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<u>DUYURU</u>

Sayın Üyemiz,

T.C. Tarım ve Orman Bakanlığından alınan bir yazıda, anılan Bakanlığın teklifi üzerine FAO Teknik İşbirliği Programı Projeleri (TCP) kapsamında onaylanan "Fisheries and Aquaculture Sectoral Preparedness and Response to COVID-19" temalı projeye ait hazırlanan, "Covid-19 Pandemisinin Türkiye Su Ürünleri ve Su Ürünleri Sektörlerindeki Etkisi İçin Değerlendirme ve Strateji Planı" isimli rapor, yazımız ekinde gönderilmekte olup 25 Mart 2022 tarihinde Muğla'da "Su Ürünleri ve Su Ürünleri Sektöründe COVID-19'a Hazırlık ve Müdahale" Projesi çalıştayı düzenlenmesinin planlandığı belirtilmektedir.

Bu kapsamda, söz konusu rapora ilişkin görüşlerinizin ve yapılması planlanan çalıştaya katılması uygun görülen temsilcilere ait iletişim bilgilerinin **en geç 14 Mart 2022 mesai bitimine kadar** Birliğimizin tarim@akib.org.tr e-posta adresine gönderilmesi hususunda gereğini rica ederim.

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Food and Agriculture Organization of the United Nations

REPUBLIC OF TURKEY
MINISTRY OF AGRICULTURE AND FORESTRY

MAPPING OF THE SEAFOOD VALUE CHAIN & COVID-19 IMPACT ASSESSMENT

FISHERIES & AQUACULTURE SECTORAL PREPAREDNESS AND RESPONSE TO COVID-19 PROJECT (TCP/TUR/3801/C1)

INTERIM REPORT PREPARED FOR THE GOVERNMENT OF TURKEY

INTERIM REPORT – NOVEMBER 2021

Prepared by
FAO

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List of Acronyms and Abbreviations

CPUE	Catch Per Unit Effort
DEIK	Turkish International Economic Relations Council
DGFA	Directorate General of Fisheries and Aquaculture (in Turkey)
EMFF	European Maritime and Fisheries Fund
EU	European Union
EUMOFA	European Market Observatory for Fisheries and Aquaculture Products
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GFCM	General Fisheries Commission for the Mediterranean
GoT	Government of Turkey
GRT	Gross Registered Tonnage
HORECA	Hotel, Restaurant and Catering
HS	Harmonised System
IFAD	International Fund for Agricultural Development of the United Nations
IIED	International Institute for Environment and Development
ITC	International Trade Centre
IUU	Illegal, Unreported and Unregulated (fishing)
MCS	Monitoring, Control and Surveillance
MoAF	Ministry of Agriculture and Forestry (of Turkey)
MSME	Micro, Small and Medium Enterprises
NESOI	Not Elsewhere Specified or Indicated (with reference to HS codes)
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Co-operation and Development
PO	Producer Organisation
PPE	Personal Protective Equipment
PPP	Public-Private Partnership
Q	Quarter (three-month period)
SFVC	Sustainable Food Value Chain
SME	Small and Medium Enterprises
TCP	Technical Cooperation Programme
TCPF	Technical Cooperation Programme Facility
ToR	Terms of Reference
TURKSTAT	Turkish Statistical Institute
UN	United Nations
UNDP	United Nations Development Programme
USA	United States (of America)
USD	US Dollar
VC	Value Chain
VCA	Value Chain Analysis
WB	World Bank
WWF	World Wildlife Foundation
YoY	Year-on-Year

Units of Measurement, Nomenclature and Exchange Rates

All units, unless otherwise specified, are metric. Where the term billion is used this should be taken as equal to 1,000 million. Some of the statistical data sourced from the Government of Turkey (TURKSTAT) is expressed (written) as "tons" – this should be taken to mean metric tonnes and not be confused with imperial (British) or US tons. To avoid confusion the abbreviation 'mt' is therefore used throughout the report.

This report uses the anglophone system for numeral separators, i.e., thousands are separated by a comma (,) and decimals by a full stop (.) e.g., 9,999.99. The continental system is the exact opposite e.g., 9.999,99.

Species names are usually given using the common English and/or Latin (scientific) names.

The Turkish currency (Lira) is designated as TRY. The currency exchange rate used throughout the report is based on the official rate obtained from the EU[1], which for October 2021 was:

US Dollar (USD) 1.00 = TRY 8.8526
Euro (€) 1.00 = TRY 10.3168

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- Istanbul Gürpınar fish market manager and employees.

Disclaimer

The content of this report does not reflect the official opinion of the Food and Agriculture Organisation of the United Nations or the Government of Turkey. Responsibility for the information and views expressed in the report herein lies entirely with the authors.

Neither the FAO of the UN or Government of Turkey institutions and bodies nor any person acting on their behalf may be held responsible for the use that may be made of the information contained therein.

[1] The operational rates of the United Nations are published for internal operations of the UN and their agencies at www.treasury.un.org/operationalrates. They are however not to be used as a database for market rates by outside parties. Currency values and prices have therefore been converted using the European Commission's official monthly accounting exchange rates from the following website: https://ec.europa.eu/info/funding-tenders/procedures-guidelines-tenders/information-contractors-and-beneficiaries/exchange-rate-inforeuro_en

[2] A TCPF project responds to specific and short-term assistance in any technical area falling within FAO's technical mandate and Strategic Framework.

Executive Summary – Key Findings and Recommendations

Introduction and methodology

1. The outcome of the Fisheries and Aquaculture Sectoral Preparedness and Response to COVID-19 Project (TCP/TUR/3801/C1) is stated as: *Improved sectoral capacity for adaptation and response to the COVID-19 situation or future similar disruption*. Achievement of this outcome is through the delivery of two outputs, the first of which is: *Strategic planning for emergency preparedness and response plan developed*.

2. This interim report, presented in two parts (Part A – seafood value chain mapping – and Part B - COVID-19 impact assessment) constitutes the first and second reporting deliverables (of four reporting deliverables) planned under the project (output 1). The report was compiled between June and October 2021 by Mr Simon Diffey (FAO international consultant), Mr Binhan Ganioglu and Mr Murat Canbaz (FAO national consultants).

3. The ongoing coronavirus pandemic prevented the FAO international consultant from visiting Turkey during this assignment so the analysis in this report is based solely on data sourced from the internet, academic papers, and in particular from local analysis and the results of fieldwork completed by the national consultants.

4. Chapter 2 provides details of the methodology used for the value chain analysis and COVID-19 impact assessment.

5. Turkey has a wide range of species targeted in its marine and inland capture fisheries, plus a limited number of important farmed species in the marine and inland aquaculture sector. In addition, there are a wide range of post-harvest products marketed within the domestic and international value chain. It is beyond the scope of this study to be able to look at all of these species/products so it was agreed early on in the study to focus on a number of key indicator species only, representing at least one value chain from each of the main marine fishing grounds (Black, Marmara and Aegean Seas), one from the inland fisheries sector and one from marine aquaculture. The following species were agreed to:
   - Marine Capture: Anchovy, Bonito, Horse Mackerel and Red mullet
   - Marine Aquaculture: Seabass and Seabream
   - Inland Aquaculture: Trout (also referred to generically as “Turkish Salmon”)

6. There were neither the resources (time and budget) or mandate within this study to undertake a full value chain analysis in what is a highly complex and diverse fisheries sector in Turkey. This is compounded by a significant lack of value chain data to be able to undertake detailed value chain mapping for any of the indicator species, which is reflected in the analysis and reporting.

7. The basis for the impact assessment was a combination of desk-based analysis of existing literature plus an analysis of the results of a field survey, using an agreed questionnaire format, conducted as part of this study. The survey was completed between July and September 2021 and involved meetings with 74 different stakeholders in six different locations nationwide.

8. Answers to the survey questions have helped the consultants determine how much the sector has been affected by the pandemic and will also enable the consultants to develop

a draft strategy to be considered by the GoT to be better prepared for future pandemics or similar emergency situations in the next reporting output of this study.

Part A: Functional analysis of the seafood value chain

9. The total fishery production of Turkey in 2020 was 786,000mt comprised of marine capture (42.2 percent), inland capture (4.2 percent), marine aquaculture (37.3 percent) and inland aquaculture (16.3 percent). Per capita consumption of fish and fishery products was 4.9kg in 2016 (FAO, 2019).

10. The sector provides an estimated overall contribution of 0.7+ percent to the national GDP and contributes significantly to a positive balance of trade with export revenues exceeding USD 1.0 billion and trade with 80+ countries internationally. Total fisheries and aquaculture sector exports have increased year-on-year since 2013 and in 2020 rose to 201,157mt worth USD1.064 billion whilst imports (on a downward trend over the same period) were 85,267mt worth USD156.93 million. The sector therefore has a foreign trade surplus of USD 906.9 million as an exporter.

11. Following a rapid overview of the capture fisheries sector, fleet size and employment and the aquaculture sector, Part A of this report provides an end market analysis and value-chain mapping of the six indicator species. The international trade market assessments for each indicator species are in largely based on an analysis of data from the International Trade Centre Trade Map website (www.trademap.org). Specific reference is made to an analysis of 'concentration of supplying/importing countries'[3] for each species.

12. Anchovy (fresh or chilled):
    - Turkey is ranked 13th for imports and 14th for exports by value globally for this product. Spain (35.9% of market share) and Italy (16.4%) between them make over half of the global consumer (importing) market and three countries dominate the export market - Portugal (28.2%), Spain (22.2%) and Italy (21.1%). Turkey has a negative balance of trade (value of imports > exports) of USD 95,000.
    - The global index of 'concentration of importing countries' is high for only two countries listed (Georgia and Greece), indicating a concentrated import supply chain.
    - The global index of 'concentration of supplying countries' is varied from a highly concentrated market of 0.8 for Cyprus, Greece and Iraq to below 0.4 for more diversified export markets such as the USA and Canada.
    - Import/export trade data suggests a highly significant drop in imports since 2020 and a lagged (during 2021 Q2) matching drop in exports. Both trends likely reflecting the impact of a sustained closure of borders for highly perishable seafood and changes in the demand for fishmeal and therefore industrial fishing effort/landings.

13. Anchovy (prepared or preserved):
    - Turkey is ranked globally 131st for imports and 31st for exports for the trade in prepared or preserved anchovies (whole or in pieces, excluding minced).
    - Spain (22.7% of market share) and Italy (21.8%) dominate the global consumer (importing) market. Five countries dominate the export market - Spain (21.5%), Morocco (18.8%), Peru (15.4%), Italy (13.7%) and Albania (9.6%). Turkey has a negative global balance of trade (value of imports > exports) of USD 101 million.
    - Turkey has a positive balance of trade (value of exports > imports) of USD 125,000, although the import and export volume of this product into/from Turkey is small.
    - There has been an almost complete cessation of imports since 2016 and a steady decline in exports over the past six years. A recent peak in exports if maintained for

[3] The global index of 'concentration of importing countries' refers to countries that export to Turkey. Conversely the index of 'concentration of supplying countries' means countries that Turkey exports to.

the whole year may match the volume and value of 2018. These changes are likely to be largely due to cyclical changes in landings (as bonito usually follow a two-year low/one-year high population cycle that is also linked to the abundance of anchovy).

14. Bonito (fresh or chilled):
    - Turkey is not ranked as importing this product and globally ranked 24th for exports by value for the trade in this product. Spain (26.6% of market share) and France (21.9%) between them make almost half of the global consumer (importing) market. Sri Lanka (48.7%) and Spain (42.7%) dominate the export market.
    - The global index of 'concentration of importing/supplying countries' lists only one country (Greece). There is insufficient trade and/or trade data to map the trend in the quantity and value of imports and of exports over the past six years (2016 to 2021 Q2) for this HS product code.

15. Bonito (prepared or preserved):
    - Turkey is ranked globally 62nd for imports and 58th for exports for a trade primarily related to canned skipjack worth USD 8.32 billion in 2020 (measured by imports).
    - The USA (15.5% of market share), five EU countries (34.4%), the UK (5.8%) and Japan (4.5%) represent 60 percent of the global consumer (importing) market. Thailand (29.1%), Ecuador (12.7%) and Spain (8.2%) are the largest exporters.
    - Turkey has a negative balance of trade (value of imports > exports) of USD 9.73 million. The global index of 'concentration of importing countries' is generally low (<0.4) for all countries. The volume imported into Turkey relative to the global trade is small, with China providing 60 percent. The global index of 'concentration of supplying countries' is varied from a highly concentrated market of 0.84 for Syria to below 0.2 for more diversified export markets such as Germany and the Netherlands.
    - An analysis of Turkish import and export data suggests a highly significant drop in imports from 2020 into 2021 but a sustained level of exports.

16. Horse mackerel (fresh or chilled and frozen):
    - Turkey is ranked globally 50th for imports and 24th for exports for trade this product. Nigeria (44.3% of market share) and Portugal (11.7%) between them make up over half of the global consumer (importing) market. Spain (34.1%) and Denmark (21.7%) dominate the export market.
    - The imports into and exports from Turkey for this product are insignificant, with the Russian Federation providing 79% by volume of imports. The global index of 'concentration of supplying countries' is varied for a limited number of countries.
    - Analysis of the trend in the quantity and value of imports to and exports from Turkey suggests a highly significant drop in imports since 2017 but a sustained level of exports until Q1 2021. The drop in exports in Q2 2021 may be due to the seasonal nature of the fishery and unrelated to the pandemic.
    - Turkey is ranked globally 69th for imports and 38th for exports in the trade of frozen horse mackerel. Turkey's market share in this trade is negligible.

17. Red mullet:
    - The ITC Trade Map database does not provide any disaggregated date for red mullet, as it is included with a wide range of other species that are generally referred to (with reference to HS coding) as 'Not Elsewhere Specified or Indicated'. This means that the international trade in this product is either insignificant and/or through informal channels, so no further analysis of the international trade in this species was possible.

18. Sea bass:
    - There is no specific HS code for prepared or preserved sea bass, and trade in this product is aggregated with that of a wide range of other products under HS Code 160419. Trade analysis has therefore been confined to the fresh/chilled product only.
    - Turkey is ranked globally 75th for imports and 2nd for exports for the trade in this product. Italy (24.7% of market share), the USA (11.7%), Spain (11.1%) and four European countries (23.7%) constitute almost 75 percent of the global consumer (importing) market. Greece (39.4%) and Turkey (30.6%) dominate the export market.
    - The global index of 'concentration of supplying countries' is extensive with 26 countries listed and varied indices from 1.0 for Greece and Lebanon (highly concentrated export market with Turkey as the sole supplier) to low indices of 0.16 (for Germany) and 0.27 (for Portugal), indicating more diversified markets within the EU importing from a number of supplying countries.
    - An analysis of import and export trade data for Turkey suggests a drop in imports in 2020 (to be expected given surpluses on the local market with limited export trade for several months) but a return to normal (so far) in 2021. The level of exports shows a sustained growth year-on-year (YoY) since 2016 with anticipated trend continuing into 2021 based on Q1/Q2 results.

19. Sea bass:
- Turkey is ranked globally 67th for imports and 2nd for exports for the trade in fresh or chilled sea bream. Italy (25.4% of market share), Spain (18.6%) and Portugal (10.1%) making up over half of the global consumer (importing) market. Greece (42.3%) and Turkey (27.8%) dominate the export market.
- In line with the international trade for sea bass, the global index of 'concentration of supplying countries' is extensive with 34 countries listed and varied indices from 0.95-1.0 for Greece, Lebanon, Syria and Ukraine (with Turkey as the sole supplier). Conversely there are low indices of 0.2 (for Germany) and 0.26 (for Italy), indicating more diversified markets importing from a number of supplying countries.
- An analysis of import and export trade data for Turkey suggests a drop in imports in 2020, although unlike for sea bass there has been less of a return to normal (so far) in 2021. The level of exports shows a sustained growth year-on-year (YoY) since 2016 with the trend anticipated to continue into 2021 based on Q1/Q2 results.

20. Rainbow trout (fresh/chilled):
- Turkey is ranked globally 29th for imports and 6th for exports for the trade in fresh or chilled trout. The USA (12.2% of market share) and Russia (11.1%) make up almost 25 percent of the global consumer (importing) market, with Belarus, Ukraine and Sweden another 25 percent. Norway (40.7%) dominates the export market, followed by Sweden (10.6%), Armenia (6.5%) and the UK (6.2%).
- The global index of 'concentration of importing countries' lists only two countries, Norway and Russia. The global index of 'concentration of supplying countries' lists 19 countries with ranging from 1.0 for Georgia and several Middle Eastern countries (with Turkey as the sole supplier) to low indices of 0.21 (for Poland), 0.25 (for Germany) and 0.28 (for Lithuania), indicating more diversified markets within the EU.
- An analysis of import and export trade data for Turkey suggests a significant drop in imports in 2021. Export trade shows a significant growth in 2020 and into 2021 based on Q1/Q2 results.

21. Rainbow trout (frozen):
    - Turkey is ranked globally 44th for imports and 2nd for exports for the trade in frozen trout. Russia (27.4% of market share), Japan (16.6%) and Vietnam (13.9%) make up

50+ percent of the global consumer (importing) market. Chile (31.6%) and Turkey (25.2%) are the main exporters, followed by Norway (16.4%) and Denmark (11.1%).

- The global index of 'concentration of importing countries' lists four countries with Russia dominating. The global index of 'concentration of supplying countries' lists 46 countries with smaller highly concentrated export markets in the Middle East such as Iraq and Kuwait having an index of 1.0 (with Turkey as the sole supplier).
- Conversely the two largest export markets of Russia and Germany, which constitute 79 percent of total exports from Turkey, have indices of 0.36 and 0.48 respectively.
- An analysis of import and export trade data for Turkey suggests that trade in this product has increased as a result of the pandemic. This is likely because there has been a need to shift fresh produce to frozen storage due to impacts on the supply chain. The level of exports shows a sustained growth year-on-year (YoY) since 2017 with the trend anticipated to continue into 2021 based on Q1/Q2 results.

22. Value-chain mapping:

- Annex 4 to the report provides value-chain maps for all six indicator species.
- There is no available data on the breakdown of sales within the domestic value chain for any of these value-chains. As such the VC mapping requires further research and in particular access to locally available data.
- In the case of red mullet there is no disaggregated data for these species so an analysis of trade (in the absence of locally sourced data) was not possible.
- In the case of sea bass and sea bream there is no specific HS code for prepared or preserved products. Trade is aggregated with the trade in a wide range of other products under HS Code 160419. The international trade in both of these species was therefore confined to the fresh/chilled product only.
- A summary is provided (in Table 5), for each indicator species, of the key VC actors, input and support service providers, key social, economic and environmental issues (impacting on the value chain), and on governance and institutional issues. Analysis of the findings from Table 5 will be undertaken in the next phase of this study.

Part B: COVID-19 impact assessment

This part of the report starts with an analysis of the feedback from the field survey questionnaire (presented in the order of the questionnaire):

23. Analysis of the results - COVID-19 and your business:

- The employment of women in the capture fisheries sector is almost non-existent and female workers are generally employed exclusively in the processing sector.
- The number of youth (people aged 20-25) employed in the sector – 33% of the total survey interviewee workforce - is significant and indicates, if representative of the whole sector, the need to provide specific emergency response policies and strategies targeted to the younger generation (that may be last to be vaccinated).
- Half of the interviewees stated that one of their staff had COVID-19 – this is considered to be a high and wide-spread 'corporate' infection rate, that perhaps reflects the likelihood of employees with large families having one of more family members infected. Only 9% of the people represented by the survey (a total of 3,055 employees working in the sector) actually had the COVID-19 disease. This is comparable with the national average of 8.7%.
- The results of the survey suggests that there is a perception that people's living conditions have changed due to the pandemic (this issue should have been monitored earlier in the pandemic and re-evaluated again in six months' time).
- Various restrictions, including travel restrictions applied throughout the country posed a serious problem in the early days of the pandemic, but thanks to the special permits

granted to the fisheries and aquaculture sector, life returned relatively quickly to a 'new normal' for fishers, fish-farmers and shore-based workers.

- Fishing boats applied self-quarantine during the pandemic period and in general permits were not given to fishermen so they were not able to disembark from their vessels. Social distancing was enforced at the landing ports.
- The survey results suggest that the majority of sector employees had access to Personal Protective Equipment (PPE), acted in accordance with the hygiene rules and paid attention to the use of PPE and social distancing rules within the processing plants and markets during the pandemic. This is likely because of their role in the food sector and as such this was a 'non-issue' for sector workers.
- When necessary, the shift system was applied to ensure social distancing and temperature checks of all employees was done daily plus general health control and COVID-19 tests applied over a 15-day cycle.
- Whilst all companies working in the sector reportedly asked their employees to be vaccinated, the Turkish government gave priority vaccination to health workers and other service sectors but this did not include fishermen and aquaculture sector. More recently, the vaccination programme has been rolled out for all persons over the age of 12 although there remains no enforced obligation to have any vaccination. Some companies ask for a weekly test from those who are not vaccinated.

