Other Fish, Frozen				57	
03.03.90	Not translated, Frozen	0	4		6	
03.04.39	Fish fillets, Other, fresh, chilled or frozen				0	
03.04.49	Fresh or chilled fillets of other fish				0	
03.04.69	Other fillets, Frozen	0				
03.04.99	Not Translated, Other, Frozen				0	
03.06.22	N/A Crustaceans	0			0	

I- imports of fresh, chilled or frozen fisheries products

Data covering the period 2013- 2017 reveals that the first ten categories of imported fresh, chilled and frozen fisheries products, represent around 84% of the imports for each year. Moreover, the first 20 items represent more than 95% of imports for each year (Table 22). It should again be noted that Lebanese Customs data are not well segregated and identified; and for few items, they were not translated in the first place or there is even some HS codes that are not mentioned in the Customs "National Tariff" description.
(http://www.customs.gov.lb/customs/Tariffs/National/hs4_hs6.asp?hs2_cd=03&hs=03044200#03044200).

The most important category is "Other fish, fresh or chilled" (HS 03.02.89.00) which, due to the species mix nature of imported consignments, probably includes demersal fish and the main aquaculture products seabass, seabream and meagre. Looking into the exporting countries (Table 23), it is clear that Turkey dominates the scene with Egypt following. Furthermore, Senegal used to export considerable amounts that stopped during the past 3 years.

The second most important imported item is "Other Flat fish "Pleuronectidae (righteye flounders), Bothidae (lefteye flounders), Cynoglossidae (tonguefishes), Soleidae (soles), Scophthalmidae (turbots) and Citharidae (Largescale flounders), excluding livers and roes" HS: 03.02.29. Table 24 shows that Egypt is the main supplier followed by Mauritania and Senegal. India and Yemen also supply some quantities of flatfish. Rest of the countries supply nominal amounts except for Tunisia that supplied 30 ton in 2017.

India is the lead exporter of Frozen "Other shrimps and prawns HS 03.06.17.00". It is followed by Vietnam, Iran, and Ecuador. Argentina and Pakistan also export important quantities of frozen shrimps (Table 25). Many countries also export nominal quantities of frozen shrimps. Frozen shrimps seem to be the only frozen seafood that is showing an upward trend in imports.

Vietnam is practically the only country that exports Frozen Fillets of Catfish (Panagasius spp., Silurus spp., Clarias spp., Ictalurus spp.) HS: 03.04.62.00 (Table 26) with token quantities from Peru, Oman, Egypt and New Zealand; which could be merely re-exports. It should be noted however, that the Customs data include another category of Fresh or Chilled Catfish (Panagasius spp., Silurus spp., Clarias spp., Ictalurus spp.) HS: 03.04.32, which involved nearly 150 tons in 2016 and were imported only from Vietnam. A downward trend in imports is obvious that is probably due to "health" and fish quality issues and due to increased demand for the cheap aquaculture seabass and seabream.

Table 22. Most important imports of fresh, chilled or frozen fisheries products by category, family or species.

2013			2014			2015		
HS	Tons		HS	Tons		HS	Tons	
03.02.89.00	5,741	Other fish, fresh or chilled	03.02.89.00	5,415	Other fish, fresh or chilled	03.02.89.00	6,509	Other fish, fresh or chilled
03.04.62.00	2,743	Catfish, Frozen fillets	03.04.62.00	2,819	Catfish, Frozen fillets	03.02.29.00	2,345	Other Flat Fish, Fresh or chilled
03.02.29.00	2,059	Other Flat Fish, Fresh or chilled	03.02.29.00	2,741	Other Flat Fish, Fresh or chilled	03.04.62.00	2,293	Catfish, Frozen fillets
03.03.69.00	1,776	Fish of the families Bermacerotidae, etc., Other, Frozen	03.03.69.00	1,910	Fish of the families Bermacerotidae, etc., Other, Frozen	03.03.69.00	1,344	Fish of the families Bermacerotidae, etc., Other, Frozen
03.06.17.00	968	Other shrimps and prawns, frozen	03.06.17.00	1,347	Other shrimps and prawns, frozen	03.06.17.00	1,229	Other shrimps and prawns, frozen
03.03.66.00	873	Hake, Frozen	03.03.66.00	1,062	Hake, Frozen	03.02.14.00	1,138	Atlantic salmon, fresh or chilled
03.02.13.00	716	Pacific salmon, fresh or chilled	03.02.14.00	922	Atlantic salmon, fresh or chilled	03.03.66.00	623	Hake, Frozen
03.04.89.00	549	Not Translated, Other, fillets, Frozen	03.03.29.00	633	Other Frozen	03.04.89.00	604	Not Translated, Other, fillets, Frozen
03.02.14.00	536	Atlantic salmon, fresh or chilled	03.06.16.00	573	Cold-water shrimps and prawns, Frozen	03.03.29.00	521	Other Frozen
03.04.99.00	516	Not Translated, Other, Frozen	03.04.69.00	571	Other fillets, Frozen	03.06.16.00	458	Cold-water shrimps and prawns, Frozen
03.04.69.00	367	Other fillets, Frozen	03.04.89.00	562	Not Translated, Other, fillets, Frozen	03.04.99.00	446	Not Translated, Other, Frozen
03.03.29.00	338	Other Frozen	03.02.13.00	451	Pacific salmon, fresh or chilled	03.02.13.00	354	Pacific salmon, fresh or chilled
03.04.32.00	317	Catfish, fillets	03.04.99.00	435	Not Translated, Other, Frozen	03.07.49.00	278	Not Translated, Other, Molluscs
03.07.49.00	277	Not Translated, Other, Molluscs	03.07.49.00	307	Not Translated, Other, Molluscs	03.04.69.00	169	Other fillets, Frozen
03.04.39.00	247	Fish fillets, Other, fresh, chilled or frozen	03.04.32.00	143	Catfish, fillets	03.03.39.00	168	Flat fish, other, Frozen
03.03.39.00	246	Other Flat Fish, Frozen	03.07.59.00	129	Octopus, Other, Frozen	03.07.59.00	141	Octopus, Other, Frozen
03.06.16.00	222	Cold-water shrimps and prawns, Frozen	03.03.39.00	97	Other Flat Fish, Frozen	03.04.32.00	135	Catfish, fillets
03.04.79.00	215	Other fish fillet, Frozen	03.04.39.00	91	Fish fillets, Other, fresh, chilled or frozen	03.04.39.00	130	Fish fillets, Other, fresh, chilled or frozen
03.03.89.00	118	Other fish, Frozen	03.06.19.00	63	Other Crustaceans, Frozen	03.04.93.00	104	Tilapia, Catfish, frozen
03.07.59.00	92	Octopus, Other, Frozen	03.03.53.00	54	Sardines, Frozen	03.04.41.00	103	Pacific salmon, fillets, fresh, chilled or frozen

2016			2017		
HS	Tons		HS	Tons	
03.02.89.00	7,538	Other fish, fresh or chilled	03.02.89.00	7,716	Other fish, fresh or chilled
03.02.29.00	2,972	Other Flat Fish, Fresh or chilled	03.02.29.00	2,958	Other Flat Fish, Fresh or chilled
03.04.62.00	2,204	Catfish, Frozen fillets	03.06.17.00	1,866	Other shrimps and prawns, frozen
03.06.17.00	1,417	Other shrimps and prawns, frozen	03.04.62.00	1,623	Catfish, Frozen fillets
03.02.14.00	1,209	Atlantic salmon, fresh or chilled	03.02.14.00	1,387	Atlantic salmon, fresh or chilled
03.03.66.00	1,098	Hake, Frozen	03.03.66.00	1,245	Hake, Frozen
03.03.69.00	1,045	Fish of the families Bermacerotidae, etc., Other, Frozen	03.03.69.00	989	Fish of the families Bermacerotidae, etc., Other, Frozen
03.04.89.00	558	Not Translated, Other, fillets, Frozen	03.04.79.00	549	Other fish fillet, Frozen
03.03.29.00	464	Other Frozen	03.02.13.00	472	Pacific salmon, fresh or chilled
03.04.99.00	414	Not Translated, Other, Frozen	03.03.49.00	440	Tunas, Other, Frozen
03.02.13.00	380	Pacific salmon, fresh or chilled	03.03.29.00	408	Other Frozen
03.07.49.00	314	Not Translated, Other, Molluscs	03.04.89.00	397	Not Translated, Other, fillets, Frozen
03.06.16.00	299	Cold-water shrimps and prawns, Frozen	03.04.99.00	362	Not Translated, Other, Frozen
03.04.93.00	284	Tilapia, Catfish, frozen	03.07.49.00	327	Not Translated, Other, Molluscs
03.03.49.00	280	Tunas, Other, Frozen	03.07.59.00	284	Octopus, Other, Frozen
03.03.89.00	280	Other fish, Frozen	03.04.69.00	230	Other fillets, Frozen
03.07.59.00	274	Octopus, Other, Frozen	03.06.16.00	208	Cold-water shrimps and prawns, Frozen
03.04.79.00	217	Other fish fillet, Frozen	03.04.93.00	204	Tilapia, Catfish, frozen
03.04.39.00	159	Fish fillets, Other, fresh, chilled or frozen	03.03.89.00	199	Other fish, Frozen
03.04.39.00	148	Catfish, fillets	03.04.81.00	126	Pacific salmon, fillets. frozen

Table 23. Main exporting countries of "Other fish, fresh or chilled" (HS 03.02.89.00)

		2013	2014	2015	2016	2017
HS	Country	Tons	Tons	Tons	Tons	Tons
03.02.89.00	Turkey	5,352	5,221	6,422	7,239	7,402
Other fish, fresh or chilled	Egypt	246	121	78	288	309
	Senegal	108	64	9	0	
	Mauritania	32				
	France	1	0	1	0	0
	Tunisia	1				4
	Mauritania		4			
	Bangladesh		1		10	
	Oman	0				
	India		0			1
	Yemen		0			
	Iran		4			
	United Arab Emirates	0				
	Netherlands	0				
	Morocco	0				
	Total	**5,740**	**5,415**	**6,509**	**7,538**	**7,718**

Table 24. Main exporting countries of "Other Flat fish "Pleuronectidae (righteye flounders), Bothidae (lefteye flounders), Cynoglossidae (tonguefishes), Soleidae (soles), Scophthalmidae (turbots) and Citharidae (Largescale flounders), excluding livers and roes" HS: 03.02.29

HS						
03.02.29.00	Country	2013	2014	2015	2016	2017
Other Flat fish	Egypt	1,705	2,132	1,568	2,283	2,228
	Senegal	313	283	423	401	374
	Mauritania	148	297	334	277	258
	India	38	7	4	3	41
	Yemen		13	11		
	Tunisia	30	0	2	0	39
	Guinea	3	0		2	5
	Libya	5			1	5
	Ghana	2	3		1	2
	France	0	0	0	1	2
	Turkey	1				1
	United Kingdom	1	0	0	1	1
	Bangladesh	1		1		1
	Morocco					1
	Norway		3	0	0	0
	Iran				1	0
	Netherlands	0	0	1	0	0
	Saudi Arabia		1	0	0	
	Other	0	0	0	0	0
	Total	**2,247**	**2,741**	**2,345**	**2,972**	**2,958**

Table 25. Main exporting countries of Frozen "Other shrimps and prawns HS 03.06.17.00".

		2013	2014	2015	2016	2017
HS	Country	Tons	Tons	Tons	Tons	Tons
03.06.17.00	India	313	487	350	430	661
Other shrimps and prawns, frozen	Viet Nam	285	331	331	390	338
	Iran	133	303	260	385	450
	Ecuador	21	22	21	83	204
	Argentina	106	165	29	44	125
	Pakistan	80	33	160	55	82
	Thailand	27	2	8	7	3
	Saudi Arabia		3	21		
	Bangladesh				13	
	China	2		16		
	Kuwait	1	1			
	Malaysia			16		
	Bangladesh			12		
	Philippines	0		0		
	Japan		1	0	0	
	Indonesia		0	6	4	1
	France		0	0	1	1
	Canada		1			
	Turkey				4	1
	Netherlands		0	0	0	
	United Arab Emirates			2		
	Cameroon					0
	Venezuela					0
	Australia					0
	Guatemala					0
	Madagascar					0
	Colombia					0
	United States					0
	Suriname					0
	Mozambique					0
	Spain			0		0
	Brazil				0	
	Colombia				0	0
	Iraq				0	
	Guinea			0	0	
	Malaysia		0			
	Russian Federation	0				
	South Africa		0	0		
	Liberia		0			
	Equatorial Guinea		0			
	Kenya		0			
	Qatar			0		
	Sierra Leone			0		
	Nigeria	0				
	Armenia	0				
	Total	968	1,347	1,229	1,417	1,866

Table 26. Main exporting countries of Frozen Fillets of Catfish (Panagasius spp., Silurus spp., Clarias spp., Ictalurus spp.) HS: 03.04.62.00

		2013	2014	2015	2016	2017
HS	Country	Tons	Tons	Tons	Tons	Tons
03.04.62.00 Frozen fillets of Catfish	Viet Nam	2,736	2,813	2,292	2,204	1,575
	Peru					46
	Oman	7				
	Egypt		5			
	New Zealand		1	1		
	Equatorial Guinea					0
	Total	2,743	2,819	2,293	2,204	1,623

Furthermore, Lebanon also imports couple of hundred tons a year of "Frozen Cold-water shrimps and prawns HS: 03.06.16.00" mainly from Vietnam, Iran, Saudi Arabia, Pakistan, and India (Table 27). There is probably a species mix-up since the top exporters produce shrimps in their warm waters.

Table 27. Main exporting countries of "Frozen Cold-water shrimps and prawns HS: 03.06.16.00".

		2013	2014	2015	2016	2017
HS	Country	Tons	Tons	Tons	Tons	Tons
03.06.16.00 Frozen Cold-water shrimps and prawns	Viet Nam	38	83	214	219	171
	Iran	47	190	122		12
	Saudi Arabia	0	76	102	59	21
	Pakistan	93	130	18	0	1
	India	13	56		17	
	Argentina	30	13	1	4	
	United Arab Emirates	0			12	
	Egypt					1
	Greenland					1
	Japan	0		1	1	0
	Bangladesh		1		0	
	Cameroon					0
	Belgium					0
	Tunisia		0			0
	Thailand					0
	France					0
	Philippines	0		0	0	0
	United States				0	
	France	0	0	0	0	
	Ecuador		24			
	Thailand				0	
	Canada				0	
	Qatar	0	0		0	
	Iraq			0	0	
	Morocco		0			
	United Kingdom		0			
	Bahamas		0			
	Brazil		0			
	Armenia		0			
	Total	222	573	458	299	208

A steady increase of imports of "Atlantic salmon (Salmo salar) and Danube salmon (Hucho hucho) HS: 03.02.14.00 has been observed (reaching 1,387 tons in 2017). These imports are mainly used to supply the smoking/slicing industry and the new fad of sushi restaurants. It is also claimed that many health coconscious Lebanese are consuming some amounts of raw salmon. The exporting countries are few but the bulk comes from the United Kingdom and Norway with lesser quantities imported from Faroe Islands, Ireland, Chile and Canada (Table 28).

Table 28. Main exporting countries of "Atlantic salmon (Salmo salar) and Danube salmon (Hucho hucho) HS: 03.02.14.00

		2013	2014	2015	2016	2017
HS	Country	Tons	Tons	Tons	Tons	Tons
03.02.14.00 Atlantic salmon	United Kingdom	415	412	487	529	648
	Norway	112	460	639	627	633
	Faroe Islands	2	41		31	21
	Ireland	6	10	12	9	10
	Chile				10	32
	Canada					8
	Iceland					0
	France	0	0		0	
	Denmark				3	
	United States			0		
	Total	**536**	**922**	**1,138**	**1,209**	**1,387**

The smoking and sushi industries also utilizes Pacific salmon (Oncorhynchus nerka, Oncorhynchus gorbuscha, Oncorhynchus keta, Oncorhynchus tschawytscha, Oncorhynchus kisutch, Oncorhynchus masou and Oncorhynchus rhodurus), HS: 03.02.13. These are also predominantly imported from the United Kingdom and Norway. It should be noted that the quantities imported from Qatar are definitely re-exports since Qatar is a desert hot state (Table 29).

Table 29. Main exporting countries of Pacific salmon (Oncorhynchus nerka, Oncorhynchus gorbuscha, Oncorhynchus keta, Oncorhynchus tschawytscha, Oncorhynchus kisutch, Oncorhynchus masou and Oncorhynchus rhodurus), HS: 03.02.13.

		2013	2014	2015	2016	2017
HS	Country	Tons	Tons	Tons	Tons	Tons
03.02.13.00 Pacific salmon	United Kingdom	542	306	249	243	265
	Norway	113	136	103	137	207
	Denmark	53	7	0		
	Netherlands					0
	Niue			2		
	France	0	2	1	0	0
	Iceland	8				
	Qatar		0			
	Total	**716**	**451**	**354**	**380**	**472**

To the above, we must add 50 - 100 tons annual imports (only 19 tons for 2017) of Fresh or chilled fillets of Pacific salmon (Oncorhynchus nerka, Oncorhynchus gorbuscha, Oncorhynchus keta, Oncorhynchus tschawytscha, Oncorhynchus kisutch, Oncorhynchus masou and Oncorhynchus rhodurus), Atlantic salmon (Salmo salar) and Danube salmon (Hucho hucho) HS 03.04.41 (Table 30). The main sources of these pacific salmon fresh or chilled fillets are Norway and the United Kingdom. It should also noted that the data includes imports from warm countries like Kuwait, United Arab Emirates, Qatar, and Nigeria; which are definitely re-exports from those countries.

Table 30. Main exporting countries of Fresh or chilled fillets of Pacific salmon (Oncorhynchus nerka, Oncorhynchus gorbuscha, Oncorhynchus keta, Oncorhynchus tschawytscha, Oncorhynchus kisutch, Oncorhynchus masou and Oncorhynchus rhodurus), Atlantic salmon (Salmo salar) and Danube salmon (Hucho hucho) HS 03.04.41

		2013	2014	2015	2016	2017
HS	Country	Tons	Tons	Tons	Tons	Tons
03.04.41.00	Norway	0	1	87	55	18
Pacific salmon fillets	United Kingdom	50	44	15	4	1
	Poland	3				
	France	0	0	0	0	0
	Chile				0	
	Italy			0		
	Canada					0
	Iceland		0			
	United States		0			
	Kuwait					0
	United Arab Emirates				0	
	Qatar		0			
	Nigeria		0			
	Total	**54**	**46**	**103**	**59**	**19**

Frozen Hake (Merluccius spp., Urophycis spp.) HS: 03.03.66 ranks also among the important species. Around 1,000 tons are imported yearly from mainly from Argentina and the United States. Little lesser amounts are imported from Peru, Spain, and Uruguay (Table 31). It is claimed by some traders that the increase in demand for hake is partially due to the fact that the Lebanese army replaced Pangasius with Hake.

Table 31. Main exporting countries of Frozen Hake (Merluccius spp., Urophycis spp.) HS: 03.03.66.

		2013	2014	2015	2016	2017
HS	Country	Tons	Tons	Tons	Tons	Tons
03.03.66.00	Argentina	547	298	451	756	405
Frozen Hake	United States	169	564		195	381
	Peru	55	78	144		227
	Spain		27	27	80	102
	Uruguay				54	81
	China					27
	Senegal					22
	Viet Nam				13	
	Equatorial Guinea				0	
	Chile	103				
	Guinea	0		0		
	Ecuador		54			
	Chile		41			
	Liberia		0			
	Equatorial Guinea		0			
	South Africa			0		
	Total	**873**	**1,062**	**623**	**1,098**	**1,245**

Frozen cods, hakes and codlike species grouped under "Frozen Fish of the families Bermacerotidae (Cod), Euclichthyidae (Cod), Gadidae (cod) , Macrouridae (Grenadiers or rattails), Melanonidae (Pelagic cod), Merlucciidae (hake), Moridae (codlings, hakelings, and moras) and Muraenolepididae (eel cods), excluding livers and roes, Other, HS: 03.03.69.00" are another important group of imported fish. They are imported from 23 countries that are led by Argentina, Morocco, Oman, Spain, Yemen, Republic of Korea, Mauritania and Uruguay (Table 32).

Table 32. Main exporting countries of "Frozen Fish of the families Bermacerotidae (Cod), Euclichthyidae (Cod), Gadidae (cod) , Macrouridae (Grenadiers or rattails), Melanonidae (Pelagic cod), Merlucciidae (hake), Moridae (codlings, hakelings, and moras) and Muraenolepididae (eel cods), excluding livers and roes, Other, HS: 03.03.69.00".

		2013	2014	2015	2016	2017
HS	Country	Tons	Tons	Tons	Tons	Tons
03.03.69.00	Argentina	356	568	352	459	218
Frozen Cods and Hakes	Morocco	370	536	223	243	349
	Oman	602	135	156	53	54
	Spain	275	335	201	100	74
	Yemen	50	267	188		
	Korea, Republic of	74	27		54	54
	Mauritania			148		28
	Uruguay					103
	Somalia			49	43	26
	Ecuador					25
	Senegal					5
	Tunisia				66	
	India		20	2	26	
	United States			24		
	China	25				
	Egypt		20			
	United Arab Emirates	20				
	Portugal	4			2	
	Equatorial Guinea	0				0
	Japan		2			
	Ghana	0				
	Burkina Faso		0			
	Korea, Democratic Rep					27
	Indonesia					25
	Total	**1,776**	**1,910**	**1,344**	**1,045**	**989**

There are couple of unidentified or specified Molluscs items under Molluscs, whether in shell or not, live, fresh, chilled, frozen, dried, salted or in brine; smoked Molluscs HS: 03.07.41 (no description available) and HS: 03.07.49 which denotes Other Molluscs. From the list of imports by countries, it seems that HS: 03.07.41 refers to warm countries while 03.07.49 refers to colder waters. HS 03.07.41 items are predominantly from Turkey; while HS 03.07.41 items are imported from china, Taiwan, Pakistan, India, Yemen and Thailand (Table 33)

Table 33. Main exporting countries of Molluscs.

		2013	2014	2015	2016	2017
HS	Country	Tons	Tons	Tons	Tons	Tons
03.07.41.00	Turkey	90	35	27	42	
Not Available, Molluscs	France	0	0	0		
	Yemen	1				
	Spain	0	0			
	United Arab Emirates	0				
	Total	**91**	**35**	**27**	**42**	**0**

		2013	2014	2015	2016	2017
HS	Country	Tons	Tons	Tons	Tons	Tons
03.07.49.00						
Other Molluscs	China	118	104	111	79	101
	Taiwan	32	57	29	43	70
	Pakistan	44	60	28	68	47
	India	28	60	37	23	51
	Yemen			10	18	16
	Turkey	38				
	Thailand	1	1	19		10
	Egypt	14	14	13	16	5
	Peru				21	
	Indonesia		1	1	20	7
	Malaysia		10	17		
	Viet Nam	3	1	0	16	10
	United Arab Emirates		1	8		
	Argentina					2
	Somalia			8		
	Spain			3		0
	Malaysia				2	
	United Kingdom				1	
	Japan		0	0	0	0
	Tunisia		0	0		
	Netherlands				0	
	France	0		0		0
	Total	**277**	**307**	**278**	**314**	**327**

The import of Frozen Tunas (of the genus Thunnus), skipjack or stripe-bellied bonito (Euthynnus (Katsuwonus) pelamis) HS: 03.03.40 picked up during 2016 (280 tons) and 2017 (440 tons) (Table 34). These were mainly imported from Mauritania and Morocco with lesser quantities imported from Korea, Yemen and Uruguay. This is the second frozen seafood that showed increase in imports probably due to the increase in demand by sushi restaurants.

Table 34. Main exporting countries of Frozen Tunas (of the genus Thunnus), skipjack or stripe-bellied bonito (Euthynnus (Katsuwonus) pelamis) HS: 03.03.40

		2013	2014	2015	2016	2017
HS	Country	Tons	Tons	Tons	Tons	Tons
03.03.49.00	Mauritania				127	209
Frozen Tunas	Morocco					125
	Korea, Republic of				66	25
	Yemen				61	54
	Uruguay					28
	Tunisia				24	
	Argentina			27		
	Viet Nam		1	24		
	Indonesia			5	1	
	India				1	
	France		0	0		
	Ivory Coast					0
	Congo					0
	Iraq			0		
	Syrian Arab Republic	0	0			
	Sierra Leone		0			
	Liberia		0			
	Total	**0**	**1**	**56**	**280**	**440**

Unidentified frozen fish fillets HS: 03.04.79.00 showed also an upward import trend and were mainly imported from Argentina (Table 35). There are also other unidentified species of frozen fillets HS 03.04.89.00 that showed a decrease in imports in 2017 (397 ton) from the peak of 604 tons in 2015.

Table 35. Main exporting countries of Frozen Other fish fillet HS 03.04.79.00

		2013	2014	2015	2016	2017
HS	Country	Tons	Tons	Tons	Tons	Tons
03.04.79.00	Argentina	164			215	537
Other fish fillet, Frozen	New Zealand	1		3	2	8
	Canada					4
	Viet Nam	50				
	France					0
	Qatar			0	0	
	Iraq			0	0	0
	Libya					0
	Total	**215**		**3**	**217**	**549**

II- Preparations of fish or of crustaceans, molluscs or other aquatic invertebrates.

This category involves two Lebanese Customs Tariff Numbers:

a- 16.04: Prepared or preserved fish; caviar and caviar substitutes prepared from fish eggs.

b- 16.05: Crustaceans, Molluscs and other aquatic invertebrates, prepared or preserved.

a- Prepared or preserved fish; caviar and caviar substitutes prepared from fish eggs HS: 16.04. Lebanese Customs data show that Lebanon imported 7,699 tons of canned Tunas and around 2,480 tons of canned Sardines in 2017 i.e. more than 91% of this category. To this, we can add 849 tons of unspecified "Other prepared or preserved fish" (Table 36). However, it should be noted that the value of those 849 tons of "Other prepared or preserved fish" imported in 2017 was USD 4.4 million while the value of the 2,480 tons of canned Sardines was around USD 7 million. The whole import bill, for this category, was USD 47.5 million in 2017.

Table 36. Imports of "Prepared or preserved fish; caviar and caviar substitutes" HS: 16:04

		2013	2014	2015	2016	2017
HS	Description	Tons	Tons	Tons	Tons	Tons
16.04.14.10	Tunas in airtight metal containers	6,994	7,798	6,746	7,886	7,699
16.04.13.10	Sardines in airtight metal containers	2,083	2,854	2,400	1,979	2,480
16.04.20.00	Other prepared or preserved fish	688	769	834	894	849
16.04.32.00	Caviar substitutes, prepared from fish eggs.	34	32	43	42	47
16.04.15.00	Mackerel, whole or in pieces, but not minced, prepared or preserved	111	90	28	31	26
16.04.19.00	Not Translated, Other, Prepared or preserved	10	21	18	24	14
16.04.31.00	Caviar, prepared from fish eggs.	4	4	12	10	5
16.04.16.00	Anchovies, whole or in pieces, but not minced, prepared or preserved	6	9	9	8	3
16.04.17.00	Eels, whole or in pieces, but not minced, prepared or preserved	7	3	6	5	1
16.04.14.90	Tunas, Other, whole or in pieces, but not minced, prepared or preserved	0	1	8	3	2
16.04.13.90	Sardines, Other, whole or in pieces, but not minced, prepared or preserved	2	0	1	1	21
16.04.12.00	Herrings, whole or in pieces, but not minced, prepared or preserved	0	0	0	0	1
16.04.11.00	Salmon, whole or in pieces, but not minced, prepared or preserved	0	0	2	0	1
Total		**9,938**	**11,581**	**10,108**	**10,883**	**11,154**

When looking into the source of the most important imported "Prepared or preserved fish; caviar and caviar substitutes", we realize that although Lebanon imports canned Tunas from more than 51 countries, Thailand alone exported around 75% of canned Tunas to Lebanon in 2017 (Table 37). However, Lebanon imported 72 tons from Italy in 2017 at a cost of USD 0.9 million as compared to Vietnam's 1,000 tons at a cost of around USD 4 million.

Table 37. Largest exporting countries of "Tunas in airtight metal containers" HS: 16.04.14.10

		2013	2014	2015	2016	2017
HS	Country	Tons	Tons	Tons	Tons	Tons
16.04.14.10	Thailand	5,501	5,829	5,432	6,643	5,750
Tunas in airtight metal containers	Viet Nam	1,211	1,619	926	738	1,033
	China	109	141	172	192	466
	Tunisia		14	41	111	55
	Italy	24	35	62	74	72
	Turkey				43	12
	Iran		31	68	34	43
	Indonesia	33	49	17	33	65
	Oman	113	43		16	194
	Seychelles			24		
	Madagascar		33			
	Other countries	3	4	4	2	9
	Total	**6,994**	**7,798**	**6,746**	**7,886**	**7,699**

Moreover, for "Sardines in airtight metal containers" HS: 16.04.13.10, Morocco is the lead exporting country with around 79% of canned sardines exported to Lebanon (Table 38). However, the 21 tons exported by Portugal in 2017 did cost Lebanon around USD 127 thousand while the cost of 133 tons exported by China to Lebanon was only USD 345 thousand.

Table 38. Most import countries exporting "Sardines in airtight metal containers" HS: 16.04.13.10

		2013	2014	2015	2016	2017
HS	Country	Tons	Tons	Tons	Tons	Tons
16.04.13.10	Morocco	1,525	2,188	2,147	1,541	1,948
Sardines in airtight metal containers	Indonesia	40	54	19	239	340
	China	261	389	137	104	133
	Tunisia	139	118		39	20
	Thailand	86	88	76	26	15
	Portugal	29	14	14	27	21
	Oman					19
	Philippines	3	1	5	2	0
	France	1	1	1	0	1
	Turkey				1	3
	Other countries		1	1		
	Total	**2,083**	**2,854**	**2,400**	**1,979**	**2,480**

Lebanon also imports items classified by Lebanese Customs as "Other prepared or preserved fish" HS: 16.04.20.00. These are imported from several countries led by France, China and Thailand (Table xxx). This seems to be more of "specialty items" since the import bill reached, in 2017, USD 4.44 million for the 849 tons imported as compared to USD 34.6 million for 7,699 tons of canned tunas.

Table 39. Most import countries exporting Other prepared or preserved fish" HS: 16.04.20.00

		2013	2014	2015	2016	2017
HS	Country	Tons	Tons	Tons	Tons	Tons
16.04.20.00	France	190	169	194	230	258
Other	China	138	143	145	159	137
	Thailand	38	113	138	136	145
	Japan	38	40	72	76	57
	India	27	48	53	66	43
	Viet Nam	47	63	51	66	51
	Lithuania	54	50	40	60	70
	Denmark	27	24	24	32	27
	Malaysia	17	23	12	30	28
	Germany	39	42	46	14	1
	Estonia	20	22	15	9	23
	Spain	6	9	5	7	6
	Saudi Arabia	33	19	19	1	
	United Arab Emirates	9		12	5	
	Italy	3	2	2	1	1
	Morocco				1	2
	Philippines	1		3		
	United Kingdom				1	0
	Indonesia	0	0	1		
	United States		1			
	Other countries	1	1	2		
	Total	**688**	**769**	**834**	**894**	**849**

b- Crustaceans, Molluscs and other aquatic invertebrates, prepared or preserved HS: 16.05. Processed Crab, Shrimps, Cuttlefish & Squids seem to lead the list with more than 88% of imports of this category (Table 40).