24. Analysis of the results – impact of COVID-19 on your business and fish marketing:

- The survey results suggest that there were no layoffs (permanent loss of staff) due to COVID-19 in the industry. Only three corporate respondents replied "yes" to this question and a total of eight persons out of the 3,055 workers represented were temporarily lost to employment.
- Over half of the sector actors were (based on the survey results) financially affected during the pandemic period. Fishermen experienced the greatest impact, the main reason being that the markets and restaurants were closed so there was less demand for fish generally. Aquaculture companies were affected in the early stages of the pandemic, but later they compensated for their turnover losses with the opening up of borders and restaurants. The least affected were the financially more liquid companies (able to service overheads) and those with integrated facilities (able to store products).
- In terms of impact on the workplace, highlighted issues included problems in some workplaces due to the lack of space for social distance. Problems also occurred onboard vessels as crew were confined and not allowed ashore.
- Fishermen were not able to sell their catches because markets and restaurants were closed. For aquaculture businesses, issues raised included varying prices in the market, with an initial fall in sales due to the shutdown, an oversupply of fish in the market and the closure of export markets because the borders were closed.
- The processing sector suffered from a lack of overseas sales and travel restrictions within the domestic supply chain and distribution system. Feed sales to the aquaculture sector also decreased and stocks formed in warehouses.
- Significant problems for the truck distribution system across Europe were most acute during the first three months of the pandemic when borders were closed.

25. Analysis of the results – business operations, logistics and support:

- There were issues with the supply of various inputs throughout the supply chain during the pandemic, and this had an adverse impact on the cost of many of these inputs. The shortage of warehousing throughout the fish-feed supply chain is noted.
- The survey results suggest that the general level of formal support for the sector was limited. For those seeking financial support, this was mainly provided in the form of loans from state banks and some companies used loans from the Small and Medium

Industry Development Organisation. The larger processing companies and vertically integrated companies received state backed unemployment/welfare support.

- Results from the survey also suggest that the sector expects that the dominate source of support should come from the government, with financial support (specifically easier access to credit) the primary request. Family are not seen as a useful or appropriate source of support and there appears to be limited expectation in producer groups (such as a cooperative) aiding in such situations.

26. Analysis of the results – preparing for the future and performance evaluation:
    - More than half of the companies reported that they have no idea or have taken no action to address future crisis. The majority of those interviewed (almost 80%) do not want to participate in developing and/or testing preparedness plans. Both of these results are of some concern and present a significant challenge for the government and state institutions if they are to learn from and prepare for future crisis.
    - The biggest requirement of the sector is undoubtedly financial – namely interest-free or low-interest loans. In addition, the demand for the postponement of loans and debts was requested. Various other specific demands and recommendations from the industry are also documented in the report.
    - Feedback from the results of the survey with regard to the performance of public sector and industry institutions related to the dealing with the pandemic was consistently negative, with 31 percent of respondents saying that responses by government institutions was “very bad” or “bad”, 42 percent saying the same for industry bodies. These results reflect the expectations of the private sector for the authorities and industry bodies to need to do more in future crisis.

27. Following on from the field survey, the report provides a summary of some early analysis by FAO (in 2020) of the immediate global impacts of the COVID-19 pandemic on the fisheries and aquaculture industries. The report also refers, as part of a global perspective and overview, to various documented measures taken by governments, fishers, processors and exporters in another early analysis of the impact of COVID-19 completed in early 2020 by the Sustainable Fisheries Partnership Foundation.

28. The report provides a summary record of the restrictions imposed between March 2020 and June 2021. Most of the restrictions were applied nationwide, although some weekend bans and night curfews were made only in the 41 largest cities nationwide.

29. Reference is made to a comprehensive joint UN study (FAO, IFAD & UNDP, 2020), which provided a comprehensive assessment of the impact, corrective actions and interventions taken by the Turkish government across the agricultural and food sector. Specific analysis of the impact on the fisheries and aquaculture sector in the UN study is limited to little more than one page, although some more general key points raised remain valid for/applicable to the sector.

30. The general lack of a more detailed analysis on the impact of the pandemic on the sector may in part be due possibly to the apparent minor and temporary nature of impacts during the early stages of the pandemic (as perceived by the researchers). Although this is true to a degree, the socio-economic impact of the COVID-19 pandemic throughout the various fisheries and aquaculture value chains were significant (to varying degrees). What is clearly evident from the available literature and the consultant’s own research is that there is a lack of COVID-19 specific impact assessment (quantitively data-based analysis) related to fisheries production, economic turnover and socio-economic impact for different segments of the industry. This is considered to be an important ‘take-away’ lesson for policy makers in learning how to better prepare for and manage pandemics and other emergencies in the future.

31. The consultants' research suggests that the effects of the pandemic with respect to the purse seine and trawl fisheries were relatively minor because the national restrictions and partial/complete lockdowns came into effect towards the official mandatory closure of the fishing season. The exception was the Bluefin tuna fishery in May/June (for both the 2020 and 2021 fishing seasons).

32. Various EUMOFA reports documented specific changes to, and the market shrinkage of, the important EU fisheries market (particularly for Turkish aquaculture products) during the pandemic. Across the EU the closure of HORECA channels, and in some places the closure of open markets, led to significant impact on their activities, especially for small scale fisheries selling fresh fish. The EU processing industry relying on frozen imports from third countries experienced a shortage in supply as processing activities were reduced and the impact of limitations in freight capacity plus some major supplying countries having closed their ports. Imports into the EU of restaurant marketed fish species decreased substantially.

33. Conversely for most processors selling to the retail sector the demand remained reportedly strong, especially for canned, frozen and smoked fish and the downstream supply chains from the processors continued to work well. For processors processing for other segments of the market (such as HORECA channels) the situation was difficult. However, there was a rapid increase in online sales and home delivery of seafood products during lockdown.

34. The report provides a summary of the observed changes in the EU fish market from Weeks 12-17 (in 2020). Evidence from analysis of EUMOFA data suggests that the Turkish aquaculture sector was hardest hit between Weeks 13 and 17 (Q2, 2020), with a sharp decline in export volume but less of an impact on unit prices. There was also a significant drop in demand from local (domestic market) consumers.

35. Inland artisanal fisheries were affected primarily as a result of closure of the processing industry because of the nationwide precautionary measures which continued for all agriculture related activities until almost mid-April, plus limited demand due to problems in the export supply chain. The artisanal and small fisheries were severely negatively impacted due to access and trade restrictions, diminished demand, the absence of tourism activities and closure of HORECA customers, and general health safety issues related to maintaining adequate working conditions for vessel crews. Reference is made to a report prepared by WWF Turkey that draws attention to the need to address socio-economic and environmental sustainability issues. This report also discusses a number of issues raised specific to the industrial fisheries and aquaculture sector.

36. In addition to the general difficulties faced by the national workforce with regard to the pandemic, work- and business-related activities and the extra administrative workload as a result of the need to comply with new and frequently changing hygiene safety requirements, a number of specific socio-economic issues were noted for fishers/fish farmers, seafood processors and traders and their families.

37. Women experienced an extra burden as in Turkish culture they are traditionally responsible for the welfare of the family, and for many families their household subsistence incomes were at risk. The number of women employed in the HORECA sector is disproportionately high so the closure of this sector for some time and loss of jobs was significant, although there is no known data or measure of this impact.

38. Female workers in the aquaculture and processing sectors had limited work once the cold stores were full and because of this only received partial payments. Women working in the canneries managed better, especially in the tuna canning factories, and were able to work overtime. Female workers in the markets and multiple retail service sectors benefited from work opportunities as home consumption became the only option with retail sales in general increasing two-three-fold. Takeaway meals and home deliveries provided job opportunities for women working in the kitchens of food service businesses.

39. Reference is made to a number of papers published on the impact of the pandemic on the Turkish fisheries sector and suggested measures to be taken. Data is also provided illustrating the impact of the pandemic on fisheries and aquaculture production and trade.

40. There is limited documented country specific information on the impact of the pandemic on wider sector management issues. Scientific research and monitoring projects were either impaired or halted due to general travel and work activity restrictions. Industry training programmes and regular educational activities were also halted and had to be carried out online using e-learning platforms. National and international development projects have experienced delays with staff repatriated to the hometown/country and in many cases, staff are still working from home.

41. Despite the fisheries and aquaculture sector being an important contributor to the national GDP, to foreign exchange earnings, as well as being socio-economically important, the sector as a whole lacks any kind of emergency response plan and there remains a general lack of sector specific sustainability and resilience building strategies and policy instruments to deal with future crisis.

42. A summary of the government, industry and market responses to the pandemic is provided in the report, although no published data is available on the level and extent of to verify and quantify the level of government support.

43. Based on the experiences of the past 18-months this report finds that it is clear that the Turkish seafood industry and fisheries/aquaculture sector now requires (and deserves) a coordinated, participatory and sustainable government led response and resilience plan, based on sound science and assessment, developed and supported by appropriate international best practice. The FAO consultants will turn their attention to this in the next phase of this study with the preparation of a draft Emergency Response and Preparedness Plan.

44. Key lessons learnt referenced in an OECD report (OECD, 2020) have in turn been used as benchmarks in discussing the policy implications for the Turkish fisheries sector:
    - Changes in food consumption and difficulties in reaching consumers have significantly impacted domestic and international demand and prices.
    - Production capacity and costs have been affected by the need for additional health and safety measures and reduced labour mobility all along the supply chain.
    - Whilst too early (at the time of writing of the OECD report) to assess the impact of the crisis on the natural resource base, investment in monitoring is crucial.
    - Potential implications for global food security and livelihoods call for urgent yet calibrated responses from governments and industry.

45. The report concludes with a summary of the commonly agreed findings (14 in total) from the COVID-19 pandemic agreed by both industry and public sector administrative bodies concerning the needs of the sector in addressing future crisis.

1. Introduction

This interim report is the first two (labelled as Part A and Part B) of four reporting deliverables (outputs) planned under the Fisheries and Aquaculture Sectoral Preparedness and Response to COVID-19 Project implemented through the Food and Agriculture Organization (FAO) of the United Nations (UN) in Turkey (Project No. TCP/TUR/3801/C1). The report has been compiled between June and October 2021.[4]

The timing of inputs by the individual consultants to this study has been (and continue to be) delayed and this may have impacted on dialogue with stakeholders. More detailed comments were anticipated from the field survey to inform and support observations made by the national consultants during the pandemic. However too much time has likely passed after the major initial impact and restrictions that respondents (to the survey) may have simply forgotten about their experiences. In essence this study should have been undertaken 6+ months ago.

1.2 Background and objectives of the study

The outcome of this project is stated as: *Improved sectoral capacity for adaptation and response to the COVID-19 situation or future similar disruption*. Achievement of this outcome is through the delivery of two outputs:

Output 1: *Strategic planning for emergency preparedness and response plan developed*; and,
Output 2: *A sub-regional public awareness campaign targeting students to support domestic market recovery.*

The consultants' work is focused exclusively on the delivery of Output 1. The activities for achieving this output, and which in turn form the basis for the individual Terms of Reference (ToR) for the three consultants, are specified overleaf in Table 1.

This interim report is presented in two parts: Part A (seafood value chain mapping); and Part B (COVID-19 impact assessment). These constitute the first and second reporting deliverables of four reporting deliverables by the consultants. A second report, containing the emergency preparedness and response plan and a seafood market development strategy, will be prepared in early 2022.

[4] Work by the national consultants started in April/May 2021 before the international consultant was appointed.

Table 1: Project Activities 1.1-1.5

Activity	Description
1.1 Country-level assessment of the impact of COVID-19 pandemic in fisheries and aquaculture sectors	The assessment will cover inland and marine capture fisheries as well as inland and marine aquaculture. The assessment will be based on inputs from the key stakeholders along the supply chain (including fishers, fish producers, processors, retailers, wholesalers, suppliers of inputs to both sectors, etc.) using rapid surveys by telephone or web and/or a survey questionnaire. The assessment aims to detail the extent and nature of socio-economic impact of the COVID-19 crisis in Turkish fisheries and aquaculture sectors that centre around consumer demand, production, supply and marketing channels. It will describe the experiences, lessons learned and innovative solutions developed by the sectors during the pandemic. It will also provide recommendations for post-pandemic recovery.
1.2 Stakeholder consultation meetings	Stakeholder consultation meetings will be organized with the aim to exchange ideas on the assessment methodology and to discuss the findings of the assessment.
1.3 Sectoral emergency preparedness and response plan	The risk-based plan, among others, will have the following elements: - Current organizational, institutional, legislative; financial frameworks for emergency preparedness and response (EPR) - Sectoral EPR structures, - Gap analysis (internal and external factors/risks) - Likely risks and sector impact analysis, - A sectoral EPR management model under several scenarios, including roles and responsibilities, - Prevention and mitigation measures with financing mechanisms, and - Surveillance and early warning, information management
1.4 Stakeholder validation meetings for the validation of emergency preparedness and response plan	A stakeholder meeting will be organised to validate draft sectoral EPR plan. The meeting will bring together the representatives of the key stakeholders and ensure gender parity.
1.5 Preparation of seafood market expansion strategy	The strategy aims to identify a framework that enhances enabling conditions for internal and external trade of fish and fishery products taking into consideration the lessons learned during the COVID-19 crisis. It will assess the pre-COVID-19 performance of fishery and aquaculture sectors and propose legislative, policy, strategic, institutional, financial, infrastructure and innovative frameworks mechanisms, systems to expand new domestic and export markets, in fish and fish products, particularly in face of COVID-19-like emergencies and crises.

2. Methodology

2.1 Methodology – Value Chain Analysis

Turkey has a wide range of species targeted in its marine and inland capture fisheries, although the number of farmed species in the marine and inland aquaculture sector is limited. In addition, there are a wide range of post-harvest products marketed within the domestic and international value chain. It is beyond the scope of this study to be able to look at all of these species/products (in terms of end market analysis and VC mapping), so it was agreed early on in the study (as discussed at the inception meeting on the 24th of June 2021) to focus on a number of key indicator species only, representing at least one VC from each of the main marine fishing grounds (Black, Marmara and Aegean Seas), one from the inland fisheries sector and one from marine aquaculture. It had originally been proposed to look at the bluefin VC but this was dropped at the request of the Turkish Ministry of Agriculture and Forestry (MoAF) in favour of looking at horse mackerel.

The following species were agreed to in early August 2021 with the MoAF:

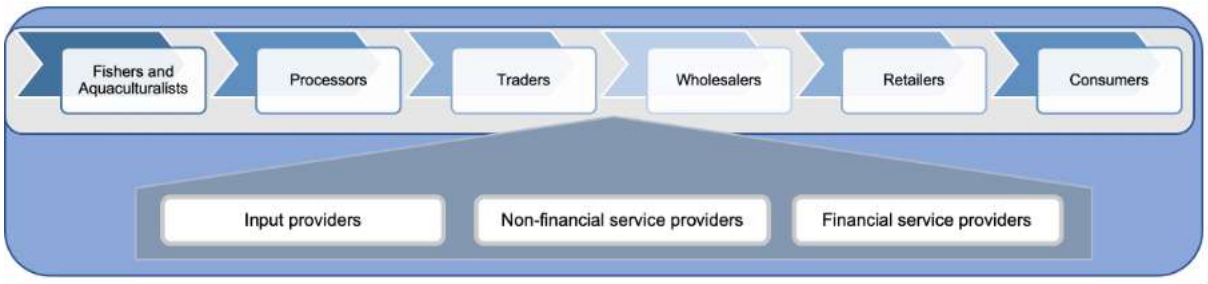
1. Marine Capture: Anchovy
2. Marine Capture: Bonito
3. Marine Capture: Horse Mackerel
4. Marine Capture: Red mullet
5. Marine Aquaculture: Seabass and Seabream
6. Inland Aquaculture: Trout (also referred to generically as “Turkish Salmon”)

2.1.1 What is a food value chain?

A **Value Chain** (VC) is the full range of enterprises and their coordinated activities that produce particular raw materials (or services) and transform them into food products that are sold to final consumers. In fisheries and aquaculture value chains, this includes **fishing and aquaculture**, **processing**, **trade**, **wholesale**, **retail** and **consumption**. Value chains can be restricted to local markets, but also expand globally. Value chain actors are supported by **service providers**, who play an essential role in facilitating the process from production to consumption. There are three main types of support provided to all actors along the value chain, as illustrated in Figure 1:

(1) **input provision** for physical inputs (such as seed and feed, packaging);
(2) **service provision** of non-financial services (such as storage, transport, and market research), and,
(3) **financial services**.

Figure 1: Fisheries and aquaculture value chain



Source: Extracted from a FAO value-chain project document, 2020.

A fisheries sector Value Chain consists of the full range of actors from capture/production (fish farmers) to consumption and their coordinated value adding activities that transform raw materials into food products. A value chain development approach is a holistic method, which examines all the elements, actors, their complex interlinked behaviour, and their technical, economic, social and environmental performance in order to devise an upgrading strategy that will improve the sustainability impact of the value chain.

The first step in the VCA process is to describe and gain an in-depth understanding of the elements of the VC and the linkages between them. This includes understanding what VC actors are doing, why they are doing this and how this behaviour has changed over time. A critical part of this first step is to understand in detail the end-markets that drive the dynamics of the VC. This deep understanding is key to interpreting the sustainability performance and formulating any kind of development strategy or plan for the VC.

2.1.2 Value Chain Analysis

Fundamental to a better understanding of the fisheries/aquaculture sector[5] and the impact of COVID-19, and in turn to prepare the seafood market expansion strategy is to undertake a fisheries sector **Value Chain Analysis** (VCA). The FAO has decades of experience in conducting VCA, with the primary framework being the Sustainable Food Value Chain (SFVC) Guiding Principles (FAO, 2014). A useful reference document on the methodology of VCA is also provided by the FAO implemented FISH4ACP Programme (FISH4ACP, 2019).
The SFVC approach, which is well documented and tested, promotes the development of agri-food value chains that are not only economically but also socially and environmentally sustainable. The approach is highly participatory in nature and stakeholder driven. Stakeholder consultation and participation are key throughout the VCA. The analytical, strategy and planning process of the VCA and VC development/upgrading works through four main steps:

(1) functional analysis
(2) sustainability assessment
(3) upgrading strategy development; and
(4) implementation planning (actions and investments).

The functional analysis and the sustainability assessment are usually conducted in parallel and form the basis of the VCA.

2.1.3 What do we mean by Functional Analysis?

The functional analysis is all about understanding the structure and dynamics of the value chain. This includes the discovery of the VC actors, input and service providers and the

[5] The term 'fisheries sector' is used throughout this report and refers to both marine and freshwater capture fisheries and aquaculture/mariculture and ranching.

enabling environment, their behaviour, their interactions, and their quantifiable dimensions (numbers, volumes and values). It includes understanding why actors choose particular markets, technologies or governance mechanisms over others which may seem more rewarding or efficient, such as using older boat types or not using ice.

Behaviours are determined by incentives and capacities so the "why" of behaviour links to a complex web of input and output prices, risk factors, preferences, knowledge of and access to inputs, finance, services and markets. In turn, there are underlying reasons why prices are low or high, why markets cannot be accessed, and why actors are not aware of particular options. These underlying reasons can link to a wide range of factors, such as (for example) market power, the nature of extension services, regulations and how they are enforced, market infrastructure, fishing rights, a lack of knowledge of the fishing sector amongst banks. A coherent functional analysis should work systematically through all these aspects in four steps, thus assuring a holistic and in-depth understanding of the VC. These four steps are:

1. End-market analysis
2. VC mapping
3. Analysing the elements of the system
4. Governance analysis

2.1.4 What do we mean by Value Chain Mapping?

A value chain map/flow chart provides a general picture of the value chain from production to consumption, indicating the functions, actors, linkages between them, and the main channels of distribution. In brief this work usually involves:

1. Determining the functions: From aquaculture production to consumption what are the main successive functional stages along the value chain?
2. Determining the types of actors: Who are the actors performing specific functions and services along the value chain, how many are there, and which actors cover more than one function?
3. Indicating the flows along the value chain: What are the main pathways through which the aquaculture/farmed product flow to the different end-markets? An assessment of the flows in volume and value terms should be provided.
4. Identifying the main marketing channels: What are the main channels and why? What changes if any (growth/decline) have happened over the past five years?
5. Providing quantified overlays of the value chain: What are the numbers of actors as well as volumes and values (profit margins) of product for each actor type, considering factors such as self-consumption, production and distribution losses and processing conversion rates.
6. Indicating possible leverage points within the value chain: Where do large volumes of product or number of actors come together and where are the possible weak points/constraints in production, trading or end market? Are there any subsidies impacting on the value chain?