Table 40. Imports of Crustaceans, Molluscs and other aquatic invertebrates, prepared or preserved HS: 16.05

		2013	2014	2015	2016	2017
HS	Description	Tons	Tons	Tons	Tons	Tons
16.05.10.00	Crab, prepared or preserved	308	309	345	401	325
16.05.29.00	Shrimps and prawns, Other, Prepared or preserved	244	282	273	393	283
16.05.54.00	Cuttle fish and squid, prepared or preserved	101	105	132	127	122
16.05.21.00	Shrimps and prawns, Not in airtight containers, prepared or preserved	112	130	177	54	165
16.05.59.00	Other Molluscs, prepared or preserved	127	125	50	90	56
16.05.69.00	Other aquatic invertebrates, prepared or preserved	7	34	2	59	1
16.05.53.00	Mussels, prepared or preserved	17	20	18	20	32
16.05.30.00	Lobster, prepared or preserved	10	15	16	12	17
16.05.40.00	Other crustaceans, prepared or preserved	12	13	15	8	6
16.05.55.00	Octopus, prepared or preserved	4	7	15	7	4
16.05.56.00	Calms, cockles and arkshell, prepared or preserved		1	0	2	2
16.05.52.00	Scallops, including queen scallops, prepared or preserved	0	0	1	2	1
16.05.58.00	Snails, other than sea snails, prepared or preserved	0	0	0	1	0
16.05.51.00	Oysters, prepared or preserved	0	0	5	0	0
16.05.62.00	Sea Urchins, prepared or preserved	0		0	0	0
Total		**943**	**1,040**	**1,049**	**1,174**	**1,015**

Thailand is also the lead exporting country of "Crab, prepared or preserved" 16.05.10.00 and represents around 63% of exports to Lebanon followed by India and Japan (Table 41).

Table 41. Main exporting countries of "Crab, prepared or preserved" 16.05.10.00

		2013	2014	2015	2016	2017
HS	Country	Tons	Tons	Tons	Tons	Tons
16.05.10.00	Thailand	242	269	241	345	205
Crab, prepared or preserved	India			59		66
	Japan	38	14	23	33	31
	Indonesia		0	3	10	19
	China	25	2	10	2	4
	United Arab Emirates	0	2	6		
	Lithuania	3	5	2	3	0
	France	0	1	1	1	1
	Bangladesh		8			
	Viet Nam	0	7		0	0
	United Kingdom	0	0	1	0	0
	Canada		1	1		0
	United States		1	0		
	Other countries		1	2	1	0
	Total	**308**	**309**	**345**	**401**	**325**

Prepared or preserved fisheries products include "Shrimps and prawns, Other, Prepared or preserved" 16.05.29.00 and "Shrimps and prawns, Not in airtight containers, prepared or preserved" HS: 16.05.21.00. The lead exporter is Vietnam followed by India, Thailand and Malaysia (Table 42).

Table 42. Main exporting countries of "Shrimps and prawns, Other, Prepared or preserved" 16.05.29.00 and "Shrimps and prawns, Not in airtight containers, prepared or preserved" HS: 16.05.21.00

		2013	2014	2015	2016	2017
HS	**Country**	**Tons**	**Tons**	**Tons**	**Tons**	**Tons**
16.05.29.00	Viet Nam	71	128	130	227	121
Shrimps and prawns, Other, Prepared or preserved	India	50	20	23	44	72
	Thailand	47	47	52	73	65
	Malaysia	18	15	14	20	13
	United Arab Emirates	28	51	22	20	5
	Saudi Arabia	10		12	7	4
	China	10	18	16		
	France	1	0	1	1	1
	Italy	0	0	1	1	1
	Brazil		0	1	1	1
	Estonia	1	1	2	0	
	Kuwait	3				0
	Philippines	2	1		0	
	Oman	2				
	Other countries	1	1			0
	Total	**244**	**282**	**273**	**393**	**283**

		2013	2014	2015	2016	2017
HS	**Country**	**Tons**	**Tons**	**Tons**	**Tons**	**Tons**
16.05.21.00	Viet Nam	78	91	93	42	94
Shrimps and prawns, Not in airtight containers, prepared or preserved	United Arab Emirates	22		53	9	52
	India		21	4	3	17
	Thailand	1	12	27		
	Malaysia	11	7			
	Denmark					2
	Other countries	0	0	0	0	0
	Total	**112**	**130**	**177**	**54**	**165**

Processed Cuttlefish and Squids "Cuttle fish and squid, prepared or preserved" HS:16.05.54.00) is also important in this category. China leads the countries that export them to Lebanon followed by Malaysia and Spain (Table 43).

Table 43. Main exporting countries of Cuttle fish and squid, prepared or preserved" HS:16.05.54.00

		2013	2014	2015	2016	2017
HS	Country	Tons	Tons	Tons	Tons	Tons
16.05.54.00	China	60	61	76	94	83
Cuttle fish and squid, prepared or preserved	Malaysia	37	41	37	30	27
	Italy	0	1	1	2	2
	Spain		0		0	10
	Estonia	2	2	1	1	1
	Thailand	1				
	New Zealand			14		
	United Arab Emirates			3		
	France	0	0	0		
	Philippines		0			
	Liberia		0			
	Japan				0	
	Tanzania					0
	Total	**101**	**105**	**132**	**127**	**122**

3.4.5 Exported products

Lebanon exported certain amounts of fish during the past few years. There is no particular trend, but the volume seems to follow a downward trend with less than 100 tons exported yearly for values less than a million US dollars (Table 44, 45).

Table 44: Volume (kg) of exported seafood

		2013	2014	2015	2016	2017
HS	Short Description	Kg	Kg	Kg	Kg	Kg
3.01	Live fish	4,246	75	960	2,640	1,665
3.02	Fish, fresh or chilled, excluding fish fillets	32,559	35,149	26,225	47,566	63,849
3.03	Fish, frozen, excluding fish fillets and other fish	99,466	269,468	169,510	6,162	15,852
3.04	Fish fillets and other fish, fresh, chilled or frozen	8,209	4,966	3,279	5,703	32,116
3.05	Fish, dried, salted or in brine; smoked fish	27,190	11,679	6,542	3,586	9,835
3.06	Crustaceans, live, fresh, chilled, frozen, etc.	23,901	7,675	3,357	5,168	714
3.07	Molluscs, live, fresh, chilled, frozen, etc.	225	1	2,472	1,064	192
3.08	Aquatic invertebrates other than crustaceans	0	0	0	0	0
	Total	**195,796**	**329,013**	**212,345**	**71,889**	**124,233**

Source: Lebanese Customs
http://www.customs.gov.lb/customs/index.htm

Table 45. Value (Thousand USD) of various exported seafood items

		2013	2014	2015	2016	2017
HS	Short Description	Thousand $	Thousand $	Thousand $	Thousand $	Thousand $
3.01	Live fish	21	1	9	14	11
3.02	Fish, fresh or chilled, excluding fish fillets	224	252	126	280	449
3.03	Fish, frozen, excluding fish fillets and other fish	91	416	380	86	129
3.04	Fish fillets and other fish, fresh, chilled or frozen	158	76	84	83	549
3.05	Fish, dried, salted or in brine; smoked fish	493	328	205	125	171
3.06	Crustaceans, live, fresh, chilled, frozen, etc.	291	92	47	72	5
3.07	Molluscs, live, fresh, chilled, frozen, etc.	2	0	23	12	1
3.08	Aquatic invertebrates other than crustaceans	0	0	0	0	0
	Total	**1,280**	**1,164**	**874**	**672**	**1,317**

Source: Lebanese Customs
http://www.customs.gov.lb/customs/index.htm

Table 46 gives a summary of seafood items exported by Lebanon for the years 2013-2017. This Table shows that Lebanon is exporting "Frozen" seafood items for products that seem to be of non-local origins e.g. frozen tunas and tuna-like species, cods, tilapias & catfish, and shrimps & prawns; particularly that it is the understanding of the authors that almost all local catches are sold fresh at local auctions and fishmongers. Nevertheless, although there is no commercial fishery for tunas in Lebanon; because only coastal commercial fishing is allowed, yet it is thought that some leisure boats with recreational fishers aboard do fish outside the 6 nm limit for fishing and even outside the territorial waters; hence they might catch some tunas or tuna-like species and maybe sell them outside "regular" vending channels. Even if these recreational fishers catch Bluefin tuna; they cannot export it outside the quota system of ICCAT; hence, they will be sold as other species. Moreover, it is not known if there are any freezing facilities that freeze any caught tunas or other "big" fish. Furthermore, the pacific salmon exported by Lebanon is definitely of non-local origin; since Lebanon does not catch/produce this species; but rather imports it for smoking/filleting/ slicing industry. The item "Other Salmonidae, fresh or chilled" HS: 03.02.19 is either re-export of same item or Atlantic/Pacific salmon or possibly mislabelled or fraudulently labelled locally grown trout with "salmon-colour meat"; thus, this item will be dealt with as a locally captured/ produced item. In addition, Lebanon does not have a fishery or aquaculture facilities for mussels and definitely does not have excess fish to fillet and export as fresh or chilled fillets (HS: 03.04.39); thus these are merely re-exports. It should be noted that Lebanon did export in 2017 around 63 tons of trout HS 03.02.11 and 7.6 tons of smoked pacific salmon.

It should be also noted that Lebanese customs records show that Lebanon exports "Snails, whether in shell or not, live, fresh, chilled, frozen" HS: 03.07.60. It is a fact that there are several snail farms in Lebanon that are not within the mandate of DFW; however, they are considered aquatic organisms as far as the Customs tariff System is concerned. It is not clear; however, how would the exporters of snails acquire "Health Certificates" so as to export this item. In addition, Lebanon is exporting some un-identified "live Fish" which are probably produced at local aquarium facilities that are not registered with DFW since its present mandate does not require this.

Table 47 gives a summary of destination countries of Lebanon's seafood exports seafood. Although there are no clear trends, "illegal" exports to Syria stopped in 2016. The exports were limited to Tilapias, catfish, carp, eels, Other, Frozen HS: 03.03.29 and Other Tunas, skipjack and Frozen bonito HS: 03.03.49, which are definitely re-exports. Exports or re-exports to Saudi Arabia have improved to 58 tons in 2017 and are nearly limited to "Trout, fresh or chilled" HS: 03.02.11, "Other Salmonidae, fresh or chilled" HS: 03.02.19, and "Pacific salmon, Smoked" HS: 03.05.41 which are assumed to be of local production or processing. Lebanon also exported some "Pacific salmon, fillets. Frozen" HS: 03.04.81 that are assumed to be simply re-exports. The same picture applies to exports to Qatar and the United Arab Emirates.

Table 46 & 47 summarize the exported items and destinations of the fisheries items assumed to be of Lebanese origin and/or processed in locally.

Table 46: Summary of seafood items exported by Lebanon

2013			2014		
HS		Kg	HS		Kg
03.03.69	Fish of the families Bermacerotidae, etc., Other, Frozen	77,500	03.03.49	Other Tunas, skipjack and bonito, Frozen	115,392
03.02.19	Other Salmonidae, fresh or chilled	26,891	03.03.29	Tilapias, catfish, carp, eels, Other, Frozen	75,004
03.05.41	Pacific salmon, Smoked	22,788	03.03.19	Other Salmonidae, Frozen	73,134
03.06.16	Cold-water shrimps and prawns, Frozen	20,701	03.02.11	Trout, fresh or chilled	19,180
03.03.49	Other Tunas, Frozen	20,000	03.02.19	Other Salmonidae, fresh or chilled	15,719
03.02.11	Trout, fresh or chilled	5,244	03.05.41	Pacific salmon, Smoked	10,520
03.01.99	Other live fish, Other	3,769	03.03.66	Hake, Frozen	4,608
03.04.99	Not Translated, Other, Frozen	3,173	03.06.17	Other shrimps and prawns, frozen	3,386
03.05.69	Fish, salted but not dried or smoked and fish in brine, Other	2,750	03.04.99	Not Translated, Other, Frozen	2,066
03.04.89	Not Translated, Other, fillets, Frozen	2,210	03.04.41	Pacific salmon, fillets. frozen	1,961
03.04.39	Fish fillets, Other, fresh, chilled or frozen	2,007	03.06.14	Crabs, Frozen	1,420
03.05.49	Other Smoked fish, including fillets	1,652	03.06.29	N/A Crustaceans, Frozen	1,350
03.06.29	N/A Crustaceans, Frozen	1,100	03.06.12	lobsters, Frozen	807
03.06.14	Crabs, Frozen	1,042	03.03.39	Other Flat Fish, Frozen	740
03.03.29	Tilapias, catfish, carp, eels, Other, Frozen	766	03.06.16	Cold-water shrimps and prawns, Frozen	712
03.03.66	Hake, Frozen	700	03.05.49	Other Smoked fish, including fillets	596
03.06.19	Other Salmonidae, Frozen	550	03.05.79	Fish fins, heads, tails, maws and other edible fish offal, Other	500
03.06.12	lobsters, Frozen	508	03.04.69	Other fillets, Frozen	355
03.04.42	Trout, Fre sh or chilled fillets	500	03.03.69	Fish of the families Bermacerotidae, etc., Other, Frozen	350
03.03.11	Sockeye salmon, Frozen	350	03.02.13	Pacific salmon, fresh or chilled	250
03.02.59	Other fish, fresh or chilled	324	03.04.42	Trout, Fresh or chilled fillets	200
03.04.69	Other fillets, Frozen	294	03.03.90	Not translated, Frozen	190
03.01.11	Live fish, Fresh water	287	03.04.49	Fresh or chilled fillets of other fish	150
03.07.99	Other Molluscs, other	212	03.04.39	Fish fillets, Other, fresh, chilled or frozen	150
03.01.19	live fish, other	190	03.04.89	Not Translated, Other, fillets, Frozen	84
03.02.90	Liver, egg, fins, tails, etc. fresh or chilled	100	03.05.59	Not Translated, Other, Fish, dried, salted or in brine	63
03.03.90	Not translated, Frozen	100	03.01.99	Other live fish, Other	50
03.03.26	Eels, Frozen	50	03.03.26	Eels, Frozen	50
03.04.49	Fresh or chilled fillets of other fish	25	03.01.11	Live fish, Fresh water	25
03.07.29	Scallops, Other	8	03.07.99	Octopus, Other, Frozen	1

2015			2016			2017		
HS		Kg	HS		Kg	HS		Kg
03.03.29	Tilapias, catfish, carp, eels, Other, Frozen	161,462	03.02.19	Other Salmonidae, fresh or chilled	27,696	03.02.11	Trout, fresh or chilled	63,000
03.02.29	Other Flat Fish, Fresh or chilled	12,800	03.02.11	Trout, fresh or chilled	19,821	03.04.81	Pacific salmon, fillets, frozen	18,191
03.02.19	Other Salmonidae, fresh or chilled	8,605	03.03.19	Other Salmonidae, Frozen	5,743	03.03.19	Other Salmonidae, Frozen	10,046
03.02.11	Trout, fresh or chilled	4,820	03.06.16	Cold-water shrimps and prawns, Frozen	3,711	03.05.41	Pacific salmon, Smoked	7,564
03.05.41	Pacific salmon, Smoked	4,769	03.04.89	Not Translated, Other, fillets, Frozen	3,649	03.04.39	Fish fillets, Other, fresh, chilled or frozen	6,212
03.03.19	Other Salmonidae, Frozen	4,548	03.05.41	Pacific salmon, Smoked	3,328	03.03.43	Other Tunas, skipjack and bonito, Frozen	5,586
03.03.66	Hake, Frozen	1,847	03.01.19	live fish, other	1,780	03.04.99	Not Translated, Other, Frozen	3,716
03.05.49	Other Smoked fish, including fillets	1,753	03.04.99	Not Translated, Other, Frozen	1,047	03.04.41	Albacore or longfinned tunas, Frozen	2,220
03.06.14	Crabs, Frozen	1,710	03.07.60	Snails, whether in shell or not, live, fresh, chilled, frozen	900	03.05.59	Not Translated, Other, Fish, dried, salted or in brine	2,000
03.04.99	Not Translated, Other, Frozen	1,579	03.01.11	Live fish, Fresh water	860	03.04.89	Not Translated, Other, fillets, Frozen	1,267
03.03.39	Other Flat Fish, Frozen	1,393	03.06.14	Crabs, Frozen	840	03.01.91	Other live fish, trout	800
03.07.60	Snails, whether in shell or not, live, fresh, chilled, frozen	1,010	03.06.12	lobsters, Frozen	505	03.02.19	Other Salmonidae, fresh or chilled	780
03.04.69	Other fillets, Frozen	765	03.04.59	Other, fresh or chilled	400	03.01.11	Live fish, Fresh water	500
03.06.12	lobsters, Frozen	702	03.03.66	Hake, Frozen	334	03.06.93	Not Translated, Crustaceans, live, fresh, chilled, frozen	413
03.01.19	live fish, other	660	03.04.69	Other fillets, Frozen	300	03.01.19	live fish, other	365
03.07.11	Oysters, Live, fresh of chilled	500	03.04.39	Fish fillets, Other, fresh, chilled or frozen	215	03.04.49	Fresh or chilled fillets of other fish	271
03.06.26	N/A Crustaceans, Frozen	485	03.05.59	Not Translated, Other, Fish, dried, salted or in brine	129	03.04.79	Other fish fillet, Frozen	250
03.04.79	Other fish fillet, Frozen	456	03.05.49	Other Smoked fish, including fillets	129	03.03.69	Fish of the families Bermacerotidae, etc., Other, Frozen	220
03.04.89	Not Translated, Other, fillets, Frozen	434	03.07.29	Scallops, Other	100	03.06.14	Crabs, Frozen	212
03.07.99	Octopus, Other, Frozen	386	03.04.79	Other fish fillet, Frozen	92	03.04.62	Catfish, Frozen fillets	150
03.06.17	Other shrimps and prawns, frozen	375	03.03.29	Tilapias, catfish, carp, eels, Other, Frozen	85	03.07.31	Mussels, Live,, fresh or chilled	138
03.07.59	Octopus, Other, Frozen	306	03.06.24	Not Translated, Crustaceans, Frozen	78	03.04.49	Fresh or chilled fillets of other fish	110
03.01.99	Other live fish, Other	300	03.02.90	Liver, egg, fins, tails, etc. fresh or chilled	49	03.06.17	Other shrimps and prawns, frozen	60
03.03.31	Halibut, Frozen	230	03.07.59	Octopus, Other, Frozen	40	03.02.99	Other	54
03.07.19	Oysters, Other, whether in shell or not, live, fresh, chilled, frozen,	200	03.06.17	Other shrimps and prawns, frozen	34	03.07.59	Octopus, Other, Frozen	36
03.06.29	N/A Crustaceans, Frozen	54	03.07.51	Octopus, Frozen	11	03.06.33	Not translated, Crabs, Frozen	29
03.07.29	Scallops, Other	50	03.07.11	Oysters, Live, fresh of chilled	10	03.07.79	Clams, cockles and ark shells, Other	18
03.03.49	Other Tunas, skipjack and bonito, Frozen	30	03.07.79	Clams, cockles and ark shells, Other	3	03.02.91	Not translated	15
03.04.59	Other, fresh or chilled	27						
03.06.24	N/A Crustaceans, Frozen	25						

Table 47: Summary of seafood export destination 2013 – 2017

2013		2014		2015	
Country	**Kg**	**Country**	**Kg**	**Country**	**Kg**
Ghana	52,000	Syrian Arab Republic	184,540	Syrian Arab Republic	161,262
Equatorial Guinea	25,500	Egypt	46,134	Kuwait	13,488
Saudi Arabia	25,465	Equatorial Guinea	29,628	Qatar	9,275
Syrian Arab Republic	20,000	United Arab Emirates	15,832	United Arab Emirates	8,675
Qatar	17,703	Iraq	15,754	Iraq	7,889
United Arab Emirates	12,640	Kuwait	9,221	Jordan	5,290
Nigeria	12,635	Qatar	8,477	Saudi Arabia	2,670
Iraq	11,262	Liberia	5,585	Guinea	1,185
Jordan	8,899	Saudi Arabia	4,950	Italy	1,010
Kuwait	6,140	Nigeria	3,850	South Africa	898
Guinea	1,690	Jordan	3,601	Cameroon	300
Bahrain	825	Paraguay	500	Sierra Leone	280
Mozambique	648	Kenya	420	Germany	55
Sierra Leone	195	Burkina Faso	350	Hong Kong	48
Liberia	194	Sierra Leone	150	Angola	20
Malaysia	0	Bahrain	21	Denmark	0
Total	**195,796**		**329,013**		**212,345**

2016		2017	
Country	**Kg**	**Country**	**Kg**
Saudi Arabia	24,343	Saudi Arabia	75,880
Qatar	16,877	United Arab Emirates	7,220
Iraq	7,038	Jordan	8,731
United Arab Emirates	5,770	Qatar	11,518
Jordan	4,081	Ivory Coast	4,421
Pakistan	3,231	Iraq	2,046
Indonesia	3,050	Guinea	1,873
Turkey	2,540	Congo	1,165
Bahrain	2,056	Kuwait	560
Italy	900	Turkey	395
Guinea	730	Liberia	6,434
Kuwait	458	Nigeria	3,400
Sierra Leone	340	Equatorial Guinea	445
Equatorial Guinea	334	Sierra Leone	135
Congo	105	Indonesia	0
Hong Kong	36	Greenland	0
Total	**71,889**		**124,223**

a- Live fish: The exported products are of limited quantities with no particular trends. Turkey seems to be the prime destination during 2016 and 2017 although the trend seems downward which implies that the exporters are not able to maintain the market (Table 48).

Table 48. Main importers of Lebanese Live Fish

		2013	2014	2015	2016	2017
HS	**Country**	**Kg**	**Kg**	**Kg**	**Kg**	**Kg**
03.01.11	Turkey				720	300
Live fish, Fresh water	Iraq	287	25			
	Jordan				140	50
	Saudi Arabia					150
	Total	**287**	**25**		**860**	**500**

		2013	2014	2015	2016	2017
HS	**Country**	**Kg**	**Kg**	**Kg**	**Kg**	**Kg**
03.01.19	Turkey				1,320	95
live fish, Other	Jordan			660	260	
	Iraq	100			200	
	Saudi Arabia				270	
	Nigeria	90				
	Total	**190**		**660**	**1,780**	**365**

		2013	2014	2015	2016	2017
HS	**Country**	**Kg**	**Kg**	**Kg**	**Kg**	**Kg**
03.01.99	Nigeria	3,445				
Other live fish, Other	Mozambique	324				
	Cameroon			300		
	Iraq		50			
	Cyprus					0
	Total	**3,769**	**50**	**300**		**0**

b- Fresh or chilled Salmonidae: a good bridgehead was established for Trout in Saudi Arabia, Jordan and United Arab Emirates. Also new markets in GCC countries were penetrated. These should be maintained and consolidated by good quality and sanitation practices at source farms. It is hoped that the "Other Salmonidae, fresh or chilled" HS: 03.02.19 is not fraudulently labelled and that the markets penetrated could be maintained. Furthermore, it seems that the markets for filleted Trout could not be maintained. Moreover, some 271 kg of "Other smoked fish" HS 03.05.49 were exported in 2017 to Iraq and Jordan (Table 49).

Table 49. Main importers of Lebanese Fresh or chilled Salmonidae

		2013	2014	2015	2016	2017
HS	**Country**	**Kg**	**Kg**	**Kg**	**Kg**	**Kg**
03.02.11	Saudi Arabia	44			7,631	52,140
Trout, fresh or chilled	Jordan	5,200	3,300	2,000	2,000	6,200
	United Arab Emirates		9,440	2,820	3,120	2,900
	Kuwait		6,440			500
	Qatar				6,070	1,250
	Bahrain				1,000	
	Total	**5,244**	**19,180**	**4,820**	**19,821**	**63,000**

		2013	2014	2015	2016	2017
HS	**Country**	**Kg**	**Kg**	**Kg**	**Kg**	**Kg**
03.02.19	United Arab Emirates	10,470	5,900	5,855	16,591	
Other Salmonidae, fresh or chilled	Qatar	5,020	7,685		2,650	
	Kuwait	6,140	2,000	1,160	6,305	
	Qatar		94	1,590		
	Bahrain	825				
	Jordan	311			1,050	
	Iraq	4,125			600	
	Turkey				500	
	Kenya		40			
	Saudi Arabia					780
	Total	**26,891**	**15,719**	**8,605**	**27,696**	**780**

		2013	2014	2015	2016	2017
HS	**Country**	**Kg**	**Kg**	**Kg**	**Kg**	**Kg**
03.04.42	Qatar		500			
Trout, Fresh or chilled fillets	Kuwait			200		
	Total		**500**	**200**		

c- Frozen Salmonidae (Table 50): same argument for b above.

Table 50. Main importers of Lebanese frozen Salmonidae HS: 03.03.19

		2013	2014	2015	2016	2017
HS	Country	Kg	Kg	Kg	Kg	Kg
03.03.19	Iraq			3,835	5,712	1,312
Other Salmonidae, Frozen	Jordan			650		
	Egypt		46,134			
	Equatorial Guinea		27,000			
	Kuwait			44		
	Qatar			19		
	Congo				31	
	Liberia					6,434
	Saudi Arabia					2,300
	Total		**73,134**	**4,548**	**5,743**	**10,048**

d- Salmon: This is the category is probably for locally processed (filleted/smoked/sliced) from imported Pacific or Atlantic Salmons. The trends are not clear, but it is feared that this might not improve much since at least one local entrepreneur is planning to open one smoking/slicing plant in United Arab Emirates (Table 51). The "Other Smoked fish, including fillets" could include some trout that are being locally smoked and "fraudulently" sold as smoked salmon.

Table 51. Main importers of Lebanese Salmon

		2013	2014	2015	2016	2017
HS	Country	Kg	Kg	Kg	Kg	Kg
03.05.41	Qatar	4,979	3,200	3,397	2,828	1,080
Pacific salmon, Smoked	Saudi Arabia	4,650	4,950	970		4,320
	United Arab Emirates	2,170				2,160
	Nigeria	9,100	1,900			
	Kuwait		210	243	458	
	Jordan	1,539	188			
	Liberia		58			
	Equatorial Guinea		14			
	Iraq	350				
	Germany			55		
	Hong Kong			48	36	
	South Africa			36		
	Angola			20		
	Bahrain				6	
	Total	**22,788**	**10,520**	**4,769**	**3,328**	**7,564**

		2013	2014	2015	2016	2017
HS	Country	Kg	Kg	Kg	Kg	Kg
03.05.49	Qatar	1,652	354	359	129	
Other Smoked fish, including fillets	Iraq					200
	Jordan			980		71
	Kuwait		221	414		
	Bahrain		21			
	Total	**1,652**	**596**	**1,753**	**129**	**271**

e- Snails (Table 52): as discussed earlier, there are local snail farms that are operating outside the mandate of DFW. In order that this business is consolidated and improved, they need to operate under strict quality control and hygienic standards i.e. there is need to develop local regulations particularly that Italy is our only market that need to be maintained and used as entry point to the EU.

Table 51. Main importers of Lebanese Snails HS 03.07.60

		2013	2014	2015	2016	2017
HS	Country	Kg	Kg	Kg	Kg	Kg
03.07.60	Italy			1,010	900	
Snails, whether in shell or not, live, fresh, chilled, frozen						
	Total			**1,010**	**900**	

4 RESULTS

The results are presented with the combined categories under the large-scale, medium-scale and small-scale seafood actors that were detailed in Table 1. At the start of each of the sub-sections, a summary table is presented showing the combined categories chosen for the analysis.
All of the data, including those presented in the tables, refers to 2016, unless otherwise specified.

4.1 LARGE-SCALE VALUE CHAIN

4.1.1 Categories

The number of respondents of the large-scale seafood actors consisted of 20 players. The categories that were included in the analysis for the large-scale seafood actors were:

- Category A - Distributors/ Processors/ Importers
- Category B - Chain supermarkets
- Category C - Grocerant

4.1.1.1 Characteristics of the respondents

Three categories were created with Distributors/processors/importers, Chain supermarkets and Grocerant, combined in the categories A, B and C respectively (Table 52). Only three of the respondents under category A reported to be specialized in one specific activity, of which only one was a pure importer. All of the rest declared that they conducted more than one activity. One of the initial categories, convenience stores (with fresh seafood) was excluded, as it was not possible to collect information on these stores as they were part of the main supermarket chains and so segregated data was not available for them. All of the respondents were managers or owner/manager of the business (Table 53). None of the interviewees was owner not directly involved in the management of the activity.

Table 52. Sampling scheme

Category	Description	Population Range	Average	Number of interviews per category
A	Distributors/ Processors/ Importers	20-29	26	15
B	Chain supermarkets	4-7	6	4
C	Grocerant	2-3	2	1
	TOTAL	**26-39**	**34**	**20**

Table 53. Role of the respondent in the company.

Category	Owner of the business	Manager	Owner and manager	Other	TOT
A	-	0.5	0.5	-	1.0
B	-	0.8	0.2	-	1.0
C	-	1.0	-	-	1.0

To give an approximation of the total population and the relative market share of those interviewed, the respondents were asked about the total number of shops for each of the three categories as well they were asked to self-evaluate their position in the market in Lebanon (Table 54).

Table 54. Average number of shops per company belonging to each category and self-evaluate market share

Category	Number of shops per category			Market share within each category		
	Min	Max	Average	Min	Max	Average
A	1	5	2	0.10	0.40	0.30
B	10	17	13	0.30	0.80	0.70
C	1	1	1	N/A	N/A	N/A

4.1.2 Main findings

4.1.2.1 Description of activities

All of the companies interviewed reported on the proportion of activities they engaged in (Table 55). Only five respondents specialized in only one activity while all of the rest engaged in a mix of activities. In particular, the importers, with the exception of one, also operated as distributors with their own brand, or processors or, in one case, as a wholesaler who also sold their products directly to the retail market and to restaurants.

It should be noted that the Processors seem to belong to a separate category in the chain. They are practically limited to filleting, smoking and slicing of imported chilled/frozen Atlantic and Pacific Salmon. The processing facilities are modern and seem to strictly follow international safety and hygiene regulations that allowed them to initiate establish a bridgehead into some neighbouring markets. However, there are also some tentative efforts by some entrepreneurs to establish a smoking industry for locally produced trout. However, there are facing many hurdles particularly the local negative perception of quality and safety of aquaculture trout.