The results of the VC mapping for the six indicator species are presented in Annex 4 and discussed in Sections A2.1 and A3.

2.1.5 Comments on VCA methodology

The methodology related to VCA should be the starting point for this study. However, whilst elements of this approach are referred to the project document activities (see Table 1), this methodology (process) has not been specified in detail in the consultants' ToR and reference is only made in the individual ToR to 'end-market analysis' and 'value-chain

mapping'; the first and second stages respectively of what is usually a four-step process (see Sections 2.1.1-2.1.4 for more details).

Whilst there is some degree of cohesion across the consultants ToR, there is neither the resources (time and budget) or mandate to undertake a full value chain analysis in what is a highly complex and diverse fisheries sector in Turkey. This is compounded by a significant lack of value chain data to be able to undertake detailed VC mapping for any of the indicator species, and this is reflected in the analysis and reporting. The consultants have developed and used a standard model to illustrate and map out the VC for each species. The shortfall in data will inevitably have implications for the delivery of a value chain development plan (in the case of this project the requested **seafood market expansion strategy**)[6] that all the relevant stakeholders can agree on, and to which they are willing to commit resources to in terms of implemented actions (projects) and investments to upgrade the fisheries sector value chain.

The consultants are not aware of any significant previous VC mapping work that has been completed for any of these species, although they are aware of a parallel FAO TCP project which was to cover both trout and shrimp in Turkey in a wider fisheries value chain project for some Mediterranean countries. It has recently (September 2021) been reported that the Turkish government wants this other project to focus only on shrimp; it is unclear if this is because of the anticipated work (analysis) in this study or because the Ministry of Agriculture and Forestry (MoAF) is already satisfied with the development of the trout sector.

The MoAF and specifically the Directorate General of Fisheries and Aquaculture (DGFA) are not responsible for the collection of fisheries market and sales data in Turkey. This is the responsibility of the Ministry of Commerce. The DGFA provided some sector specific 2020 data early on in the project (but no detailed market analysis) which has been used in this report. Some international trade data has however been obtained from international sources for 2021 Q1/Q2 and has been presented in Part A of this report.

2.2 Methodology – COVID-19 impact assessment

The basis for the impact assessment was a combination of desk-based analysis of existing literature plus an analysis of the results of a field survey conducted as part of this project. The itinerary of the fieldwork completed between July and September 2021 was as follows:

Istanbul: 19th July; 17th August and 20th August
Ankara: 10th and 11th August
Trabzon: 12th and 13th August
Elazig: 8th, 9th and 10th September 2021
Izmir: 13th September
Mugla: 14th September (Mugla Milas) and 15th-16th September (Mugla Dalyan and Seydikemer)

The consultants were guided in the development of the field survey questionnaire by the FAO guide entitled 'Best practices for developing surveys and questionnaires on the impacts of COVID-19 on fisheries and aquaculture' (FAO, 2020c).

Answers to the survey questions have helped the consultants determine how much the sector has been affected by the pandemic and will also enable the consultants to develop a draft strategy to be considered by the GoT to be better prepared for future pandemics or

[6] A strategy differs from a plan in that a strategy lacks the detailed working out (namely the budget and timeframe) that are usually associated with a plan.

similar emergency situations (in the next reporting output of this study). The details of individuals and institutions who participated in the survey remain confidential and participants were assured that they would not be disclosed within this report, so as to try to ensure full and open answers to the questions asked. As such all the answers are anonymous and have not been referenced to any one individual person or company.

PART A: FUNCTIONAL ANALYSIS OF THE SEAFOOD VALUE CHAIN

A1 A brief analysis of the Turkish fisheries sector

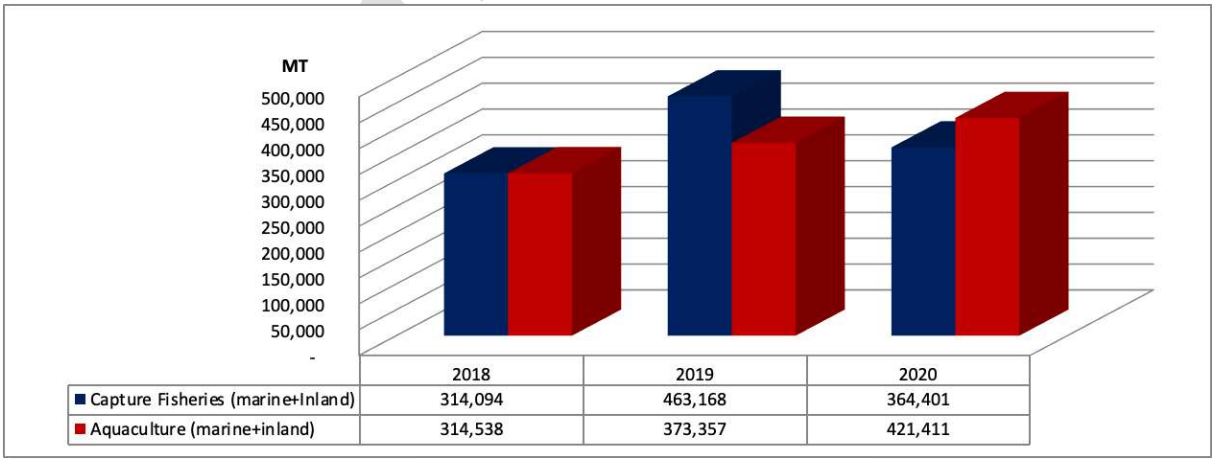
Turkey covers a geographic area of 783 560km², with 8,333 km of coastline on the Black Sea, the Aegean Sea, the Mediterranean Sea, the Sea of Marmora, the Bosporus and Dardanelles. Turkey has rich inland waters and river systems with significant potential for capture and culture-based fisheries. The total population is currently 84.34 million (2020 data from the Internet) and per capita consumption of fish and fishery products was 4.9kg in 2016 (FAO, 2019). The total fishery production of Turkey in 2020 was 786,000mt comprised of marine capture (42.2 percent), inland capture (4.2 percent), marine aquaculture (37.3 percent) and inland aquaculture (16.3 percent) – see Figure 2 and data in Annex 2.

The sector provides an estimated overall contribution of 0.7+ percent to the national GDP, although as is typical for many developed and middle-income economies the geo-political, socio-economic and economic significance of the fisheries sector at a local and regional level far out ways its perceived contribution based on national economic data. The sector contributes significantly to a positive balance of trade, with export revenues exceeding USD 1.0 billion and trade with over 80 countries internationally. Turkey is a major aquaculture producer in the wider EU region and has an overseas fishing fleet operating in the Mediterranean and Eastern Black Seas and the South Atlantic Ocean.

Imports and Exports

Total fisheries and aquaculture sector exports have increased year-on-year since 2013 and in 2020 rose to 201,157mt worth USD1.064 billion whilst imports (on a downward trend over the same period) were 85,267mt worth USD156.93 million. The sector therefore has a foreign trade surplus of USD906.9 million as an exporter.

Figure 2: Turkish Capture Fisheries and Aquaculture Production (2018-2020)



	2018	2019	2020
Capture Fisheries (marine+Inland)	314,094	463,168	364,401
Aquaculture (marine+inland)	314,538	373,357	421,411

Source: FAO Consultant's analysis of data from Annex 2

Opportunities and Threats

Threats to the sector are reportedly over-fishing, fleet overcapacity, poor environmental planning, and unregulated fishing[7] (FAO, 2019). Observations suggest that another key concern is the absence of an ecosystem approach to fisheries management and governance, including the need for multiannual fisheries management plans. This would necessitate improvements in the collection of data to monitor and evaluate implementation of these plans. Opportunities for increasing production in a sustainable manner are sought in the promotion of co-management schemes, stock assessment, monitoring control and surveillance (MCS), increased market access for Turkish fisheries products into the European Union (EU), and the improved regulation of recreational fisheries.

Capture fisheries

The marine fishery makes up about 90 percent of capture fisheries landings, amounting to just over 331,000mt in 2020. The Black Sea is responsible for close to 75 percent of the marine landings. Anchovy, pilchard, sprat and horse mackerel are the main small pelagic species in terms of volume, amounting to 85 percent of the marine catch in 2020. Marine capture production is highly influenced by fluctuating anchovy catches, which peaked at 385,000mt in 2007 but decreased to an average of 150,000mt per year in 2012-2014, recovered to 193,500mt in 2015 but decreased to 158,000mt in 2017. The latest data from DGFA records an anchovy catch of 171,253mt in 2020. There is no available data for 2021.

A significant proportion of the landings from the Black Sea are used in the production of fishmeal and fish oil. Fish caught for human consumption comes from all the seas surrounding Turkey. Inland capture fisheries produced just over 33,000mt in 2020, continuing a decreasing trend in catches seen every year since 2014. The most important species are *inci kefali* [8] and gibel carp, which together make up half the landings. Other important species are sand smelt, mullets, common carp and land snail.

Fleet size and employment

The marine fleet consists of 15,302 vessels (down from 17,497 as reported in FAO, 2019) of which 66 percent were small vessels under 8.0m in length (and approximately 5.0 GRT) – see Table 2 below:

Table 2: Profile of Turkish fishing fleet (2020)

Area	Size Group (m)							Total
	0-4.9	5-7.9	8-9.9	10-11.9	12-19.9	20-29.9	30+	
Marine	688	8,822	3,335	856	859	460	282	15,302
Inland	394	2,312	391	22	62	-	-	3,181
Total	1,082	11,134	3,726	878	921	460	282	18,483

Source: DGFA, 2021

Data from the FAO (FAO, 2019) states that in 2017 the total number of marine fishers was 31,842, of which 344 were women. There were an estimated additional 10,500 people engaged in the aquaculture sector. OECD data from 2018 suggest that total employment in the seafood sector, including processing, accounted for 52,937 jobs, which represents 27% less jobs than in 2008.

[7] The consultant is aware of a wide range of technical and administrative MCS measures that suggests unregulated fishing is currently not such a serious threat to the sector.

[8] *Alburnus tarichi*, known as the tarek, pearl mullet, Van fish or Van shah kuli, is a species of cyprinid fish endemic to the Lake Van basin in Turkey and the only known fish to inhabit Lake Van.

More recent data from TURKSTAT (for 2020) states that the number of people working in the marine fisheries sector is 35,540 people;[9] there is no data on how many of these are women. This is at slight variance from data received from the DGFA, which provided the following 2020 employment figures across the sector (Table 3 overleaf). Total full-time and part-time employment and subsistence fishing equates to a total direct and indirect (family) dependency within the sector of an estimated 300,000 men, women, and youth, equivalent to 0.35 percent of the total population.

Table 3: Employment in the sector (2020)

	Marine	Inland	Sub-Total
Fisheries	28,717	5,460	34,177
Aquaculture			10,750
Processing			6,450
Grand Total			51,377

Source: DGFA, 2021

Aquaculture

Aquaculture has a relatively short history in Turkey. It began with the farming of rainbow trout and common carp in the late 1960s and developed further with gilthead seabream and European seabass cage culture in the mid-1980s located along the coast of the Aegean Sea. A Bluefin tuna (BFT) fattening business started off the Mediterranean coast of Antalya and in the Aegean Sea near Izmir from 2000 and has grown significantly since. Production has increased significantly in the past decade, with a 331 percent increase in marine and 161 percent increase in inland aquaculture output from 2010 to 2020. Total aquaculture production has exceeded that from marine and inland capture fisheries in two of the last three years (based on 2020 data), as illustrated earlier in Figure 2.

The majority of inland aquaculture production is from rainbow trout culture (Turkish salmon) which is conducted in concrete raceways and net cages in dam lakes and reservoirs. European seabass and gilthead seabream are the main cage-farmed marine species. 43 percent of total aquaculture production is exported. This rapid growth of the aquaculture sector has made Turkey the leading producer in the Mediterranean Sea. Production extends also to the Black Sea, where sea-raised trout and European sea bass are cultivated. Turkish aquaculture has limited diversity, with the following finfish species cultured commercially:

- Rainbow trout (*Oncorhynchus mykiss*);
- Sea trout (*Salmo trutta labrax);*[10]
- Sea bass (*Dicentrarchus labrax*);
- Sea bream (*Sparus aurata*);
- Meagre (*Argyrosomus regius*);[11]
- Carp (*Cyprinus carpio*);[12] and,
- Blue-fin tuna (*Thunnus thynnus*).[13]

[9] Of these 35,540 a total of 13,685 (38.5%) are the fishing vessel owners/captains, 6,196 (17.4%) are salaried crew working on larger vessels, 10,856 (30.5%) are share fishermen working on smaller vessels and the remainder are salaried and/or unpaid partners and household members.
[10] The Black Sea salmon is a fairly small species of salmon traditionally inhabiting the northern Black Sea coasts and inflowing rivers. The fish is a close relative of the brown trout.
[11] 7,428mt produced in 2020 and 3,375mt in 2019 (TURKSTAT, 2021).
[12] 173mt produced in 2020 and 203mt in 2019 (TURKSTAT, 2021).
[13] 4,338mt produced in 2020 and 2,327mt in 2019 (TURKSTAT, 2021).

Total production from the aquaculture sector reached just over 421,000mt in 2020 (see Annex 2). Freshwater aquaculture production is almost exclusively trout. The main marine species are sea bass and sea bream with total production of 258,656mt, equivalent to 93 percent of the total marine aquaculture production. Turkey is a major global producer and exporter of both farmed sea bass and sea bream, particularly to the EU.

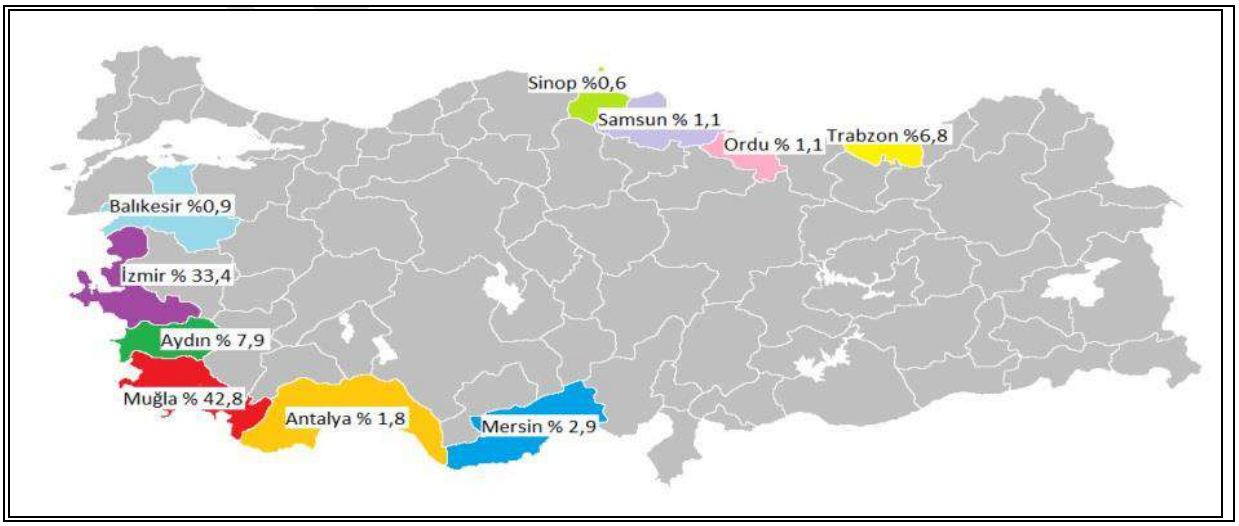
The number of vertically integrated aquaculture businesses operating their own hatcheries, fish feed plants, fish farms, and processing and packaging facilities is increasing constantly. In 2020, there were 1,707 inland and 432 marine aquaculture facilities employing approximately 11,000 persons – see Table 4:

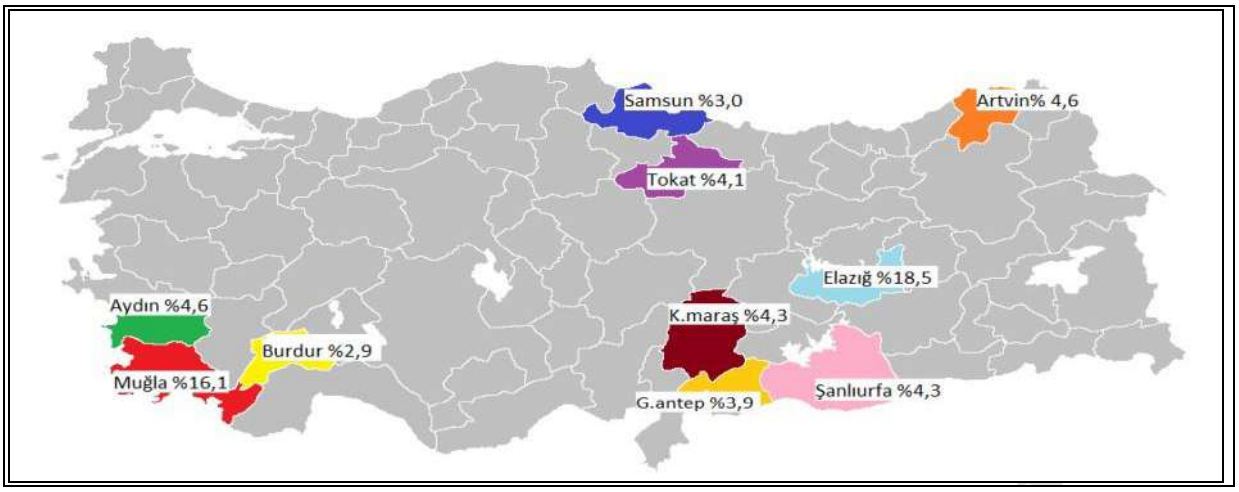
Table 4: Number and capacity of Turkish aquaculture facilities

	Production capacity (MT)	Number of facilities	Total potential production capacity (MT/year)
Marine	Hatchery	25	-
	0-50	130	3,515
	51-100	16	1,335
	101-250	18	3,114
	251-500	56	19,276
	501-1000	93	82,764
	1001>	94	196,12
	Sub-Total	**432**	**306,124**
Inland	Hatchery	65	-
	0-50	1,118	19,228
	51-100	105	9,31
	101-250	196	39,295
	251-500	122	53,16
	501-1000	99	84,767
	1001>	2	4,9
	Sub-Total	**1,707**	**210,66**
TOTAL		**2,139**	**516,784**

Source: DGFA, 2021

Figure 3: Major cities engaged in marine and inland aquaculture (2019 data)





Source: Agriculture Economic and Policy Development Institute (MoAF, 2021)

A2 End market analysis and VC mapping of six indicator species

As discussed in Section 2.1, it is beyond the scope of this study to be able to look at all of the species/products landed and marketed in Turkey so it was agreed to focus on a number of key indicator species only, representing at least one VC from each of the main marine fishing grounds (Black, Marmara and Aegean Seas), one from the inland fisheries sector and one from marine aquaculture. The following species were agreed to:

1. Marine Capture: Anchovy
2. Marine Capture: Bonito
3. Marine Capture: Horse Mackerel
4. Marine Capture: Red mullet
5. Marine Aquaculture: Seabass and Seabream
6. Inland Aquaculture: Trout (also referred to generically as “Turkish Salmon”)

A2.1 Domestic & international trade

The international trade market assessments for each of the agreed indicator species in this study report are in large part based on an analysis of data from the International Trade Centre (ITC) Trade Map website (www.trademap.org).[14] The ITC website provides - in the form of tables, graphs and maps - indicators on export performance, international demand, alternative markets and competitive markets, as well as a directory of importing and exporting companies.

Trade Map covers 220 countries and territories and 5,300 products of the Harmonised System (HS).[15] Typically for each of the key indicator species it has been, where possible, looked at the two most prevalent products forms (invariably fresh/chilled and one form of processed/preserved value-chain product). The data in this section on international trade and the accompanying Annex 3 provides an assessment of the trade status of both importing and exporting countries specifically in relation to Turkey, thereby providing one form of end market analysis that will help inform development of a market expansion strategy later on in the study.

An explanation of the data provided in the last column of each table in Annex 3 and analysis of ‘concentration of supplying/importing countries’ in the following sections of this report is provided as follows:

Importers: This is a measure of how diversified an importing country is in terms of its suppliers (supplying countries) of a specific product. The index ranges from zero to one. As an example, if country ‘A’ has a high index (close to 1) it means that the majority of imports from (or exports by) country ‘A’ are to Turkey. Hence country ‘A’ is a concentrated market in terms of imports into Turkey. Conversely, a less concentrated market (with country ‘A’ supplying, or importing to, many different countries) would have an index close to zero.