Table 55. Activity of the respondents – reported by proportion of total activity

	Importer / Distributor	Branding-Distributor	Chain Supermarkets	Grocerant	Processors	Wholesaler	Total
Category A	0.42	0.36	-	-	0.18	0.03	1.0
Category B	0.25	0.13	0.50	0.13	-	-	1.0
Category C	-	-	-	0.50	0.50	-	1.0

4.1.2.2 Employment

The sex-disaggregated employment information was collected along with the basic demographic information on the nationality and age structure of the employees (Table 56, 57, 58). Although the age classes were originally collected under three classes: under 18; 18-25; over 25 no employees under 18 were reported. No women were reported to work in Category B, however, 18% and 27% of female employees was reported for Categories A and C respectively. The query also included information about unpaid work for women and in very few cases; the respondents reported that their wives/daughters supported their activity (in an unpaid capacity. Most employers said that the profession is not suitable for women because it is physically demanding and because they never had female applicants for the jobs; nevertheless, females do exist in those operations particularly in the administrative, marketing and accounting departments. All three categories had a similar trend in age structure with the average across all three being 70% of the employees over the age

of 25. The highest occurrence of foreigners was in Category C (24%), with none in Category B and 16% in Category A.

Table 56. Average employment per company - Category A

Type of people employed	Number of employees			Number of foreigners	Total working days per year
	18-25 years old	>25 years old	Total		
Men full time	7	18	25	5	276
Men regular part-time	-	-	-	-	-
Men daily (seasonal/occasional)	-	12	12	3	60
Men - Total	**7**	**30**	**37**	**8**	
Women full time	-	9	9	-	279
Women regular part-time	-	5	5	-	60
Women daily (seasonal/occasional)	-	-	-	-	-
Women - Total	**-**	**14**	**14**	**-**	**-**
TOTAL	**7**	**44**	**51**	**8**	**205**

Table 57. Average employment per company - Category B (Only employment involved with seafood)

Type of people employed	Number of employees			Number of foreigners	Total working days per year
	18-25 years old	>25 years old	Total		
Men full time	6	44	50	-	300
Men regular part-time	-	-	-	-	-
Men daily (seasonal/occasional)	-	-	-	-	-
Men - Total	6	44	50	-	-
Women full time	-	-	-	-	-
Women regular part-time	-	-	-	-	-
Women daily (seasonal/occasional)	-	-	-	-	-
Women - Total	-	-	-	-	-
Total employees	**6**	**44**	**50**	**-**	**300**

Table 58. Average employment number per company - Category C (Only employment involved with seafood)

Type of people employed	Number of employees			Number of foreigners	Total working days per year
	18-25 years old	>25 years old	Total		
Men full time	28	42	70	20	290
Men regular part-time	-	-	-	-	-
Men daily (seasonal/occasional)	-	-	-	-	-
Men - Total	**28**	**42**	**70**	**-**	
Women full time	15	-	15	-	290
Women regular part-time	-	-		-	-
Women daily (seasonal/occasional)	-	-	-	-	-
Women - Total	**15**	**-**	**15**	**-**	
Total employees	**43**	**42**	**85**	**20**	**290**

Through the interviews, employment in terms of full or part time engagement was investigated. The majority of the employment was reported as full time. Based on the reported employment values, the Full-time equivalent (FTE) was calculated as a harmonized value. This harmonized value was calculated based on a threshold of 2 000 hours[1] per FTE. The figure (Table 59) was calculated as:

[(Number of businesses per category) × (average number of working days) × (average number of employees per business unit) × (average number of hours of work per employee)] / (2000 hours)

Table 59. Average and total estimated employment in terms of FTE per category

	Average employment			Population		Total employment in FTE	
	Full time	Part time	FTE	Min	Max	Min	Max
Category A	34	17	42	20	29	838	1215
Category B	50		60	4	7	240	420
Category C	85		99	2	3	197	296

4.1.2.3 Cost structure analysis

The total seafood sales (Table 60) are analysed here. In only two instances, seafood accounted for the total sales of the business, while the supermarkets, as expected, were the category where seafood provided the lowest contribution to the overall turnover.

Table 60. Proportion of sales from seafood, by category.

	Proportion of sales from seafood (%)	Proportion of sales from other business activities (%)	TOTAL (%)
Category A	0.56	0.44	1.0
Category B	0.03	0.97	1.0
Category C	1.0	-	1.0

The main sales periods were generalized across the three categories with the busier periods corresponding to upward price trends. The busier/higher value periods appeared to be tightly correlated with weekend, holidays and Lent. The sale and price calendar is presented in Appendix 4. A general price trend was consistently noted whereby the imported product prices are affected by the international prices, not by national market conditions.

Sales volumes, prices and revenues were qualitative compared to previous years' values so as to qualitatively understand the interviewee's perceptions. It was not possible to identify specific trends and information per species and thus, the general trends that were identified are summarized in Table 61. For over half of each category the sales volumes were higher than the previous year while prices remained mostly static.

[1] The threshold is set at 2 000 hours per year, as that is an international threshold commonly used in many sectors, and therefore can be considered as a standard unit of measurement for a full time working position. It also allows for international comparisons.

Table 61. Declared trend of annual sales volume and prices in percentage

Category	Annual sales volume 2016 compared to 2015			Average annual price 2016 compared to 2015		
	Up	Down	Static	Up	Down	Static
A	55	27	18	23	23	54
B	66		34	14	14	72
C	100					100

The operating costs – both as the percentage of revenues as well as the total cost were probed; with almost no responses provided for the cost per year (Table 62). It was possible to obtain the percentage of revenue only for the categories A and B. Category C, Grocerant, did not provide this information, but they did provide the average monthly salary for a worker – LL1.1 million. For both reporting categories, labour costs were the main cost followed by costs of storage and ice. The Category A did report asset values and total costs on an annual basis – the average values for these were LL 9 billion (asset value) and LL 1.2 billion (total costs).

Table 62. Cost items by category as a percentage of revenue and the total cost per year.

	Category A		Category B		Category C	
Cost item	% of revenues	Cost per year (LL million)	% of revenues	Cost per year (LL million)	% on revenues	Cost per year (LL million)
Labour (wages and salaries)	22	N/A	8-15	N/A	N/A	N/A
Storage and ice	16	N/A	4	N/A	N/A	N/A
Logistics and distribution	4	N/A	4	N/A	N/A	N/A
Port clearance	0	N/A	0	N/A	N/A	N/A
Power/electricity/fuel	7	N/A	0	N/A	N/A	N/A
Trays/bags/other packaging	0	N/A	0	N/A	N/A	N/A
Repair and maintenance costs	0	N/A	0	N/A	N/A	N/A
Investments	0	N/A	0	N/A	N/A	N/A
Rent of facilities	0	N/A	9	N/A	N/A	N/A

The respondents of categories B did not provide any information on the operating costs of their activities, with the exception of the average monthly salary per worker, which was around LL1.1 million.

4.1.2.4 Commercial Seafood Chain

In this section, the characteristics of the main seafood products, their country of origin (Table 63), product state (preservation technique or display form), relative proportion sold within each category and average price value are all detailed (Table 64 & 65). This was followed by the self-description of how each respondent of the category mapped their position in the chain relative to the others.

Cultured seabass/seabream imported from Turkey make up the largest share of fresh/chilled products for both categories A and B. This species is typically imported by a wholesaler, not by the businesses themselves. For category B canned tuna makes the overall largest share of the relative proportion of products sold, while for category C prepared sushi was more than half of the total share.

Table 63. Characterization of the products (country of origin)

	Country of origin		
Category	**A**	**B**	**C**
1 Juvenile fish (Bizri)	Lebanon	Lebanon	Lebanon
2 Local demersal fish in total	Lebanon	Lebanon	Lebanon
3 Seabream/Seabass (aqua-culture)	Turkey	Turkey	Turkey
Imported:			
-Grouper	Senegal	Senegal/Mauritania/Egypt	Senegal/Egypt/Lebanon
-Meagre		Egypt	
-Nile Perch		Uganda	
-Pangasius	Vietnam	Vietnam	
-Tilapia		Egypt	
-Hake	Argentina		
-Red mullet		India/Egypt/Dubai	Senegal/Egypt/Local
-Other - bivalves	France, New Zealand		
4 Sardine	Lebanon	Lebanon	Lebanon
5 Tuna-like species	Indonesia	Thailand	
6 Tuna canned	Thailand	Vietnam	
7 Shrimps wild/aquaculture	Vietnam/Indonesia/India/ Iran/ Ecuador/UAE/Malaysia/Argentina/ North Europe/Turkey/Egypt	Turkey/Egypt/Iran/ Saudi Arabia	Iran/Asia (no aquaculture)
8 Salmon imported	Scotland	Norway/Scotland	Scotland/ Norway
9 Crustaceans and cephalo-pods	Indonesia/China		
10 Trout			
11 Sushi			
Oyster and mussels	France/China	France	

Table 64. The relative proportion of the products sold in 2016, the average prices and the method of preservation

	Relative proportion of the products sold in 2016 in percentage			Average prices (LL/Kg)			Method of preservation in percentage (C=chilled; F=frozen)		
Category	**A**	**B**	**C**	**A**	**B**	**C**	**A**	**B**	**C**
1 Juvenile fish (Bizri)	-	1	-	-	5,500	-		100C	
2 Local demersal fish in total	-	0.5	-	-	17,500	-		100C	
3 Seabream/Seabass (aqua-culture)	24	24	-	7,016	8,250	-		100C	
Imported:									
Grouper	-	5	10	23,000	25,000	55,000		100C	
Meagre	-	3	-	7,500	8,750	-		100C	
Nile Perch	1	1	-	-	19,000	-	50C; 50F	100C	
Pangasius	12	1	-	4,699	5,000	-	90C; 10F	100F	
Tilapia	0	0.1	-	13,000	7,000	-		100C	
Hake	10	0.2	-	3,405	10,000	-	16C; 84F	100C	
Red mullet	-	1	9	-	12,000	55,000		100C	100C
Other	5	-	-	21,000	-	-	100F		
4 Sardine	-	0.2	-	-	5,000	-			
5 Tuna-like species	0.2	4	-	52,500	9,000	-	66F; 34C	66F; 34C	
6 Tuna canned	9	36	-	1,800	1,800	-			
7 Shrimp wild/aquaculture	9	4	21	26,250	17,500	35,000	86F; 14C	66F; 34C	100%F
8 Salmon imported	15	4	-	25,675	32,000	-	85C; 25F	100C	100%C
9 Crustaceans and cephalo-pods	7	1	-	7,787	-	-	100F	100F	
10 Trout	-	1	-	-	23,000	-		100C	
11 Sushi	-	-	60	-	-	60,000			100%F
Other	6	11	-	9,000	-	-	66F; 34C	66F; 34C	
TOTAL (tonnes)	**641**	**532**	**58**	**12,752**	**6,838**	**53,879**			

Table 65. Proportion (%) of product by source

	Origin		
Category	**A**	**B**	**C**
1 Juvenile fish (Bizri)		Local product from other players	Local product from other players
2 Local demersal fish in total (all quality classes)		Local product from other players	
3 Seabream/Seabass (aqua-culture)	Imported product by whole-saler or other	Imported product by whole-saler or other	
Imported:			
- Grouper		Directly imported	Imported product by whole-saler or other
- Meagre		Directly imported	
- Nile Perch	Directly imported		
- Pangasius	Directly imported		
- Hake	Directly imported		
- Red mullet		Directly imported	Imported product by whole-saler or other
Oyster and mussels	Directly imported	Directly imported	
5 Tuna -like species	Directly imported		
6 Tuna canned	Directly imported	Directly imported	
7 Shrimps wild/aquaculture	Directly imported	Directly imported	Imported product by whole-saler or other
8 Salmon imported	Imported product by whole-saler or other /Directly imported	Directly imported	Imported product by whole-saler or other
9 Crustaceans and cephalo-pods	Directly imported		
11 Sushi	Directly imported		
Oyster and mussels	Directly imported	Directly imported	

Table 66. Proportion of product by sale destination

	Category		
	A	**B**	**C**
• Retailers (supermarket, fishmongers, etc.)	0.43	-	-
• HORECA (Hotel; Restaurant; Catering)	0.41	-	-
• Directly to final consumer	0.01	1.00	1.00
• Wholesaler	0.14		-
• Export	-	-	-
• Other	0.01	-	-
TOTAL	**1.00**		

Respondents were asked to describe their position in the commercial seafood chain and these responses are shown in Table 67. Optimally, in their response they would describe the entire chain, based on their knowledge, however for many players they were only able to describe their usual source (Step 1) and to whom they sold the product (Step 2). When they were able, the respondents also provided the mark-up as a percentage (occasionally this was provided as a value in local currency). The commercial seafood chain was described based on broad product categories. For fresh local products (Table 67), Category A purchased from wholesalers and sold directly mainly to either retailers or HORECA, while the destination was the same for Category B who purchase fresh/chilled fish from a wholesaler. In both cases, a mark-up of about 10% was reported. Imported products – either chilled/fresh (Table 68) or frozen (Table 69) were purchased either from wholesalers or from importers with a mark-up ranging between 10-30%. Imported aquaculture products (Table 70) had the highest mark-up reported, whether they were sold to the consumer or to restaurants.

Table 67. Typical scheme of seafood commercial chain for Fresh local product

Category	Step 1	Mark-up	Step 2	Mark-up	Step 3	Notes
A	Wholesaler	10%*	Category A		Retailers	*In general, is about LL 2000
B	Wholesaler	10-20%	Category B	10-30%*	Consumer	*if promotion 15%
C	Wholesaler		Category C	30%	Consumer	

Table 68. Typical scheme of seafood commercial chain for Fresh imported product

Category	Step 1	Mark-up	Step 2	Mark-up	Step 3	Notes
A	Importer	10-25% (or LL1000)	Category A	LL 1000/2000	Consumer	
B	Wholesaler	LL1000-2000	Category B	5%*	Consumer	*it is higher for special items
C	Wholesaler		Category C	30%	Consumer	

Table 69. Typical scheme of seafood commercial chain for Frozen imported product

Category	Step 1	Mark-up	Step 2	Mark-up	Step 3	Notes
A	Importer	10-30% (or LL250-500)	Category A	8-35%*	Consumer/ restaurant	*higher for retail market, lower for the restaurants
B	Importer	10-25%	Category B	30-40%	Consumer/ restaurant	
C	Wholesaler		Category C	30%	Consumer	

Table 70. Typical scheme of seafood commercial chain for Aquaculture imported product

Category	Step 1	Mark-up	Step 2	Mark-up	Step 3	Notes
A	Direct im-port-Category A	100%	Consumer/ restaurant			
A	Importer	15%	Category A	100-200%	Consumer	
B	Importer	10%	Category B	35%	Consumer	Typical value chain for seabream/seabass
C	Wholesaler		Category C	30%	Consumer	

Finally, on the top of food loss and waste that could not be sold was reported as a proportion (%) of the total amount of product that they bought but were unable to sell. The main cause reported for categories A and B was due to deterioration/spoilage as the result of power outages, import delays or consumer related issues.

4.1.2.5 Analysis of critical factors, challenges and opportunities

The respondents were asked to rank in order of priority their perception of the importance of a number of issues that were most important to their buyers (Table 71). Price and trust in the seller were ranked as the most important across all three categories. Product quality and hygiene were the next highest ranked factors across all three.

Table 71. Ranking of importance of issues for buyers on a scale of 1- 5 (5 = the most important of all and 1 = not important). The different shades of red emphasise the degrees of importance, from the light green corresponding to 1 to the dark green corresponding to 5.

	A	B	C
Price	5	5	5
Quality of product	4	4	5
Origin of product (local, imported)	2	2	3
If local, area of origin (South, North, etc.)	2	1	1
Captured	2	1	1
How the product is captured (type of fishing gear)	1	1	1
If from aquaculture	2	1	1
If imported	2	1	3
Predictability/regularity of supply	4	2	5
Type of packaging	3	2	1
Hygiene	4	4	5
Display (ice, etc.)	5	3	5
Trust in the seller	5	5	5
Trust in the label	5	4	-
Freshness of products	5	5	-
Other (specify)	-	-	-

The most significant issues identified by the respondents were grouped by category. For those with a large focus on imported products, delays due to port clearance were often reported. The other issues reported centred around import prices, price control and irregular product supply. These issues are summarized below in Table 72.

Table 72. Reported issues, problems, cause of problem, as provided by respondents

	Issues	Problem experienced	Why does this problem occur?
Category A	Delay in port clearance	Average delay is 10-15 days	
	Port clearance	Too expensive: clearing from port costs $250/25 ton container + 10% clearing charges. Some complained that number of samples taken by authorities for testing is excessive (e.g. 2 salmon specimens per consignment)	
	Energy costs	High cost of energy	The electricity is paid at domestic rate, not at the much cheaper industrial. In some cases it is self-produced at higher costs.
	Security situation	Reluctance to invest, the security situation is considered neither safe nor stable for investments	
	The price of local production is too high	Monopolies and cartel of the local traders	
	Competition	Too many players and too much competition	It is too easy to get the licence
	Hygienic conditions in Beirut (Quarantina) Central Market	The poor hygienic conditions in the market Beirut (Quarantina) Central Market discourage the purchase of seafood	
Category B	Availability of product	Irregular supply of products does not allow for organising robust selling strategy	Difficulties in planning the activity
	Shortage of specialised manpower in seafood handling	Shortage of skilled workers reduce the quality of seafood and its purchase	
	Prices of aquaculture products	Mark-ups of the traders are too high	There is a cartel for the imports
	Administrative and bureaucratic issues	Some players feel there are many bureaucratic and administrative barriers and limitations in seafood marketing	

The role and status of women and youth in employment in the three categories was probed. The respondents provided their feedback (Table 73) based on their perceptions of why there were lower engagement levels for both women and men. In one case in Category A, it was highlighted that women's wages were about 10% lower than those of the men, while in Category B it was reported that men who were married with children received higher salaries.

Table 73. Rational for lower employment levels of youth and women in the sector.

Category	The main reason why fewer women are employed		The main reason fewer <25 years old are employed
A	Too physically demanding	No one applied for the job	Not enough experience
B	Not attracted by manual labour	No one applied for the job	No one applied for the job
C	N/A	N/A	N/A

4.2 MEDIUM-SCALE VALUE CHAIN

4.2.1 Categories

The number of respondents of the medium-scale consisted of 26 companies and establishments. The majority of them were involved in more than one activity, for example, almost all the auctioneers were also wholesalers and many wholesalers were also selling their product on the retail market. In order to simplify the analysis and make it more clear, and based on the number of questionnaires completed, the respondents were categorized according to the following categories:

- Category A: Auctioneers/wholesalers
- Category B: Auctioneers/wholesalers/importers
- Category C: Wholesalers/importers/fishmongers
- Category D: Wholesalers/Fishmonger

These categories were formed as the majority of auctioneers and importers also operated as wholesalers, while the opposite was not always true. Furthermore, many wholesalers also operated in the retail market, while the opposite was not always true. The geographical disaggregation was made according to the costal governorates as follows:

- Akkar
- North
- Beirut & Mount Lebanon
- South

During the course of the interviews, the respondents were asked to provide their own estimate of the total population of medium-sized business (Table 74).

Table 74. Estimated population of medium-scale actors grouped per governorate and per activity as supplied by the respondents.

	Governorate			
Activity of actors	**Akkar**	**North**	**Beirut/Mount Lebanon**	**South**
Importer	1	1	6-10	5-6
Wholesaler	1-3	13-15		12-14
Wholesaler/Auctioneer	3	2	6-8	2
Auctioneer				4-6
Fishmonger		10		6-7

The final populations by category-Governorate are provided below in Tables 75-78 and these also include the number of samples taken for each of these.

Table 75. Population and sample per area - Akkar

Category		Population	Sample
A	Importer	1	3
A	Wholesaler + Wholesaler/Auctioneer*	4-6	

*One of the three is also importer and fishmonger in Aabdeh

Table 76. Population and sample per area - North

Category		Population	Sample
A	Auctioneer/Wholesaler	2	2
D	Wholesaler	13-15	4
D	Fishmonger (inside the auction market)	10	

Table 77. Population and sample per area – Beirut/Mount Lebanon

Category		Population	Sample
B	Auctioneers/wholesalers/importers	6-10	7

Table 78. Population and sample per area - South

Category		Population	Sample
A	Auctioneer/Wholesaler	6-8	4
A	Fishmonger (inside the auction market)	6-7	
C	Wholesalers/importers/fishmongers	17-20	5

Characterisation of the respondents

In most of the cases the respondents were managers and also owners of the business (Table 79), particularly in the Akkar and North governorates. In the South, in one case, the respondent was owner of the business without having a managerial role.

Table 79. Position of manager responding to interview, by category-region.

Governorate	Category	Owner of the business	Manager	Owner and manager	Other	TOTAL
Akkar	A			1.0		1.0
North	A			1.0		1.0
	D			1.0		1.0
Beirut/Mount Lebanon	B		0.5	0.5		1.0
South	A		0.4	0.6		1.0
	C	0.25	0.25	0.5		1.0

4.2.2 Main findings

4.2.2.1 Description of activities

According to these criteria, in the North, two groups of respondents were identified: the auctioneers that also acted as wholesalers and the wholesalers that also sold directly the product to the retail market (fishmongers). In the South, a group was also identified that was composed of the auctioneers that also acted as wholesalers and another group of wholesalers/ importers/fishmongers. In Beirut/Mount Lebanon, the only category was a mix of auctioneers/ wholesalers/importers and two had a side fishmonger operation (either directly or through family members). Akkar was the other Governorate with only a single category – auctioneers/ wholesalers. Within each of the categories there were differences in activities for some of the respondents – their activities were not perfectly homogenous, however they were placed within the category of best fit. This category involves the Fish Markets/Auction System for local and imported chilled/frozen seafood. For further information, please consult Appendix 6 - Fish Market & Auction System.

Each category was composed of at least two respondents. The medium-scale was analysed per governorate (Table 80)

Table 80. Medium-scale group at governorate level

Category	Akkar	North	Mount Lebanon	South	Total
Auctioneers/wholesalers (A)	3	2		4	9
Auctioneers/wholesalers/importers (B)			8		8
Wholesalers/importers/fishmongers (C)				5	5
Wholesalers/fishmongers (D)		4			4
Total	**3**	**6**	**8**	**9**	**26**

When mapping the 26 respondents, only two declared to be specialized in one activity, of which only one that happened to be a pure importer. All the rest declared that they carried out more than one activity (Table 81). The respondents were primarily the managers of the company/ establishment or the owner/manager.

All of the companies/establishments interviewed reported on the proportion of activities they engaged in (Table 81). Only five respondents specialized in only one activity, while all of the rest were engaged in a mix of activities. In particular, the importers, with the exception of one, also operated as distributors with their own brand, or processors or, in one case, as a wholesaler who also sold their products directly to the retail market and to restaurants.

Table 81. Seafood value chain activity as reported by the respondents (seafood actors) as the proportion of their activity.

	Akkar	North		Beirut/Mount Lebanon	South	
Seafood actors	Auctioneer/ wholesaler (A)	Auctioneer/ wholesaler (A)	Wholesaler/ fishmonger (D)	Auctioneer/ wholesaler/ importer (B)	Auctioneer/ wholesaler (A)	Wholesaler/ importer/ fishmonger (C)
Importer	0.20	0.00	0.00	0.30	0.25	0.00
Wholesaler	0.00	0.00	0.67	0.25	0.31	0.00
Wholesaler/auction-eer	0.60	0.50	0.00	0.25	0.00	0.33
Auctioneer	0.00	0.00	0.00	0.00	0.00	0.33
Fishmonger (inside the auction market)	0.20	0.25	0.00	0.00	0.06	0.17
Fishmonger (near or related to the auction market)	0.00	0.00	0.00	0.10	0.00	0.00
Fishmonger	0.00	0.00	0.33	0.05	0.25	0.00
Fishmonger-street vendor "Hungare"	0.00	0.00	0.00	0.00	0.13	0.00
Fishmonger/restau-rant	0.00	0.25	0.00	0.05	0.00	017
Total	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**

4.2.2.2 Employment

Sex-disaggregated employment information was collected along with the basic demographic information on the nationality and age structure of the employees (Tables 82-87).

By category, the average number of women employed was 30% in Category A; 36% in Category B; 40% in Category C; 52% in Category D. A query was also included about unpaid work for women and in Category B - Mount Lebanon one of the respondents reported that their wives supported their activity (in an unpaid capacity). In the five categories, the respondents didn't highlight any significant difference in wages between men and women, with the exception of the wholesalers/ importers/fishmongers category (category C) in the South, where the majority of respondents declared that the woman, in the same position of a man, would get a salary about 20% lower than a man.

The age classes were collected under three classes: under 18; 18-25; over 25. No employees under 18 were reported; with the exception of Category C for the South (Auctioneers/wholesalers). All of the categories and Governorates had a similar trend in age structure with the average across all three being just over 50% of the employees over the age of 25. The only occurrence of foreigners was for the two employees reported in Category A – South.

Table 82. Average employment per company/establishment – Akkar Auctioneers/ wholesalers (category A)

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time		2	4	6		350
Men regular part-time			5	5		100
Men daily (seasonal/occasional)						
Men - Total		**2**	**9**	**11**		
Women full time		5		5		350
Women regular part-time						
Women daily (seasonal/occasional)		2		2		100
Women - Total		**7**		**7**		
TOTAL		**9**	**9**	**18**		

Table 83. Average employment per company/establishment – North Auctioneers/ wholesalers (category A)

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time			5	5		360
Men regular part-time		4	3	7		100
Men daily (seasonal/occasional)						
Men - Total		**4**	**8**	**12**		
Women full time		2		2		360
Women regular part-time						
Women daily (seasonal/occasional)						
Women - Total		**2**		**2**		
TOTAL		**6**	**8**	**14**		

Table 84. Average employment per company/establishment – North Wholesalers/ fishmongers (category D)

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time				2		295
Men regular part-time		1	5	6		150
Men daily (seasonal/occasional)			2	2		150
Men - Total		**1**	**7**	**10**		
Women full time		5	1	6		295
Women regular part-time		3		3		150
Women daily (seasonal/occasional)		2		2		150
Women - Total		**10**	**1**	**11**		
TOTAL		**11**	**8**	**21**		

Table 85. Average employment per company/establishment – Beirut/Mount Lebanon Auctioneers/wholesalers/importers (category B)

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time			4	4		333
Men regular part-time			5	5		165
Men daily (seasonal/occasional)						
Men - Total			**9**	**9**		
Women full time		5		5		333
Women regular part-time						
Women daily (seasonal/occasional)						
Women - Total		**5**		**5**		
TOTAL		**5**	**9**	**14**		

Table 86. Average employment per company/establishment – South Auctioneers/ wholesalers (category C)

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men-full time		3		3		359
Men regular part-time	1	2	7	10		180
Men daily (seasonal/occasional)		1	1	2		90
Men - Total	**1**	**6**	**8**	**15**		
Women- full time		5	2	7		220
Women regular part-time		1	2	3		110
Women daily (seasonal/occasional)						
Women - Total		**6**	**4**	**10**		
TOTAL	**1**	**7**	**12**	**25**		

Table 87. Average employment per company/establishment – South Wholesalers/ importers/fishmongers (category A)

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men- full time			2	3		331
Men regular part-time			6	6		165
Men daily (seasonal/occasional)		2		2		180
Men - Total		**2**	**8**	**10**		
Women- full time		3		3		
Women regular part-time						
Women daily (seasonal/occasional)			2	2	2	60
Women - Total		**3**	**2**	**5**		
TOTAL		**5**	**10**	**15**		

Through the interviews, employment in terms of full or part time engagement was explored. The reported employment was a mix between full and part-time. Based on the reported employment values, the Full-time equivalent (FTE) was calculated as a harmonized value. This harmonized value was calculated based on a threshold of 2 000 hours[2] per FTE. The figure (Table 88) was calculated as:

[(Number of businesses per category) × (average number of working days) × (average number of employees per business unit) × (average number of hours of work per employee)] / (2000 hours)

Table 88. Average employees per category

		Average employment number			Population		Total employment in FTE	
Governorate	Category	Full time	Part time	FTE	Min	Max	Min	Max
Akkar	A	2	1	3	5	7	16	22
North	A	7	7	13	2	2	26	26
	D	8	13	17	23	25	397	431
Beirut/Mount Lebanon	B	20	10	33	6	10	199	332
South	C	5	6	9	12	15	106	133
	A	6	10	13	17	20	227	267

4.2.2.3 Cost structure analysis

For all of the categories, except category D – North had all of their sales revenues from seafood sales (Table 89). For Category D only an average of 13% of total sales was from seafood.

Table 89. Proportion of sales from seafood, by category.

Governorate	Category	Proportion of sales from seafood	Proportion of sales from other business activities	TOTAL
Akkar	A	1.00	-	1.00
North	A	1.00	-	1.00
	D	0.13	0.87	1.00
Beirut/Mount Lebanon	B	1.00	-	1.00
South	A	1.00	-	1.00
	C	1.00	-	1.00

The main sales periods were generalized across all of the categories with the busier periods corresponding to upward price trends. The busier/higher value periods were also reported to be tightly correlated with holidays, weekends, Lent, and the summer period. The sale and price calendar is presented in Appendix 3. A general price trend was consistently noted whereby the imported products prices are affected by the international prices, not by national market conditions and these prices were reported to be more consistent than domestic prices.

It was not possible to identify specific trend and information per species, but general trends by Governorate and category were reported. The general trend of decreased sales volumes and prices was identified and summarised in Table 90.

[2] The threshold is set at 2 000 hours per year, as that is an international threshold commonly used in many sectors, and therefore can be considered as a standard unit of measurement for a full time working position. It also allows for international comparisons.

Table 90. Declared trend of annual sales volume and prices

Governorate	Category	Annual sales volume 2016 compared to 2015 as percentage			Average annual price 2016 compared to 2015 as percentage		
		Up	Down	Static	Up	Down	Static
Akkar	A	11	78	11		100	
North	A		100			100	
	D		38	62		38	62
Beirut/Mount Lebanon	B	23	54	23		38	62
South	C		100		40	10	50
	A		10	90			100

The operating costs were probed, whereby the responses only gave the relative proportion of each cost item to the total costs (Table 91), not the costs as a percentage of revenues. For the reporting categories across the Governorates, the labour costs were the main cost for four out of the six categories by Governorate. In the South, labour costs were 55 and 77 percent for Categories C and A, respectively. For category B – Beirut/Mount Lebanon, the costs were fairly equally distributed between labour, power and ice costs. In Akkar, ice was the greatest cost item, followed by labour costs. The salaries were reported to range between the minimum legal wage per month, LL680 thousand ($450), and LL1-1.2 million per month ($700-800).

Table 91. Cost items as the percentage of the total costs. Costs greater than 50% of the total are highlighted in dark green, between 30-50% in light green and between 20-30% in yellow.

	Akkar	North		Mount Lebanon	South	
Category	A	A	E	B	C	A
Cost item	Percentage on costs					
Labour (wages and salaries)	21	32	50	22	55	77
Power/electricity/fuel	3	7	34	22	1	3
Ice	35	30	10	28	9	7
Trays/bags/other packaging	13	0	0	12	3	0
Repair and maintenance costs	13	0	0	11	6	5
Transportation and logistics	8	31	0	2	26	7
Extraordinary costs	0	0	0	0	0	0
Other (specify)	0	0	0	0	0	0
Indirect tax	8	0	0	0	0	0
Coop share from auction	0	0	0	3	0	0
Coop share from fish cleaning	0	0	0	0	0	0
Water	0	0	0	0	0	0
TOTAL costs per year	100	100	100	100	100	100

4.2.2.4 Commercial Seafood Chain

In this section the characteristics of the main species, their country of origin, product state (preservation or display form), relative proportion sold within each category and average price value are all detailed. This is followed by the self-description of how each respondent of the category mapped their position in the chain relative to the others.

Locally, due to the limited amount of fish landed by the local fleet, largely artisanal and small-scale, many species are sold according to mixed categories, locally called 'class one' 'class two' and 'class three', composed by species of the same market level. This commercial classification was utilised in the questionnaire. The following group of species are typically present in the three categories:

- Class-one: Red mullet, Grouper, seabass, seabream, big shrimps, etc.
- Class-two: Sargus, dentex, meagre, barracuda, etc.
- Class-three: Grey mullet, siganus, red fish, small sargus, oblada, etc.

Table 92 - 95 show that seabass/seabream, which are mainly imported from aquaculture production facilities in Turkey make up the largest share of fresh/chilled products for the Categories: A-Akkar, D-North, B-Beirut/Mount Lebanon and C-South. For these categories by Governorate, the species was typically imported either directly or by a wholesaler. Category A-North exclusively sold local demersal fish obtained directly from the fishers either with or without an auctioneer. Local demersal fish made up the second greatest proportion of the sales after seabass/seabream for Category C-South.

Table 92. The relative proportion of the products sold in 2016, the average prices and the method of preservation/display Governorates of Akkar and North

	Relative proportion of the products sold in 2016			Average prices (LL/Kg)			Method of preservation in percentage (F=frozen; C=Fresh/chilled)		
Governorate	Akkar	North		Akkar	North		Akkar	North	
Category	A	A	D	A	A	D	A	A	D
1 Juvenile fish (Bizri)	0.25			1,500			100C		
2 Local demersal fish in total	0.08	1.00		15,000	10,000		100C	100C	
- Class one*	0.02			25,000	40,000		100C	100C	
- Class two **	0.06			9,000			100C		
- Class three ***	0.01			6,000			100C		
3 Seabream/Seabass (aqua-culture)	0.40		0.30	7,500		10,000	100C		100F
Imported:			0.02			10,000			100F
- Grouper	0.01			14,500			100C		
- Meagre	0.02		0.01	7,500			100C		
- Nile Perch	0.02						100F		
- Pangasius	0.02		0.03			4,369	100F		100F
- Tilapia	0.02			3,000		5,273	100C		100F
- Hake			0.03			4,520	100F		100F
- Red mullet	0.002		0.01	24,000			100C		
- common pandora			0.03	7,500		3,766	100C		100F
- red porgy			0.00			6,026	100C		100F
4 Sardine	0.01			2,000			100C		
5 Tuna like species (tuna, balamida, etc)									
6 Tuna canned			0.01	50,000		18,831			100F
7 Shrimps wild/aquaculture	0.01		0.54	11,5000		15,065	100C		100F
8 Salmon imported									
9 Crustaceans and cepha-lopods	0.06		0.02	10,000			100C		
10 Trout									
11 Sushi									
Siganus + grey mullet									
Other			0.00			20,338			100F
TOTAL (tonnes)	**76**	**313**	**139**	**7,383**	**10,000**	**12,033**			

* Red mullet, Grouper, seabass, seabream, etc.
** Sargus, dentex, meagre, barracuda, etc.
*** Grey mullet, siganus, red fish, small sargus, oblada, etc.

Table 93. The relative proportion of the products sold in 2016, the average prices and the method of preservation/display Governorates of Mount Lebanon and South

	Relative proportion of the products sold in 2016			Average prices (LL/Kg)			Method of preservation in percentage (F=frozen; C=Fresh/chilled)		
Governorate	Beirut/ Mount Lebanon	South		Beirut/ Mount Lebanon	South		Beirut/ Mount Lebanon	South	
Category	B	A	C	B	A	C	B	C	A
1 Juvenile fish (Bizri)	0.16	0.02		3,167	4,500	6,667	100C	100C	100C
2 Local demersal fish in total	0.02	0.01	0.25		19,000		100C	100C	
- Class one*	0.00	0.00	0.01	35,000	35,000	35,625	100C	100C	100C
- Class two **	0.00		0.03	16,875		16,000	100C		100C
- Class three ***		0.00	0.07	10,875	11,000	8,875		100C	100C
3 Seabream/Seabass (aqua-culture)	0.45	0.41		8,633	10,000		100C	100C	
Imported:	0.12			9,783			100C		
- Grouper	0.02	0.02	0.01	18,500	23,750	20,000	100C	100C	100C
- Meagre	0.03	0.02		7,000	10,000		100C	100C	
- Nile Perch		0.01						100C	
- Pangasius		0.01			5,000			100F	
- Tilapia		0.20		4,000	3,500			100C	
- Hake	0.15	0.14		8,833	4,433		66F; 34C	75F; 25C	
- Red mullet	0.00	0.01	0.05		25,000	15,000	100C	100C	100C
- common pandora			0.05			18,000			100C
- red porgy									
4 Sardine			0.03			4,750			100C
5 Tuna like species (tuna, balamida, etc)	0.04	0.01	0.05	900	20,000	4,500	100C	100C	100C
6 Tuna canned									
7 Shrimps wild/aquaculture	0.01	0.09	0.07	22,500	29,500		100C	90F; 10C	
8 Salmon imported	0.00	0.02	0.01	34,000	30,000		100C	50F; 50C	
9 Crustaceans and cepha-lopods									
10 Trout		0.01			15,000			100C	
11 Sushi									
Siganus + grey mullet			0.11			6,000			100C
Other			0.19		12,500				
TOTAL (tonnes)	**1735**	**140**	**103**	**7,393**	**10,493**	**4,646**			

* Red mullet, Grouper, seabass, seabream, etc.
** Sargus, dentex, meagre, barracuda, etc.
*** Grey mullet, siganus, red fish, small sargus, oblada, etc.

Table 94. Country of origin of the seafood products sold in 2016

Governorate	Akkar	North		Beirut/ Mount Lebanon	South	
Category	A	A	D	B	C	A
1 Juvenile fish (Bizri)	Lebanon	Lebanon	Lebanon	Lebanon		
2 Local demersal fish in total (all quality classes)	Lebanon	Lebanon	Lebanon	Lebanon		
3 Seabream/Seabass (aquaculture)	Turkey	Turkey	Turkey	Turkey	Turkey	Turkey, Cyprus
Imported:						
- Grouper	Mauritania, Senegal			Egypt		Senegal, Egypt, Mauritania
- Meagre	Egypt		Egypt	Egypt, Turkey		Egypt, Turkey
- Nile Perch						
- Pangasius			Vietnam			Vietnam
- Tilapia	Egypt		Egypt			Egypt
- Hake			Argentine	Senegal, Egypt, Mauritania		Argentine
- Red mullet	Morocco, Turkey			Turkey, Egypt		
- common pandora						Oman
- red porgy						Oman
- Other						
4 Sardine						
5 Tuna like species (tuna, balamida, etc)		Lebanon				
6 Tuna canned			Thailand			
7 Shrimps wild/aquaculture	Syria, Lebanon	Lebanon	Iran, Pakistan, Vietnam			
8 Salmon imported						
9 Crustaceans and cephalopods		Lebanon				
10 Trout						
11 Sushi						
Siganus + grey mullet		Lebanon		Lebanon		

Table 95. Source of the seafood products sold in 2016 by category-Governorate

Governorate	Akkar	North		Beirut/ Mount Lebanon	South	
Category	A	A	D	B	C	A
1 Juvenile fish (Bizri)	1, 2	1, 2		1, 2	1, 2	1, 2
2 Local demersal fish in total (all quality classes)	1, 2	1, 2		1, 2	1, 2	1, 2
3 Seabream/Seabass (aqua-culture)	4, 5		5	4, 5	5	
Imported:			5	4, 5	4, 5	
- Grouper	4, 5		5	4, 5	4, 5	
- Meagre	4, 5		5	4, 5	4, 5	
- Nile Perch	4, 5		5	4, 5	4, 5	
- Pangasius	4, 5		5	4, 5	4, 5	
- Tilapia	4, 5		5	4, 5	4, 5	
- Hake	4, 5		5	4, 5	4, 5	
- Red mullet	4, 5		5	4, 5	4, 5	
- common pandora	4, 5		5	4, 5	4, 5	
- red porgy	4, 5		5	4, 5	4, 5	
- Other	4, 5		5	4, 5	4, 5	
4 Sardine	1, 2		5	1, 2	1, 2	1, 2
5 Tuna-like species	1, 2		5	1, 2		
6 Tuna canned						
7 Shrimps wild/aquaculture	1, 2, 4, 5		5	1, 2, 4, 5	1, 2, 5	
8 Salmon imported	4, 5		5	4, 5	5	
9 Crustaceans and cepha-lopods	1, 2, 4, 5		5	1, 2, 4, 5	1, 2, 5	
10 Trout						
11 Sushi						
Siganus + grey mullet						

1 = Local product directly from fishers (without auctioneer); 2 = Local product directly from fishers (through auctioneer); 3 = Local product from other players; 4 = Directly imported; 5 = Imported product by wholesaler or another company

Positioning in the commercial seafood chain

Respondents were asked to describe their position in the commercial seafood chain and these responses are shown in Tables 96-100. Optimally, in their responses, they would describe the entire chain, based on their knowledge; however, for many players they were only able to describe their usual source (Step 1) and who they sold the product to (Step 2). When they were able, the respondents also provided the mark-up as a percentage (and occasionally as a value in local currency). The commercial seafood chain was described based on broad product categories. Table 96 describes the proportion of product sold to different purchasers per category. It was found, as in the North, Category D sold more than half of their products to restaurants. In the South, Categories A and C had the consumer as their main purchaser i.e. 35-46% of their products. Category A in both Akkar and North sold about 60% of their products to the general category of fishmongers.

Table 96: Proportion (%) of product that is sold to different purchasers. Percentages greater than 50% of the total are highlighted in orange, between 30-50% in pink and between 20-30% in purple.

Governorate	Akkar	North		Beirut/ Mount Lebanon	South	
Category	A	A	D	B	C	A
Private consumer	13	23	7	29	46	35
Restaurant	0	0	53	4	16	14
Importer	0	0	0	1	0	8
Wholesaler	0	0	0	1	0	0
Wholesaler/Auctioneer	0	0	0	0	2	0
Auctioneer	0	0	0	0	0	18
Fishmonger (inside the Beirut (Quarantina) Central Fish Market)	0	0	0	23	6	0
Fishmonger (inside the port/city auction market)	40	41	0	2	0	0
Fishmonger (near or related to the auction market)	0	0	0	2	5	15
Fishmonger (outside the market)	0	25	0	22	8	5
Fishmonger-street vendor "Hungare"	27	0	0	15	17	6
Fishmonger/restaurant	20	0	10	2	0	0
Supermarket	0	0	30	0	0	0
Other	0	12	0	0	0	0
Total	**100**	**100**	**100**	**100**	**100**	**100**

For fresh local products, Category A purchased from the fisher and sold directly to the consumer. The mark-up was reported between 7.5-10%. Categories C and D did not report on this variable.

Imported fresh products were purchased either from Beirut (Quarantina) Central Fish Market or from wholesalers and then sold to wholesalers, mongers or "Hungare". In one instance, for Category A-South, three steps in the value chain were reported with sales to the consumer, restaurant, etc. Overall, the mark-up on the fresh imported seafood was lower – between 3-7%.

Imported products – either chilled/fresh or frozen were purchased from either wholesalers or importers with a mark-up ranging between 10-30%. Imported aquaculture products had the highest mark-up reported, whether they were sold to the consumer or to restaurants.

Table 97. Typical scheme of commercial seafood chain for fresh local product

Governorate	Category	Step 1	Mark-up	Step 2	Mark-up	Step 3
Akkar	A	Fisher	10%	Monger; Consumer		
North	A	Fisher	7.5%	Consumer; Monger; Hungare		
Beirut/Mount Lebanon	B	Wholesaler	5-7%	Wholesaler; Monger; Hungare		
South	A	Fisher	5-10%	Wholesaler/ Monger	10%	Consumer/ Restaurant
		Beirut (Quarantina) Fish Market	3-7%	Wholesaler/ Monger	20%*	Consumer/ Restaurant

*The mark-up was reported as a value, LL1000-10000/Kg, and this was equivalent to 20%.

Table 98. Typical scheme of commercial seafood chain for fresh imported product

Governorate	Category	Step 1	Mark-up	Step 2	Mark-up	Step 3
Akkar	A	Beirut (Quarantina) Fish Market	3-7%	Wholesaler	LL500-1000/Kg	Hungare
Beirut/Mount Lebanon	B	Beirut (Quarantina) Fish Market	3-7%	Wholesaler		
		Wholesaler/ Importer	20%	Mongers; Hungare; Wholesalers		
South	C	Beirut (Quarantina) Fish Market	3-7%	Wholesaler	LL1500-3000/ Kg	Consumer; restaurant; monger; Hungare

The general scheme for imported frozen products and imported aquaculture products were similar, as shown in Tables 50-51. The first step in the chain was always reported to be the importer and the mark-up to the second step was 10-20%. The second step was sales to either wholesalers, mongers or restaurants with the mark-up reported to be between 10-40%. The final, third step was reported as the consumer for most of the respondents.

Table 99. Typical scheme of commercial seafood chain for frozen imported product.

Governorate	Category	Step 1	Mark-up	Step 2	Mark-up	Step 3
Akkar	A	Importer	LL500-1000/Kg	Wholesaler; monger; restaurant		
North	D	Importer	10%	Monger	20%	Consumer
Beirut/Mount Lebanon	B	Importer	LL3000/box	Monger	LL1500-2500/ Kg	Consumer
South	C	Importer	10%	Wholesaler/fishmonger	20-40%	Consumer
	A	Importer	20%	Wholesaler/fishmonger	10%	Consumer

Table 100. Typical scheme of commercial seafood chain for aquaculture imported product

Governorate	Category	Step 1	Mark-up	Step 2	Mark-up	Step 3
North	D	Importer	LL3000/box			
South	A	Importer	10%	Wholesaler/fishmonger	35%	Consumer

4.2.2.5 Analysis of critical factors, challenges and opportunities

The respondents were asked to rank in order of priority their perception of the importance of a number of issues that were most important to their buyers. Price and trust in the seller were ranked as the most important across all four Categories. Product quality and hygiene were the next highest ranked factors across all four.

The most significant issues for the respondents were grouped by category. For those with a large focus on imported products, delays due to port clearance were often reported. The other issues reported centred around import prices, price control and irregular product supply. These issues are summarized below in Table 101.

Table 101. Reported issues, problems, cause of the problems and potential resolutions, as provided by respondents.

Governorate	Category	Issues	Problem experienced	Why does this problem occur?	What do you think could be done to solve the problem and/or what are you doing to try to solve the problem?
Akkar	A	Supply of the local production	Irregularity of local supply; Fishers try to sell to different buyers, it is difficult to build any fidelity relationship seller-buyer	Small-scale and poorly equipped vessels;	Better equipped vessels
North	A	Puffer fish Import of aquaculture products	Puffer fish ruins the gears, increase the cost of fishing. Imported fish push down the prices of the local production, in particular for the small-pelagics		Increase taxes on imported seafood
	D		Overexploitation, use of small mesh sizes, high catch rates of juveniles; No protection of small –scale traders against big-scale importers/traders; High electricity costs Syrian crisis lowered the consumption and the prices of seafood		
Beirut/Mount Lebanon	B		High taxes on imported seafood (most of them are considered as 'big companies' by tax office); Frequent electricity outage; Management of Beirut (Quarantina) Fish Market; Poor facilities at Beirut (Quarantina) Fish Market; Poor conditions of fish transport; Political pressure on Airlines freight carrying (some privileged importers with certain airlines);		
South	C	High import level of aquaculture seabream and seabass;	This dumping lowered prices and promoted the big players, which can reduce the mark-up due to the large volumes;		
		Low and irregular quantity of the local production	No possibility to start a regular supply to the clients; the clients do not get used to the product		Facilitate the import
		Security situation	People frequented restaurants less, and then decreased the consumption of expensive products		
	A	Ready-to-cook products from supermarket	Consumers are more and more oriented toward already prepared seafood products; Decreased consumption of local species		
		High level import level of aquaculture seabream and seabass;	It is difficult for the medium players to import directly from the producers		
		Monopoly of the Beirut (Quarantina) Fish Market by big players			

Respondents were asked to provide their feedback on the largest challenges and these responses are shown in Table 102. In the commercial seafood chain, product quality, freshness, hygiene, origin, packaging and trust were all ranked as the most important issues.

Table 102. Ranking of importance of issues for buyers on a scale of 1- 5 (5 = dark green/ the most important of all and 1 = pink/not important)

Governorate	Akkar	North		Beirut/ Mount Lebanon	South	
	A	A	D	B	C	A
Price	3	1	3	5	4	4
Quality of product	5	-	4	5	4	4
Origin of product (local, imported)	4	5	-	2	4	2
If local, area of origin (South, North, etc.)	2	-	5	2	1	3
Captured	1	-	3	2	3	1
How the product is captured (type of fishing gear)	1	-	-	1	1	4
If it is from aquaculture	1	-	-	1	2	3
If it is imported	5	-		2	2	3
Predictability/regularity of supply	4	-	1	3	2	3
Type of packaging	1	-	-	4	5	3
Hygiene	5	-	5	4	5	4
Display (ice, etc.)	5	-	5	3	4	1
Trust to the seller	5	-	5	5	5	3
Freshness of product	-	-	-	5	-	5
Other (specify)	-	-	-	-	5	-

Employment

The role and status of women and youth in employment in the three categories was queried. The respondents provided their feedback based on their perceptions of why there were lower engagement levels for both women and men (Table 103). In Category C - South it was highlighted that women's wages were about 20% lower than those of the men, even in the same position as the men.

Table 103. Rational for lower employment levels of youth and women in the sector.

Governorate	Category	The main reason why fewer women are employed	The main reason fewer <25 years old are employed
Akkar	A	Physically unfit	Low attractiveness due to salaries; hard work
North	A		
	D	Social & ethical issue; Physically unfit	Considered irresponsible
Beirut/ Mount Lebanon	B	The auction market is considered inappropriate for women (bad manners)	Low attractiveness
South	C	The auction market is considered inappropriate for women (bad manners)	No need for more staff
	A	Physically unfit	

4.3 SMALL-SCALE VALUE CHAIN

4.3.1 Categories

The small-scale business group consisted of mongers operating inside or nearby the fish markets, in fish shops or as street-vendors. Some of them, apart from the monger activity, operated also as wholesaler or restaurant.

The number of respondents of this group consisted of 37 entities all categorized according to the specific business category defined in the preparatory phase of the survey, as listed below:

- Category A: Fishmonger (inside the Beirut (Quarantina) Central Fish Market)
- Category B: Fishmonger (inside the auction market)
- Category C: Fishmonger (near or related to the auction market)
- Category D: Fishmonger
- Category E: Fishmonger-street vendor or "Hungare"
- Category F: Fishmonger/restaurant
- Category G: Fishmonger/wholesaler

They were geographically disaggregated according to the costal governorates as follows:

- Akkar
- North
- Beirut/Mount Lebanon
- South

The final sampling scheme and number of respondents per category and governorate is summarized in the following table (Table 104), while in the following table (Table 105) the coverage of the sample to the total estimated population is outlined.

Table 104. Sampling scheme

	Governorate			
Category	Akkar	North	Beirut/Mount Lebanon	South
A – Fishmonger (inside the Beirut (Quarantina) Fish Market)			3	
B - Fishmonger (inside the auction market)		3		1
C - Fishmonger (near or related to the auction market)			2	5
D - Fishmonger	9	12	37	14
E - Fishmonger-street vendor "Hungare"		8	18	11
F - Fishmonger/restaurant		4	8	6
Total	9	27	68	37

Table 105. Small-scale group at governorate level: population and sample

	Population				Sample			
Category	Akkar	North	Beirut/ Mount Lebanon	South	Akkar	North	Beirut/ Mount Lebanon	South
A – Fishmonger (inside the Beirut (Quarantina) Fish Market)			20-45				3	
B - Fishmonger (inside the auction market)	4	10		6-7	*	3		1
C - Fishmonger (near or related to the auction market)		10	2-4	7-8		*	2	5
D - Fishmonger	15-30	15-30	30-50	40-60	9	12	37	14
E - Fishmonger-street vendor "Hungare"	25-50	20-50	100-200	80-120	*	8	18	11
F - Fishmonger/restaurant		4-3	8-12	10-12		4	8	6
Total	**44-84**	**59-103**	**160-301**	**143-207**	**9**	**27**	**68**	**37**

*categories not covered by the survey

Three categories - namely Akkar-category A and E, North-category C – consisting of an estimated total number of companies ranging between 34 and 64, were not sampled and their contribution to the seafood commercial chain was then estimated using the estimates deriving from the closest categories.

4.3.1.1 Characteristics of the respondents

The role of the respondents in the entities is outlined in Table 106, and shows as most the respondents were managers or owner/manager of the business, especially in the South governorate. In some cases, particularly in fishmongers inside the Beirut (Quarantina) Central Fish Market and in fishmonger/restaurants in Mount Lebanon governorate, the interviewees were owners not directly involved in the management of the activity.

Table 106. Role of the respondent in the company

Governorate	Category	Owner of the business	Manager	Owner and manager	TOTAL
Akkar	D Fishmonger	0.11	0.22	0.67	1.00
North	B - Fishmonger (inside the auction market)	0.00	0.00	1.00	1.00
	D - Fishmonger	0.50	0.08	0.42	1.00
	E - Fishmonger-street vendor "Hungare"	0.00	0.00	1.00	1.00
	F - Fishmonger/restaurant	0.75	0.00	0.25	1.00
Beirut/Mount Lebanon	A – Fishmonger (inside the Beirut (Quarantina) Fish Market)	0.33	0.33	0.33	1.00
	C - Fishmonger (near or related to the auction market)	0.00	0.00	1.00	1.00
	D - Fishmonger	0.11	0.35	0.54	1.00
	E - Fishmonger-street vendor "Hungare"	0.33	0.00	0.67	1.00
	F - Fishmonger/restaurant	0.13	0.38	0.50	1.00
South	B - Fishmonger (inside the auction market)	1.00	0.00	0.00	1.00
	C - Fishmonger (near or related to the auction market)	1.00	0.00	0.00	1.00
	D - Fishmonger	0.93	0.07	0.00	1.00
	E - Fishmonger-street vendor "Hungare"	1.00	0.00	0.00	1.00
	F - Fishmonger/restaurant	0.83	0.17	0.00	1.00

4.3.2 Main findings

4.3.2.1 Employment

The sex-disaggregated employment information was collected along with the basic demographic information on the nationality and age structure of the employees, with three-year classes range: under 18; 18-25; over 25 (Tables 107 - 121). The total employment generated by this category ranged between 1,461 and 2,573 full-time equivalent workers (Table 122). No women were involved in the activities in the street vendor "Hungare" category in any of the governorates nor in Akkar-fishmonger and South-fishmonger (near or related to the auction market). The reasons reported by all the respondents were that the activities were considered too physically demanding or not socially accepted for the women. Few employees were under 18 years old, none of them in the South governorate categories. The respondents explained this due to the low attractiveness of the activity and that the salaries are considered too low.

Table 107. Average employment per entity: Akkar – D - Fishmonger

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time	1	2	1	4	1	350
Men regular part-time	-	-	-		-	-
Men daily (seasonal/occasional)	-	-	-		-	-
Men - Total	**1**	**2**	**1**	**4**	**1**	**350**
Women full time	-	-	-		-	-
Women regular part-time	-	-	-		-	-
Women daily (seasonal/occasional)	-	-	-		-	-
Women - Total	**-**	**-**	**-**	**-**	**-**	
TOTAL	**1**	**2**	**1**	**4**	**1**	**350**

Table 108. Average employment per entity: North - B - Fishmonger (inside the auction market)

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time	-	-	1	1	-	310
Men regular part-time	-	-	3	3	-	300
Men daily (seasonal/occasional)	-	-	-	-	-	-
Men - Total	**-**	**-**	**4**	**4**	**-**	**303**
Women full time	-	-	-	-	-	-
Women regular part-time	-	-	-	-	-	-
Women daily (seasonal/occasional)	-	-	-	-	-	-
Women - Total	**-**	**-**	**-**	**-**	**-**	**-**
TOTAL	**-**	**-**	**4**	**4**	**-**	**303**

Table 109. Average employment per entity: North - D - Fishmonger

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time	1	2	1	4	-	327
Men regular part-time	-	1	-	1	-	200
Men daily (seasonal/occasional)	-	-	-		-	-
Men - Total	**1**	**3**	**1**	**5**	**-**	**302**
Women full time	-	-	1	1	-	365
Women regular part-time	-	-	-		-	-
Women daily (seasonal/occasional)	-	-	-		-	-
Women - Total	**-**	**-**	**1**	**1**	**-**	**-**
TOTAL	**1**	**3**	**2**	**6**	**-**	**312**

Table 110. Average employment per entity: North - E - Fishmonger-street vendor "Hungare"

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time	-	1	2	3	1	348
Men regular part-time	-	-	-	-	-	-
Men daily (seasonal/occasional)	-	-	-	-	-	-
Men - Total	**-**	**1**	**2**	**3**	**1**	**348**
Women full time	-	-	-	-	-	-
Women regular part-time	-	-	-	-	-	-
Women daily (seasonal/occasional)	-	-	-	-	-	-
Women - Total	**-**	**-**	**-**	**-**	**-**	**-**
TOTAL	**-**	**1**	**2**	**3**	**1**	**348**

Table 111. Average employment per entity: North - F - Fishmonger/restaurant

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time	-	1	1	2	-	346
Men regular part-time	-	-	-		-	-
Men daily (seasonal/occasional)	-	-	-		-	-
Men - Total	**-**	**1**	**1**	**2**	**-**	**346**
Women full time	-	-	1	1	-	363
Women regular part-time	-	-	1	1	1	280
Women daily (seasonal/occasional)	-	-	-		-	-
Women - Total	**-**	**-**	**2**	**2**	**1**	**322**
TOTAL	**-**	**1**	**3**	**4**	**1**	**331**

Table 112. Average employment per entity: Beirut/Mount Lebanon - A – Fishmonger (inside the Beirut (Quarantina) Fish Market)

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time	-	-	1	1	2	300
Men regular part-time	-	-	-		-	-
Men daily (seasonal/occasional)	-	-	-		-	-
Men - Total	**-**	**-**	**1**	**1**	**2**	**300**
Women full time	-	-	1	1	-	300
Women regular part-time	-	-	1	1	-	280
Women daily (seasonal/occasional)	-	-	-		-	-
Women - Total	**-**	**-**	**2**	**2**	**-**	**290**
TOTAL	**-**	**-**	**3**	**3**	**2**	**295**

Table 113. Average employment per entity: Beirut/Mount Lebanon - C - Fishmonger (near or related to the auction market)

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time	-	-	1	1	1	355
Men regular part-time	-	-	-		-	-
Men daily (seasonal/occasional)	-	-	-		-	-
Men - Total	**-**	**-**	**1**	**1**	**1**	**355**
Women full time	-	-	1	1	-	350
Women regular part-time	-	-	2	2	-	280
Women daily (seasonal/occasional)	-	-	-		-	-
Women - Total	**-**	**-**	**3**	**3**	**-**	**303**
TOTAL	**-**	**-**	**4**	**4**	**1**	**316**

Table 114. Average employment per entity: Beirut/Mount Lebanon - D - Fishmonger

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time	1	1	2	4	1	344
Men regular part-time	1	-	-	1	1	-
Men daily (seasonal/occasional)	2	-	-	2	1	90
Men - Total	**4**	**1**	**2**	**7**	**3**	
Women full time	-	1	1	2	1	360
Women regular part-time	-	1	1	2	1	355
Women daily (seasonal/occasional)	-	1	1	2	1	-
Women - Total	**-**	**3**	**3**	**6**	**3**	
TOTAL	**4**	**4**	**5**	**13**	**-**	**287**

Table 115. Average employment per entity: Beirut/Mount Lebanon - E - Fishmonger-street vendor "Hungare"

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time	-	-	1	-	-	319
Men regular part-time	-	-	-	-	-	-
Men daily (seasonal/occasional)	-	-	-	-	-	-
Men - Total	**-**	**-**	**1**	**-**	**-**	**319**
Women full time	-	-	-	-	-	-
Women regular part-time	-	-	-	-	-	-
Women daily (seasonal/occasional)	-	-	-	-	-	-
Women - Total	**-**	**-**	**-**	**-**	**-**	**-**
TOTAL	**-**	**-**	**1**	**-**	**-**	**319**

Table 116. Average employment per entity: Beirut/Mount Lebanon - F - Fishmonger/ restaurant

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time	-	-	3	3	3	351
Men regular part-time	-	2	2	4	2	280
Men daily (seasonal/occasional)	-	-	-	-	-	-
Men - Total	**-**	**2**	**5**	**7**	**4**	**323**
Women full time	-	-	1	1	-	351
Women regular part-time	-	-	1	1	2	280
Women daily (seasonal/occasional)	-	-	-	-	-	-
Women - Total	**-**	**-**	**2**	**2**	**2**	**-**
TOTAL	**-**	**2**	**7**	**9**	**6**	**318**

Table 117. Average employment per entity: South - B - Fishmonger (inside the auction market)

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time	-	-	1	1	-	360
Men regular part-time	-	-	-	-	-	-
Men daily (seasonal/occasional)	-	-	-	-	-	-
Men - Total	-	-	1	1	-	360
Women full time	-	-	-	-	-	-
Women regular part-time	-	-	-	-	-	-
Women daily (seasonal/occasional)	-	-	-	-	-	-
Women - Total	-	-	-	-	-	-
TOTAL	-	-	1	1	-	360

Table 118. Average employment per entity: South - C - Fishmonger (near or related to the auction market)

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time	-	-	1	1	-	360
Men regular part-time	-	-	-	-	-	-
Men daily (seasonal/occasional)	-	1	-	1	1	200
Men - Total	**-**	**1**	**1**	**2**	**1**	**280**
Women full time	-	-	-	-	-	-
Women regular part-time	-	-	-	-	-	-
Women daily (seasonal/occasional)	-	-	-	-	-	-
Women - Total	**-**	**-**	**-**	**-**	**-**	**-**
TOTAL	**-**	**1**	**1**	**2**	**1**	**280**

Table 119. Average employment per entity: South - D - Fishmonger

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time	-	1	2	3	-	356
Men regular part-time	-	2	1	3	-	167
Men daily (seasonal/occasional)	-	-	-	-	-	-
Men - Total	**-**	**3**	**3**	**6**	**-**	**-**
Women full time	-	-	1	1	-	340
Women regular part-time	-	-	-	-	-	-
Women daily (seasonal/occasional)	-	-	-	-	-	-
Women - Total	**-**	**-**	**1**	**1**	**-**	**340**
TOTAL	**-**	**3**	**4**	**7**	**-**	**254**

Table 120. Average employment per entity: South - E - Fishmonger-street vendor "Hungare"

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time	-	1	1	2	-	254
Men regular part-time	-	-	-	-	-	-
Men daily (seasonal/occasional)	-	-	-	-	-	-
Men - Total	**-**	**1**	**1**	**2**	**-**	**254**
Women full time	-	-	-	-	-	-
Women regular part-time	-	-	-	-	-	-
Women daily (seasonal/occasional)	-	-	-	-	-	-
Women - Total	**-**	**-**	**-**	**-**	**-**	**-**
TOTAL	**-**	**1**	**1**	**2**	**-**	**254**

Table 121. Average employment per entity: South - F - Fishmonger/restaurant

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time	-	1	3	4	2	360
Men regular part-time	-	-	-	-	-	
Men daily (seasonal/occasional)	-	-	1	1	1	100
Men - Total	**-**	**1**	**4**	**5**	**3**	**308**
Women full time	-	-	1	1	1	360
Women regular part-time	-	-	-	-	-	-
Women daily (seasonal/occasional)	-	-	-	-	-	-
Women - Total	**-**	**-**	**1**	**1**	**1**	
TOTAL	**-**	**1**	**5**	**6**	**5**	**315**

Based on the reported employment values the Full-time equivalent (FTE) was calculated as a harmonized value This harmonized value was calculated based on a threshold of 2 000 hours[3] per FTE. The figure was calculated as: [(Number of businesses per category) × (average number of working days) × (average number of employees per business unit) × (average number of hours of work per employee)] / (2000 hours). Average and total estimated employment in terms of FTE per category are given in Table 122.