Exporters: This measures the concentration of importing countries buying from Turkey as an exporter. If country ‘A’ has a high index (close to 1), it shows that Turkey’s export of a specific product depends heavily on limited markets and Turkey exports only to very few

[14] There are also other databases that provide a useful analysis of trade data, such as at www.oec.world and https://www.fao.org/fishery/statistics/global-commodities-production
[15] HS code is an abbreviation for Harmonised Commodity Description and Coding System and is the list of numbers used by customs authorities worldwide to classify a product.

countries as trading partners. Conversely, a small index figure shows that many countries import from Turkey.

Anchovy

The Anchovy (*Engraulis encrasicolus*) is a forage fish somewhat related to the herring; anchovies are placed in the family *Engraulidae.* They are caught in the Black Sea, Marmara and Northern Aegean Seas in Turkey. The fishing is mostly done with purse seine boats. Anchovy is the most commonly caught fish in the seas, with landings of 171,253mt in 2020. The bulk of the catches are used to produce fish meal and oil as animal/fish feed, both for the domestic market and for export. Demand for fish feed is a growing market given the significant increases in Turkish aquaculture production.

The fishing season in Turkey is between September and the following April with the main effort being between October and the following February. Anchovy are either landed ashore fresh or sometimes frozen onboard. From the landing ports the fish is sent to wholesale fish markets, processing factories and fishmeal and oil factories dependent on market demand. From the wholesale fish markets, sales are made to retail fish markets, restaurants and supermarket chains through broker companies – see Annex 4 VC Map A4.1. There is no available data on the breakdown of sales within the domestic value chain.

Anchovies are some of the most world's traded fish species in a number of product forms and recent years the development of trade of prepared and preserved anchovies has increased with improvements in the value chain, supplying a growing demand for ready-to-eat convenience fish products. Disaggregated international trade statistics[16] have been collated and analysed from the ITC Trade Map database for two anchovy value chains - fresh or chilled anchovies (HS Code 030242) and prepared or preserved anchovies, whole or in pieces excluding minced (HS Code 160416).

International trade: fresh or chilled (HS Code 030242)
Turkey is ranked 13th for imports and 14th for exports by value in the World for the trade in fresh or chilled anchovies. An analysis of available ITC Trade Map database statistics shows that the global market volume and value of trade in these anchovy products was 24,260mt worth USD 40.8 million in 2020 (measured by imports), with Spain (35.9% of market share) and Italy (16.4%) between them making over half of the global consumer (importing) market for these products. Three countries dominate the export market - Portugal (28.2% of market share), Spain (22.2%) and Italy (21.1%). There is a global balance of trade (value of exports exceeding value of imports) for this value chain of USD 15.5 million.

Annex 3 Tables A3.1/3.2 provide an analysis of data collected on the imports into and exports from Turkey for fresh or chilled anchovies. Turkey has a small negative balance of trade (value of imports exceeding exports) of USD 95,000. The global index of 'concentration of importing countries' (countries that export to Turkey) for fresh or chilled anchovies is high

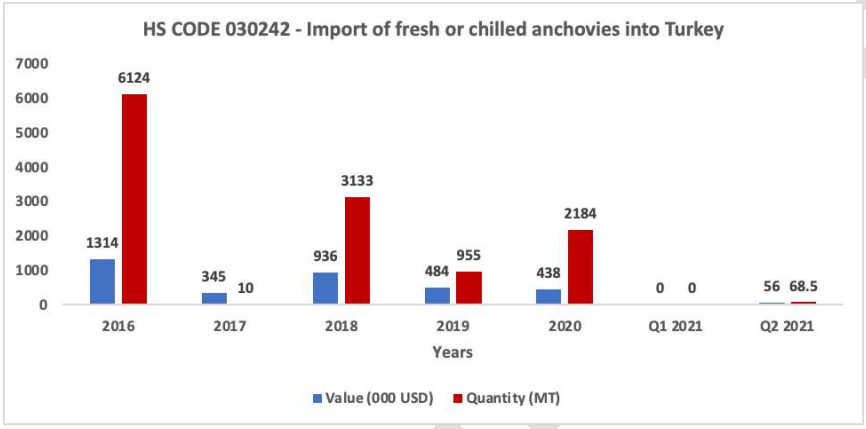
[16] The ITC Trade Map Database provides a wide range of aggregated data under HS codes for fish species and/or products that then need to be disaggregated to ascertain the trade in a specific species/value chain product. In the case of species and/or products for which there is minimal trade or the trade is generic in nature and therefore grouped along with a range of un-related species, obtaining specific disaggregated data is often not possible.

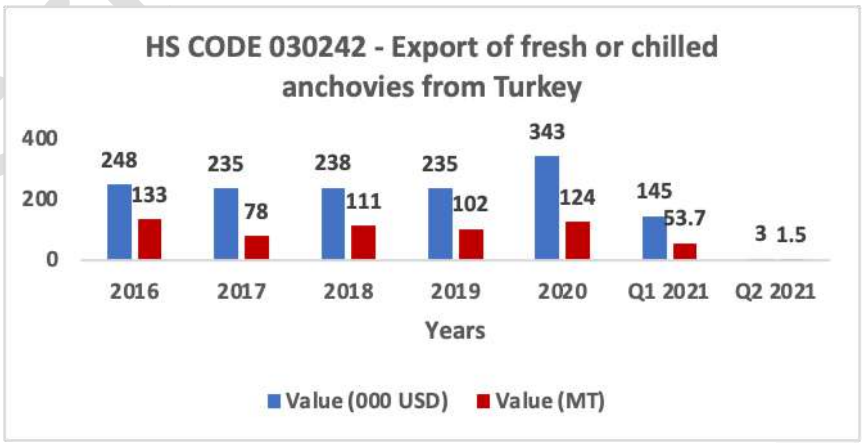
for only two countries listed (Georgia and Greece), indicating a concentrated import supply chain.

The global index of 'concentration of supplying countries' (countries that Turkey exports to) for fresh or chilled anchovies is varied from a highly concentrated market of 0.8 for three countries (Cyprus, Greece and Iraq) to below 0.4 for more diversified export markets such as the USA and Canada (indicating that these countries import from a number of sources other than just Turkey).

Figure 4 illustrates the trend in the quantity and value of imports to and exports from Turkey over the past six years (2016 to 2021 Q2) for fresh/chilled anchovy. The data suggests a highly significant drop in imports since 2020 and a lagged (during 2021 Q2) matching drop in exports. Both trends likely reflecting the impact of a sustained closure of borders for highly perishable seafood and changes in the demand for fishmeal and therefore industrial fishing effort/landings (see also findings in Section B7.3).

Figure 4: Import & export of fresh/chilled anchovy (2016-21)





Source: FAO Consultant's analysis of data from ITC Trade Map database, 2021

International trade: prepared or preserved (HS Code 160416)

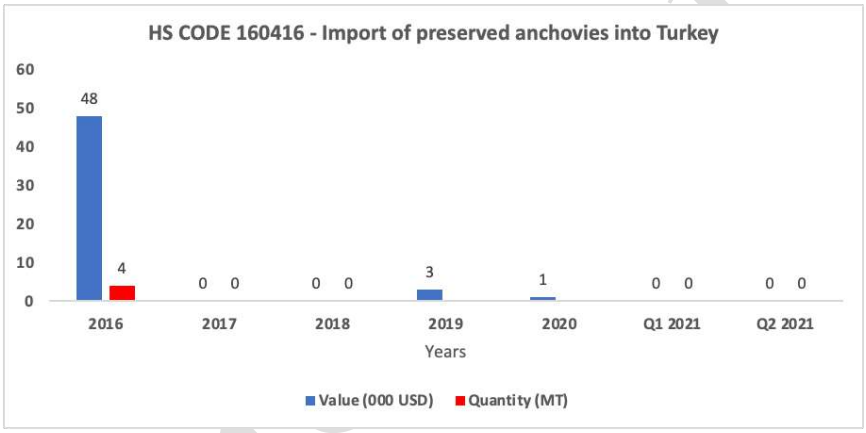
Turkey is ranked (by value) globally 131st for imports and 31st for exports for the trade in prepared or preserved anchovies (whole or in pieces, excluding minced). An analysis of available ITC Trade Map database statistics shows that the global market volume and value of trade in these anchovy products was 38,302mt worth USD 343.6 million in 2020 (measured by imports), with again, as with fresh/chilled anchovy products, Spain (22.7% of market share) and Italy (21.8%) having almost equal share and between them dominating

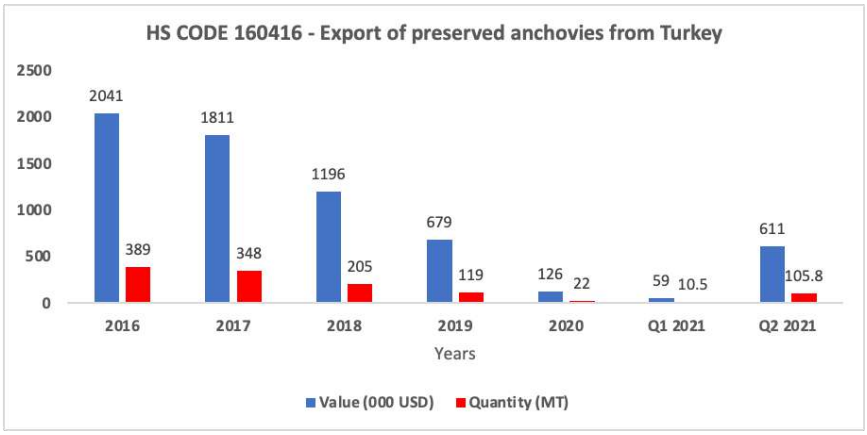
the global consumer (importing) market. The next most significant markets are France (11.3%), the USA (8.8%) and the UK (6.1%). Five countries dominate the export market - Spain (21.5% of market share), Morocco (18.8%), Peru (15.4%), Italy (13.7%) and to a lesser extent Albania (9.6%). There is a negative global balance of trade (value of imports exceeding value of exports) for this value chain of USD 101 million.

Annex 3 Tables A3.3/3.4 provide an analysis of data collected on the imports into and exports from Turkey for prepared or preserved anchovies. Turkey has a small positive balance of trade (value of exports exceeding imports) of USD 125,000. Only one country (Peru) exported a negligible volume of prepared or preserved anchovies to Turkey in 2020. The global index of 'concentration of supplying countries' (countries that Turkey exports to) for the same products is below 0.4 for most countries except two (Georgia and Panama) and again the volume is small, with a total export volume of only 22mt.

Figure 5 illustrates the trend in the quantity and value of imports to and exports from Turkey over the past six years (2016 to 2021 Q2) for prepared/preserved anchovy. The data suggests an almost complete cessation of imports since 2016 (un-related to the pandemic) and a steady decline in exports over the past six years, with a recent peak in exports that if maintained for the whole year may match the volume and value of 2018. These changes are likely to be largely due to cyclical changes in landings (as bonito usually follow a two-year low/one-year high population cycle that is also linked to the abundance of anchovy).

Figure 5: Import & export of prepared/preserved anchovy (2016-21)





Source: FAO Consultant's analysis of data from ITC Trade Map database, 2021

Bonito

The Atlantic Bonito (*Sarda sarda*) is a member of the *Scombridae* family that includes a variety of mackerel and tuna species, the Spanish mackerel and kingfish (King mackerel). Bonito grow up to 75 centimetres and weigh 5–6kg at this size and are an important fishery in Turkey conducted by purse seiners and some artisanal fishermen. The total landings of bonito was 22,743mt in 2020. The fishing season in Turkey is between September and the following April with the main effort being between September and the following January, linked to intense periods of spawning migration.

Bonito fish are landed ashore fresh and sometimes frozen onboard the larger fishing vessels. At the port of landing, it is sent to wholesale fish markets and processing factories (primarily canneries) according to market conditions. From the wholesale fish markets, sales are made to retail fish markets, restaurants, and supermarket chains through broker companies - see Annex 4 VC Map A4.2. There is no available data on the breakdown of sales within the domestic value chain.

International trade: fresh or chilled (HS Code 030233)
Turkey is not ranked as importing this product and globally ranked 24th for exports by value for the trade in fresh or chilled bonito, and there is an insignificant positive balance of trade. An analysis of available ITC Trade Map database statistics shows that the global market volume and value of trade in fresh/chilled bonito was 3,194mt worth USD 8.5 million in 2020 (measured by imports),[17] with Spain (26.6% of market share) and France (21.9%) between them making almost half of the global consumer (importing) market. Sri Lanka (48.7% of market share) and Spain (42.7%) dominate the export market. There is a negative global balance of trade (value of imports exceeding value of exports) for this value chain of USD 3.075 million.

Annex 3 Tables A3.5/3.6 provide an analysis of data collected on the imports into and exports from Turkey for fresh or chilled bonito. The global index of 'concentration of importing countries' (countries that export to Turkey) and 'concentration of supplying countries' (countries that Turkey exports to) for fresh or chilled bonito lists only one country (Greece). There is insufficient trade and/or trade data to map the trend in the quantity and value of imports and of exports over the past six years (2016 to 2021 Q2) for this HS product code.

International trade: prepared or preserved (HS Code 160414)[18]
Turkey is ranked (by value) globally 62nd for imports and 58th for exports for the trade in prepared or preserved bonito. An analysis of available ITC Trade Map database statistics shows that the global market volume and value of trade in prepared or preserved bonito was 1.78 million mt worth USD 8.32 billion in 2020 (measured by imports),[19] with the USA (15.5% of market share), five EU countries (34.4%), the UK (5.8%) and Japan (4.5%) between them representing 60 percent of the global consumer (importing) market.

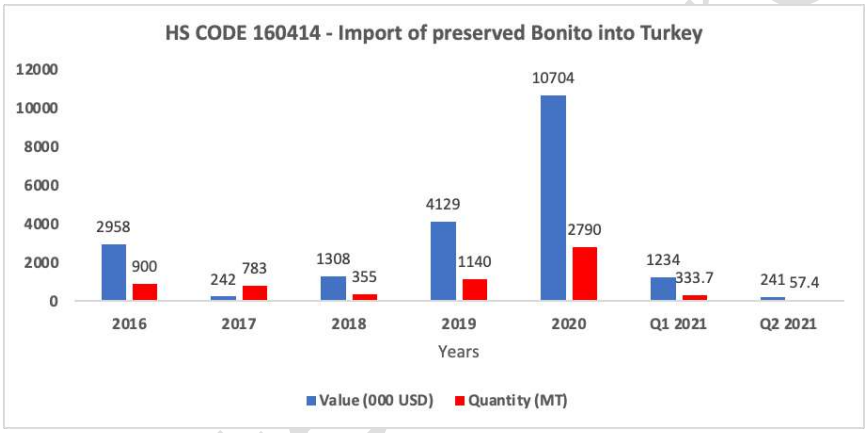
[17] Note that these trade figures are for fresh or chilled skipjack tuna or stripe-bellied bonito, with skipjack tuna dominating the world trade of these two HS coded products.
[18] This HS code refers specifically to 'prepared or preserved tunas, skipjack and Atlantic bonito, whole or in pieces (excluding minced)'
[19] This significant trade is primarily related to canned skipjack.

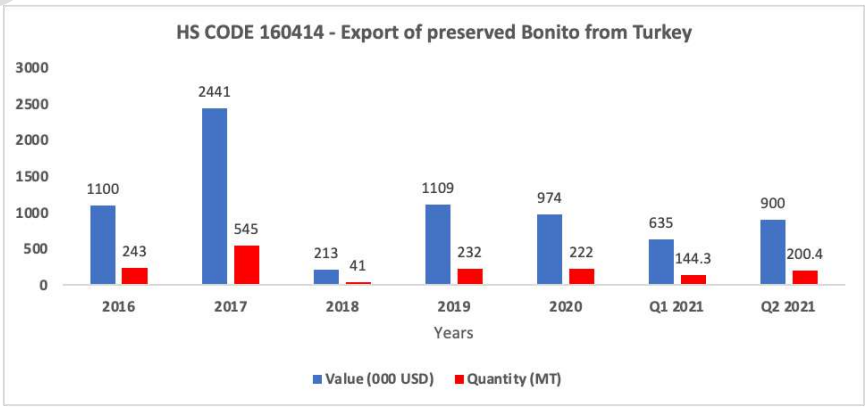
Thailand (29.1% of market share), Ecuador (12.7%) and Spain (8.2%) constitute half of the export market. There is a negative global balance of trade (value of imports exceeding value of exports) for this value chain of USD 204 million.

Annex 3 Tables A3.7/3.8 provide an analysis of data collected on the imports into and exports from Turkey for this HS product code. Turkey has a significant negative balance of trade (value of imports exceeding exports) of USD 9.73 million. The global index of 'concentration of importing countries' (countries that export to Turkey) for this product is generally low (<0.4) for all countries indicating an unconcentrated import supply chain (i.e., the exporting countries are servicing a diversified market). The volume imported into Turkey relative to the global trade is small, with China providing 60 percent. The global index of 'concentration of supplying countries' (countries that Turkey exports to) for prepared or preserved bonito is varied from a highly concentrated market of 0.84 for Syria to below 0.2 for more diversified export markets such as Germany and the Netherlands (indicating that these countries import from a number of sources other than just Turkey).

Figure 6 illustrates the trend in the quantity and value of imports to and exports from Turkey over the past six years (2016 to 2021 Q2) for prepared/preserved bonito. The data suggests a highly significant drop in imports from 2020 into 2021 but a sustained level of exports, contributing in a small way to the positive balance of trade in fish and fish products.

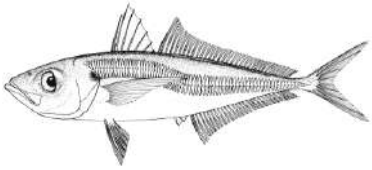
Figure 6: Import & export of prepared/preserved bonito (2016-21)





Source: FAO Consultant's analysis of data from ITC Trade Map database, 2021

Horse mackerel



Horse mackerel is a generic (and sometimes rather vague) term that refers to a range of species worldwide. It is commonly applied to a variety of pelagic species, especially of the *Carangidae* family (jack mackerels and scads). The species referred to in the Turkish fishery is the Atlantic horse mackerel (*Trachurus trachurus*), a species of jack mackerel also known as the European horse mackerel or common scad. Although the fishery is all year round, they are found in the Sea of Marmara and Aegean in the autumn months and return to the Black Sea in the spring months. The size of the fish landed varies in length from 20cm in the Sea of Marmara to 30 cm in Aegean Sea.

Fishing is mostly done with purse seine boats, also some artisanal / subsistence fishermen also target this fishery. The total amount of horse mackerel caught in 2020 was only 12,349mt. All horse mackerel is landed ashore fresh from where it is sent to wholesale fish markets and then on to retail fish markets and restaurants and supermarket chains through broker companies - see Annex 4 VC Map A4.3. There is no available data on the breakdown of sales within the domestic value chain.

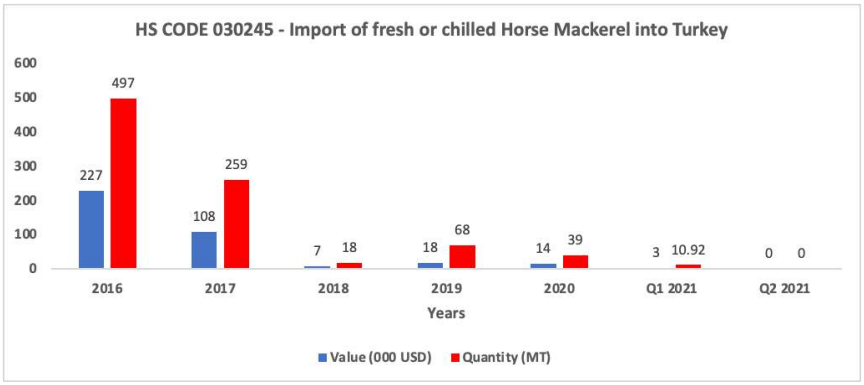
International trade: fresh or chilled (HS Code 030245)
Turkey is ranked (by value) globally 50th for imports and 24th for exports for the trade in fresh or chilled horse mackerel.[20] An analysis of available ITC Trade Map database statistics shows that the global market volume and value of trade in fresh/chilled horse mackerel was 41,740mt worth USD 95.98 million in 2020 (measured by imports), with Nigeria (44.3% of market share) and Portugal (11.7%) between them making over half of the global consumer (importing) market. Spain (34.1% of market share) and Denmark (21.7%) dominate the export market. There is a negative global balance of trade (value of imports exceeding value of exports) for this value chain of USD 49.75 million.