Table 122. Average and total estimated employment in terms of FTE per category

		Average employment			Population		Estimated range of employment in FTE	
Governorate	Category	Full time	Part time	FTE	Min	Max	Min	Max
Akkar	D- Fishmonger	5	0	7	15	30	104	207
North	B - Fishmonger (inside the auction market)	1	3	5	10	10	48	48
	D - Fishmonger	5	1	8	15	30	118	235
	E - Fishmonger-street vendor "Hungare"	3	0	3	20	50	70	174
	F - Fishmonger/restaurant	3	1	5	1	3	5	16
Beirut/								
Mount Lebanon	A – Fishmonger (inside the Beirut (Quarantina) Fish Market)	1	0	2	20	45	32	72
	C - Fishmonger (near or related to the auction market)	2	2	3	2	4	6	11
	D - Fishmonger	5	7	13	30	50	377	629
	E - Fishmonger-street vendor "Hungare"	1	0	1	100	200	128	256
	F - Fishmonger/restaurant	4	5	12	3	12	37	146
South	B - Fishmonger (inside the auction market)	1	0	1	6	7	9	10
	C - Fishmonger (near or related to the auction market)	1	1	2	7	8	14	16
	D - Fishmonger	4	3	7	40	60	277	416
	E - Fishmonger-street vendor "Hungare"	2	0	2	80	120	170	256
	F - Fishmonger/restaurant	5	1	7	10	12	67	81
	TOTAL					**641**	**1,461**	**2,573**

[3] The threshold is set at 2 000 hours per year, as that is an international threshold commonly used in many sectors, and therefore can be considered as a standard unit of measurement for a full time working position. It also allows for international comparisons.

4.3.2.3 Cost structure analysis

Sale volumes, prices and revenues were qualitative and compared to previous years' values to qualitatively understand the interviewee's perceptions. It was not possible to identify specific trend and information per species and so the general trend that was identified as summarized in Table 123. In general, in Akkar, North and South governorates, the majority of respondents declared 2016 annual sales volume static when compared to the previous year. While in Mount Lebanon, in general, annual sales of 2016 were declared to be lower or stable when compared to the previous year. Average annual prices, in the majority of cases, in all categories of respondents and for all governorates, were mostly reported to be static for the two year under analysis.

Table 123. Declared trend of annual sales volume and prices

Governorate	Category	Annual sales volume 2016 compared to 2015 in percentage			Average annual price 2016 compared to 2015 in percentage		
		Up	Down	Static	Up	Down	Static
Akkar	D Fishmonger	-	22	78	-	18	82
North	B - Fishmonger (inside the auction market)	-	-	100	-	-	100
	D - Fishmonger	-	30	70	7	6	87
	E - Fishmonger-street vendor "Hungare"		12	88	13		87
	F - Fishmonger/restaurant		29	71	21		79
Beirut/Mount Lebanon	A – Fishmonger (inside the Beirut (Quarantina) Fish Market)	3	70	27	18		82
	C - Fishmonger (near or related to the auction market)		60	40			100
	D - Fishmonger	15	44	41	17	7	76
	E - Fishmonger-street vendor "Hungare"	9	62	29	12	12	76
	F - Fishmonger/restaurant	13	76	10	2	10	88
South	B - Fishmonger (inside the auction market)		100				100
	C - Fishmonger (near or related to the auction market)		28	72		18	82
	D - Fishmonger		27	73	22		78
	E - Fishmonger-street vendor "Hungare"		31	69	31	3	66
	F - Fishmonger/restaurant		12	33	55		100

Table 124 – 126 shows the operating costs as the percentage of the total cost were queried, with labour generally found to be the main operating cost. In fact, apart from fishmonger (Category D) in the North governorate, labour costs accounted for more than 40% of the annual costs of the activities, excluding depreciation and opportunity costs and taxes. The easiest cost structure was identified for the street vendors "Hungare", where the costs largely consisted of labour and, partially of ice and packaging. The most elaborate cost structure was generally identified in the Category D, with most of the cost items reported.

Table 124. The cost structure (percentage of total costs) by category for Akkar and North.

	Akkar	North			
Cost item	**D Fishmonger**	**B - Fishmonger (inside the auction market)**	**D - Fishmonger**	**E - Fishmonger-street vendor "Hungare"**	**F - Fishmonger/ restaurant**
Labour (wages and salaries)	47	82	18	85	40
Power/electricity/ fuel	7	0	6	0	9
Ice	9	12	20	9	14
Trays/bags/other packaging	5	6	5	6	4
Repair and maintenance costs	3	0	14	0	2
Transportation and logistics	21	0	17	0	31
Extraordinary costs	8	0	20	0	0
TOTAL costs per year	**100**	**100**	**100**	**100**	**100**

Table 125. Cost structure (percentage of total costs) by category for Beirut/Mount Lebanon.

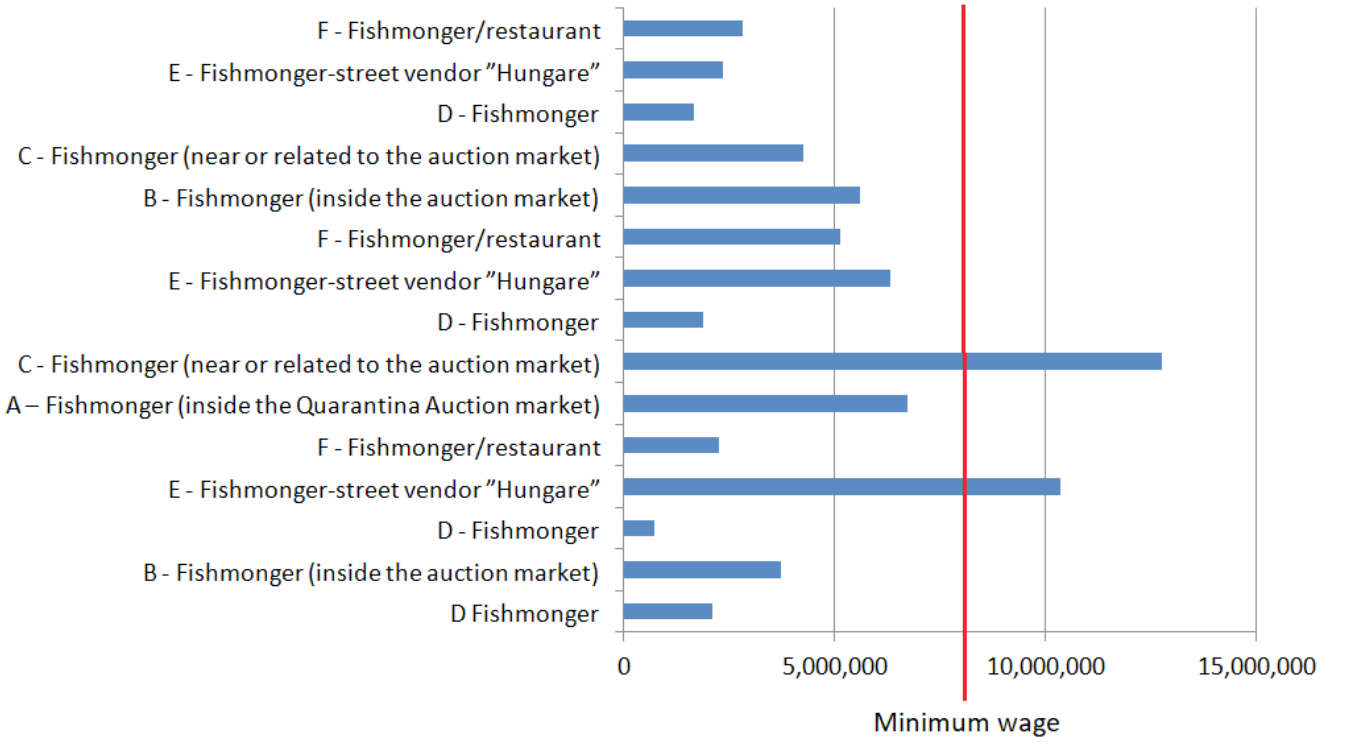
	Mount Lebanon				
Cost item	**A – Fishmonger (inside the Beirut (Quarantina) Central Fish Market)**	**C - Fishmonger (near or related to the auction market)**	**D - Fishmonger**	**E - Fishmonger-street vendor "Hungare"**	**F - Fishmonger/ restaurant**
Labour (wages and salaries)	76	52	59	75	57
Power/electricity/ fuel	0	11	9	0	6
Ice	16	13	6	21	4
Trays/bags/other packaging	8	5	4	4	2
Repair and maintenance costs	0	0	0	0	0
Transportation and logistics	0	18	23	0	31
Extraordinary costs	0	0	0	0	0
TOTAL costs per year	**100**	**100**	**100**	**100**	**100**

Table 126. Cost structure (percentage of total costs) by category for South.

	South				
Cost item	B - Fishmonger (inside the auction market)	C - Fishmonger (near or related to the auction market)	D - Fishmonger	E - Fishmonger-street vendor "Hungare"	F - Fishmonger/ restaurant
Labour (wages and salaries)	74	41	51	70	51
Power/electricity/fuel	0	8	6	0	7
Ice	18	16	16	20	7
Trays/bags/other packaging	7	4	4	5	2
Repair and mainte-nance costs	0	4	0	5	0
Transportation and logistics	0	27	20	0	21
Extraordinary costs	0	0	3	0	12
TOTAL costs per year	**100**	**100**	**100**	**100**	**100**

Labour costs per FTE are outlined in Figure 5, below. The FTE was calculated based on a total of 2000 working hours. According to the information provided by the respondents, in most of the cases the full-time workers in this study work more than 2000 hours/year and in the range of 2500 hours/year. In this respect, although the wage for every category seems less than the minimum wage, the effective income earned by each worker in 2016 was around 30% more than the values shown in the figure. There could also be some form of unpaid labour that could also affect the values obtained by the survey.

Figure 5. Average labour costs per FTE compared to the minimum wage (LL) indicated by the red line



In general, for the majority of respondents, no differences were highlighted on the salaries between men and women. The only exception was found in the South governorate, where the respondents declared an average difference of wages of women against men worth about 20-40%.

4.3.2.4 Commercial Seafood Chain

In this section, details are provided about the characteristics of the main species; their country of origin; product state (preservation technique or display form); volume of product sold within each category; and the average price value. This is followed by a self-description of the respondents' position in the chain relative to the others in the same category.

Seabass/seabream, which are mainly imported from aquaculture production facilities in Turkey make up the largest share of fresh/chilled products for both Categories A and B. This species is typically imported by a wholesaler, not by the businesses themselves. For Category B, canned tuna makes the overall largest share of the relative proportion of products sold.

Characterization of the products

Due to the limited amount of fish landed by the local fleet, largely artisanal and small-scale, it is common to sell the products according to mixed categories, locally called 'class one' 'class two' and 'class three'. The same commercial classification was utilised in the questionnaire. Following the most common species that typically composed the three categories:

- Class-one: Red mullet, Grouper, seabass, seabream, big shrimps, etc.
- Class-two: Sargus, dentex, meagre, barracuda, etc.
- Class-three: Grey mullet, siganus, red fish, small sargus, oblada, etc.

Table 127 characterizes products sold per category per governorate; while Table 128 shows the average annual prices per commercial item. Furthermore, Figure 6 shows Selling price (LL/Kg) per category of imported seabream/seabass from aquaculture while Figure 7 shows the selling price (LL/Kg) per category of local Bizri. The situation per governorate is as below:

Akkar
In Akkar governorate, the fishmonger category (Category D) mainly commercialised fresh/chilled product where the local products accounted for about 1/3 of the total. Among the imported seafood products, the most important category was the cultured seabream and seabass imported from Turkey (about 1/4 of the total) and tilapia imported from Egypt. The group of local class-one species, fetched the highest price, about LL32 thousand.

North
In governorate of North the fishmongers inside the auction market (Category B) only commercialised local products where the low-prices categories (bizri and class-three species) accounting for about 2/3 of the total volume sold in 2016.

In the case of the fishmongers (Category D), the local products accounted for 1/3 of the total, red mullet imported from Turkey was the most commercialised single species, with a volume worth 4.8 tonnes while cultured seabream and seabass totalled 3.9 tonnes.

For the fishmongers and street vendors (Category E) in the area, the local production accounted for about 2/3 of the total product sold. The meagre imported from Egypt and Senegal was the main single species commercialised, followed by the local bogue (boops boops).

For the fishmonger/restaurant category (Category F), the imported shrimps accounted for 2/3 of the total sold species, while the local products accounted for about 10% of the total.

Beirut/Mount Lebanon

The fishmongers inside Beirut (Quarantina) Fish Market (Category A) mainly sold imported products, with the local production accounting for about 15% of the total. For the fishmongers near or related to the auction market (Category C), the local products accounted for about half of the sold products, with bizri being the main item. The cultured seabream and seabass represented about 1/4 of the total product sold by this category. Tuna-like species represented about half of the products sold by the fishmongers in Beirut/Mount Lebanon (Category D). For the street-vendors "Hungare" (Category E) the main item was the cultured seabream/seabass, representing about 1/3 of the total. For the fishmongers/restaurant (Category F) the bogue (Boops boops) was the most important species sold, accounting for about 50% of the total while class-one species represented the most important group of species.

South

The fishmongers inside the auction market (Category B) sold only local products, in particular bizri and the three mixed classes of species. For the fishmongers near or related to the auction market (Category C) the local products represented about 50% of the total commercialised products. The cultured seabream and seabass represented about 1/3 of the total. For the fishmongers (Category D), local products represented about 1/3 of the total, while seabream and seabass about ¼ of sale. Street vendors "hungare" (Category E) in the South mainly sold low priced species such as bizri, class-three species, and cultured seabream and seabass. Fishmongers/restaurant (Category F) mainly sold imported products, with local products accounting for less than 1/3 of the total.

Table 127. Characterization of the product sold per category, where 100% represents the total volume sold in 2016 per each category) – Total value in percentage

Governorate	Akkar	North				Beirut/Mount Lebanon					South				
Category	D	B	D	E	F	A	C	D	E	F	B	C	D	E	F
1 Juvenile fish (Bizri)	7	5	6	4	2	9	24	5	12	12	25	15	9	30	6
2 Local demersal fish in total	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
- Class one	6	2	3	1	2	2	1	1	6	3	25	6	5	0	5
- Class two	12	29	10	1	2	4	3	2	7	4	50	13	11	0	7
- Class three	4	64	13	22	4	5	20	3	7	7	0	12	12	11	16
3 Seabream/Seabass (aquaculture)	25	0	20	17	16	0	30	13	37	43	0	28	25	36	37
Imported:	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0
- Grouper	7	0	0	0	1	7	5	2	2	5	0	5	4	6	6
- Meagre	6	0	2	19	2	3	5	2	3	3	0	2	4	6	6
- Nile Perch	0	0	0	0	0	0	0	0.4	0	0	0	0	0	0	0
- Pangasius	0	0	2	0	3	0	0	3	0	0	0	0	0	0	1
- Tilapia	21	0	0	0	0	5	0	1	0	0	0	0	0	0	0
- Hake	8	0	3	0	0	5	0	1	3	3	0	0	13	0	0
- Red mullet	2	0	25	1	1	12	7	1	3	2	0	1	1	5	6
- Common pandora	0	0	2	3	2	14	0	3	5	3	0	8	7	5	3
- red porgy	0	0	9	10	0	7	0	2	5	4	0	0	3	0	3
- Other	0	0	0	1	0	3	0	2	4	0	0	0	0	0	0
4 Sardine	0	0	0	0	0	3	0	0	0	1	0	0	0	0	0
5 Tuna like species (tuna, balamida, etc.)	0	0	2	0	1	0	0	51	3	2	0	0	2	0	0
6 Tuna canned	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0
7 Shrimps wild/aquaculture	3	0	0	0	59	5	5	2	2	7	0	10	4	0	4
8 Salmon imported	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0
9 Crustaceans and cephalopods	0	0	2	0	5	0	0	1	0	0	0	0	0	0	0
10 Trout	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
11 Sushi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other (specify)	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0
Other (specify)	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
Other (specify)	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
TOTAL (tonnes)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

A: Fishmonger (inside the Beirut (Quarantina) Central Fish Market); B: Fishmonger (inside the auction market); C: Fishmonger (near or related to the auction market); D: Fishmonger; E: Fishmonger-street vendor "Hungare"; F: Fishmonger/restaurant; G: Fishmonger/wholesaler

Table 128. Average annual prices per commercial item in 2016

Governorate	Akkar	North				Beirut/Mount Lebanon					South				
Category	D	B	D	E	F	A	C	D	E	F	B	C	D	E	F
1 Juvenile fish (Bizri)	2,000	2,500	3,375	2,688	6,333	4,000	5,000	5,653	5,000	6,143	5,000	4,600	4,667	4,818	5,000
2 Local demersal fish in total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Class one	31,875	25,000	30,714	25,000	30,000	35,000	30,000	27,261	30,778	27,429	0	28,600	28,545	0	28,333
-Class two	12,000	10,500	10,429	15,000	12,667	21,667	15,000	14,421	25,417	14,750	13,000	14,200	14,385	0	13,750
-Class three	5,000	5,333	8,400	8,125	10,000	9,333	9,000	8,516	12,000	9,250	8,000	8,500	7,583	7,375	8,000
3 Seabream/Sea-bass (aquaculture)	10,000	0	9,900	10,000	11,333	0	11,000	10,769	10,111	12,000	0	9,600	15,167	8,800	9,833
Imported:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- Grouper	19,000	0	13,000	0	26,500	23,333	30,000	20,231	22,667	28,333	0	17,250	18,500	15,000	17,200
- Meagre	9,750	0	11,400	9,750	11,500	14,000	9,000	11,636	10,875	13,500	0	10,667	11,000	8,667	12,167
- Nile Perch	0	0	0	0	0	0	0	10,000	0	0	0	0	0	0	0
- Pangasius	0	0	6,000	0	4,300	0	0	7,250	0	0	0	0	0	0	4,000
- Tilapia	6,000	0	0	0	0	0	0	6,000	0	0	0	0	0	0	0
- Hake	5,000	0	6,000	0	0	14,000	0	12,538	9,500	13,333	0	0	5,000	0	0
- Red mullet	11,000	0	15,000	14,000	14,000	15,000	16,000	17,000	14,000	17,500	0	15,000	18,400	15,000	19,333
- Common pandora	0	0	16,750	16,000	21,667	12,000	0	11,417	15,000	11,667	0	11,333	11,500	12,000	13,667
- red porgy	0	0	6,000	6,750	0	11,333	0	11,615	9,500	11,000	0	0	15,000	0	15,000
- Other	0	0	0	9,000	0	6,000	0	9,000	20,000	0	0	0	0	0	0
4 Sardine	0	0	0	0	0	6,000	0	6,333	0	6,000	0	0	0	0	0
5 Tuna like species (tuna, balamida, etc)	0	0	3,000	0	5,000	0	0	7,000	5,000	5,000	0	0	5,000	0	0
6 Tuna canned	0	0	0	0	0	15,000	0	0	0	0	0	0	0	0	0
7 Shrimps wild/ aquaculture	15,000	0	0	0	80,000	15,000	21,500	17,421	14,286	18,167	0	17,000	23,333	0	18,500
8 Salmon import-ed	0	0	0	0	0	0	0	18,000	0	25,000	0	0	0	0	30,000
9 Crustaceans and cephalopods	0	0	11,667	10,500	42,500	0	0	27,500	0	0	0	0	0	0	0
10 Trout	0	0	0	0	0	0	0	12,000	0	0	0	0	0	0	0
11 Sushi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other (specify)	0	0	0	4,000	0	0	0	0	0	0	0	0	0	0	0
Other (specify)	0	0	0	8,000	0	0	0	0	0	0	0	0	0	0	0
Other (specify)	0	0	0	10,000	0	0	0	0	0	0	0	0	0	0	0
TOTAL (tonnes)															

A: Fishmonger (inside the Beirut (Quarantina) Fish Market); B: Fishmonger (inside the auction market); C: Fishmonger (near or related to the auction market); D: Fishmonger; E: Fishmonger-street vendor "Hungare"; F: Fishmonger/restaurant; G: Fishmonger/wholesaler

Figure 6. Selling price (LL/Kg) per category of imported seabream/seabass from aquaculture in 2016

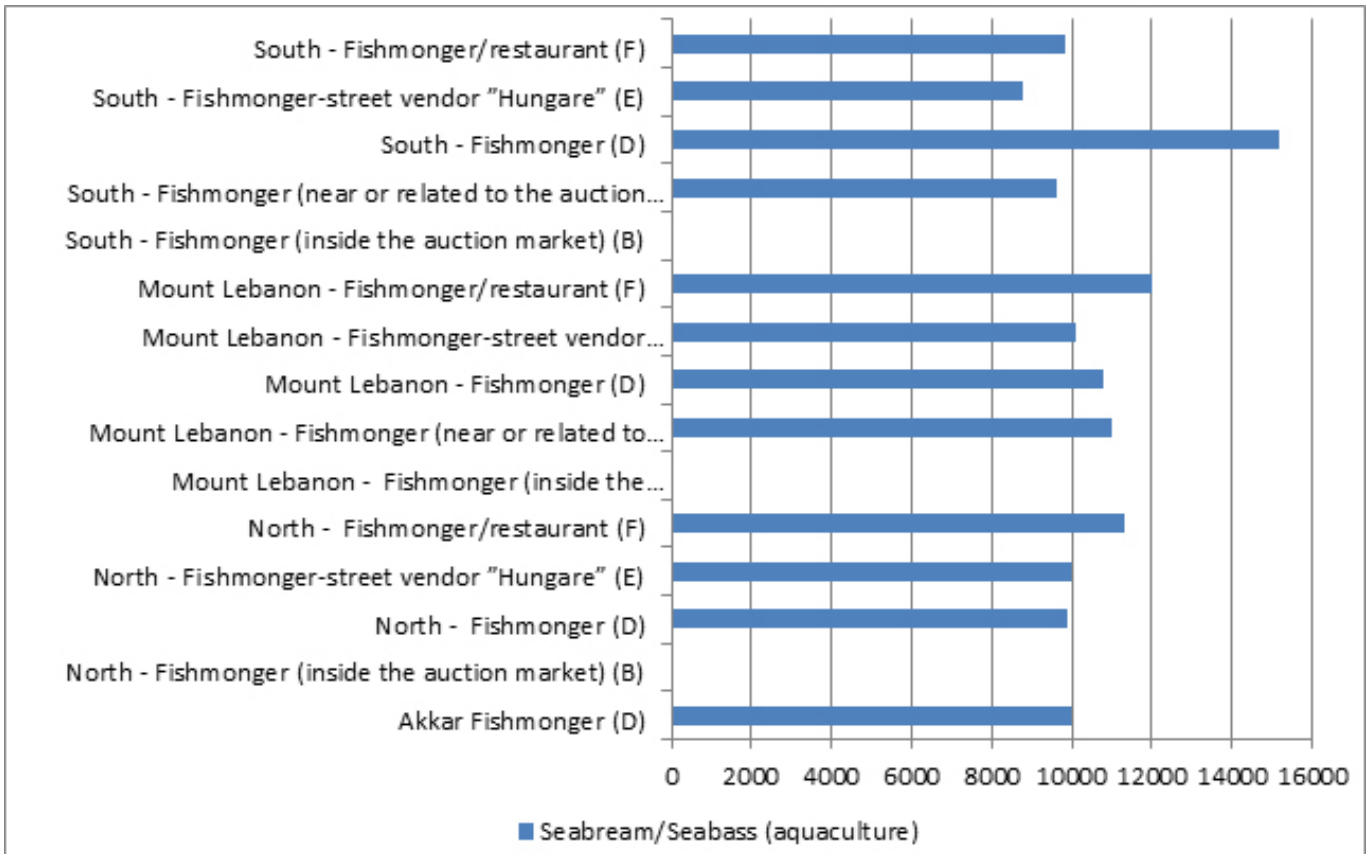
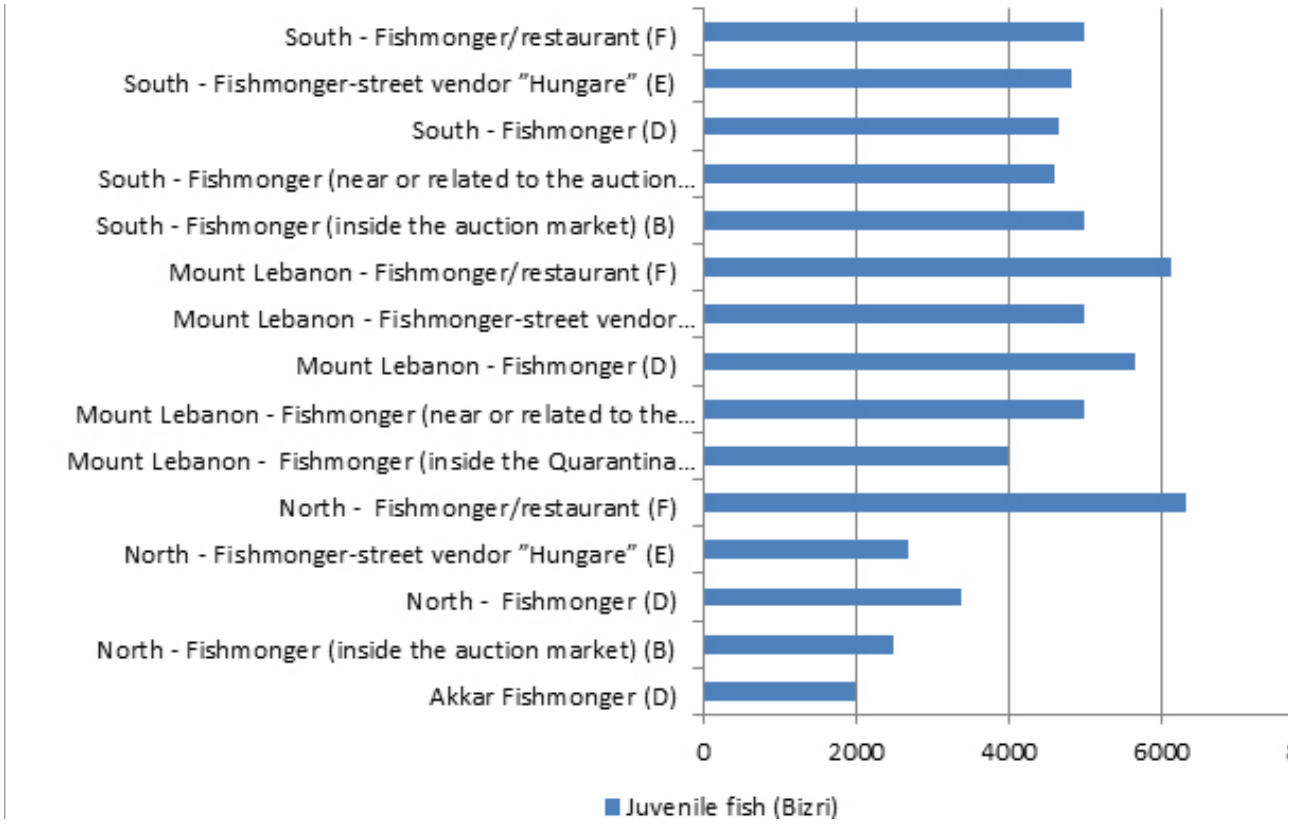


Figure 7. Selling price (LL/Kg) per category of local Bizri in 2016



Positioning in the commercial seafood chain

Tables 129 – 131 show sources of different seafood by different entities. The commercial seafood chain was described based on broad product categories. As described in Table 132, in the North governorate, category D sold more than half of their products were sold to restaurants. In the South, categories A and C had the consumer as their main purchaser for 35-46% of their product. Category A in both Akkar and North sold about 60% of their product to the general category of fishmongers. In Tables 133 - 137, the respondents described their position in the commercial seafood chain. Optimally, in their response they would describe the entire chain, based on their knowledge, however for many players they were only able to describe their usual source (Step 1) and who they sold the product to (Step 2). When they were able, the respondents also provided the mark-up as a percentage (and occasionally as a value in local currency).

Table 129. Description of the sources of the product per category in Akkar and North governorates

Governorate	Akkar	North			
Category	D Fishmonger	B - Fishmonger (inside the auction market)	D - Fishmonger	E - Fishmonger-street vendor "Hungare"	F - Fishmonger/ restaurant
1 Juvenile fish (Bizri)	1; 2	2	1; 2	2	1; 2
2 Local demersal fish – in total					
Class one*	1; 2; 3	2	1; 2	2	1; 2
Class two **	2; 3	2	1; 2	2	1; 2
Class three***	2	2	1; 2; 3	2	1; 2
3 Seabream/Seabass (aquaculture)	5	5	5		5
Imported:					
Grouper	5		5		5
Meagre	5		5	5	5
Nile Perch					
Pangasius			5		5
Tilapia	5				
Hake	5		5		
Red mullet	5		5	5	5
Other			5	5	5
Other			5	5	
Other				5	
4 Sardine					
5 Tuna like species (tuna, balamida)			1		
6 Tuna canned					
7 Shrimps wild/aquaculture	5				1
8 Salmon imported					
9 Crustaceans and cephalopods			1	2; 5	1; 2; 5
10 Trout					
11 Sushi					
Other (specify)					
Other (specify)					
Other (specify)					
TOTAL					

1 = Local product directly from fishers (without auctioneer); 2 = Local product directly from fishers (through auctioneer); 3 = Local product from other players; 4 = Directly imported; 5 = Imported product by wholesaler or another company

Table 130. Description of the sources of the product per category in Beirut/Mount Lebanon governorates

Governorate	Mount Lebanon				
Category	A – Fishmonger (inside the Beirut (Quarantina) Central Fish Market)	C - Fishmonger (near or related to the auction market)	D - Fishmonger	E - Fishmonger-street vendor "Hungare"	F - Fishmonger/ restaurant
1 Juvenile fish (Bizri)	2; 5	1; 2	1; 2; 3; 5	1; 2; 3; 4	1; 2
2 Local demersal fish – in total					
Class one*	2; 5	1; 2	1; 2; 3; 5	1; 2	1; 2; 3
Class two **	2; 5	1; 2	1; 2; 3; 5	1; 2	1; 2; 3
Class three***	2; 5	1; 2	1; 2; 3; 5	1; 2	1; 2; 3
3 Seabream/Seabass (aquaculture)		5	1; 2; 3; 5	1; 2; 5	5
Imported:			1		
Grouper	5	5	5	5	5
Meagre	5	5	2; 5	2; 5	5
Nile Perch			5		
Pangasius			4; 5		
Tilapia			1; 2		
Hake	5	2; 5	5	5	5
Red mullet	5	5	1; 4; 5	5	5
Other			1	1	
Other			1	1	
Other			1	1	
4 Sardine			1		
5 Tuna like species (tuna, balamida)					
6 Tuna canned			1		
7 Shrimps wild/aquaculture	5	2; 5	3; 5	2; 5	5
8 Salmon imported			5		5
9 Crustaceans and cephalopods			2	2	
10 Trout					
11 Sushi					
Other (specify)					
Other (specify)					
Other (specify)					
TOTAL					

1 = Local product directly from fishers (without auctioneer); 2 = Local product directly from fishers (through auctioneer); 3 = Local product from other players; 4 = Directly imported; 5 = Imported product by wholesaler or another company

Table 131. Description of the sources of the product per category in South governorate

Governorate	South				
Category	B - Fishmonger (inside the auction market)	C - Fishmonger (near or related to the auction market)	D - Fishmonger	E - Fishmonger-street vendor "Hungare"	F - Fishmonger/ restaurant
1 Juvenile fish (Bizri)	2	1; 2	1; 2; 3	2	1; 2
2 Local demersal fish – in total					
Class one*	2	1	2		2
Class two **	2	1	2	2	1; 2
Class three***		1; 2	1; 2	2	1; 2
3 Seabream/Seabass (aquaculture)		5	5	5	5
Imported:					
Grouper		5	4; 5	5	5
Meagre		5	4; 5	5	5
Nile Perch					
Pangasius					5
Tilapia			5		
Hake			4		
Red mullet		5	5	5	5
Other					
Other					
Other					
4 Sardine					
5 Tuna like species (tuna, balamida)			1		
6 Tuna canned		5			5
7 Shrimps wild/aquaculture		5	4; 5		5
8 Salmon imported					
9 Crustaceans and cephalopods					
10 Trout					
11 Sushi					
Other (specify)					
Other (specify)					
Other (specify)					
TOTAL (tonnes)					

1 = Local product directly from fishers (without auctioneer); 2 = Local product directly from fishers (through auctioneer); 3 = Local product from other players; 4 = Directly imported; 5 = Imported product by wholesaler or another company

Table 132. Proportion of product that is sold to different purchasers. Percentages greater than 50% of the total are highlighted in dark green, between 30-50% in light green and between 20-30% in yellow.

Governorate	Akkar	North			
Category	D Fishmonger	B - Fishmonger (inside the auction market)	D - Fishmonger	E - Fishmonger-street vendor "Hungare"	F - Fishmonger/ restaurant
Private consumer	0.85	1.0	0.98	0.8	1.0
Restaurant	0.05		0.02	0.2	
Fishmonger (outside the market)					
Fishmonger-street vendor "Hungare"	0.10				
Fishmonger/restaurant					
Total	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Governorate	Beirut/Mount Lebanon				
Category	A – Fishmonger (inside the Beirut (Quarantina) Central Fish Market)	C - Fishmonger (near or related to the auction market)	D - Fishmonger	E - Fishmonger-street vendor "Hungare"	F - Fishmonger/ restaurant
Private consumer	0.6	1.0	0.85	0.52	0.90
Restaurant	0.2		0.15	0.26	0.10
Fishmonger (outside the market)	0.2			0.22	
Fishmonger-street vendor "Hungare"					
Fishmonger/restaurant					
Total	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Governorate	South				
Category	B - Fishmonger (inside the auction market)	C - Fishmonger (near or related to the auction market)	D - Fishmonger	E - Fishmonger-street vendor "Hungare"	F - Fishmonger/ restaurant
Private consumer	1.0	0.80	0.75	1.0	0.95
Restaurant		0.20	0.25		0.05
Fishmonger (outside the market)					
Fishmonger-street vendor "Hungare"					
Fishmonger/restaurant					
Total	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**

Table 133. Typical scheme of seafood commercial chain for Fresh local product

Governorate	Category	Step 1	Mark-up	Step 2	Mark-up	Step 3
Akkar	D - Fishmonger	Fisher	10%	Wholesaler	5-10%	Fishmonger
North	B - Fishmonger (inside the auction market)	Wholesaler or fish market	LL1,500-3,000/Kg	Consumer		
	D - Fishmonger					
	E - Fishmonger-street vendor "Hungare"					
	F - Fishmonger/restaurant					
Beirut/ Mount Lebanon	A – Fishmonger (inside the Beirut (Quarantina) Central Fish Market)	Wholesaler or fish market	20-30%	Consumer		
	C - Fishmonger (near or related to the auction market)					
	D - Fishmonger					
	E - Fishmonger-street vendor "Hungare"					
	F - Fishmonger/restaurant					
South	B - Fishmonger (inside the auction market)	Wholesaler or fish market	20-25%	Consumer		
	C - Fishmonger (near or related to the auction market)					
	D - Fishmonger					
	E - Fishmonger-street vendor "Hungare"					
	F - Fishmonger/restaurant					

Table 134. Typical scheme of seafood commercial chain for Fresh imported product

Governorate	Category	Step 1	Mark-up	Step 2	Mark-up	Step 3
Akkar	D - Fishmonger	Wholesaler	LL1,000/Kg	Consumer		
North	B - Fishmonger (inside the auction market)	Wholesaler	LL2,000/ Kg	Consumer		
	D - Fishmonger					
	E - Fishmonger-street vendor "Hungare"					
	F - Fishmonger/restaurant					
Beirut/ Mount Lebanon	A – Fishmonger (inside the Beirut (Quarantina) Central Fish Market)	Wholesaler or fish market	20-30%	Consumer		
	C - Fishmonger (near or related to the auction market)					
	D - Fishmonger					
	E - Fishmonger-street vendor "Hungare"					
	F - Fishmonger/restaurant					
South	B - Fishmonger (inside the auction market)	Wholesaler or fish market	15-25%*	Consumer		
	C - Fishmonger (near or related to the auction market)					
	D - Fishmonger					
	E - Fishmonger-street vendor "Hungare"					
	F - Fishmonger/restaurant					

*Depending on the species, the mark-up can be a fixed amount worth about LL2.000/Kg

Table 135. Typical scheme of seafood commercial chain for Frozen imported product

Governorate	Category	Step 1	Mark-up	Step 2	Mark-up	Step 3
Akkar	D - Fishmonger	Wholesaler	LL1,000/Kg	Consumer		
North	B - Fishmonger (inside the auction market)	Wholesaler	LL1,000-3,000/Kg	Consumer		
	D - Fishmonger					
	E - Fishmonger-street vendor "Hungare"					
	F - Fishmonger/restaurant					
Beirut/ Mount Lebanon	A – Fishmonger (inside the Beirut (Quarantina) Central Fish Market)	Wholesaler or fish market	20-30%	Consumer		
	C - Fishmonger (near or related to the auction market)					
	D - Fishmonger					
	E - Fishmonger-street vendor "Hungare"					
	F - Fishmonger/restaurant					
South	B - Fishmonger (inside the auction market)	Wholesaler or fish market	15-20%*	Consumer		
	C - Fishmonger (near or related to the auction market)					
	D - Fishmonger					
	E - Fishmonger-street vendor "Hungare"					
	F - Fishmonger/restaurant					

*Depending on the species, the mark-up can be a fixed amount worth about LL3,000/Kg

Table 136. Typical seafood commercial chain for Aquaculture imported product

Governorate	Category	Step 1	Mark-up	Step 2	Mark-up	Step 3
Akkar	D - Fishmonger	Wholesaler	5-10%*	Consumer		
North	B - Fishmonger (inside the auction market)	Wholesaler	LL1,000-3,000/Kg	Consumer		
	D - Fishmonger					
	E - Fishmonger-street vendor "Hungare"					
	F - Fishmonger/restaurant					
Beirut/ Mount Lebanon	A – Fishmonger (inside the Beirut (Quarantina) Central Fish Market)	Wholesaler or fish market	20-30%	Consumer		
	C - Fishmonger (near or related to the auction market)					
	D - Fishmonger					
	E - Fishmonger-street vendor "Hungare"					
	F - Fishmonger/restaurant					
South	B - Fishmonger (inside the auction market)	Wholesaler or fish market	10-20%	Consumer		
	C - Fishmonger (near or related to the auction market)					
	D - Fishmonger					
	E - Fishmonger-street vendor "Hungare"					
	F - Fishmonger/restaurant					

*Depending on the species, the mark-up can be a fixed amount worth about LL1,000/Kg

Table 137. Typical scheme of seafood commercial chain for Cooked product (fishmonger/ restaurant)

Governorate	Category	Step 1	Mark-up	Step 2	Mark-up	Step 3
Akkar	D - Fishmonger					
North	B - Fishmonger (inside the auction market)					
	D - Fishmonger	Wholesaler	LL5.000/ Kg	Customer		
	E - Fishmonger-street vendor "Hungare"					
	F - Fishmonger/restaurant	Wholesaler	LL5.000/ Kg	Customer		
Beirut/ Mount Lebanon	A – Fishmonger (inside the Beirut (Quarantina) Central Fish Market)					
	C - Fishmonger (near or related to the auction market)					
	D - Fishmonger	Wholesaler	20-50%	Customer		
	E - Fishmonger-street vendor "Hungare"					
	F - Fishmonger/restaurant	Wholesaler	50%	Customer		
South	B - Fishmonger (inside the auction market)					
	C - Fishmonger (near or related to the auction market)					
	D - Fishmonger					
	E - Fishmonger-street vendor "Hungare"					
	F - Fishmonger/restaurant	Wholesaler	20-35%	Customer		

*Depending on the species, the mark-up can be a fixed amount worth about LL1,000/Kg

Sales

In general, the results (Table 138) show that the period from March through to August is considered the best in terms of sales of total volume. The only exception to this is in the region of Akkar for the fishmongers (Category D) where the period from May to September exhibited the lowest sales and from October to April the highest. In general, the composition of the products sold varied during the months with the spring-summer period (March-August) exhibited better sales for the local very small fish "Bizri", which is made up of 2-5 cm fish mostly made up of anchovies, round sardinella and sardines. Other small pelagic species, such as round sardinella and the imported aquaculture products, in particular seabream and seabass from Turkey were also commonly sold. In certain regions, such as in Mount Lebanon, the demand for local demersal coastal species such as Rabbitfishes (Siganus spp.) and bogue (Boops boops) is high during the winter particularly in December.

The prices of imported fish products remain constant throughout the year due to a balance between the demand and supply. For the local production especially the "Bizri" and sardines, there is more volatility in the first sale prices due to fluctuations in the catches, which depend on the fishing activities. A general increase in the price was reported for the periods related with the holidays and festivities (e.g. New Year, religious holidays).

Table 138. Description of the main sales periods and changing of prices over an average year as provided by the respondents.

Month	Main sales periods	For which species?	Prices (up, down, static)
January			
February			
March	X	All species but particularly for the bizri and small-pelagics and for the imported aquaculture seabream and seabass	No response
April	X		
May	X		
June	X		
July	X		
August	X		
September			
October			
November			
December			

4.3.2.5 Analysis of critical factors

Table 139 shows the vendors' reporting on their perception of how their buyers would rank a variety of issues on a scale of 1- 5 (5 = the most important of all and 1 = not important).

Table 139. Reported issues of importance for buyers on a scale of 1- 5 (5 = the most important of all and 1 = not important)

Governorate	Akkar	North			
Category	D Fishmonger	B - Fishmonger (inside the auction market)	D - Fishmonger	E - Fishmonger-street vendor "Hungare"	F - Fishmonger/ restaurant
Price	4	5	5	5	4
Quality of product	4	4	5	5	5
Origin of product (local, imported)	1	-	4	4	4
If local, area of origin (South, North, etc.)	1	-	5	-	1
Captured	2	-	1	-	1
How the product is captured (type of fishing gear)	1	-	2	-	3
If it is from aquaculture	2	-	-	-	1
If it is imported	1	-	-	-	4
Predictability/regularity of supply	1	-	-	-	1
Type of packaging	2	-	2	-	3
Hygiene	4	5	5	5	5
Display (ice, etc.)	3	5	5	-	5
Trust to the seller	4	5	5	5	5
Freshness of product	-	-	-	-	-

Governorate	Beirut/Mount Lebanon				
Category	A- Fishmonger (inside the Beirut (Quarantina) Central Fish Market)	C- Fishmonger (near or related to the auction market)	D - Fishmonger	E - Fishmonger- street vendor "Hungare"	F - Fishmonger/ restaurant
Price	4	5	4	5	4
Quality of product	5	4	5	5	5
Origin of product (local, imported)	3	3	4	3	3
If local, area of origin (South, North, etc.)	3	-	3	3	4
Captured	2	-	2	2	4
How the product is captured (type of fishing gear)	2	-	2	3	2
If it is from aquaculture	2	-	2	2	2
If it is imported	3	4	3	3	3
Predictability/regularity of supply	2	-	2	2	2
Type of packaging	4	3	4	4	4
Hygiene	5	5	5	5	5
Display (ice, etc.)	5	4	5	5	5
Trust to the seller	5	5	5	5	5
Freshness of product	5	-	2	3	0
Governorate	**South**				
Category	**B - Fishmonger (inside the auction market)**	**B - Fishmonger (inside the auction market)**	**B - Fishmonger (inside the auction market)**	**B - Fishmonger (inside the auction market)**	**B - Fishmonger (inside the auction market)**
Price	5	5	5	4	5
Quality of product	5	4	4	4	5
Origin of product (local, imported)	4	4	5	3	4
If local, area of origin (South, North, etc.)	3	3	3	3	3
Captured	3	3	4	3	3
How the product is captured (type of fishing gear)	4	4	3	3	4
If it is from aquaculture	4	4	4	3	4
If it is imported	3	3	3	4	3
Predictability/regularity of supply	4	4	3	3	4
Type of packaging	3	3	4	4	3
Hygiene	4	4	4	4	4
Display (ice, etc.)	5	5	5	5	5
Trust to the seller	5	5	5	5	5
Freshness of product	-	-	-	-	-

Unsold product

The fishmongers (Category D) in the region of Akkar stated that in summer, about 10% of the product is not sold due to a relatively lower market demand. In Tripoli, the fishmongers (Category B) on average reported that during the whole year, 20% of their product was not being sold, due to a low market demand and perceived high prices. In the region of Mount Lebanon, many respondents declared to be unable to sell about 5-10% of their product due to deterioration and spoilage. The respondents noted that there were no specific problems related to deterioration/ spoilage besides the problems in electricity supply and improper preservation. Some also commented that the inability to sell part of the product might also be due to the perceived problem of fish being polluted.

List of critical factors

Table 140. Reported issues and problems as provided by respondents

Governorate	Category	Issues	Problem experienced
North	B - Fishmonger (inside the auction market)	Health/Medical insurance; Imported fish	They feel negative/pessimistic due to the high rate of imported fish; High competition by street vendors "Hungare"
	D - Fishmonger	Street vendors; High electricity and water costs	High competition by street vendors "Hungare"
	E - Fishmonger-street vendor "Hungare"	Licence; Overexploitation of small pelagic resources	Some of them operate without licence; They noticed a decrease in the supply of small-pelagics
	G Fishmonger/ wholesaler	High electricity costs	
Beirut/Mount Lebanon	D - Fishmonger	Hygienic conditions at fish market	Poor hygienic conditions discourage seafood purchase
	F - Fishmonger/restaurant	Political and economic instability	

4.4 KEY HIGHLIGHTS

Large-scale seafood actors

The large-scale business group consisted of distributors, processors, importers, chain supermarkets and grocerant.

Most employers said that the profession is not suitable for women because it is physically demanding work and they never received applications from women for the jobs. Nevertheless, women do work in some of the operations - particularly in the administrative, marketing and accounting departments.

The total employment, measured in FTE, was estimated to range between 1275 and 1931.

The busier and higher value periods appeared to be tightly correlated with weekends, holidays and the period of Lent. A general price trend was consistently noted whereby the imported product prices are affected by the international prices, not by national market conditions.

Labour costs were the main cost item with the average monthly salary for a worker estimated at LL1.1 million ($730). This cost item was followed by the cost for storage and ice as the second largest components of all cost items.

Cultured seabass/seabream imported from Turkey make up the largest share of fresh/chilled products and the species were typically imported by a wholesaler, not by the businesses themselves. While for canned/processed products, canned tuna and prepared sushi makes the overall largest share of the relative proportion of products sold.

The fresh, local products are generally purchased from wholesalers and sold directly with a reported mark-up of about 10%. Imported products – either chilled/fresh or frozen were purchased either from wholesalers or from importers with a mark-up ranging between 10-30%. Imported aquaculture products had the highest mark-up reported, whether they were sold to the consumer or to restaurants.

Medium-scale seafood actors

The medium-scale enterprise group consisted of seafood business including auctioneers, wholesalers, importers and fishmongers.

The total employment measured in FTE was estimated to range between 971 and 1211. Some respondents in the South reported that women's wages were about 20% lower than those of the men, even when the women were working in the same position as the men.

The busier/higher value periods were also reported to be tightly correlated with holidays, weekends, Lent, and the summer period. Compared to previous year a general trend of decreased sales volumes and prices was identified.

In general, labour costs was one the main cost (for four out of six categories) followed by power and ice costs. The salaries were reported to range between the minimum legal wage per month, LL680 thousand ($450), and LL1-1.2 million per month ($700-800).

Typically, imported cultured seabass and seabream make up the largest share of fresh/chilled products with the exception of Auctioneers/wholesalers from the North who exclusively sold local demersal fish obtained directly from the fishers either with or without an auctioneer. For wholesalers/importers/fishmongers in the South local demersal fish made up the second greatest proportion of the sales after seabass/seabream.

The general scheme for imported frozen products and imported aquaculture products were similar: the first step in the chain was always reported to be the importer and the mark-up to the second step was 10-20%. The second step was sales to either wholesalers, mongers or restaurants with the mark-up reported to be between 10-40%. The final, third step was reported as the consumer for most of the respondents. Imported aquaculture products had the highest mark-up reported, whether they were sold to the consumer or to restaurants.

The most significant issues reported centred around imported products, delays due to port clearance and import prices, price control and irregular product supply. Finally, on the topic of food loss and waste it was reported that local products suffer in the spring season, as there is not adequate market demand. In the summer, deterioration/spoilage due to losses of electrical power is an endemic issue. The auctioneers made a general note to that they did not face issues with unsold products, as they would simply lower the price until the products were sold.

Small-scale seafood actors

The small-scale business group consisted of mongers operating inside or nearby the fish markets, in fish shops or as street-vendors.

The total employment generated by this category ranged between 1 461 and 2 573 FTEs. In most cases the full-time workers in this study worked more than 2,000 hours/year and the total hours were in the range of 2,500 hours per year. No women were involved in the activities in the street vendor "Hungare" category as the activities were considered too physically demanding or not socially acceptable for women and, in general, this activity had the lowest attractiveness and the lowest salaries.

In general, the period from March through to August is considered the best in terms of sales of total volume, but no other specific trend in the annual sales volume was identified, while average annual prices were mostly reported to be static for the two-year period under analysis. The prices of imported fish products remain constant throughout the year while the price of local Bizri is more volatile depending on the fluctuations in the catches. A general increase in the price was reported for the periods related to holidays and festivities (e.g. New Year, religious holidays).

A simple cost structure was identified for these categories, whereby labour was generally found to be the main operating cost followed by ice and packaging. Average salaries, calculated for the standard working time represented by the FTE, were generally low and below the national minimum wage. Further, considering that the effective working hours per year were far above the threshold of the 2 000 hours the effective income earned by each worker was actually higher. Moreover, the values obtained by the survey could have also been affected by some form of unpaid labour that was not taken into account.

Imported cultured seabass/seabream made up the largest share of fresh/chilled products, and this was particularly true for the street-vendors "Hungare". These products were typically imported by a wholesaler and not directly by the businesses themselves. Bizri, bogue (Boops boops) and in general class-three quality products were also important items sold by these categories. In the case of fishmongers, imported red mullet was found to be one the most commercialised single species while local products accounted for 1/3 of the total. In Beirut (Quarantina) Fish Market, the vendors mainly sold imported products, with the local production being a portion of the total and bizri being the main item.

During the busy period of March – August the local product was found to be mainly represented by local Bizri, which is made up of small fish 2-5 cm in length and mostly made up of the species anchovies, round sardinella and sardines.

Between 5 and 20% of the products ,in general, are not sold due to low market demand, perceived high prices, deterioration and spoilage, in some cases it was reported the problem that local seafood is perceived as being polluted.

Overall commercial seafood chain

The total estimated number of business entities ranged between 460 to 759, with the small scale representing the large majority in numbers (80 %) but around 20% of the total volume. The value of the sales, which averaged in a range from LL182 Billion – LL268 Billion which were equivalent to $300 Million – $430 Million while the total employment in FTE involved in the commercial seafood chain ranged between 3 774 and 5 715 (Table 141).

Table 141. Summary of estimation of total businesses, volume, value and employment

	Estimated businesses		Total volume (t)		Total value (1000 USD)		Employment in FTE	
Business category	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
Large-scale	26	39	14,411	21,343	121,075	178,219	1,275	1,931
Medium-scale	67	79	21,496	26,122	120,511	145,336	1,037	1,211
Small-scale	367	641	7,695	13,719	55,785	100,507	1,461	2,573
Total	**460**	**759**	**43,602**	**61,184**	**297,371**	**424,062**	**3,774**	**5,715**

Analysing the production and supply patterns and countries of origin of the products in the different categories (small, medium and large-scale), revealed an extremely high level of dependence on external supply and that export levels were negligible. In Lebanon, there is a large imbalance between the supply from local production and the demand, which drives the high levels of imports and the prices. Table 142 shows an example of the high price for a local product, Barracuda, as compared those imported from Turkey and Egypt; since the product quality, but particularly the origin of the product, are important factors for the consumers and they are willing to pay a magnitude of order higher for the local product.

Table 142. Example of prices for fresh/chilled Barracuda in Lebanon depending on the country of origin.

Country of origin	Barracuda prices
Local	$30/Kg
Turkey	$8/Kg
Egypt	$3.5/Kg

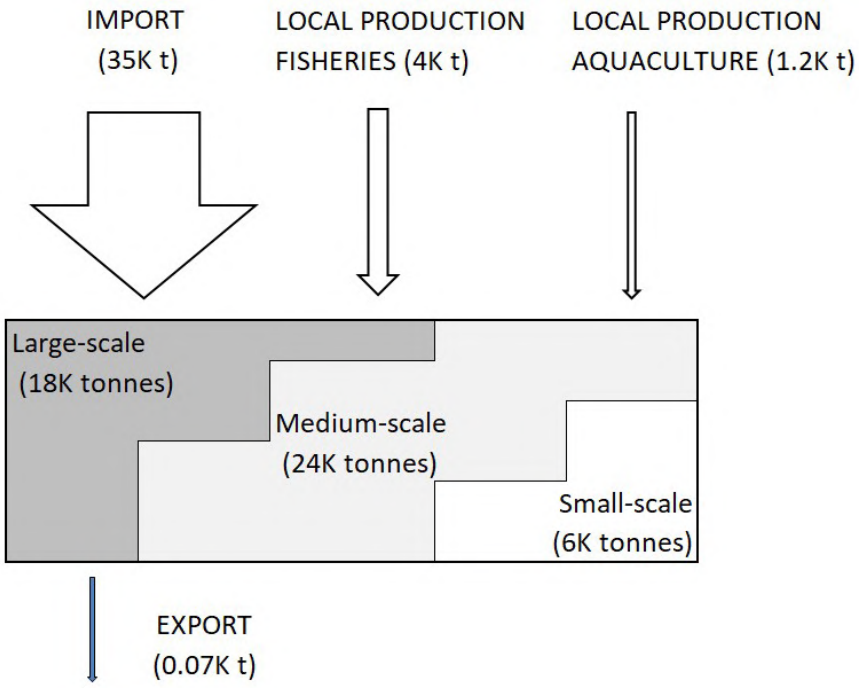
The Lebanese seafood market is made up of about 90% imports i.e. around 35 thousand tonnes. The export is negligible, less than 100 tonnes, and the local production is extremely low, about 4 thousand tonnes from fisheries and 1.2 tonnes from freshwater aquaculture production (Table 143). This makes the apparent market total about 40 thousand tonnes and the consumption per capita equal to 8.9 Kg (Table 94). Furthermore, the import market is controlled by a limited number of players, while, on the other hand, the local production was scattered with many individuals locally marketing the production. It is important to note that, for imports, the majority of the fisheries products come from aquaculture and demersal trawl fisheries, particularly from Turkey (20%), Thailand (20%), Vietnam (14%) and Egypt (8%). For the imported species, seabream/ seabass, tilapia, red mullet and shrimps were the most important chilled species. Hake, pangasius, shrimps and tuna were the most prevalent imported frozen species.

Table 143. Apparent production, marketing and consumption per capita 2016.

Production Fisheries (t)	Production Aquaculture (t)	Import (t)	Export (t)	Apparent market (t)	Consumption per capita (kg)
4,273	**1,225**	**34,476**	**0.072**	**39,974**	**8.9**

The apparent distribution of the import and local production (fisheries and aquaculture) are matched to their main destination within the Lebanese value chain (Figure 8). The Large-scale producers are the primary destination for imported products while very few exports are produced.

Figure 8. General overview of the apparent distribution of the volume between actors of the chain (year?)



Tables 144 and 145 show two typical examples of price transmission in the supply chain in Lebanon. Table 144 is for imported fresh/whole seabream while Table 145 is for fresh/whole locally captured species. For the local species, the starting price would be higher, but then the mark-up is lower both between the auctioneer – wholesaler and the wholesaler- final purchase. On the other hand, the starting price for the imported species is low, but then the mark-up is high for both steps. Between the importer- fishmonger the mark-up was between 15-20% and then between 30-40% between the fishmonger and the final purchase.

Example of price transmissions in the supply chain

Table 144. General scheme of the price transmission in the supply chain of the imported seabream.

Step 1	Purchase price (LL/Kg)	Step 2	Purchase price (LL/Kg)	Step 3	Purchase price (LL/Kg)	Step 4
Producer	5000-6000	Importer	6000-7500	Fishmonger	8000-10000	Consumer
Mark-up			15-20%		30-40%	

Table 145. General scheme of the price transmission in the supply chain of the locally captured species.

Step 1	Purchase price (LL/Kg)	Step 2	Purchase price (LL/Kg)	Step 3	Purchase price (LL/Kg)	Step 4
Fisher	15000	Auctioneer	16000	Wholesaler/ Fishmonger	17500-19500	Consumer/ Restaurant
Mark-up			6-7%		10-20%	

5 ANALYSIS OF CHALLENGES AND CRITICAL FACTORS IN SEAFOOD CHAIN

5.1 FACTORS AND CHALLENGES

1) High prices

Relative to the cost of living in Lebanon and with respect to the value of landings, in general, the average price per kg of local production was found to be relatively high compared to the European prices (Pinello & Dimech 2013). The high price is a natural result of the highly unbalanced context of demand and supply, in which most of the demand is met by imports (~90%). This imbalance holds the prices relatively high, and, resultantly the capture fisheries production was not processed and was mostly commercialised in a fresh/whole form. Once products were imported, they were not re-exported after value-added process, except for probably some quantities of processed salmon, so the prices do not increase much. In general, in Lebanon, the first step of the seafood value chain was usually the importer and there are few steps in the value chain with only a few points of re-sale with few steps taken for value-addition. In summary, the seafood value chain is relatively short and uncomplicated.

The few imported species and the small-scale nature of most players mean that only a few importers operate in the country. The difficulties with bureaucratic hurdles, issues with organizing air-based imports, etc. mean that only a few players who are more specialized act as importers. This restricted the number of importers and also keeps prices higher as a small group was controlling the imports.

2) Local production

The local production of seafood is low, the production levels are aleatory and it is mostly consumed locally, near the landing point. The fleet is characterized by being small-scale composed of older, mainly wooden, vessels with fishing activity very dependent on weather conditions. Around half of the catch are small pelagic species that are seasonal in their abundance. Problems in the hygiene of the vessel, which result in low product quality further limits the commercialization.

The combination of factors including low and unstable supply and low product quality made the commercialization of the product for those players that required advance planning, such as the big market chains, unappealing. The local product is well perceived by the consumer and they feel it is of the best quality. This strength of the local products can be leveraged to support increased production levels.

It appeared that imported seabream/seabass were being dumped into the Lebanese market from aquaculture production. Very few players control the import of the species and they are large enough that their economies of scale allowed them to re-sell the product with very limited mark-up. This eliminates smaller competitors who could not afford to sell for such a low price per kilogram. In this way, the market is increasingly concentrated as it is flooded with the cheap seabream/seabass.

3) Product spoilage

There were some specific problems reported by the respondents that were about the deterioration/ spoilage resulting from problems in electricity supply and from improper preservation of the seafood during transport and display. For example, bizri that are landed without any ice or cooling are then transported from the port of Aabdeh to Beirut (Quarantina) Central Auction Market. Further, some informal sales are conducted with the fish transported in the trunks of cars and sold along the roadside from there. In some cases, the final consumers perceived that some of the fish were polluted and this resulted in an inability to sell part of the product.