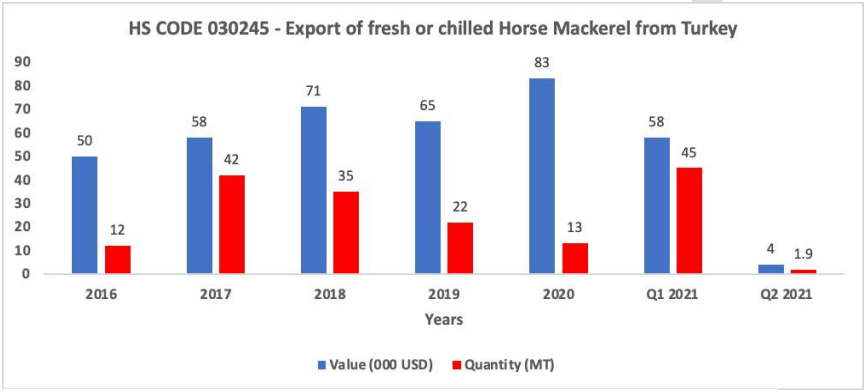
Annex 3 Tables A3.9/3.10 provide an analysis of data collected on the imports into and exports from Turkey for fresh or chilled horse mackerel (both of which are small volumes at 39mt and 13mt respectively). Turkey has a small positive balance of trade (value of exports exceeding imports) of USD 69,000. The global index of 'concentration of importing countries' (countries that export to Turkey) is high and limited to three, indicating a concentrated import supply chain with the Russian Federation providing 79% by volume. The global index of 'concentration of supplying countries' (countries that Turkey exports to) is varied (0.25-0.77) for a limited number of countries only.

Figure 7 overleaf illustrates the trend in the quantity and value of imports to and exports from Turkey over the past six years (2016 to 2021 Q2) for fresh/chilled horse mackerel. The data suggests a highly significant drop in imports since 2017 but a sustained level of exports until Q1 2021. The drop in exports in Q2 2021 may be due to the seasonal nature of the fishery and unrelated to the pandemic.

[20] The ITC Trade Map database HS Code 030245 specifies 'fresh or chilled jack and horse mackerel *Trachurus* species' so it is unclear how disaggregated the trade data is for the species of interest in the Turkish fishery, as there are several different *Trachurus* species worldwide.

Figure 7: Import & export of fresh/chilled horse mackerel (2016-21)



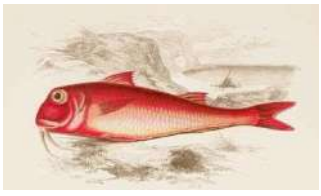


Source: FAO Consultant's analysis of data from ITC Trade Map database, 2021

Frozen (HS Code 030355)

Turkey is ranked (by value) globally 69th for imports and 38th for exports for the trade in frozen horse mackerel. An analysis of available ITC Trade Map database statistics shows that in relation to this trade, Turkey's market share is negligible. No further detailed analysis of this value chain has been therefore undertaken, although it is encouraging to see a small positive balance of trade (exports exceeding imports) of USD 220,000 in 2020.

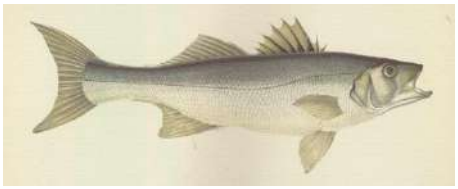
Red mullet



The red mullet and surmullet (stripped red mullet) are species of goatfish (*Mullus barbatus* and *Mullus surmuletus*). Both common names can also refer to the *Mullidae* family in general so the fishery for both species is referred to using the common name 'red mullet'. These species live continuously between the Marmara, Aegean and Black Seas in Turkey and are caught in all three seas during the fishing season between September and the following April. Fishing is mostly done using trawlers, although artisanal / subsistence fishermen also target this fishery. The total catch of red mullet in 2020 was 4,379mt. Catches are brought ashore fresh and from the port of landing are sent to wholesale fish markets where sales are made to retail fish markets and restaurants and supermarket chains through broker

companies - see Annex 4 VC Map A4.4. There is no available data on the breakdown of sales within the domestic value chain.
The ITC Trade Map database does not provide any disaggregated date for red mullet, as it is included with a wide range of other species that are generally referred to (with reference to HS coding) as 'Not Elsewhere Specified or Indicated' (NESOI). This means that the international trade in this product is either insignificant and/or through informal channels. As such any analysis of the NESOI trade data is essentially meaningless unless species specific data can be provided.

Sea bass



Sea bass is a common name for a variety of different species of marine fish and many fish species of various families are referred to as sea bass. In the context of this study the fish sold and consumed as sea bass refers exclusively to the European bass (*Dicentrarchus labrax*), one of only six species in the family *Moronidae*, collectively called the temperate basses. It is primarily an ocean-going fish native to the waters of west and southern Europe and the North African coasts, though it can also be found in shallow coastal waters and river mouths during the summer months. European bass are a slow-growing species that takes several years to reach full adulthood. An adult European seabass usually weighs around 5 kg but can reach sizes of up to 1.0m in length and 12kg in weight; the most common marketed size is about half this size.

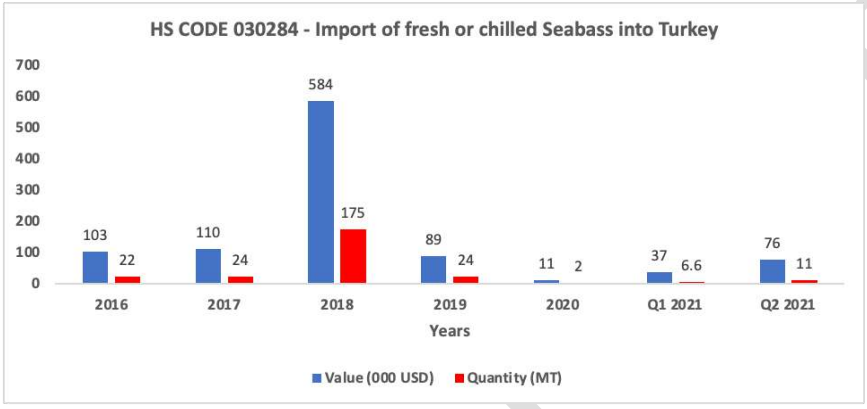
It is both fished and farmed commercially and is considered to be the most important fish currently farmed in the Mediterranean Sea. Turkey exports sea bass mostly to the EU and is second biggest sea bass producer in Europe; other producers include Greece, Italy, Spain, Croatia and Egypt. Reference in this study is exclusively to farmed fish and not to landings from the wild capture fishery (which is negligible). Seabass is cultured all year-round mostly using sea cages in the Black Sea and Aegean Sea. The total amount of seabass farmed in 2020 was 148,907mt. There is no available data on the breakdown of sales within the domestic value chain. The VC map for this species is presented in Annex 4 (A4.4).

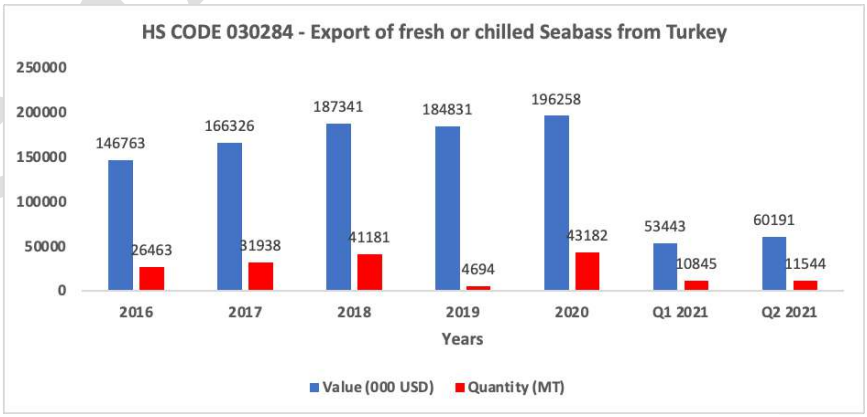
There is no specific HS code for prepared or preserved sea bass, and trade in this product is aggregated with that of a wide range of other products under HS Code 160419. The international trade in sea bass has therefore been confined to the fresh/chilled product only.

International trade: fresh or chilled sea bass (HS Code 030284)
Turkey is ranked (by value) globally 75th for imports and 2nd for exports for the trade in fresh or chilled sea bass. An analysis of available ITC Trade Map database statistics shows that the global market volume and value of trade in fresh/chilled sea bass was 111,318mt worth USD 664.7 million in 2020 (measured by imports), with Italy (24.7% of market share), the USA (11.7%), Spain (11.1%) and four European countries, Portugal, France, the Netherlands and the UK (23.7%) between them making almost 75 percent of the global consumer (importing) market. Greece (39.4% of market share) and Turkey (30.6%) dominate the export market. There is a negative global balance of trade (value of imports exceeding value of exports) for this value chain of USD 24.3 million.

Annex 3 Tables A3.11/3.12 provide an analysis of data collected on the imports into and exports from Turkey for fresh or chilled sea bass. The global index of 'concentration of importing countries' (countries that export to Turkey) lists one country only (France) with an insignificant small volume (2.0mt).
The global index of 'concentration of supplying countries' (countries that Turkey exports to) is extensive with 26 countries listed and varied indices from a maximum of 1.0 for Greece and Lebanon (indicating a highly concentrated export market with Turkey as the sole supplier) to low indices of 0.16 (for Germany) and 0.27 (for Portugal), indicating more diversified markets within the EU importing from a number of supplying countries. Figure 8 illustrates the trend in the quantity and value of imports to and exports from Turkey over the past six years (2016 to 2021 Q2) for fresh/chilled sea bass. The data suggests a drop in imports in 2020 (to be expected given surpluses on the local market with limited export trade for several months) but a return to normal (so far) in 2021. The level of exports shows a sustained growth year-on-year (YoY) since 2016 with anticipated trend continuing into 2021 based on Q1/Q2 results.

Figure 8: Import & export of fresh/chilled sea bass (2016-21)





Source: FAO Consultant's analysis of data from ITC Trade Map database, 2021

Sea bream

The *Sparidae* are a family of fish commonly called sea breams and porgies. The gilthead (sea) bream (*Sparus aurata*), referred to as Orata in Italy and Dorada in Spain, are found in the Mediterranean Sea and the eastern coastal regions of the North Atlantic. It commonly reaches 35cm in length but may reach double this length and weigh up to 7.4kg.
Seabream is, along with sea bass, most commercially farmed species in the Mediterranean. Turkey exports sea bream mostly to the EU and as with sea bass is second biggest producer in Europe; other producers include Greece, Italy, Spain, Croatia and Egypt. Seabass is cultured all year round in sea cages in the Black Sea and Aegean Sea in Turkey. The total volume of sea bream farmed in 2020 was 109,749mt. There is no available data on the breakdown of sales within the domestic value chain. The VC map for this species is presented in Annex 4 (A4.5). As is the case for sea bass, there is no specific HS code for prepared or preserved sea bream, and trade in this product is aggregated with the trade in a wide range of other products under HS Code 160419. The international trade in sea bream has therefore been confined to the fresh/chilled product only.

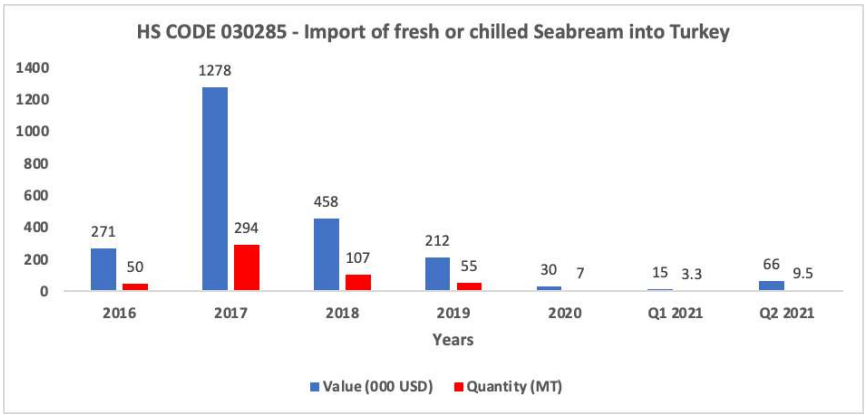
International trade: fresh or chilled sea bream (HS Code 030285)
Turkey is ranked (by value) globally 67th for imports and 2nd for exports for the trade in fresh or chilled sea bream. An analysis of available ITC Trade Map database statistics shows that the global market volume and value of trade in fresh/chilled sea bream was 140,513mt worth USD 757.2 million in 2020 (measured by imports), with Italy (25.4% of market share), Spain (18.6%) and Portugal (10.1%) making up over half of the global consumer (importing) market. Greece (42.3% of market share) and Turkey (27.8%) dominate the export market. There is a positive global balance of trade (value of exports exceeding value of imports) for this value chain of USD 49.0 million.

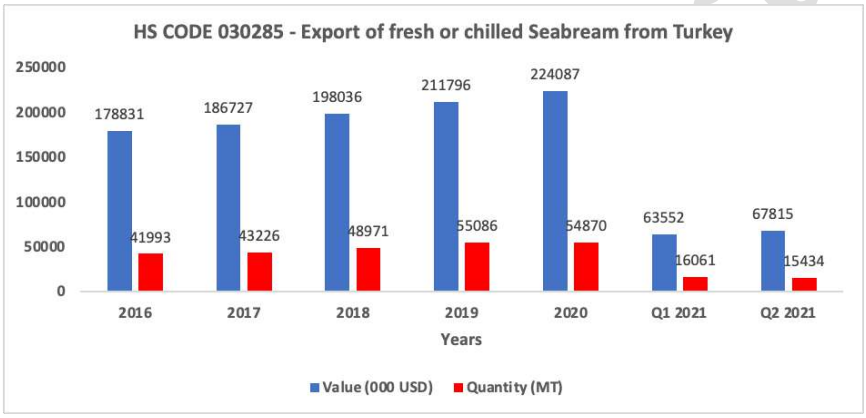
Annex 3 Tables A3.13/3.14 provide an analysis of data collected on the imports into and exports from Turkey for fresh or chilled sea bream. The global index of 'concentration of importing countries' (countries that export to Turkey) again lists only one country (France) with an insignificant small volume (7.0mt).

In line with the international trade for sea bass, the global index of 'concentration of supplying countries' (countries that Turkey exports to) is extensive with 34 countries listed and varied indices from 0.95-1.0 for Greece, Lebanon, Syria and Ukraine (indicating a highly concentrated market with Turkey as the sole supplier). Conversely there are low indices of 0.2 (for Germany) and 0.26 (for Italy), indicating more diversified markets importing from a number of supplying countries in addition to Turkey.

Figure 9 (below and overleaf) illustrates the trend in the quantity and value of imports to and exports from Turkey over the past six years (2016 to 2021 Q2) for fresh/chilled sea bream. The data suggests a drop in imports in 2020, although unlike for sea bass there has been less of a return to normal (so far) in 2021. The level of exports shows a sustained growth year-on-year (YoY) since 2016 with the trend anticipated to continue into 2021 based on Q1/Q2 results.

Figure 9: Import & export of fresh/chilled sea bream (2016-21)





Source: FAO Consultant's analysis of data from ITC Trade Map database, 2021

Rainbow trout (Turkish salmon)

The rainbow trout (*Oncorhynchus mykiss*), known as *Celikba*s in Turkish, is a salmonid native to the cold-water tributaries of the Pacific Ocean in Asia and North America that was brought to Europe from North America in 1882. In the wild rainbow trout can reach 80cm in length and 10kg in weight. This fish is farmed in almost every river and lake and dam lake with appropriate water conditions in Turkey. In recent years this species has also been cultivated in the sea, especially in the eastern Black Sea, and value generically referred to as 'Turkish salmon'.

The total volume of trout farmed in 2020 was 144,182mt of which 18,182mt was Turkish salmon farming in the sea. Trout is exported especially to Europe, Russia and more recently to Asian countries. There is no available data on the breakdown of sales within the domestic value chain. The VC map for this species is presented in Annex 4 (A4.6).

International trade: fresh or chilled (HS Code 030211)

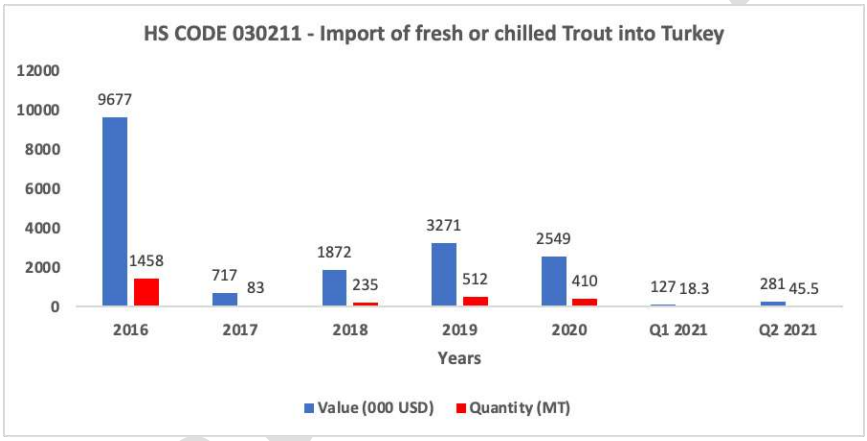
Turkey is ranked (by value) globally 29th for imports and 6th for exports for the trade in fresh or chilled trout. An analysis of available ITC Trade Map database statistics shows that the global market volume and value of trade in fresh/chilled trout was 124,133mt worth USD 635.3 million in 2020 (measured by imports), with trade listed to almost 100 countries

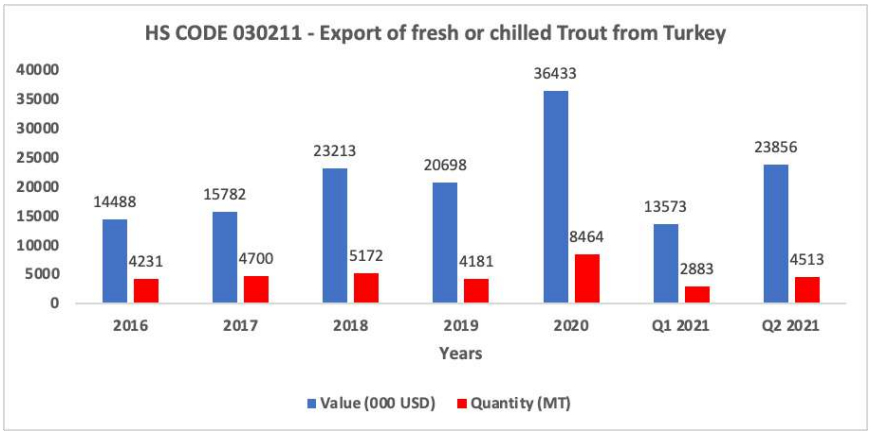
globally. The USA (12.2% of market share) and Russia (11.1%) make up almost 25 percent of the global consumer (importing) market, with Belarus, Ukraine and Sweden another 25 percent. Norway (40.7% of market share) dominates the export market, followed by Sweden (10.6%), Armenia (6.5%) and the UK (6.2%). There is a positive global balance of trade (value of exports exceeding value of imports) for this value chain of USD 38.4 million.

Annex 3 Tables A3.13/3.14 provide an analysis of data collected on the imports into and exports from Turkey for fresh or chilled trout. The global index of 'concentration of importing countries' (countries that export to Turkey) lists only two countries, Norway and Russia, the latter with a small volume (15.0mt) but highly concentrated trade with Turkey. Imports from Norway has a low index of 0.1 indicating a diversified import supply chain (i.e., Norway trades this product with many countries).
The global index of 'concentration of supplying countries' (countries that Turkey exports to) lists 19 countries with indices ranging from 1.0 for Georgia and several Middle Eastern countries, indicating a highly concentrated market with Turkey as the sole supplier, to low indices of 0.21 (for Poland), 0.25 (for Germany) and 0.28 (for Lithuania), indicating more diversified markets within the EU importing from a number of supplying countries.

Figure 10 illustrates the trend in the quantity and value of imports to and exports from Turkey over the past six years (2016 to 2021 Q2) for fresh/chilled trout. The data suggests a significant drop in imports in 2021. Export trade shows a significant growth in 2020 and into 2021 based on Q1/Q2 results.