4) Energy cost

There is a general, national problem with the electrical supply, and thus for refrigeration. The electricity supply is inadequate, although inexpensive, and the supply through the national grid is rationed and only available for a portion of the day. In order to ensure electrical supply for the other portion of the day, either personal electricity or the private neighbourhoods' standby generators use is required, further increasing the costs. Further, some business, mainly the small and medium-scale, had to pay for electricity like normal citizens, not at industrial rates.

5) Political, bureaucratic and logistical barriers

Problems in the logistics for the imports, which are not easy to arrange, including arranging for cargo space on airplanes, organizing containers for frozen product and ensuring the timely delivery pushes them to work through the perceived cartel of the traders/importers/auctioneers at Beirut (Quarantina) Central Fish Market. The small and medium-scale players could barely afford to organize these imports; moreover, bureaucratic requirements present another significant hurdle. The political instability of the country seems to play a key role in dis-incentivizing investments in the seafood sector.

6) Employment

The sector appeared to have low levels of attractiveness. Particularly, to receive their average salaries, the workers had to work for long hours and days to obtain a salary comparable to the national minimum wage of Lebanon. Due to their long working hours, the average salary was around the minimum wage, but when this was calculated on the basis of FTE, with a 2000 hour cap, the salaries mostly fell below the minimum wage (Figure 5). The most informal of the sectors – the Hungare- attracted young, unskilled workers. However, due to the very informal and scattered nature of the work under this category.

Women were employed in the large and medium-scale categories, but not in the small-scale categories except as unpaid wives/daughters or owners/managers of the business. In the medium and large-scale categories between 20-30% of the workforce were reported to be women. In the small-scale category, it was reported by the respondents that the dual factors of the physical requirements of the work as well as cultural norms kept women outside of work in this category.

7) Street vendors "Hungare"

Street vendors, "Hungare", operated without a licence and were not well regulated. They were low-

income people who sold their products on the streets with no or poor preservation techniques, typically using their own cars to move and sell the products. They also had poor seafood handling expertise and no facilities.

8) Skills and facilities

Building skills for labour working in the sector seems to be a need, especially for those working in the small-scale seafood actors. Issues of product handling and hygienic standards were all raised by the respondents and could be readily addressed through appropriate training. Another concern was raised about the lack of proper facilities. It is therefore recommended that relevant stakeholders such as the government ministries as well as the private sector work to jointly address the various capacity development needs.

5.2 SUMMARY OF FACTORS AND CHALLENGES PER CATEGORY

Large-scale value chain

Aside from those issues highlighted by the respondents for the categories, and based on the data collected, it seems that the reasonable prices, consistent availability, and resulting market domination of seabass and seabream might give some room for some competition in the market from other species that would also be so well accepted by the consumers.

A more consistent supply of local products, while retaining the good prices currently charged, would decrease the reliance on imported seafood and bring more diversity to the market.

Medium-scale value chain

A more consistent supply of local products, while retaining the good prices currently charged would decrease the reliance on imported seafood. In the North, the local fish and fishery products are preferred while in the South aquaculture products are perceived to be of lower quality; and thus, working with consumers on their perceptions could improve the market demand for aquaculture products. Improving the access and availability of importation pathways to the medium-scale players through government initiatives would help to increase the number of players in the import pool and break-up the control currently held by a few large importers.

Small-scale value chain

The main issues for the small-scale appeared to be the informal nature of the work, the lack of handling and processing facilities for the workers. A particular focus on formalizing workers in this category, providing training on product handling and hygiene could be placed on the training requirements for this category.

6. MAIN RECOMMENDATIONS FOR ACTIONS

Based on the findings of the study combined with the feedback from the respondents the main recommendations for actions have been compiled under three headings –products; market (trade) and people- with summaries below and then prioritized by the authors based on the data analysis as well as the field visits (Table 146).

Recommendations - Products

Increase added value of products through improved post-harvest processing
Currently, most of the products are sold fresh/whole in the market. There could be an opportunity to increase the post-harvest processing for value-added products for both the internal market as well as for re-export. This step would be a portion of the maturation of the seafood value chain in Lebanon.

Stabilize local production levels
One of the main hurdles for the large-scale players from utilizing locally captured species is the aleatory nature of the availability. These players must be able to plan on regular and predictable local supplies; which if stabilized and improved – through steps such as improving the ability of the fleet to stay at sea fishing under poor weather conditions – the reliance on imported species could be reduced.

Improve hygiene/ handling practices
For all players, but particularly for the small-scale players, the need for improved product handling and hygiene practices was raised. This could be conducted through capacity development training.

Development of capacity of ice plants to provide training to their customers and retailers on proper ice handling and occupational safety and health to ensure that ice supplied to fishers and intermediaries meet food safety and quality standards.

Improve the fish storage and vending facilities at the markets / with the vendors
This point is an important complementary step with the previously identified recommendation. Improved facilities are required for providing the necessary infrastructure to then support the improved hygiene practices.

Supply Chain Governance
Improvement of supply chain governance and coordination between public and private stakeholders. Develop and enforce appropriate regulations to govern and improve quality and safety standards at all seafood-vending facilities. This is expected to improve quality and hygiene levels of traded seafood.

Processing

- Improve sustained productivity and food safety can have a positive impact on the price competitiveness of processed fish products in local and budding export markets.
- Develop local capacity to deliver productivity improvement programs and related services to enterprises along the seafood processing chain.

Recommendations – Market (trade)

Market Information and accessibility

- Improve access to markets, increased market competitiveness through enhanced capacity of individuals, institutions and relevant service providers. This is expected to enhance negotiating position of those most vulnerable in the commercial chain through improved logistics and enhanced access to market information;
- Enable fishing communities to improve access markets, increased market competitiveness through enhanced capacity of individuals, institutions and relevant service providers;
- Enhanced negotiating position of those most vulnerable in the supply chain through improved logistics and enhanced access to market information.

Facilitate and promote development of open markets.

In order to promote open markets, steps must be taken to better distribute power within the seafood value chain. Government control to reduce the development of monopolies is required for this to occur.

Central/Regional Fish Markets

- Modernize and upgrade the Beirut Central Fish Market/Auction facilities and enable direct access to the sea in order to accommodate local and foreign fishing vessels that will land the fish caught in the Lebanese Waters (territorial sea and EEZ).
- Modernization and capacity building of the management capabilities of the central and regional fish markets staff.
- Upgrading of capacity of market administration of wholesale/auction fish markets to deliver training on food safety to wholesalers/retailers and their workers.

Trading:

Improvement of access to services that would help players to meet food safety and occupational safety and health standards through

- Enhancement of capacity of traders to act as mentors on food safety to their suppliers.
- Upgrading of fish transportation system from landing site to final consumers.

Retail distribution
Improvement of access of vendors to information and services that would enable them to adopt better marketing practices, facilities and services; together with ensuring that there are sufficient market-based incentives to facilitate any possible improvement or upgrading.

Improved productivity can have a positive impact on the price competitiveness of processed fish products in the international market

Increase local production by targeting new species in national fisheries
By diversifying the species targeted by the national fisheries through training and capacity development with the fishers the local supply of seafood could be improved, thus reducing the reliance on imports.
This requires improvement and proper maintenance of fishing vessels and modification of gears that can contribute to fuel efficiency, sea safety, and in reducing overexploitation of inshore resources.

Improve the diversity of species traded
In addition to increasing the diversity of local species captured, the import of a greater diversity of seafood would help to improve the market in Lebanon.

Reduce product dumping with species like seabass/seabream
The dumping of seabass/seabream on the Lebanese market is one of the factors that reduces competition in the national seafood value chain. Preventing this dumping would be a key component of the steps to promote a more open trade market nationally.

Recommendations - People

Improve labour skills
Training for the people working in the sector may be especially needed for those working in the small-scale category of the sectors, but would likely benefit each of the small, medium and large-scale categories. In particular, product handing and hygiene could be addressed, but also the training could be used as an entry point to enhance consumer awareness and to improve their acceptance of a wider selection of species. Moreover, post-harvest best practices and value addition are expected to be introduced to fishing communities and along the seafood chain together with improving the quality of seafood products and increased job opportunities. It is recommended that relevant stakeholders such as the government ministries as well as the private sector work to jointly address the various capacity development needs.

Regularize and license street vendors
The Hungare had the most tenuous employment without a licensing or regulatory system. Bringing them under the regulated system would not only allow for better controls over product handling and quality, but also offer them the opportunity to improve their training and skills to develop their capacity to improve their work situation. Clean and sanitary merchandising of fish and fish products are expected to significantly help reducing postharvest losses, make the sector gain consumers and stakeholders' confidence, and improve livelihoods.

Support engagement of women
Upgrading women's education and providing on-the-job training are measures necessary for them to benefit from new opportunities offered by enlarged trade. However, this should be complemented by preliminary work with the women to better understand their linkages in the value chain and how these linkages drive the behaviour of individual stakeholders in terms of their commercial behaviour and how value determination in end markets drives the dynamics of the system (FAO 2016b).

Table 131. Description of the sources of the product per category in South governorate

Recommendations – People	Priority
Improve labour skills	High
Regularize and license street vendors "Hungare"	High
Support engagement of women	Medium
Recommendations – Products	**Priority**
Increase added value of products through improved post-harvest processing	Medium
Stabilize local production levels	Medium
Improve hygiene/ handling practices	High
To improve the fish storage facilities at the markets / with the vendors	High
Recommendations – Market (trade)	**Priority**
Increase local production by targeting new species in national fisheries	Medium
Facilitate and promote development of open markets	High
Improve the diversity of species traded	Medium
Reduce product dumping with species like seabass/seabream	Medium

APPENDICES

Appendix 1: References

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Appendix 2: Study questionnaires

Large-scale questionnaire
Reference Year: 2016

Questionnaire number _____
Interviewer name(s) _____

SECTION 1 - General information

1. Date of interview _____

2. City/town/village _____

3. Company name _____

4. Interviewee Name _____

5. Interviewee contact phone number _____

Interviewee contact email _____

6. What is your activity? (tick the options)

Tick
☐ Importers/other distributors

☐ Branding-distributors

☐ Chain supermarkets (Spinney level)

☐ Convenient store (with fresh seafood)

☐ Grocerant (e.g. O&C)

☐ Processors

☐ Other (specify)

7. Are you

Tick

☐ the owner of the business

☐ the manager

☐ Both

☐ Other (specify): _____

8. Out of your total sales revenues for 2016, what proportion comes

a) From seafood _____%

b) From other business activities _____%

9. How many of the below categories are there in Lebanon (including you)?

	Tick
Importers/other distributors	☐
Branding-distributors	☐
Chain supermarkets (Spinney level)	☐
Convenient store (with fresh seafood)	☐
Grocerant (e.g. O&C)	☐
Processors	☐
Other (specify)	☐

10. Number of shops of the company:

No_____

11. What is your market share? (considering your category) _____%

SECTION 2 - Employment

12. How many people do you employ of different ages and genders? And do the people you employ are foreigners? Including yourself and any family members

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time						
Men regular part-time						
Men daily (seasonal/occa-sional)						
Men - Total						
Women full time						
Women regular part-time						
Women daily (seasonal/ occasional)						
Women - Total						

13. If there are no women employed, what is the main reason?

14. If there are no employees <25 years old, what is the main reason?

SECTION 3 - Characterization of the product

15. Indicate the relative proportion of the products sold in 2016, the average prices and the method of product state (preservation technique or display form)

	Tonnes or %	Price (LL/Kg)	Fresh/chilled (C) or frozen (F)	Country
(if imported)				
1 Juvenile fish (Bizri)				
2 Local demersal fish – in total				
Local demersal - Class one*				
Local demersal - Class two **				
Local demersal - Class three ***				
3 Seabream/Seabass (aquaculture)				
Imported:				
Grouper				
Meagre				
Nile Perch				
Pangasius				
Tilapia				
Hake				
Red mullet				
Other				
Other				
Other				
4 Sardine				
5 Tuna like species (tuna, balamida)				
6 Tuna canned				
7 Shrimps wild/aquaculture				
8 Salmon imported				
9 Crustaceans and cephalopods				
10 Trout				
11 Sushi				
Other (specify)				
Other (specify)				
Other (specify)				
TOTAL	**100%/ton**			

* Red mullet, Grouper, seabass, seabream, big shrimps, etc.
** Sargus, dentex, meagre, barracuda, etc.
*** Grey mullet, siganus, red fish, small sargus, oblada, etc.

16. What proportion (%) of your product comes directly from:

	Local product directly from fishers (without auctioneer)	Local product directly from fishers (through auctioneer)	Local product from other players	Directly imported	Imported product by wholesaler or another company	Total
1 Juvenile fish (Bizri)						100%
2 Local demersal fish – in total						100%
Class one*						100%
Class two **						100%
Class three***						100%
3 Seabream/Seabass (aquaculture)						100%
Imported:						
Grouper						100%
Meagre						100%
Nile Perch						100%
Pangasius						100%
Tilapia						100%
Hake						100%
Red mullet						100%
Other						100%
Other						100%
Other						100%
4 Sardine						100%
5 Tuna like species (tuna, balamida)						100%
6 Tuna canned						100%
7 Shrimps wild/aqua-culture						100%
8 Salmon imported						100%
9 Crustaceans and cephalopods						100%
10 Trout						100%
11 Sushi						100%
Other (specify)						100%
Other (specify)						100%
Other (specify)						100%
TOTAL						**100%**

* Red mullet, Grouper, seabass, seabream, big shrimps, etc.
** Sargus, dentex, meagre, barracuda, etc.
*** Grey mullet, siganus, red fish, small sargus, oblada, etc.

17. What proportion (%) of your product you sell to

Retail market (supermarket, fishmongers, etc.)	
HORECA (Hotel; Restaurant; Catering)	
Directly to final consumer	
Wholesaler	
Export	
Other (specify)	
Other (specify)	
TOTAL	**100%**

18. When are the main sales periods? And how prices change over the year (up, down, static)?

Month	Tick	For which species?	Prices (up, down, static)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

19. How important do you think the following issues are to your buyers on a scale of 1- 5 (5 = the most important of all and 1 = not important)

	Interviewee's perception of importance (1-5)
Price	
Quality of product	
Origin of product (local, imported)	
If local, area of origin (South, North, etc.)	
Captured	
How the product is captured (type of fishing gear)	
If from aquaculture	
If imported	
Predictability/regularity of supply	
Type of packaging	
Hygiene	
Display (ice, etc.)	
Trust to the seller	
Trust to the label	
Other (specify)	

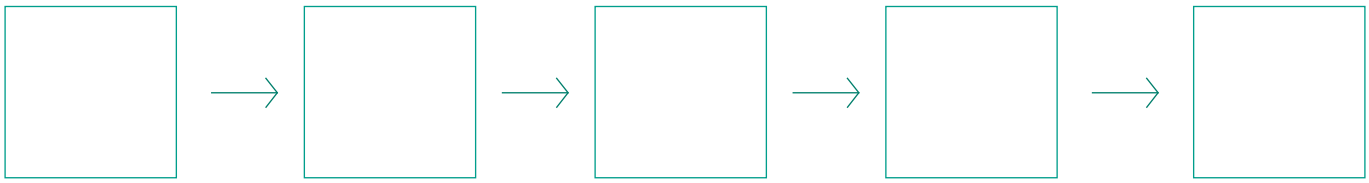
20. What proportion (%) of the total amount of product that you buy are you typically unable to sell because of

	Season			
	Winter	Spring	Summer	Autumn
No market demand				
Deterioration/spoilage				
Pollution				
Other (specify)				

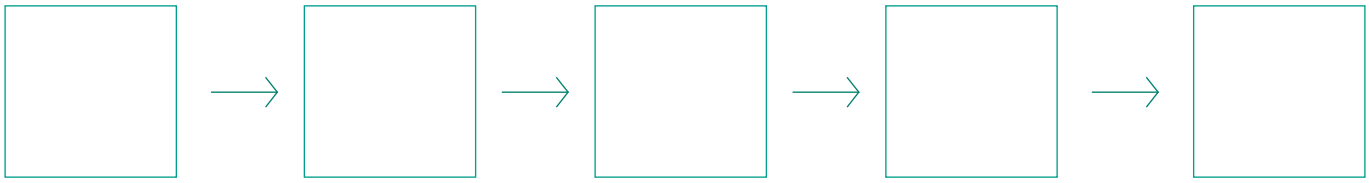
SECTION 4 - Value chain

21. Can you shortly describes a typical value chain of you products (% or amount of mark-up):

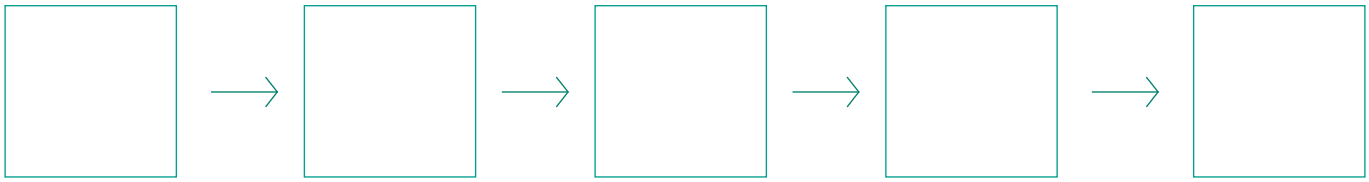
Fresh local product



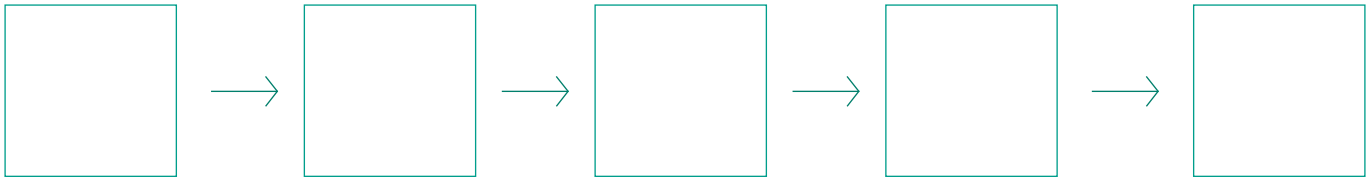
Fresh imported product



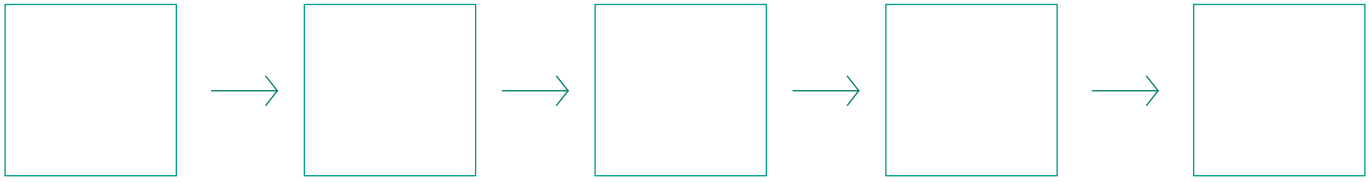
Frozen imported product



Aquaculture imported product



Cooked product (fishmonger/restaurant)



22. How have those volumes, sales revenue and prices changed compared to previous years? (up, down, static)

Fresh product	Annual sales volume 2016 compared to 2015 (up, down, static)	Avg annual price 2016 compared to 2015 (up, down, static)
1 Juvenile fish (Bizri)		
2 Local demersal fish – in total		
Class one*		
Class two **		
Class three***		
3 Seabream/Seabass (aquaculture)		
Imported:		
Grouper		
Meagre		
Nile Perch		
Pangasius		
Tilapia		
Hake		
Red mullet		
Other		
Other		
Other		
4 Sardine		
5 Tuna like species (tuna, balamida)		
6 Tuna canned		
7 Shrimps wild/aqua-culture		
8 Salmon imported		
9 Crustaceans and cephalopods		
10 Trout		
11 Sushi		
Other (specify)		
Other (specify)		
Other (specify)		
TOTAL		

* Red mullet, Grouper, seabass, seabream, big shrimps, etc.
** Sargus, dentex, meagre, barracuda, etc.
*** Grey mullet, siganus, red fish, small sargus, oblada, etc.

23. Please could you tell us about your main operating costs related to seafood for 2016?

Cost item	%	Cost per year
Labour (wages and salaries)		
Storage and ice		
Distribution		
Logistics		
Port clearance		
Power/electricity/fuel		
Trays/bags/other packaging		
Repair and maintenance costs		
Investments		
Extraordinary costs		
Total value of assets		
Other (specify)		
Other (specify)		
Other (specify)		
TOTAL costs per day		
TOTAL costs per month		
TOTAL costs per year		

24. In case women are employed, is there is any difference in the wages between men and women?

Tick

☐ YES

☐ NO

25. If YES, could you quantify it? (%)

_____%

26. Are there women providing unpaid support to the activity?

Tick

☐ YES

☐ NO

27. If YES, why?

_____

_____

Medium-scale questionnaire
Reference Year: 2016

Questionnaire number _____
Interviewer name(s) _____

SECTION 1 - General information

1. Date of interview _____

2. City/town/village _____

3. Company name _____

4. Interviewee Name _____

5. Interviewee contact phone number _____

Interviewee contact email _____

6. What is your activity? (tick the options)

- ☐ Importer
- ☐ Wholesaler
- ☐ Wholesaler/Auctioneer
- ☐ Auctioneer
- ☐ Fishmonger (inside the Quarantina Auction market)
- ☐ Fishmonger (inside the auction market)
- ☐ Fishmonger (near or related to the auction market)
- ☐ Fishmonger
- ☐ Fishmonger-street vendor Hungare"
- ☐ Fishmonger/restaurant
- ☐ Other (specify)

7. Are you
Tick

- ☐ the owner of the business
- ☐ the manager
- ☐ Both
- ☐ Other (specify):

_____

8. Out of your total sales revenues for 2016, what proportion comes

c) From seafood _____%

d) From other business activities _____%

9. How many of the below categories are there

in your city/town/village (including you)?

Importer	Tick
Wholesaler	
Wholesaler/Auctioneer	
Auctioneer	
Fishmonger (inside the Quarantina Auction market)	
Fishmonger (inside the auction market)	
Fishmonger (near or related to the auction market)	
Fishmonger Fishmonger-street vendor "Hungare" Fishmonger/restaurant Other (specify)	

SECTION 2 - Employment

10. How many people do you employ of different ages and genders? And do the people you employ are foreigners? Including yourself and any family members

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time						
Men regular part-time						
Men daily (seasonal/occa-sional)						
Men - Total						
Women full time						
Women regular part-time						
Women daily (seasonal/ occasional)						
Women - Total						

11. If there are no women employed, what is the main reason?

12. If there are no employees <25 years old, what is the main reason?

SECTION 3 - Characterization of the product

13. Indicate the relative proportion of the products sold in 2016, the average prices and the method of product state (preservation technique or display form)

	Tonnes or %	Price (LL/Kg)	Fresh/chilled (C) or frozen (F)	Country
1 Juvenile fish (Bizri)				
2 Local demersal fish – in total				
Class one*				
Class two **				
Class three***				
3 Seabream/Seabass (aquaculture)				
Imported:				
Grouper				
Meagre				
Nile Perch				
Pangasius				
Tilapia				
Hake				
Red mullet				
Other				
Other				
Other				
4 Sardine				
5 Tuna like species (tuna, balamida)				
6 Tuna canned				
7 Shrimps wild/aqua-culture				
8 Salmon imported				
9 Crustaceans and cephalopods				
10 Trout				
11 Sushi				
Other (specify)				
Other (specify)				
Other (specify)				
TOTAL				

* Red mullet, Grouper, seabass, seabream, big shrimps, etc.
** Sargus, dentex, meagre, barracuda, etc.
*** Grey mullet, siganus, red fish, small sargus, oblada, etc.

14. What proportion (%) of your product comes directly from:

	Local product directly from fishers (without auctioneer)	Local product directly from fishers (through auctioneer)	Local product from other players	Directly imported	Imported product by wholesaler or another company	Total
1 Juvenile fish (Bizri)						100%
2 Local demersal fish – in total						100%
Class one*						100%
Class two **						100%
Class three***						100%
3 Seabream/Seabass (aquaculture)						100%
Imported:						
Grouper						100%
Meagre						100%
Nile Perch						100%
Pangasius						100%
Tilapia						100%
Hake						100%
Red mullet						100%
Other						100%
Other						100%
Other						100%
4 Sardine						100%
5 Tuna like species (tuna, balamida)						100%
6 Tuna canned						100%
7 Shrimps wild/aquaculture						100%
8 Salmon imported						100%
9 Crustaceans and cephalopods						100%
10 Trout						100%
11 Sushi						100%
Other (specify)						100%
Other (specify)						100%
Other (specify)						100%
TOTAL						**100%**

* Red mullet, Grouper, seabass, seabream, big shrimps, etc.
** Sargus, dentex, meagre, barracuda, etc.
*** Grey mullet, siganus, red fish, small sargus, oblada, etc.

15. What proportion (%) of your product comes directly from:

	%
Private consumer	
Restaurant	
Importer	
Wholesaler	
Wholesaler/Auctioneer	
Auctioneer	
Fishmonger (inside the Quarantina Auction market)	
Fishmonger (inside the port/city auction market)	
Fishmonger (near or related to the auction market)	
Fishmonger	
Fishmonger-street vendor "Hungare"	
Fishmonger/restaurant	
Other (specify)	
Other (specify)	

16. When are the main sales periods? And how prices change over the year (up, down, static)?

Month	Tick	For which species?	Prices (up, down, static)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

17. How important do you think the following issues are to your buyers on a scale of 1- 5 (5 = the most important of all and 1 = not important)

	Interviewee's perception of importance (1-5)
Price	
Quality of product	
Origin of product (local, imported)	
If local, area of origin (South, North, etc.)	
Captured	
How the product is captured (type of fishing gear)	
If from aquaculture	
If imported	
Predictability/regularity of supply	
Type of packaging	
Hygiene	
Display (ice, etc.)	
Trust to the seller	
Trust to the label	
Other (specify)	

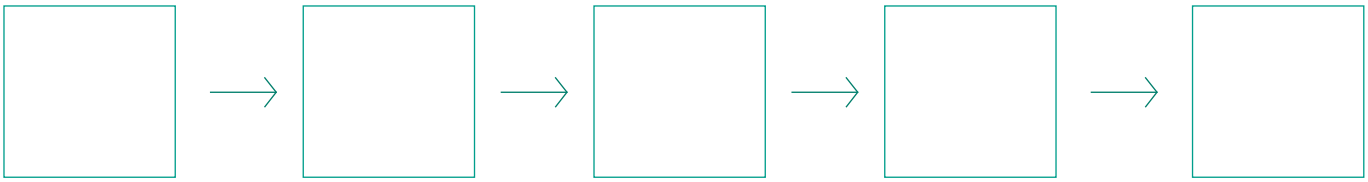
18. What proportion (%) of the total amount of product that you buy are you typically unable to sell because of

	Season			
	Winter	Spring	Summer	Autumn
No market demand				
Deterioration/spoilage				
Pollution				
Other (specify)				

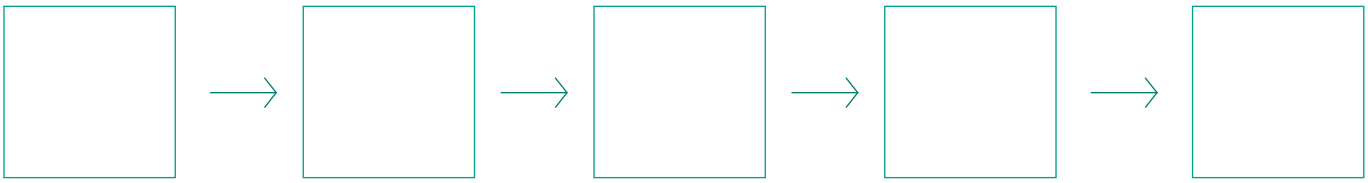
SECTION 4 - Value chain

19. Can you shortly describes a typical value chain of you products (% or amount of mark-up):

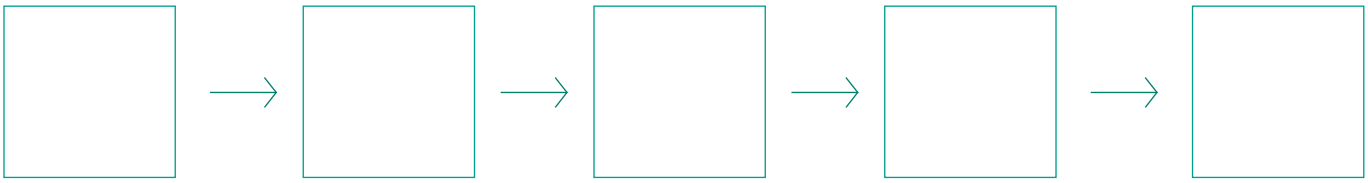
Fresh local product



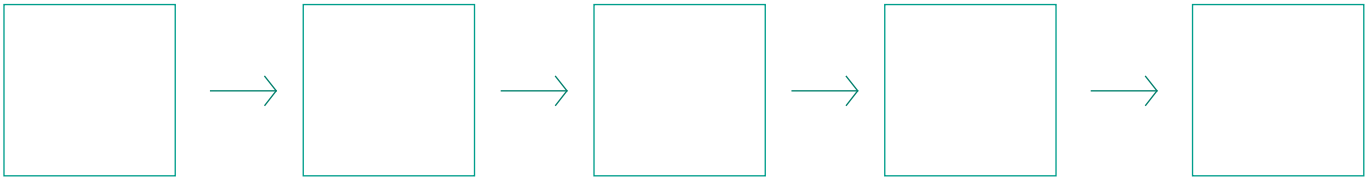
Fresh imported product



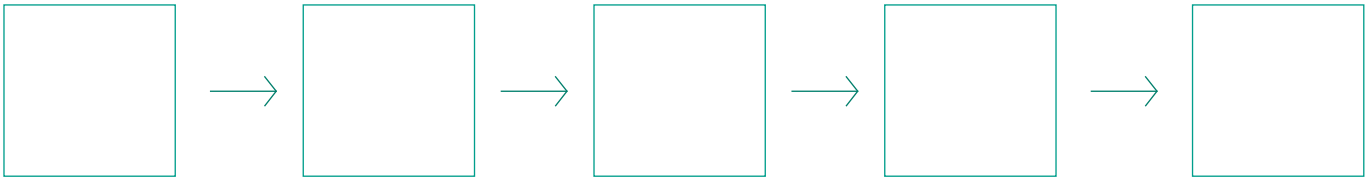
Frozen imported product



Aquaculture imported product



Cooked product (fishmonger/restaurant)



20. How have those volumes, sales revenue and prices changed compared to previous years? (up, down, static)

Fresh product	Annual sales volume 2016 compared to 2015	Avg annual price 2016 compared to 2015
1 Juvenile fish (Bizri)		
2 Local demersal fish – in total		
Class one*		
Class two **		
Class three***		
3 Seabream/Seabass (aquaculture)		
Imported:		
Grouper		
Meagre		
Nile Perch		
Pangasius		
Tilapia		
Hake		
Red mullet		
Other		
Other		
Other		
4 Sardine		
5 Tuna like species (tuna, balamida)		
6 Tuna canned		
7 Shrimps wild/aqua-culture		
8 Salmon imported		
9 Crustaceans and cephalopods		
10 Trout		
11 Sushi		
Other (specify)		
Other (specify)		
Other (specify)		
TOTAL		

* Red mullet, Grouper, seabass, seabream, big shrimps, etc.
** Sargus, dentex, meagre, barracuda, etc.
*** Grey mullet, siganus, red fish, small sargus, oblada, etc.

21. Please could you tell us about your main operating costs related to seafood products (see question No. 8-a) for 2016?

Cost item	%	Cost per year
Labour (wages and salaries)		
Storage and ice		
Distribution		
Logistics		
Port clearance		
Power/electricity/fuel		
Trays/bags/other packaging		
Repair and maintenance costs		
Investments		
Extraordinary costs		
Total value of assets		
Other (specify)		
Other (specify)		
Other (specify)		
TOTAL costs per day		
TOTAL costs per month		
TOTAL costs per year		

22. In case women are employed, is there is any difference in the wages between men and women?

Tick

☐ YES

☐ NO

23. If YES, could you quantify it? (%)

_____%

24. Are there women providing unpaid support to the activity?

Tick

☐ YES

☐ NO

25. If YES, why?

Critical factors

Issues	Problem experienced	Why does this problem occur?	What do you think could be done to solve the problem and/or what are you doing to try to solve the problem?

Small-scale questionnaire
Reference Year: 2016

Questionnaire number _____
Interviewer name(s) _____

SECTION 1 - General information

1. Date of interview _____

2. City/town/village _____

3. Company name _____

4. Interviewee Name _____

5. Interviewee contact phone number _____

Interviewee contact email _____

6. What is your activity? (tick the options)

- ☐ Importer
- ☐ Wholesaler
- ☐ Wholesaler/Auctioneer
- ☐ Auctioneer
- ☐ Fishmonger (inside the Quarantina Auction market)
- ☐ Fishmonger (inside the auction market)
- ☐ Fishmonger (near or related to the auction market)
- ☐ Fishmonger
- ☐ Fishmonger-street vendor Hungare"
- ☐ Fishmonger/restaurant
- ☐ Other (specify)

7. Are you
Tick

- ☐ the owner of the business
- ☐ the manager
- ☐ Both
- ☐ Other (specify):

_____

8. Out of your total sales revenues for 2016, what proportion comes

c) From seafood _____%

d) From other business activities _____%

9. How many of the below categories are there in your city/town/village (including you)? Tick

- ☐ Importer
- ☐ Wholesaler
- ☐ Wholesaler/Auctioneer
- ☐ Auctioneer
- ☐ Fishmonger (inside the Quarantina Auction market)
- ☐ Fishmonger (inside the auction market)
- ☐ Fishmonger (near or related to the auction market)
- ☐ Fishmonger
- ☐ Fishmonger-street vendor "Hungare"
- ☐ Fishmonger/restaurant
- ☐ Other (specify) _____

SECTION 2 - Employment

10. How many people do you employ of different ages and genders? And do the people you employ are foreigners? Including yourself and any family members

Type of people employed	Number of employees				Number of foreigners	Total working days per year
	<18 years old	18-25 years old	>25 years old	Total		
Men full time						
Men regular part-time						
Men daily (seasonal/occa-sional)						
Men - Total						
Women full time						
Women regular part-time						
Women daily (seasonal/ occasional)						
Women - Total						

11. If there are no women employed, what is the main reason?

_____

12. If there are no employees <25 years old, what is the main reason?

_____

SECTION 3 - Characterization of the product

13. Indicate the relative proportion of the products sold in 2016, the average prices and the method of product state (preservation technique or display form)

	Tonnes or %	Price (LL/Kg)	Fresh/chilled (C) or frozen (F)	Country
1 Juvenile fish (Bizri)				
2 Local demersal fish – in total				
Class one*				
Class two **				
Class three***				
3 Seabream/Seabass (aquaculture)				
Imported:				
Grouper				
Meagre				
Nile Perch				
Pangasius				
Tilapia				
Hake				
Red mullet				
Other				
Other				
Other				
4 Sardine				
5 Tuna like species (tuna, balamida)				
6 Tuna canned				
7 Shrimps wild/aqua-culture				
8 Salmon imported				
9 Crustaceans and cephalopods				
10 Trout				
11 Sushi				
Other (specify)				
Other (specify)				
Other (specify)				
TOTAL				

* Red mullet, Grouper, seabass, seabream, big shrimps, etc.
** Sargus, dentex, meagre, barracuda, etc.
*** Grey mullet, siganus, red fish, small sargus, oblada, etc.

14. What proportion (%) of your product comes directly from:

	Local product directly from fishers (without auctioneer)	Local product directly from fishers (through auctioneer)	Local product from other players	Directly imported	Imported product by wholesaler or another company	Total
1 Juvenile fish (Bizri)						100%
2 Local demersal fish – in total						100%
Class one*						100%
Class two **						100%
Class three***						100%
3 Seabream/Seabass (aquaculture)						100%
Imported:						
Grouper						100%
Meagre						100%
Nile Perch						100%
Pangasius						100%
Tilapia						100%
Hake						100%
Red mullet						100%
Other						100%
Other						100%
Other						100%
4 Sardine						100%
5 Tuna like species (tuna, balamida)						100%
6 Tuna canned						100%
7 Shrimps wild/aquaculture						100%
8 Salmon imported						100%
9 Crustaceans and cephalopods						100%
10 Trout						100%
11 Sushi						100%
Other (specify)						100%
Other (specify)						100%
Other (specify)						100%
TOTAL						**100%**

* Red mullet, Grouper, seabass, seabream, big shrimps, etc.
** Sargus, dentex, meagre, barracuda, etc.
*** Grey mullet, siganus, red fish, small sargus, oblada, etc.

15. What proportion (%) of your product comes directly from:

	%
• Private consumer	
• Restaurant	
• Importer	
• Wholesaler	
• Wholesaler/Auctioneer	
• Auctioneer	
• Fishmonger (inside the Quarantina Auction market)	
• Fishmonger (inside the port/city auction market)	
• Fishmonger (near or related to the auction market)	
• Fishmonger	
• Fishmonger-street vendor "Hungare"	
• Fishmonger/restaurant	
• Other (specify)	
• Other (specify)	

16. When are the main sales periods? And how prices change over the year (up, down, static)?

Month	Tick	For which species?	Prices (up, down, static)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

17. How important do you think the following issues are to your buyers on a scale of 1- 5 (5 = the most important of all and 1 = not important)

	Interviewee's perception of importance (1-5)
Price	
Quality of product	
Origin of product (local, imported)	
If local, area of origin (South, North, etc.)	
Captured	
How the product is captured (type of fishing gear)	
If from aquaculture	
If imported	
Predictability/regularity of supply	
Type of packaging	
Hygiene	
Display (ice, etc.)	
Trust to the seller	
Trust to the label	
Other (specify)	

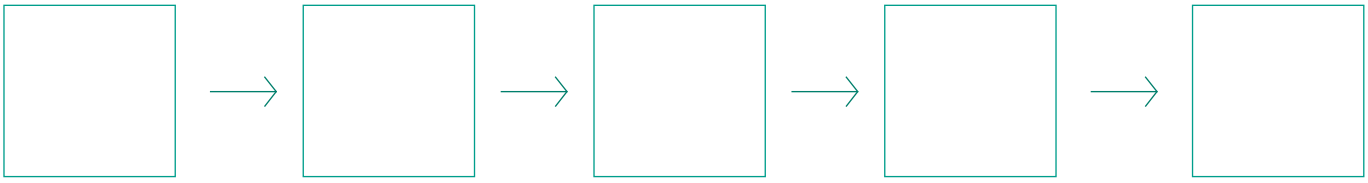
18. What proportion (%) of the total amount of product that you buy are you typically unable to sell because of

	Season			
	Winter	Spring	Summer	Autumn
No market demand				
Deterioration/spoilage				
Pollution				
Other (specify)				

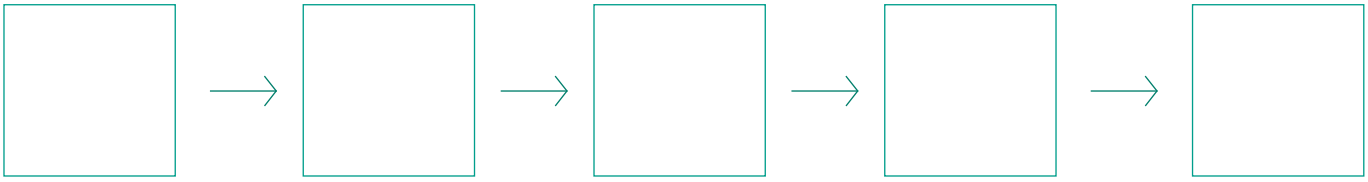
SECTION 4 - Value chain

19. Can you shortly describes a typical value chain of you products (% or amount of mark-up):

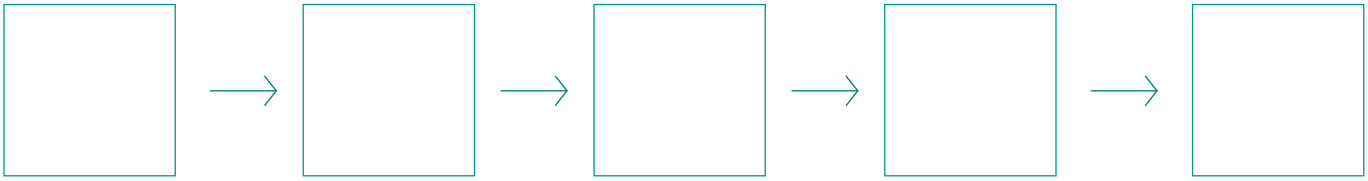
Fresh local product



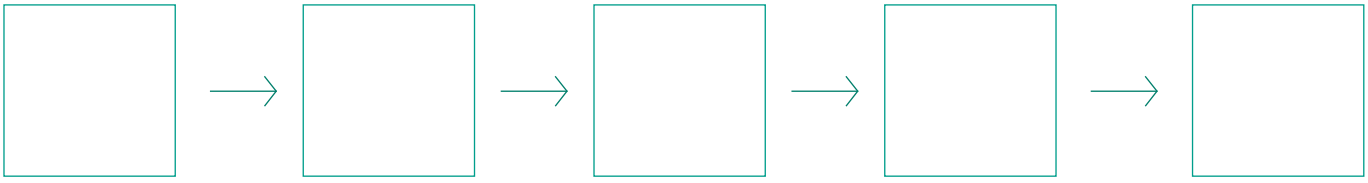
Fresh imported product



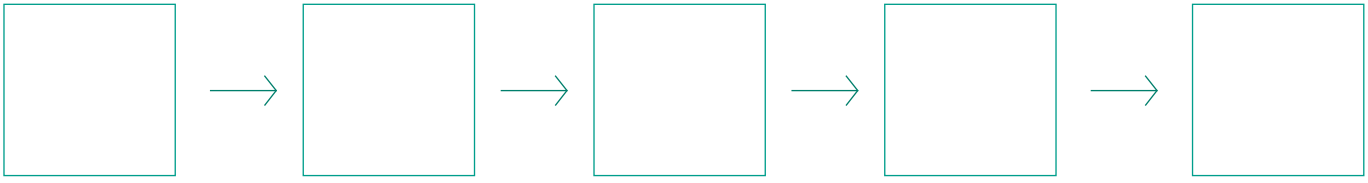
Frozen imported product



Aquaculture imported product



Cooked product (fishmonger/restaurant)



20. How have those volumes, sales revenue and prices changed compared to previous years? (up, down, static)

Fresh product	Annual sales volume 2016 compared to 2015	Avg annual price 2016 compared to 2015
1 Juvenile fish (Bizri)		
2 Local demersal fish – in total		
Class one*		
Class two **		
Class three***		
3 Seabream/Seabass (aqua-culture)		
Imported:		
Grouper		
Meagre		
Nile Perch		
Pangasius		
Tilapia		
Hake		
Red mullet		
Other		
Other		
Other		
4 Sardine		
5 Tuna like species (tuna, balamida)		
6 Tuna canned		
7 Shrimps wild/aquaculture		
8 Salmon imported		
9 Crustaceans and cepha-lopods		
10 Trout		
11 Sushi		
Other (specify)		
Other (specify)		
Other (specify)		
TOTAL		

* Red mullet, Grouper, seabass, seabream, big shrimps, etc.
** Sargus, dentex, meagre, barracuda, etc.
*** Grey mullet, siganus, red fish, small sargus, oblada, etc.

21. Please could you tell us about your main operating costs related to seafood products (see question No. 8-a) for 2016?

Cost item	%	Cost per year
Labour (wages and salaries)		
Storage and ice		
Distribution		
Logistics		
Port clearance		
Power/electricity/fuel		
Trays/bags/other packaging		
Repair and maintenance costs		
Investments		
Extraordinary costs		
Total value of assets		
Other (specify)		
Other (specify)		
Other (specify)		
TOTAL costs per day		
TOTAL costs per month		
TOTAL costs per year		

22. In case women are employed, is there is any difference in the wages between men and women?

Tick

☐ YES

☐ NO

23. If YES, could you quantify it? (%)

_____%

24. Are there women providing unpaid support to the activity?

Tick

☐ YES

☐ NO

25. If YES, why?

_____

_____

Critical factors

Issues	Problem experienced	Why does this problem occur?	What do you think could be done to solve the problem and/or what are you doing to try to solve the problem?

Appendix 3 – List of data collectors

The following were the people involved in data collection:

- Dario Pinello: International Consultant
- Samir Majdalani: National Consultant
- Imad Lahoud: Agricultural Engineer, MOA
- Samer Ajam Jawhar: Fisheries Inspector, MOA
- Charbel Nammour: Ranger, Head of Beirut Fisheries Centre, MOA
- Wisam Wazneh: Ranger, MOA
- Hussein Nassar: Ranger, MOA
- Bahij Mezher: Ranger, MOA
- Hussam Abbas: Ranger, Head of Aabdeh Forestry & Fisheries Centre, MOA
- Ali Nassar: Ranger, Head of Saida Forestry & Fisheries Centre, MOA
- Ibrahim Younis: Ranger, Head of Sour Forestry & Fisheries Centre, MOA

Appendix 4 – Main sales period

Large-scale

Table X. The main sales periods and the changes in prices over the year for the medium-scale businesses grouped together

Month	the main sales periods	For which species?	Prices (up, down, static)
January		Generalised trend, for all species	Down
February			Up
March	X		Up
April	X		Up
May			Down
June			Down
July	X		Up
August	X	All species in general, seabream from aquaculture in particular	Up
September			Down
October			Down
November			Down
December	X	Salmon, shrimps, groupers, all the high-priced species	Up

Medium-scale

Table X. The main sales periods and the changes in prices over the year for the medium-scale businesses grouped together

Month	the main sales periods	For which species?	Prices (up, down, static)
January			Down/Static
February			Down/Static
March	X		Up
April	X		Up
May	X	Sardines, bizri, boops and small pelagics	Up
June	X	Sardines, bizri, boops and small pelagics	Up
July	X	Sardines, bizri, boops and small pelagics	Up
August	X	Sardines, bizri, boops and small pelagics	Up
September			Down/Static
October			Down/Static
November			Down/Static
December	X		Up

Appendix 5: Laws and regulations related to the fisheries sector in Lebanon

REGULATION	NO.	YEAR	TITLE
Law	1104	14/11/1921	The determination of the coastal zone scope and penalties related to the infringement of fishing rules
Law	144/S	10/6/1925	Definition of Public Domain
Law	372	25/6/1926	Regulations relating to navigation, fishermen and fishing boats
Law	2775	28/9/1929	Monitoring of coastal marine fishing
Law	3178	18/6/1930	The wandering of foreign fishing vessels not covered by the French Mandate
Law	70/L.R	5/5/1937	Regulation of Coastal Fishing
Law	86/L.R.	3/5/1939	Safety of maritime navigation and conditions in ships
Law	95/L	9/5/1939	Regulating sponge fishing
Law	153/L.R.	14/7/1939	Prevention of docking, trawling, use of fixed or dredge nets in the area where the marine cable wire between Tunisia and Beirut reach land
Law		23/9/1946	Labor Law
Law		02/18/1947	Maritime Trade Law
Law		19/11/1947	Subjecting river fishing to licensing
Decree	11882	3/6/1948	Regulation of fishing in rivers
Decree	7993	3/4/1952	Syndicates Regulations
Decree	16225	13/6/1957	Definition of maritime navigation
Decree	6349	16/3/1961	Organization of Technical Troupe to monitor and control forests, hunting and fisheries (Repealed by Decree No. 9924 of 20/2/2013)
Decree	8371	30/12/1961	The organization of the Ministry of Agriculture and identifying its Cadre
Law		25/5/1962	Amendment of Article 2 of Law of 5/5/1954 related to marine fishing
Decree	10121	20/7/1962	Zoning and licensing requirements for extracting gravel and sand from the Maritime Public Domain.
Decree	17199	18/8/1964	Putting in effect the draft Law for cooperative associations.
Decree	17614	18/9/1964	Exploitation of Maritime Public Domain not presently exploited.
Decree	3401	11/12/1965	Cooperatives (Repealed by Decree 2989 of 17/3/1972)
Decision	31/1	26/1/1966	Ratification of Lebanese Ports System.
Decree	4809	24/6/1966	Regulating the occupation of the public maritime domain
Decree	4810	24/6/1966	System of occupation of maritime public domain
Decree	9791	4/5/1968	Putting into practice the draft Law aimed at monitoring the beaches
Decree	11541	23/12/1968	Organization of the special service responsible for monitoring the coast within the Internal Security Forces
Decree	11618	4/1/1969	Establishment of Cooperation Division within the Ministry of Agriculture
Decree	15649	21/9/1970	Regulation for extraction of sand and other materials from Maritime Public Domain and from seabed
Decision	93/1	16/6/1971	The conditions imposed on the use of buoys in the field of marine fishing, swimming and docking
Decree	2989	17/3/1972	Repealing Decree 3401 of 11/12/1965 regarding Cooperatives and replacing it with new provisions
Decision	347/1	11/12/1972	Regulation of free diving fishing
Legislative Decree	138	16/9/1983	Determining the breadth of the territorial sea areas and the Forbidden Maritime Zones
Law	64	12/8/1988	Conservation of the environment against pollution from harmful wastes and dangerous materials.
Law	89	7/9/1991	Determination of Marine Fishing Licenses fees – 1991 Government Fiscal Budget Law
Decision	108/1	11/9/1991	Creating a protected fishing and hunting area within the premises of Anjar Centre
Decision	129/1	23/10/1991	Establish a national maritime protected zone at the Oceanographic & Fishing Institute in Batroun
Decision	281/1	19/11/1991	Ban on fishing of sponge for 5 years

REGULATION	NO.	YEAR	TITLE
Decision	209/1	21/11/1991	Organization of maritime navigation, functioning of the ports, the equivalence of vocation certificates and services required by the Ministry of Public Works and Transport for Maritime Navigation.
Law	121	9/3/1992	Establishment of two nature reserves (in some of the islands in front of Tripoli Beach(
Decision	62/1	16/3/1993	Ban of Sardines nets within specific conditions
Decision	63/1	16/3/1993	Ban on fishing of sponge for 5 years
Decision	229/1	13/10/1993	Regulating the use, under certain conditions, of the newly introduced Kerkari nets to Lebanon
Decision	32/N	24/3/1994	Organization of sailing of fishing and recreational vessels within the territorial waters and beyond.
Decree	5246	20/6/1994	The organization of the Ministry of Agriculture and identifying its Cadre and conditions of employment in some of the functions for this Cadre and the ranks and salaries of its professional staff (Article 100 – Department of Fisheries & Wildlife)
Decision	183/1	27/10/1994	Ban of fishing in Lake Qaraoun
Decision	226/1	14/12/1994	Distribution of fishing nets and gear among fishermen cooperatives along the Lebanese coast
Decision	47/1	13/3/1995	Distributing fishing nets and gear among fishermen co-operatives along the Lebanese coast.
Decision	98/1	19/5/1995	Distribution of nets and fishing gear to development committees in the places that could not set up cooperatives to date.
Decision	60/1	31/7/1995	Defining the specific conditions for the use of Kirkai (Cianciolo) nets
Decision	61/1	31/7/1995	Defining the specific conditions for the use of Sardine nets (Lux)
Decision	254/1	8/12/1995	Regulating fishing-diving sport
Decision	255/1	8/12/1995	Regulating fishing-diving sport institutes
Decision	261/1	20/12/1995	Distribution of fishing nets and gear donated by FAO among fishermen cooperatives
Decision	131/1	15/3/1996	Organizing work at Oceanographic and Fishing Institute at Batroun in collaboration with the National Council for Scientific Research (CNRS)
Decision	156/1	20/3/1996	Forming the Examination Committee to settle the situations of amateur scuba divers
Decision	234/1	20/5/1996	Defining medical form needed to practice scuba diving
Decision	71/N/96	3/7/1996	Establishment of marine fishing port in the region of Halat
Decision	77/N/96	10/7/1996	Organization of sailing of fishing and recreational vessels within the Lebanese territorial waters.
Decision	324/1	22/7/1996	Amending Decision No. 156/1 of 1996 & Decision 254/1 of 8/12/1995
Decision	119/N/96	8/10/1996	Considering the area of maritime beach a fishing and recreational port
Decision	202/1	14/4/1997	Amending Decision 254/1 of 8/12/1995 regarding regulating fishing-diving sport
Decision	381/1	25/11/1997	The activities Programme of the Oceanographic and Fisheries Institute in Batroun.
Decision	385/1	26/11/1997	Prohibition of fishing in river estuaries along the Lebanese coast
Decision	397/1	28/11/1997	Creation of a Fishing and Hunting Guidance Centre at the Institute of Oceanography and Fisheries in Batroun- Governorate of North Lebanon
Decision	398/1	28/11/1997	Creation of a Fishing and Fisheries Centre at the Institute of Oceanography and Fisheries in Batroun- Governorate of North Lebanon
Decision	1/18	2/2/1998	Establishment of Fisheries & Wildlife Extension Services Centers
Decision	50/1	6/3/1998	Settlement of situations for scuba divers holding diving certificates
Decision	115/1	23/6/1998	Organization of work at the Institute of Oceanography and Fisheries and defining the basis for cooperation with the National Centre for Scientific Research (CNRS)
Decree	12841	7/8/1998	Organization of fishing and leisure ports, and regulation of their use and safeguarding
Law	708	5/11/1998	Creation of Tyr Coast Nature Reserve in Jaftlak Ras Al Ain – Tyr Real Estate Zone
Decision	279/1	19/11/1998	Ban on catching sea turtles
Decision	280/1	19/11/1998	Prohibiting to fish with beach seines along the Lebanese coast.
Decision	281/1	19/11/1998	Ban on fishing of sponge for 5 years
Decision	290/1	23/11/1998	Defining the use of the sardine nets within specific conditions
Decision	291/1	23/11/1998	Restricting the use of Kirkari nets (purse seine) to specific conditions
Decision	42/1	24/3/1999	Organization of the hobby of underwater fishing
Decision	43/1	24/3/1999	Restricting the use of Sardine and "Cianciolo" nets to specific conditions

REGULATION	NO.	YEAR	TITLE
Decision	78/1	29/6/1999	Amending article 4 of Decision No. 43/1 of 24/3/1999 regarding restricting the use of the sardine and Cianciolo nets to specific conditions.
Decision	122/1	21/9/1999	Stop-work for Decision No. 280/1 of 19/11/1998 Prohibiting to fish with beach seines along the Lebanese coast
Decision	125/1*	23/9/1999	Prohibiting fishing of whales, seals and marine turtles
Decision	179/1	1/12/1999	Assigning classrooms at the disposal of official vocational agricultural school at the Oceanographic Institute
Decision	19/1	11/1/2000	Creation of a center for fishing, nursery and forestation in Abdeh in the Governorate of North Lebanon
Decision	267/1	27/11/2000	Stop-work for Decision No. 280/1 of 10/11/1998 - Prohibiting to fish with beach seines along the Lebanese coast until 15/5/2001
Decision	126/1	23/5/2001	Regulating scuba diving sport
Decision	147/1	18/6/2001	Delegation of signing of the amateur scuba diving licenses
Law	444	29/7/2002	Protection of the Environment
Decision	88/1	14/3/2003	Prohibition of fishing by beach seines along the Lebanese coast
Decision	127/1	9/5/2003	Stop work for Decision 88/1 of 14/3/2003 that prohibits fishing by beach seines along the Lebanese coast, until 15/5/2005
Decision	165/2T	23/7/2003	Establishing a Cooperative for coast protection and fishing & shellfish fishing in the province of Mount Lebanon.
Decision	199/2T	19/8/2003	Establishing a cooperative for fishermen in the Governorate of Mount Lebanon.
Decision	321/1	31/10/2003	Stop work for Decision 88/1 of 14/3/2003 that prohibits fishing by beach seines along the Lebanese coast
Decision	15/1	21/1/2004	Legal sizes relating to fishing, transporting, buying and importing fish, shellfish and crustaceans in Lebanon
Law	571	11/2/2004	Permitting the Government to join the Agreement to preserve cetaceans in the Black Sea, Mediterranean and the Contiguous Atlantic Area
Law	613	20/11/2004	Permitting the Government to ratify the amendments to the Agreement establishing the General Fisheries Commission for the Mediterranean
Decision	54/1	24/2/2005	Permission for Department of Fisheries & Wildlife to catch marine organisms to conduct research
Decision	352/1	3/10/2005	Stop work for Decision 88/1 of 14/3/2003 that prohibits fishing by beach seines along the Lebanese coast for three years
Decision	104/FO	17/11/2005	Repeal of decisions regarding occupying riverine public domain
Decision	130/2T	13/6/2007	Establishing a cooperative for fishermen in the Governorate of Mount Lebanon.
Decision	408/1	2/11/2007	Defining types of marine fishing gears
Decision	1/1	1/1/2008	Stop-work for Decision No. 408/1 of 2/11/2007 concerned with defining types of marine fishing gears
Decision	93/1	14/3/2008	Regulating scuba diving
Decision	459/1	14/8/2008	Establishing a port for marine fishing and excursion in the zone of Jall Al Bahr-Ain Almrayseh
Law	34	16/10/2008	Permission to the government to join the Convention on the Protection of the Marine Environment and the Coastal Region of the Mediterranean; which are the amendments made to the Protection of the Mediterranean Sea against Pollution.
Decision	20/1	15/1/2009	Defining types of marine fishing gears
Decision	35/2T	5/3/2009	Establishment of a cooperative for the development of fishing in the Governorate of the North Lebanon
Decision	229/1	12/5/2009	Prohibiting the use of remains of slaughterhouses as feed for fish
Decision	346/1	15/7/2010	Regulating and defining some fishing types and gears
Decision	676/1	27/7/2011	Prohibiting fishing, transporting, selling and consuming of some fish species
Law	163	18/8/2011	Determination and announcement the maritime areas of the Lebanese Republic
Decree	6433	1/10/2011	Delimitation of the Lebanese Exclusive Economic Zone
Decision	952/1	26/10/2011	Hygienic regulations for fresh, chilled and frozen fish transport vehicles
Decision	8/1	4/1/2012	Regulating and defining some fishing types and gears (Fyke nets)
Decree	8633	7/8/2012	Fundamentals of Environmental Impact Assessment
Decree	9924	20/2/2013	Organization of Technical Troupe to monitor and control Forests, hunting and fisheries
Decision	792/1	16/8/2013	Amending Decision No. 108/1 of 1991 (Creating a protected fishing and hunting area within the premises of Anjar Centre)
Decision	1154/1	9/12/2013	General conditions to protect cetaceans (repealed by Decision 215/1 of 16/3/2015)
Decision	1160/1	10/12/2013	General conditions for fishing sharks (repealed by Decision 215/1 of 16/3/2015)

REGULATION	NO.	YEAR	TITLE
Decision	1163/1	12/12/2013	Ban on catching seabirds
Decision	396/1*	12/5/2014	Ban on catching seabirds
Decision	482/1	9/6/2014	Correction of Article 2 of Decision 396/1 of 15/5/2014 (Ban on catching seabirds)
Decree	639	18/9/2014	Joining the Integrated Coastal Zone Management Protocol in the Mediterranean emanating from the amendments to the Convention for the Protection Of The Mediterranean Sea Against Pollution which was approved in Barcelona on 06/10/1995 and ratified by Law No. 34 Date 16/10/2008
Decision	1044/1*	25/11/2014	General conditions to protect cetaceans
Decision	1045/1*	25/11/2014	General conditions to catch sharks
Decision	215/1	16/3/2015	Repeal of Decision 1154/1 of 9/12/2013 and Decision 1160/1 of 10/12/2013
Decision	1234/1	31/12/2015	Amending Decision 952/1 of 26/10/2011 regarding hygienic regulations for fresh, chilled and frozen fish transport vehicles
* In accordance with GFCM recommendations			

Appendix 5 – Images from the markets

Figure 9. Dora Port Fish Auction- Dora (El Metn/Greater Beirut By Charbel Nammour

Figure 10. Port Fish Auction- Ouzaii (Baabda)/Greater Beirut by Samir Majdalani

Figure 11. Saida Port Fish Auction by Ali Nassar

Figure 12. Saida Port Fish Auction by Ali Nassar

Figure 13. Sarafand Port Fish Auction by Ali Nassar

Figure 14. Annous Fish Auction - Tripoli/El Mina by Samer Jawhar

Figure 15. Interviews in Tripoli/Al Mina by Dario Pinello

Figure 16. Sidawi Fish Auction – Tripoli/El Mina by Samer Jawhar

Figure 17. Hafzah Fish Auction in Aabdeh (Akkar) by Samer Jawhar

Figure 18. Hussein Rachidi Auction/Fishmonger – Aabdeh (Akkar) by Samer Jawhar

Figure 19. Haytham Rachidi Auction – Aabdeh (Akkar) by Samer Jawhar

Figure 20. Fishmonger in El Mina by Samer Jawhar

Figure 21. Naqoura (South Lebanon) Port Fishmonger by Samir Majdalani

Figure 22. fishmonger in Ouzaii – Baabda (Greater Beirut) by Hussein Nassar

Figure 23. Local products in Tripoli/El Mina by Dario Pinello

Figure 24. Local products in Tripoli/El Mina by Dario Pinello

Figure 25. Imported products by Dario Pinello

Figure 26. Imported cultured seabream and seabass by Dario Pinello

Figure 27. Local Bizri by Dario Pinello

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