Figure 10: Import & export of fresh/chilled trout (2016-21)





Source: FAO Consultant's analysis of data from ITC Trade Map database, 2021

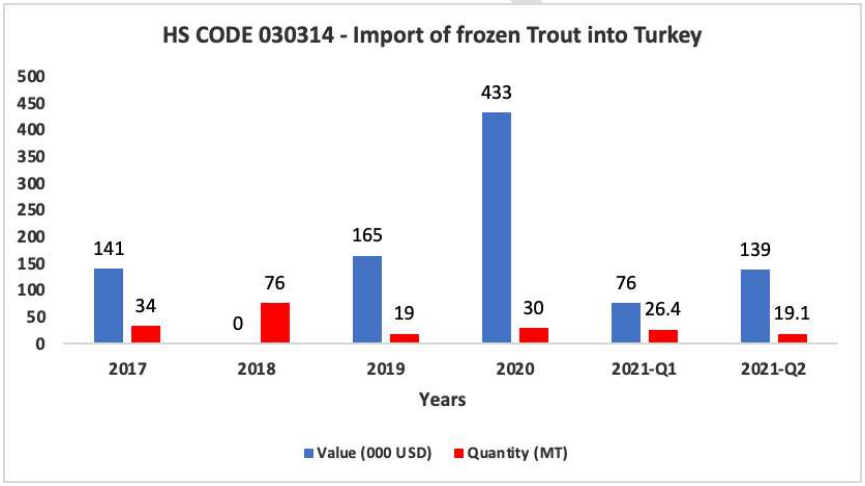
International trade: frozen trout (HS Code 030321)[21]

Turkey is ranked (by value) globally 44th for imports and 2nd for exports for the trade in frozen trout. An analysis of available ITC Trade Map database statistics shows that the global market volume and value of trade in frozen trout was 75,963mt worth USD 367 million in 2020 (measured by imports), with trade listed to 105 countries globally. Russia (27.4% of market share), Japan (16.6%) and Vietnam (13.9%) make up over 50 percent of the global consumer (importing) market. Chile (31.6% of market share) and Turkey (25.2%) dominate the export market, followed by Norway (16.4%) and Denmark (11.1%).
There is a small negative global balance of trade (value of imports exceeding value of exports) for this value chain of USD 7.2 million.

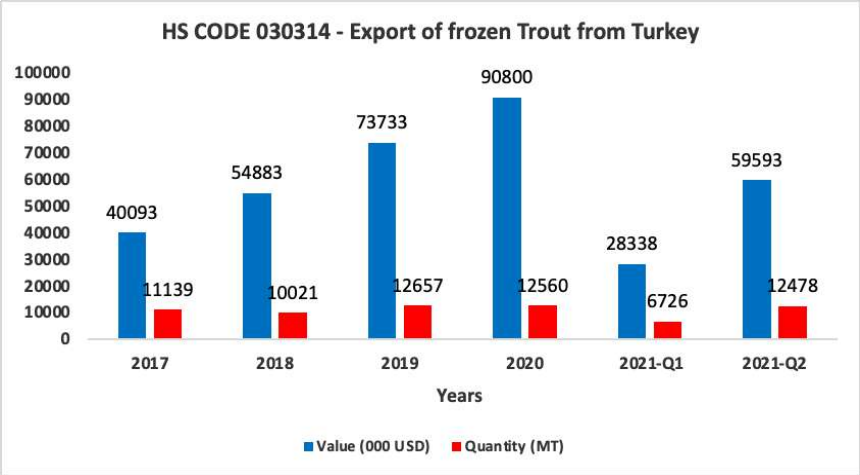
Annex 3 Tables A3.17/3.18 provide an analysis of data collected on the imports into and exports from Turkey for frozen trout. The global index of 'concentration of importing countries' (countries that export to Turkey) lists four countries with Russia comprising 71% of total imports. The global index of 'concentration of supplying countries' (countries that Turkey exports to) lists 46 countries with smaller highly concentrated export markets in the Middle East such as Iraq and Kuwait having an index of 1.0 with Turkey as the sole supplier. Conversely the two largest export markets of Russia and Germany, which between them constitute 79 percent of total exports from Turkey, have indices of 0.36 and 0.48 respectively, indicating more diversified markets importing from a number of supplying countries.

Figure 11 illustrates the trend in the quantity and value of imports to and exports from Turkey over the past five years (2017 to 2021 Q2) for frozen trout. The data suggests that trade in this product has increased as a result of the pandemic. This is likely because there has been a need to shift fresh produce to frozen storage due to impacts on the supply chain. The level of exports shows a sustained growth year-on-year (YoY) since 2017 with the trend anticipated to continue into 2021 based on Q1/Q2 results.

Figure 11: Import & export of frozen trout (2016-21)



[21] The ITC Trade Map database HS Code 030321 specifies 'frozen trout' as including the following species: *Salmo trutta, Oncorhynchus mykiss, Oncorhynchus clarki, Oncorhynchus aguabonita, Oncorhynchus gilae, Oncorhynchus apache* and *Oncorhynchus chrysogaster*. There is no disaggregated trade data for the traded species of interest in Turkey (*Salmo trutta*).



Source: FAO Consultant's analysis of data from ITC Trade Map database, 2021

A3 Elements of the value chain – a rapid overview

The analytical and strategic planning process of VCA is typically implemented through four main steps (as discussed in Section 2.1) and functional analysis is the first step in this process, which aims to describe and gain an in-depth understanding of the elements of the VC and the linkages between them. In so much has been possible within the scope of this study, and in particular with the data made available, the consultant has completed the VC mapping and end-market analysis elements of the functional analysis.

As mentioned previously in Section 2.1 there is neither the resources or mandate within this study to undertake a full value chain analysis of the Turkish fisheries and aquaculture sector. In addition, there is a lack of market and trade data to complete the detailed VC mapping of the six indicator species.

In addition to the VC map for these species presented in Annex 4, the consultant has therefore had to confine their analysis to a rapid overview of the key elements of a functional analysis for the six indicator species. A functional analysis within a VCA typically includes a description and/or review of the following issues, presented in summary in Table 5 overleaf:

- Key VC actors (by function);
- Input and support service providers;
- Social, economic and environmental issues (impacting on the VC); and,
- Governance and institutional issues

Table 5: Elements of the value-chain for six key indicator species

	Anchovy	Bonito	Horse Mackerel	Red Mullet	Sea bass/bream	Trout/Turkish Salmon
Key VC actors	• Vessel Owners • Fish meal/oil processors • Wholesale market, supermarket chains and retail market operators • Commissioner • Processing Factory • Transportation Company worker • Fishermen Cooperatives and Unions • Importer/Exporter	• Vessel Owners • Artisanal / Subsistence Fishermen • Wholesale market, supermarket chains and retail market operators • Commissioner • Processing Factory Owner • Fishermen Cooperatives and Unions • Importer/Exporter	• Vessel Owners • Artisanal / Subsistence Fishermen • Wholesale market, supermarket chains and retail market operators • Commissioner • Fishermen Cooperatives and Unions • Importer/Exporter	• Vessel Owners • Wholesale market, supermarket chains and retail market operators • Commissioner • Fishermen • Cooperatives and Unions	• Fish Farm Owner and staff • Hatchery • Wholesale market, supermarket chains and retail market operators • Commissioner • Supermarket Chains • Processing Factory • Importer/Exporter	• Fish Farm Owner and staff • Hatchery • Wholesale market, supermarket chains and retail market operators • Commissioner • Supermarket Chains • Processing Factory • Importer/Exporter
Input and support service providers	• Shipyards • Net lofts and fishing equipment suppliers • Banks (Credits) • Ice, fuel and box suppliers • Logistics companies	• Shipyards • Net lofts and fishing equipment suppliers • Banks (Credits) • Ice, fuel and box suppliers • Logistics companies	• Shipyards • Net lofts and fishing equipment suppliers • Banks (Credits) • Ice, fuel and box suppliers • Logistics companies	• Shipyards • Net lofts and fishing equipment suppliers • Banks (Credits) • Ice, fuel and box suppliers • Logistics companies	• Fish Feed providers • Cage and net producers • Fish veterinary services • Shipyards • Banks (Credits) • Ice, fuel and box suppliers • Technological Equipment providers • Logistics companies • Customs and export agents	• Fish Feed providers • Cage and net producers • Fish veterinary services • Banks (Credits) • Shipyards • Ice, fuel and box suppliers • Technological Equipment providers • Logistics companies • Customs and export agents
Governance and institutional issues	• Fisheries law and regulations (4-year cycle)[22] • Limited number / weak fisher cooperative and producer groups	• Fisheries law and regulations (4-year cycle) • Limited number / weak fisher cooperative and producer groups	• Fisheries law and regulations (4-year cycle) • Limited number / weak fisher cooperative and producer groups	• Fisheries law and regulations (4-year cycle) • Limited number / weak fisher cooperative and producer groups	• Aquaculture law and regulations • Aquaculture Producer groups	• Aquaculture law and regulations • Aquaculture Producer groups

[22] Every 4 years representatives of the MoAF and fisheries sector jointly prepare a published circular.

	Anchovy	Bonito	Horse Mackerel	Red Mullet	Sea bass/bream	Trout/Turkish Salmon
Key social, economic and environmental issues (including risk assessment)	• Annual spawning migration patterns • Water pollution • Oil and chemical spillages • Poorly educated workforce • Lack of product marketing • Impact of climate change on migration patterns • Limited storage capacity for landings • Overfishing and declining fish stocks	• Annual spawning migration patterns • Water pollution • Oil and chemical spillages • Poorly educated workforce • Impact of climate change on migration patterns • Limited storage capacity for landings • Overfishing	• Annual spawning migration patterns • Water pollution • Oil and chemical spillages • Poorly educated workforce • Impact of climate change on migration patterns • Overfishing	• Annual spawning migration patterns • Water pollution • Oil and chemical spillages • Poorly educated workforce • Impact of climate change on migration patterns • Overfishing	• Marine water pollution (oil and chemical spillages) • Fish diseases • Climate change (sea temperature) • Ship collision accidents (with cage farms) • Fish-feed raw material • Energy costs • Poorly educated workforce	• River and lake pollution • Watershed management (droughts/floods) • Fish diseases • Earthquake • Fish-feed raw material • Energy costs • Poorly educated workforce

PART B: COVID-19 IMPACT ASSESSMENT

B4 Field survey results

Surveys were conducted in six cities nationwide from July to September 2021 to assess the impact of the COVID-19 pandemic on the sector; see Section 2.2 for details of the itinerary. A questionnaire was developed by the consultants, approved by the MoAF and the FAO. Results of the findings from the survey are presented in Sections B4.1-7. During the survey, implemented over 14 working days in total by one consultant only, 74[23] different stakeholders were interviewed (representing a total of 3,055 workers in the sector) as follows:

- 18 fishermen;
- 1 fish meal and oil company representative;
- 2 producer groups;
- 1 cooperative union and 1 cooperative;
- 11 fish wholesalers and 6 fish retail outlets;
- 30 aquaculture companies; and,
- 5 processing companies.

B4.1 Analysis of the results – COVID-19 and your business

		Number	Percentage
QA-1: How many women, youth and family members work in your business ?	Women	747	24%
	Youth	1,017	33%
	Family member	144	5%
Total (out of 3,055)		1,908	62%

The employment of women in the capture fisheries sector (working on boats) is almost non-existent and female workers are generally employed exclusively in the processing sector.

The number of youth (people aged 20-25) employed in the sector – 33% of the total survey interviewee workforce - is significant and indicates, if representative of the whole sector, the need to provide specific emergency response policies and strategies targeted to the younger generation (that for example may be last to be vaccinated).

	Total Answer	Number		Percentage	
		Yes	No	Yes	No
QB-1: How many of staff (family or other employees) had COVID-19 disease?	74	38	36	51%	49%
Number of sick people	3,055	271	2,784	9%	91%

Half of the respondents (interviewees) stated that one of their staff had COVID-19 – this is considered to be a high and wide-spread 'corporate' infection rate, that perhaps reflects the likelihood of employees with large families having one of more family members infected.

[23] In two cases (QC-4b and QE-2) there were slightly less than the full complement of 74 respondents.

Only 9% of the people actually working in the sector represented by the survey (3,055) actually had COVID-19 disease. This is comparable with the national average of 8.7%.[24]

N = 74	Number		Percentage	
	Yes	No	Yes	No
QB-2: Did you or your employees' living conditions change from before and to after the COVID-19 pandemic?	58	16	78%	22%

Informal qualitative feedback and comments to QB-2 from those interviewed include:
- "We were unable to work due to the national shutdown."
- "Our business has dwindled."
- "We could not fish because the fish markets were closed for three weekends."
- "We did not allow our employees to take leave."
- "Some of our employees went into quarantine."

The results of the survey suggests that there is a perception that people's living conditions have changed due to the pandemic.[25] Various restrictions, including travel restrictions applied throughout the country posed a serious problem in the early days of the pandemic (see Table 6 for more details on the pandemic restrictions and timeline), but thanks to the special permits granted to the fisheries and aquaculture sector,[26] life returned relatively quickly to a 'new normal' for fishers, fish-farmers and shore-based workers. The fact that restaurants and markets were closed during the period of restrictions (again see Table 6) posed a serious problem for domestic sales within the sector.

Fishing boats applied self-quarantine during the pandemic period and in general permits were not given to fishermen (based on the decisions of the captains/owners to minimise risk to the crew unless for specific reasons, such as for medical emergencies) so they were not able to disembark from their vessels. Social distancing was enforced at the landing ports.

N = 74	Number		Percentage	
	Yes	No	Yes	No
QB-3: Were appropriate hygiene rules applied in your business / workplace before the COVID-19 pandemic?	70	4	95%	5%

Informal qualitative feedback and comments to QB-3 from those interviewed include:
- "Cleaning and sterilization was done every day."
- "We are inspected by the ministries once a week or every 10 days."

[24] A total of 7,296,879 people have been infected (with 65,117 deaths) out of a total population of 83,614,362 people (based on data sourced by the consultants, October 2021).
[25] It would be interesting to have monitored this issue earlier on in during the pandemic and also to re-evaluate in six-month's time to understand if there are perceived permanent changes to living conditions within the sector. This would necessitate a specialist socio-economic survey and assume a degree of good record keeping by participants.
[26] The aquaculture sector and larger vessels (purse seiners >24m LOA) were given a permit to operate from the 15th of April 2020. Small-scale fishermen applied to the state authorities and were also granted permits to operate from the same date.

N = 74	Number		Percentage	
	Yes	No	Yes	No
QB-4: Did you have easy access to hygiene kits (mask, sterile gloves, hand sanitiser and equipment for temperature checks, etc.) throughout the COVID-19 pandemic?	70	4	95%	5%

Informal qualitative feedback and comments to QB-4 from those interviewed include:

- "The municipality brought it to us first. Then we easily supplied it ourselves."

N = 74	Number		Percentage	
	Yes	No	Yes	No
QB-5: Were social distancing, supply of sanitary equipment, hygiene conditions, health check rules applied in your business / workplace during the COVID-19 pandemic?	72	2	97%	3%

Informal qualitative feedback and comments to QB-5 from those interviewed include:

- "Social distancing was practiced."
- "Nobody left the ship unless absolutely necessary."
- "Employees were not given leave."
- "Quarantine was applied on the ship."
- "The factory workers were tested every two weeks."
- "As retail sellers, we focused on package service-based work."[27]

The results from the three questions (QB-3, 4 and 5) suggests that the majority of sector employees had access to Personal Protective Equipment (PPE), acted in accordance with the hygiene rules and paid attention to the use of PPE and social distancing rules within the processing plants and markets during the pandemic. This is likely because of their role in the food sector and as such this was a 'non-issue' for sector workers. When necessary, the shift system was applied to ensure social distancing[28] and temperature checks of all employees was done daily plus general health control and COVID-19 tests applied over a 15-day cycle.

Whilst all companies working in the sector reportedly asked their employees to be vaccinated, the Turkish government gave priority vaccination to health workers and other service sectors but this did not include fishermen and aquaculture sector. More recently, the vaccination programme has been rolled out for all persons over the age of 12 although there remains no enforced obligation to have any vaccination. Some companies ask for a weekly test from those who are not vaccinated.

[27] It is assumed this refers to home delivery service.
[28] Which may have increased processing plant variable utility costs.

B4.2 Analysis of the results – impact of COVID-19 on your business

	Total Answer	Number		Percentage	
		Yes	No	Yes	No
QC-1: Did you lose any staff due to the COVID-19 pandemic? If yes,	74	3	71	4%	96%
a) Temporary due to sickness	8	8	0	0%	100%
b) Permanent due to sickness	0	0	0	0%	100%

The survey results suggest that there were no layoffs (permanent loss of staff) due to COVID-19 in the industry. Only three corporate respondents replied "yes" to this question and a total of eight persons out of the 3,055 workers represented were temporarily lost to employment. This question and data ignore employees that retired due to their age and/or for other reasons such as chronic disease un-related to COVID-19.

N = 74	Number		Percentage	
	Yes	No	Yes	No
QC-2: Was your business affected financially due to the COVID-19 pandemic?	55	19	74%	26%

Informal qualitative feedback and comments to QC-2 from those interviewed include:
- "The closure of restaurants had a huge impact on fish sales."
- "It had a negative effect of around 30% on the turnover."
- "The quarantine on some boats had a negative impact on fishing and on turnover."

Based on the results from this survey over half of the sector actors were financially affected during the pandemic period. Fishermen experienced the greatest impact, the main reason being that the markets and restaurants were closed so there was less demand for fish generally. Aquaculture companies were affected in the early stages of the pandemic, but later they compensated for their turnover losses with the opening up of borders and restaurants. The least affected were the financially more liquid companies (able to service overheads) and those with integrated facilities (able to store fish and/or fish products).

N = 74	Number		Percentage	
	Yes	No	Yes	No
QC-3: Have you experienced administrative, social problems amongst your staff in your business due to the COVID-19 pandemic?	9	65	12%	88%

Informal qualitative feedback and comments to QC-3 from those interviewed include:
- "There was a problem because the workers were not given leave."
- "Quarantine was applied on boats."
- "The main problems were with the workshop that services vehicles."[29]
- "We couldn't come to work in the offices, we had to work from home."

[29] It is assumed this refers to problems getting spare parts and/or labour shortage issues.

- "The workers did not like to eat in a crowded room."

Issues clearly arose primarily because staff did not want to work closely together and this caused a problem in some workplaces due to the lack of space for safe social distance, for example in the cafeterias. Problems also occurred onboard vessels as crew were confined and not allowed ashore.

B4.3 Analysis of the results – impact on fish marketing

N = 74	Number		Percentage	
	Yes	No	Yes	No
QC-4a: Have you experienced problems with the domestic marketing and sales of your products during the COVID-19 pandemic?	43	31	58%	42%

Informal qualitative feedback and comments to QC-4a from those interviewed include:

- "As a fisherman, we could not bring products because the markets were closed."
- "Prices varied" and "Product sales dropped due to the shutdown."
- "Restaurants are closed and we cannot sell fish."
- "We had a problem in marketing because there was a large supply of fish in the market."

In summary fishermen were not able to sell their catches because markets and restaurants were closed.[30] For aquaculture businesses, the main issues were varying prices in the market, with an initial fall in sales due to the shutdown, an oversupply of fish in the market and closure of export markets because the borders were closed. The processing sector also suffered from a lack of overseas sales and travel restrictions within the domestic supply chain and distribution system. Feed sales to the aquaculture sector also decreased and stocks formed in warehouses.

N = 68	Number		Percentage	
	Yes	No	Yes	No
QC-4b: Have you experienced problems with the international marketing and sales of your products during the COVID-19 pandemic?	17	51	25%	75%

Informal qualitative feedback and comments to QC-4b from those interviewed include:

- "We had problems at the customs gates and in the transportation of products abroad."
- "We could not send fish to Germany because the borders were closed."
- "We had to delay the orders we received."
- "In some European countries, the passage of Turkish trucks was not possible due to closed borders."

[30] As a result, it would be interesting to analyse in more detail the landings, catch rates and CPUE across the major fisheries and the impact changes in fishing effort have had on the marine ecosystem during the pandemic.

Significant problems for the truck distribution system across Europe were most acute during the first three months of the pandemic when borders were closed. No mention was made from any respondents of the impact of the pandemic on air freight supply chain and distribution system, but it is assumed that it is a similar story.[31]

B4.4 Analysis of the results – business operations and logistics

N = 74	Number		Percentage	
	Yes	No	Yes	No
QC-5: Did you have any problems (communication, raw material, feed, product, equipment, maintenance , storage and logistics etc.) with your suppliers or customers during the COVID-19 pandemic?	28	46	38%	62%

Informal qualitative feedback and comments to QC-5 from those interviewed include:

- "Prices for machinery, equipment and fishing nets increased."
- "It has become difficult to find maintenance and repair personnel."
- "Prices (*for fishing gear*) rose as the fishing net factories were not fully operational."
- "Problems arose in the supply of materials."
- "Overseas logistics costs have increased. We had problems in maintenance and repair."
- "We had a problem in the supply of raw materials because the borders were closed."
- "We couldn't find any fish to process."
- "We could not find personnel to work."
- "We had a problem in the supply of fish feed" and "We had problems in the import and logistics of feed raw materials."
- "Feed raw material warehousing and feed warehousing were insufficient."

In summary there was evidently an issue with the supply of various inputs (fish feed, raw material for processing plants, fishing gear, repair services etc) throughout the supply chain during the pandemic, and as a result this had an adverse impact on the cost of many of these inputs. The highlighted issue of a shortage of warehousing throughout the fish-feed supply chain is in particular noted and suggests that there is limited capacity for both the storage (stockpiling) of locally sourced raw material (fish offal or fish specifically caught for reduction to fish meal/oil) and/or for the storage of the final product(s).

N = 74	Number		Percentage	
	Yes	No	Yes	No
QC-6: Have you experienced problems about payments, credits, loans during the COVID-19 pandemic?	41	33	55%	45%

[31] The salmon industry, in particular, suffered from increased air freight costs and the cancellation of flights (FAO, IFAD & UNDP, 2020).

Informal qualitative feedback and comments to QC-6 from those interviewed illustrates the knock-on effect and chain reaction of supply chain issues experienced by over half of the respondents during the pandemic:

- "Loan credit from banks was used" and "Extension of credit previously taken."
- "It has become very difficult to get loans from banks."
- "Loan credit payments failed" and "There were problems with payments and receivables."
- "We have reduced our business."
- "We couldn't get our receivables, so we couldn't pay our debts."

B4.5 Analysis of the results – business support

N = 74	Number			Percentage		
	Yes	No	No idea	Yes	No	No idea
QD-1: Did you receive any kind of support during the COVID-19 pandemic?	19	52	3	26%	70%	4%

N = 74	Government institutions	%	Family	%	Producer Group	%	Other	%
QD-2a: If yes, what kind of support did you receive from where / from whom?								
a. Financial	7	9%	1	1%	0	0%	1	1%
b. Information	3	4%	0	0%	0	0%	0	0%
c. Health care	2	3%	0	0%	0	0%	0	0%
d. Technical	1	1%	0	0%	1	1%	0	0%
e. Social	1	1%	0	0%	0	0%	0	0%
f. Unemployment / Welfare support	11	15%	0	0%	0	0%	0	0%

The general level of formal support for the sector was limited. For those seeking financial support, this was mainly provided in the form of loans from state banks and some companies used loans from the Small and Medium Industry Development Organisation (KOSGEB). One respondent also stated, "I got money from the fishmeal and oil factory." The larger processing companies and vertically integrated companies received state backed unemployment/welfare support.

N = 74	Government institutions	%	Family	%	Producer Group	%	Other[32]	%
QD-2b: What kind of support would you expect or need?								
a. Financial	46	62%	0	0%	0	0%	3	4%
b. Information	39	53%	0	0%	1	1%	0	0%
c. Health care	40	54%	0	0%	0	0%	0	0%
d. Technical	38	51%	0	0%	1	1%	1	1%
e. Social	37	50%	0	0%	0	0%	0	0%
f. Unemployment / Welfare support	39	53%	0	0%	0	0%	0	0%

[32] Includes Commissioners (market intermediaries), brokers, financial service providers and friends.

Results from this survey suggest that the dominate source of support should come from the government, with financial support (specifically easier access to credit) the primary request. Family are not seen as a useful or appropriate source of support and there appears to be limited expectation in producer groups (such as a cooperative) aiding in such situations.

B4.6 Analysis of the results – preparing for the future

N = 74	Number			Percentage		
	Yes	No	No idea	Yes	No	No idea
QE-1a: Have you prepared for a new crisis that may happen in the future based on your experience from the COVID-19 pandemic process?	32	38	4	43%	51%	5%

Those that answered "Yes" to QE-1a were then asked (QE-1b) to indicate briefly what actions they have taken or will take (and when)? The following responses were provided:

- The continued provision (and use) of PPE in factories and on fishing vessels;
- The increased application of social distancing and hygiene rules;
- Where staff live on site or in company accommodation, there are reports of enlarging workers' living quarters (presumably to support increased social distancing); and,
- Some fish processors are increasing their stock in cold storage and some are diversifying into the preparation of ready-to-eat products, responding presumably to increased consumer demand for convenience home-cooked meals.

N = 69	Number			Percentage		
	Yes	No	No idea	Yes	No	No idea
QE-2: Would you like to take part in developing and / or testing preparedness plans against crises that may occur in the future?	14	54	1	20%	78%	1%

The results of the survey (QE-1a) suggest that slightly more half of the companies (51% plus 5%) have no idea or taken no action to address future crisis. The majority of those interviewed (almost 80% in answer to QE-2) do not want to participate in developing and/or testing preparedness plans. Both of these results are of some concern and present a significant challenge for the government and state institutions if they are to learn from and prepare for future crisis.

QG-1:**Bearing in mind your answers to earlier questions concerning the financial impact of COVID-19, do you have any specific comments about the financial support you received and/or expected (were promised) during the COVID-19 pandemic and in similar situations that you may experience in the future?**

The biggest requirement of the sector is undoubtedly financial – namely interest-free or low-interest loans. In addition, the demand for the postponement of loans and debts was

requested. Specific demands from the industry (un-edited) were as follows, in no specific order of importance:

- A need for formal identification of those who earn their living from fishing.
- Support for fisherman by the government when a fisherman is not sailing (working at sea) and employment support for sector workers should in general be increased.
- There should have been social security and tax exemption during the pandemic period.
- There is a need to facilitate the supply of materials and raw materials.
- Layoffs should be reviewed.
- The VAT rate should be zero and electricity prices should be lowered.
- Commissioners (intermediaries) in wholesale fish sales should be abolished.

QG-2: What measures do you recommend could or should have been taken during the COVID-19 pandemic to address the issues and problems you experienced?

The following recommendations were made, presented in no specific order of importance:

- Government institutions need to better inform (more quickly) fishermen in crisis situations.
- A need to ensure social distancing is observed in fish unloading areas.
- The need to identify fishermen's needs, including the building of both quarantine and resting (accommodation) facilities for in ports.
- In case of problems related to the sector, information should be obtained from the upper and lower unions.[33]
- Export channels should always be kept open.[34]

B4.7 Analysis of the results – performance evaluation

N = 74	1 Very bad	2 Bad	3 Normal	4 Good	5 Very good
QF-1: How many points would you give to evaluate related government institutions support during the COVID-19 pandemic process?					
Number	8	15	30	9	12
Percentage %	11%	20%	41%	12%	16%
QF-2: How many points would you gave for evaluation of Producer Group (cooperatives, unions and producer organizations) support during the COVID-19 pandemic process?					
Number	14	17	22	11	10
Percentage %	19%	23%	30%	15%	14%
QF-3: Are the measures and preparations taken by the government during the COVID-19 pandemic process supportive enough of your business?					
Number	6	24	27	10	7
Percentage %	8%	32%	36%	14%	9%

Survey questions QF1-3 addressed feedback as to the performance of public sector and industry institutions related to the dealing with the pandemic. In general, the feedback was consistently negative, with 31 percent of respondents saying that responses by government

[33] Lower unions refers to cooperatives and producer union groups based in the regions. These are affiliated to upper central (national) unions.
[34] This is considered an unrealistic expectation as this requires other countries to also keep their borders open, which is an issue beyond the control of the government.

institutions was “very bad” or “bad”, 42 percent saying the same for industry bodies and between 30-41 percent saying the responses were “normal”. These results reflect the expectations of the private sector for the authorities and industry bodies to need to do more in future crisis; a subject to be discussed in the second part of this study (Report 2A/B).

B5 Impact on the fisheries sector – a global perspective

Some useful early analysis of the immediate global impacts of the COVID-19 pandemic on the fisheries and aquaculture industries was provided in April and June 2020 (FAO, 2020a and FAO 2020b). Even though this analysis is now rather outdated some of the points raised remain of general relevance to the situation faced by the Turkish fisheries and aquaculture sector:

Capture fisheries

- There was a drop in demand, which in some cases has resulted in price drops of fish and fish products, have put a halt or reduced activity for many fishing fleets, as their work has become unprofitable.
- Fleets relying on export markets and on higher value species are likely to be more impacted.
- Global industrial fishing activity fell by ~6.5 percent at the end of April 2020 compared with previous years as a result of restrictions and closures related to COVID-19.[35]
- Sanitary measures (physical distance between crew members at sea, facial masks, etc.), and lack of necessary equipment (e.g., masks and gloves) are making fishing difficult and can also cause a cease of activity.
- Limitations of input supplies (e.g., ice, gear, bait) due to suppliers being closed or unable to provide inputs on a credit basis is yet another constraint on the fishing industry.
- A lack of clarity about the legal responsibilities of shipowners in the event of activity resumption, on the crew's eligibility for aid measures (e.g., partial unemployment, temporary closures), on the support systems and mechanisms available to maintain this primary activity, have all affected the current level of fishing effort.
- The tuna industry (globally) reported movement restrictions for professional seafarers and marine personnel who were not allowed to disembark in ports and transit through airports, preventing crews to be changed and seafarers to be repatriated.

Aquaculture

- Whilst diverse, this industry is reliant heavily on labour, inputs, financing and markets, which were impacted upon during and after the COVID-19 pandemic.
- Whilst it is (was) expected that farmers will continue to take care of their fish, and not give them away nor dispose of them, the sector will possibly struggle to sustain its activity or maintain its planned production cycles, as it might find that markets, supplies of production inputs (e.g., seeds, feeds), but also access to credit, are stopped, or significantly reduced due to the lockdowns and economic slowdown.[36]

Another early analysis of the impact of COVID-19 in a number of targeted fisheries (referred to as T75[37]) was completed in Q1 2020 by the Sustainable Fisheries Partnership Foundation (SFP, 2020), and lists some of the most common responses by different groups. Many of the T75 actions taken as reported by SFP are also reflected in the analysis of the field survey completed by, and responses given to, the FAO consultant documented in Section B4.

[35] According to Global Fishing Watch as reported in FAO, 2020b
[36] In the case of the Turkish aquaculture sector whilst these statements are true during the initial lockdown, as confirmed from the findings of the survey (see Section B4).
[37] T75 fisheries are high-volume fisheries with product destined mainly for the export market and which are key for global seafood production and supply. SFP field-staff team members interviewed 42 key informants (mainly by phone) at the start of the pandemic in early 2020 from some T75 fisheries (excluding Turkey) to identify the measures taken by vendors and suppliers and their perspectives for the near future.

States/Government

Measures taken by governments on behalf of the fisheries sector included:

- Some states put in place measures such as delayed payments of credit or temporary layoffs partially covered by unemployment insurance schemes (for example in Chile). Fishers however rarely depend on credit from banks, so in fisheries that remain in the informal sector, fishers and workers cannot benefit from any of these measures.
- A key focus of states has been on hygiene and awareness campaigns.
- Some initiatives put in place by state authorities by early April were designed to maintain access to food, including the demand at the local level and the supply of seafood to communities. Measures included improved price monitoring, the provision of facilities and refrigerated transport to supply seafood.
- Governments also implemented plans to ensure continuous income for fishery dependent families, including alternative livelihoods and 'Cash for Work' schemes.
- Access for credit and microfinance schemes.
- Provision of basic supplies and food items.

Fishers

Measures taken by fishers included:

- Commercialising their main target species in the domestic market, normally at lower prices, because of low interest in the domestic market in target species, lower purchasing power in domestic markets, or an excess of product as a result of lowered demand
- Changing gears and shifting to target species that were still in demand in the international market, such as tuna.
- Shifting fishing methods to target species in demand within the domestic market. This increased focus on species in demand in the domestic market contributed to local food security in the short term.[38]

Processors and exporters

Measures taken by processors and exporters included:

- Implementation of stricter hygiene and biosecurity protocols in facilities, including plants, offices, and vehicles.
- A reduction in processing capacity to meet social distancing measures and adapt to reduced demand. These actions largely affected workers in processing plants, who are mainly women. Those impacted the most were informal workers.
- In the absence of government aid, some sectors self-organized to ensure the availability of basic supplies to fishing communities. Some processors also facilitated advanced payments of salaries and benefits to workers.
- Switching the main product processed to others that required a smaller workforce in processing plants and have a steady market demand (e.g., stopping processing blue swimming crab and switching to tuna).
- Continuing to buy product at low prices and stocking up to the stocking limit of their facilities.
- Shifting their target market and focusing on placing products in the domestic market as much as possible. In some cases, domestic retailers suspended the supply of fresh product as well, leading to attempts by processing plants to innovate through online marketing direct to consumers.

[38] The counter to this is that attention then needs to be made in monitoring the impact of changes in fishing effort in the longer term, particularly if the increased effort leads to overfishing of the new targeted species and/or the newly targeted fishery is not well regulated.

B6 COVID-19 – a timeline of restrictions

Table 6 provides a summary record of the restrictions imposed between the 22nd of March 2020 and 1st of June 2021. Most of the restrictions were applied nationwide, although some weekend bans and night curfews were made only in the 41 largest cities nationwide (which represents 70-80% of the total population).

Table 6: Diary of restrictions

Date	Restriction
22.03.2020-11.05.2020	Full closure (no travel permitted and no going to work)[39] for those over the age of 65 and those with chronic illness
10.04.2020-12.04.2020	Weekend full closure
30.04.2020-03.05.2020	Full closure (lock-down)
17.04.2020-19.04.2021	Weekend Full closure
23.04.2020-26.04.2020	Full Closure
08.05.2021-10.05.2021	Weekend full closure
15.05.2021-19.05.2021	Full closure
01.11.2020-02.11.2020	night curfew (21:00-05:00)
21.11.2020-22.11.2020	night curfew (20:00-10:00)
22.11.2020-23.11.2020	night curfew (20:00-05:00)
01.12.2020-03.12.2020	Full closure
04.12.2020-07.12.2020	Full closure
29.04.2021-17.05.2021	Full closure
17.05.2021-01.06.2021	night curfew (21:00-05:00) & weekend full closure

Source: FAO Consultant's analysis, 2021

B7 Impact on fisheries production and trade

A comprehensive joint UN study entitled 'COVID-19, rapid impact assessment on the agri-food sector and rural areas in Turkey' (FAO, IFAD & UNDP, 2020) provides a comprehensive assessment of the impact, corrective actions and interventions taken by the Turkish government across the agricultural sector, including crop and livestock production, forestry and the food sector. The report also addresses other areas such as government support to the sector, employment issues, impact on the role of women and seasonal workers, the impact of COVID-19 on biosecurity rules, and the use of digital technology as a result of the pandemic. Analysis of the impact of the pandemic on the fisheries and aquaculture sector in this report is however limited to little more than one page.[40] Some key points raised in the report are however worth documenting for the fisheries sector:

- The impact on fisheries and aquaculture systems vary and the situation is (was) rapidly evolving.
- Whilst the coronavirus cannot infect aquatic animals, fishery and aquaculture products could become infected if handled by infected people who do not follow good hygiene

[39] Permits were however granted for exemptions from April/May 2020 in the productive sectors such as agriculture, livestock, fisheries, aquaculture and food manufacturing/distribution

[40] And a survey of preliminary findings contained within the report (FAO, IFAD & UNDP, 2020) also states that out of 130 stakeholders questioned, representation from the fisheries sector is only mentioned once from six producer unions (crop, animal and fisheries) interviewed.

practices. To date, there has been no reports of COVID infections due to the consumption of aquatic products.

- Fish products dependent on international trade suffered early on in the pandemic due to market restrictions/border closures.
- Fresh fish/shellfish supply chains were severely impacted by closure of the food service sector (hotels, restaurants, schools, work canteens etc.).
- The processing sector faced closures due to a drop in consumer demand.
- Some large companies and restaurants purchased fish on sale at low prices and stock-pilled in cold storage.
- The fish trade was significantly impacted and fishing businesses are likely to work (fish) harder in the 2020-21 season to compensate for losses in the 2019-20 season (possibly leading to over-fishing stresses in some fisheries[41]).
- MoAF postponed rental payments for fishing rights.
- Access to fishing harbours was limited at the start of the pandemic.[42]
- There were no major issues for the aquaculture sector,[43] particularly as the MoAF organised two rounds of discounted fish sales supported by domestic produce promotion campaigns (implemented with NGO support) through various chain stores in April 2020. Producers supplying fish in support of these campaigns were financially compensated.
- An important issue identified by the fisheries producer cooperatives was that cold-storage capacity was taken up (so spare capacity depleted) during the pandemic.
- Logistics companies adopted an innovative solution to the problem of driver quarantine by switching drivers at the international border, thereby minimising disruptions to the supply chain and distribution network.

The general lack of a more detailed analysis on the impact of the pandemic on the sector may in part be due possibly to the apparent minor and temporary nature of impacts during the early stages of the pandemic (as perceived by the researchers). Although this is true to a degree, the socio-economic impact of the COVID-19 pandemic throughout the various fisheries and aquaculture value chains were significant (to varying degrees) as has become evident from the research conducted for this report. What is clearly evident from the available literature is that there is a lack of COVID-19 specific impact assessment (quantitively data-based analysis) related to fisheries production, economic turnover and socio-economic impact for different segments of the industry. This is an important 'take-away' lesson for policy makers in learning how to better prepare for and manage pandemics and other emergencies in the future.

The consultants' research suggests that the effects of the pandemic with respect to the purse seine and trawl fisheries were relatively minor because the national restrictions and partial/complete lockdowns came into effect towards the official mandatory closure of the fishing season.[44] The exception was the Bluefin tuna fishery in May/June (for both the 2020 and 2021 fishing seasons) with catches (of juvenile fish for ranching) in international waters due to the scarcity of fish plus environmental issues related to both the near-shore and the in-shore fisheries having been severely affected by the extensive blooms of mucilage.[45]

[41] Q4 2020-Q1 2021 fishing data is not available to substantiate/verify if this has been the case.
[42] The consultants are however aware that after pressure from industry access was granted for activities to resume based on a permit basis, as mentioned in feedback to the field survey.
[43] This statement reported in FAO, IFAD & UNDP, 2020 is at variance with the observations of the consultant, which suggests that all aquaculture activities were adversely affected from mid-March to early June 2020 due to the lack of demand and logistic problems in the international trade.
[44] The purse seine/trawling fishing season runs from 15th September to 15th April and the pandemic impacted significantly on sales and therefore fisher incomes only from March onwards.
[45] This refers to a secretion of polysaccharides from collapsing blooms of phytoplankton that occur in the Marmara Sea but have also been seen in parts of the Black Sea, Aegean Sea and Eastern

B7.1 EU market trends and the impact on aquaculture production

Various EUMOFA[46] reports (EUMOFA, 2020) documented specific changes to, and the market shrinkage of, the important EU fisheries market (particularly for Turkish aquaculture products) during the pandemic. General statements suggest that across the EU the closure of HORECA channels, and in some places the closure of open markets, led to significant impact on their activities, especially for small scale fisheries selling fresh fish. The EU processing industry relying on frozen imports from third countries experienced a shortage in supply as processing activities were reduced and the impact of limitations in freight capacity plus some major supplying countries having closed their ports. Imports into the EU of restaurant marketed fish species in particular decreased substantially.

Conversely for most processors selling to the retail sector the demand remained reportedly strong, especially for canned, frozen and smoked fish and the downstream supply chains from the processors continued to work well. For processors processing for other segments of the market (such as HORECA channels) the situation was difficult. However, there was a rapid increase in online sales and home delivery of seafood products during lockdown. Starting from low volumes, e-commerce sales of fresh produce increased by 25% and online takeaway deliveries have doubled (as reported by various news bulletins). Observed changes in the EU fish market from Weeks 12-17 (in 2020) are documented as follows:

Week 12: The imported volume of fresh/chilled whole fish decreased by 17% compared to Week 11 (down 2,800mt from 16,800mt) and was down 12% YoY. Five products accounted for 89% of the decrease: Atlantic salmon from Norway (46% by volume), cod from Norway (25%), redfish from Iceland (7%), Gilthead seabream from Turkey (6%) and haddock from Norway (5%).

Week 13: Imports decreased even more, by 32% compared to the previous week and 39% YoY. Imports of fresh whole fish decreased by a further 4,500mt to 9,500mt. Five products accounted for 97% of the decrease: Atlantic salmon from Norway (65%), cod from Norway (14%), Gilthead seabream and European seabass from Turkey (8% and 6% respectively) and haddock from Norway (5%).

Week 14: The fishery sector was still struggling without the European HORECA market and limited airfreight capacity for exports. In general, lower landing volumes led to some positive trends in first sales prices in Week 14 compared to the previous week, but overall, the prices are lower than normal.

Week 14: EU imports of fresh whole seabass and seabream from Turkey had dropped by more than 50% during Weeks 10-13 (early mid-March), and by more than 70% compared with Week 14 (end of March). Import prices were relative stable in Weeks 13 and 14 at around €4.00/kg.

Week 16: Compared with Week 15, extra-EU imports showed a strong recovery, as volumes grew by 63%, while values increased by 55% in Week 16. Five products accounted for 66%

Mediterranean. The blooms are caused by higher temperatures, stagnant water and high inputs of nitrates and phosphates, which in turn trigger blooms of zooplankton and jellyfish, causing lowered water oxygen content and the collapse of plankton communities including larval fish. The secretions from the dying organisms form a 'sea snot' on the surface and upper water column. Fishing activities are impacted due to the scarcity of fish and mucilage accumulation in the fishing nets.

[46] The European Market Observatory for fisheries and aquaculture (EUMOFA) is a market intelligence tool on the European Union fisheries and aquaculture sector, developed by the European Commission. It aims to increase market transparency and efficiency, analyses EU markets dynamics, and supports business decisions and policymaking.

of the increase in volume: salmon from Norway (30%), cold-water shrimp from Greenland (15%), Alaska pollock from China (9%), yellowfin tuna from Seychelles (7%) and miscellaneous shrimps from Greenland (5%). All categories of produce (fresh, frozen and prepared/preserved) registered significant growth. Prices for fresh whole fish produce exceeded the 2020-average price.
Week 17: Since the start of 2020, EU import prices of fresh farmed European seabass from Turkey averaged €3.86/kg, up 5% from the corresponding period in 2019. Imports volumes have trended up and in week 17 exceeding 400mt.

Week 17: EU imports quantities of fresh whole gilthead seabream from Turkey have in the same period (Weeks 1-17 of 2020) shown a similar increasing trend as for European seabass, with the Week 17 volume in excess of 600mt. EU import prices of Turkish gilthead seabream trended on a higher level than seabass in Weeks 1-17 of the year.

Week 17: Since the lockdown, the price gap between the two farmed species has narrowed. EU import prices of fresh gilthead seabass averaged €4.02/kg in Weeks 1-17 of 2020. This represents an increase of 10% from the corresponding period in 2019. In Week 17, the import price rose to €4.10/kg.

In summary, it is evident from analysis of EUMOFA data that the Turkish aquaculture sector was hardest hit between Weeks 13 and 17 (Q2, 2020), with a sharp decline in export volume but less of an impact on unit prices. There was also a significant drop in demand from local (domestic market) consumers.

B7.2 Inland and small-scale fisheries

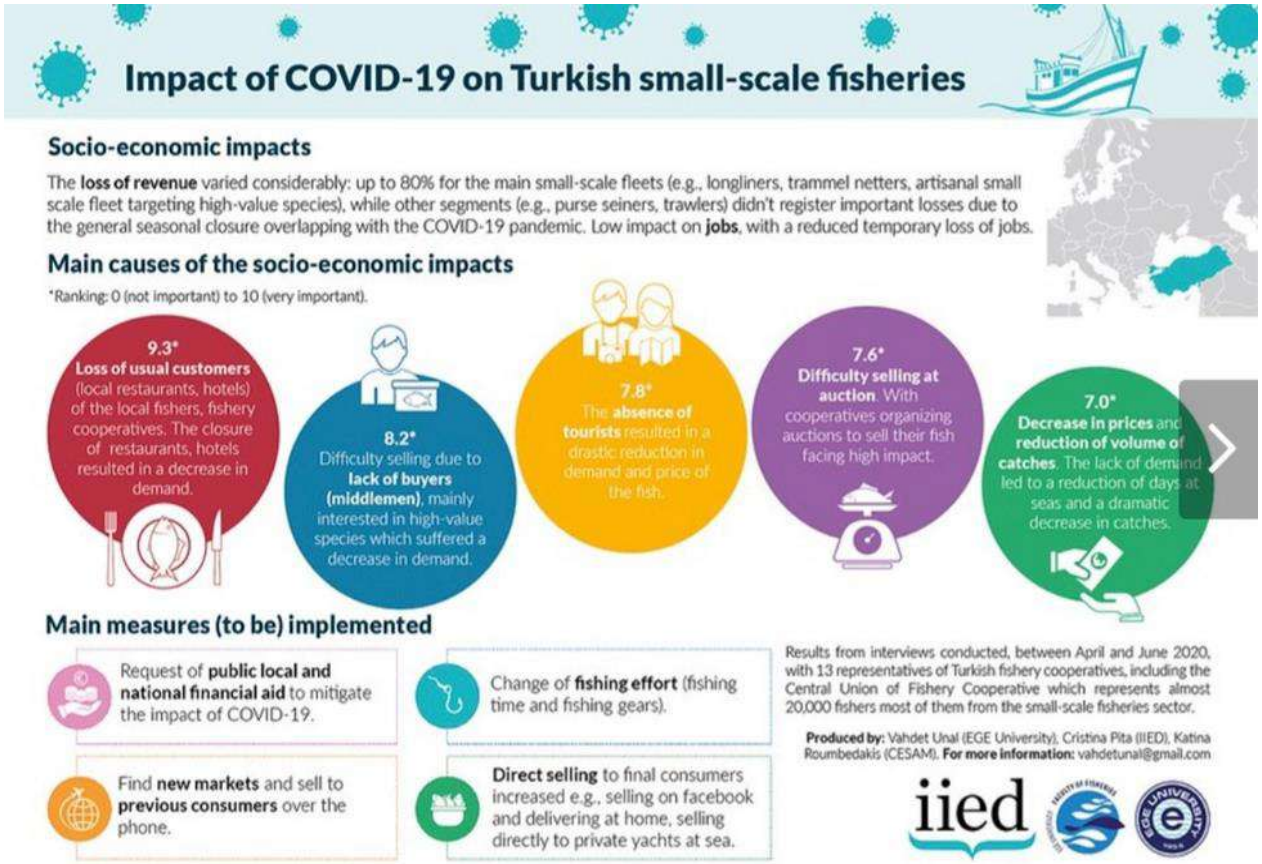
Inland artisanal fisheries were affected primarily as a result of closure of the processing industry because of the nationwide precautionary measures which continued for all agriculture related activities until almost mid-April, plus limited demand due to problems in the export supply chain. Aside from localised health and activity restrictions, local trade did however in general continue with limited decrease in the amount caught and marketed.

The artisanal and small fisheries were severely negatively impacted by the pandemic due to access and trade restrictions, diminished demand, the absence of tourism activities and closure of HORECA customers, and general health safety issues related to maintaining adequate working conditions for vessel crews. An assessment and suggested responses prepared by WWF Turkey (WWF, 2020) draws attention to the need to address socio-economic and environmental sustainability issues. The main points raised were (translated and summarised from the Turkish language publication):

- *A need to assure healthy working throughout the value chain through supply of sanitary equipment and obedience to the distancing rules, financial support needs to be granted for losses due to seized fishery and related activities.*
- *Similar financial support could be considered for bans and restrictions for the purpose of ecosystem sustainability and a need for a EMFF type fund, support for direct sales by fishers and appropriate legislation to shorten the value chains and strengthen fisher bargaining powers to secure sustainable incomes.*
- *There is a need to benefit from the current state of decreased pressure on the fishery stocks to assure continuation of the positive effects and need for increased cooperation with regional advisory bodies such as the GFCM, to implement the rules related to improved sustainability and IUU mitigation.*
- *Based on experiences from the pandemic, it is apparent that any policy and response plan needs to consider that, aside from effective and timely support to the industry, the assurance of human capital welfare is a priority in disaster and crisis response plans.*

A joint infographic (Figure 12 overleaf) provides a useful summary of the immediate impacts, along with a number of basic policy suggestions, for the nearshore capture fisheries sub-sector:

Figure 12: Infographic – COVID-19 and Turkish small-scale fisheries



Source: IIED, 2020

B7.3 Industrial fisheries

In addition to the analysis on the impact of the pandemic to individual fishers and families within the artisanal or near-shore fishers, issues raised by the industrial fisheries and aquaculture sector include:

- The loss of revenue due to constraints on fishing activities as well as diminished local and export market demand (except for processed and canned goods);
- Increased expenses (running costs and added investment cost) to comply with extra hygiene and sanitary condition requirements;
- Limits on cold storage capacity due to decreased demand;
- Logistics problems, especially for imported goods and materials;
- Loss of efficiency and profitability due to sick leave and restrictions on personnel working conditions;
- Increased maintenance and running costs for aquaculture facilities, especially in terms of increased feed consumption due to low demand (for a period of time);
- Loss of income from the HORECA sector, with some permanent (bankruptcy) closures within the restaurant business sector due to long term closures or activity restrictions;

- Increased retail prices to compensate for lower demand which suppressed demand; and,
- Problems with credits, loans and payments due to cash flow constraints which in some cases caused a crisis for micro and small-medium (SME) and MSME) sized enterprises.

B7.4 Socio-economic impact and gender issues

In addition to the general difficulties faced by the national workforce with regard to the pandemic, work- and business-related activities and the extra administrative workload as a result of the need to comply with new and frequently changing hygiene safety requirements, the following issues are noted for fishers/fish farmers, seafood processors and traders and their families across the sector:

- The temporary loss of jobs due to sickness, the healthcare requirements of family members, or restrictions of access to work;
- The permanent loss of jobs for those working in businesses that went bankrupt;
- Restrictions due to time-bound and/or seasonal controls (such as license renewals, issuing of port activity papers, health controls, etc.);
- Some problems with access to individual hygiene and sanitary equipment;

Addressing gender specific issues, women experienced an extra burden as in Turkish culture they are traditionally responsible for the welfare of the family, and for many families their household subsistence incomes were at risk. The number of women employed in the HORECA sector is disproportionately high so the closure of this sector for some time and loss of jobs (even if part-time or through the informal sector) was significant, although there is no known data or measure of this impact. Female workers in the aquaculture and processing sectors had limited work once the cold stores were full and because of this only received partial payments. Women working in the canneries managed better, especially in the tuna canning factories, and were able to work overtime, notwithstanding their obligations to look after sick members of their family. Female workers in the markets and multiple retail service sectors[47] benefited from work opportunities as home consumption became the only option with retail sales in general increasing two-three-fold. Added to which takeaway meals and home deliveries were permitted for a long time which provided job opportunities for women working in the kitchens of food service businesses.

B7.5 Expert consultations

A number of papers have been published on the impact of the pandemic on the fisheries sector and suggested measures to be taken, plus various expert meetings, some of which are referenced in summary as follows:

An article published in the Marine and Life Sciences Journal entitled 'The evaluation of the early impacts of the COVID-19 pandemic on the export of fishery commodities of Turkey' (Can *et al*, 2020), compares the 2019 and 2020 Q1 figures of fishery products' exports to show the impact of the pandemic on the industry. The following is a summary of the key findings from this paper:

- The early impacts of the COVID-19 on the export of aquatic products of Turkey were evaluated by using export data on quantity (kg) and customs value (USD) of the aquatic products belong to the first quarter period of 2019 and 2020.
- The mean values of exported products in both quantity and customs value decreased by 3.79% and 4.22% respectively from 2019 to 2020.

[47] Supermarket chains such as Metro, Migros, Cagdas and Carrefour.

- Drill-down analysis of export statistics showed that fresh Sea bass, Sea bream, Bluefin tuna, and Carp were the main exported products.
- Germany, the Netherlands, Spain, Italy, Russia, Greece and Japan were the main export markets that determined the strength of the Turkish fish export supply chain. Exports from 2019 to 2020 to these countries decreased by 7.89% (in quantity) and decreased by 7.43% (in customs value-USD).
- Frozen sea cucumber exports to China, Hong Kong, and the USA decreased by 56.07%, 24%, and 5.5% respectively.
- The export of frozen or fresh crab, shrimp, lobster, frozen fillet (trout, sea bream and sea bass) and live fish (sea bream and sea bass) decreased by 31.08% and 48.55% respectively.
- In contrast, the quantity of fresh, live, and frozen snails, mussels, octopus, squid and cuttlefish exported to South Korea, Greece, and China increased by 58.59%.
- The export of dried, salted, or pickled and smoked fish (7.24% in quantity), canned aquatic products (26.63% in quantity) and frozen sea bass, sea bream, and tuna fish (7.56% in quantity) also increased.
- In conclusion it was evident that in general canned, frozen, and smoked fish products experienced an increase in demand but that these increases have not (at the time of writing) compensated for the decreases in demand for other products.

Two major sector specific meetings/workshops were convened, one coordinated by the University of Istanbul, Department of Aquatic Sciences, and one by The Iskenderun Technical University, Department of Water Resources Management and Organisation, shortly time after the onset of the pandemic and the respective bans and limitations imposed by the government authorities (See Section B6).

In both of the workshops, supported by a high number of academia representatives, as well as DGFA officials and some industry representatives, attention was drawn primarily to the need for social and financial support to the individuals within the fisheries value chains, assistance to the aquaculture and export industries through promotion campaigns, assurance of wellbeing of value chain actors, and the need to work closely with the academia, with emphasis being made on the importance of the Turkish fisheries industry both from an economic and human capital perspective.

An article entitled 'Effects of COVID-19 Pandemic on the Fisheries and Aquaculture Industry: A Mini Review' (Turkish Journal of Bioethics, 2020) analysed the impacts of the pandemic on the Turkish fisheries and aquaculture industries with suggestions on relevant actions of response by the officials. Reference is made in the paper to the importance of the promotion campaign for domestic consumption of local aquaculture products through major market chains, which had a positive effect on the sales figures. The paper also discusses the logistical problems for the sector (particularly in dealing with fresh highly perishable fish products) due to border closures and restrictions on the movement of people.

There was little in this paper that adds in detail to the analysis and findings that have already been documented elsewhere in the report, although an interesting reference is made to the problems with feed supply sources and channels for the aquaculture sector. To avoid shortages and the high dependence on imports of raw materials and premixes for the feed industry, the paper suggests supporting, revisiting existing agriculture sector policies, the domestic production of essential feed components, ingredients and industrial plants, particularly through incentives for the utilisation of fish trimmings and non-utilised potential fishery products for use as fish feed raw material. Support for research on new technologies, potential new aquaculture species and alternative products for fish meal substitutes and

campaigns and policies to promote the consumption of aquatic products were also proposed.

In an article entitled 'Impact of COVID-19 epidemic on agricultural sector and food security: an evaluation in Turkey' (Aydin & Güner, 2020), whilst there is reportedly little specific reference to the fisheries sector, reference is made to the cessation of mobility causing disruptions in the agricultural supply chain and that as a result:
'…Turkey increased the importation agricultural and grain products and was unable to lower food prices despite the decrease in global food prices. In this context, Turkey does not have a good outlook for food security….'

The study concludes by suggesting that Turkey could re-direct funds used for the importation of grains (USD 7.5 billion in 2019 and USD 4.3 billion during the pandemic) for research and development purposes to increase productivity values and respective infrastructures. Suggestions are also made for the re-evaluation of production diversity, value chain and market price policies. A policy strategy is also proposed to secure biodiversity and ecosystems, aiming for high productivity, high efficiency and economic viability while abiding by the rules of sustainability and transmission to climate-smart technologies and respective plans to increase resilience against the effects of climate change.

B7.6 Impact assessment – a summary of data and findings

The following data[48] illustrates the impact of the COVID-19 pandemic on fisheries and aquaculture production and trade:

- Marine capture fisheries production was down by 23.2 percent in 2020 compared with 2019;
- Inland capture fisheries production increased by 4.8 percent over the same period;
- During the first three months of the pandemic lockdown (March to May 2020) Turkish seafood exports decreased by up to 30 percent;
- Imports during the same period decreased by more than 55 percent after a temporary increase in the percentage relative to 2019 in early 2020;
- The short term relatively low unit prices of both cultured and wild caught species were replaced by elevated prices and higher quantities of supply on the domestic market beginning from June/July 2020;
- Some export prices and volumes remained low throughout the remaining months of 2020 and until the third quarter of 2021[49]; and,
- Total aquaculture production in 2020 was up by 12.9 percent with respect to 2019.

B8 Impact on fisheries management, research & education

There is limited documented country specific information on the impact of the pandemic on wider sector management issues, although it is noted that in line with the general lockdown restrictions, the Turkish Coastguard faced problems with undertaking fisheries MCS IUU patrols due to staff sickness, health and working hours restrictions. The tuna industry also reported movement restrictions for professional seafarers, including for at sea fisheries

[48] Based on national consultant conversations with industry representatives and government officials plus data from TURKSTAT (June 2021) and Ege Exporters Council media release (June/July 2020).
[49] This is however not the case for all products, as is documented in the trade data presented in Section A2. More recent trade news, referenced in Section B10 also suggests that the industry has 'bounced back' even stronger since the early days of the pandemic.

observers, and marine personnel in ports, which prevented crew changes and repatriation of seafarers (FAO, IFAD & UNDP, 2020).

Scientific research and monitoring projects were either impaired or halted due to general travel and work activity restrictions. Industry training programmes and regular educational activities were also halted and had to be carried out online using e-learning platforms, which impaired and limited the opportunities for fieldwork and hands-on practical training (such as for seafarers, engineers etc).

National and international development projects have also experienced delays with staff repatriated to the hometown/country and in many cases, staff are still working from home 18-months after the start of the pandemic crisis.

B9 COVID-19 Resilience

The fisheries sector is an important contributor to the national GDP and to foreign exchange export revenue earnings, as well as being socio-economically important in various regions to the local and regional economy and labour market, especially for women in the aquaculture, processing and service subsectors. Despite these attributes the sector as a whole lacks any kind of emergency response plan and aside from the temporary assistance and interventions outlined below, there remains a general lack of sector specific sustainability and resilience building strategies and policy instruments to deal with future crisis. The emergency response actions implemented by the authorities in relation to the COVID-19 pandemic were based on the general experiences and capacity of the government, demands from industry and funding available at the time.

B9.1 A summary of government responses

Although no sector specific support mechanisms were put into place by the government, monthly financial support to affected individual aquaculture personnel, fisher crews, processing, service and retail personnel was given in accordance with the central government's decision to provide social support to the impacted workforce. No published data is available on the level and extent of this support.

A key policy response and pillar of structural support to the sector, as mentioned earlier (see Section B7.5) was the government (MoAF) backed campaign, supported by the Central Aquaculture Producers Organisation, initiated in April 2020 to promote the local consumption of aquaculture products with the theme of '*Evde Hayat, Tabakta Balık'* (translated as Life at Home, Fish on the Plate). This initiative was modelled on similar campaigns to support the local consumption of fishery products that have been successfully implemented (un-related to the pandemic) in the UK, Russia, Poland, China. The MoAF organised two rounds of discounted aquaculture fish sales to shift collapsed export and service sector demand to household consumption and as a result it is estimated that a total of between 5-10,000mt were absorbed by the domestic market.

Furthermore, as documented in FAO, IFAD & UNDP, 2020 a communiqué was published in the Turkish Government's Official Gazette on the 12th of June 2020 subsidising processed aquaculture products like salmon, trout, gilt-head bream, sea bass, carp, meagre and tilapia with the aim of increasing domestic consumption, as export demand for Turkish aquaculture products has fallen considerably. Producers supplying aquaculture products to chain retailers were granted financial support of TRY2/kg up to 100mt.

Other policy initiatives taken by the government during the pandemic included:

- To avoid certain fishing activity and age restrictions due to the bans, changes were made to the renewal of fisher and fishing licenses;
- Payments due from the use of fishing ports and licensed fishing concessions for the rental of inland water bodies were waived;
- Attempts were made to postpone the credit payments of aquaculture businesses to state banks;
- Increased government MCS related activities to assure food safety for fish products plus the promotion of wider science-based publicity to assure the wider public that the consumption of the fish products posed no health problems connected to the pandemic;
- Sector employees were included as part of a support scheme related to the temporary loss of work, backed by the Turkish Government; and,
- Research (in the first few months of the pandemic only) to support various stages of the fisheries value chain in relation to the extended impact of the crisis.

Based on the experiences of the past 18-months it is clear that the Turkish seafood industry and fisheries/aquaculture sector now requires (and deserves) a coordinated, participatory and sustainable government led response and resilience plan, based on sound science and assessment, developed and supported by appropriate international best practice.

The consultants will turn their attention to this in the next phase of this study with the preparation of a draft Emergency Response and Preparedness (ERP) Plan for consideration and adoption by the Turkish Government to help mitigate in the future against the negative effects of another pandemic and/or other possible disasters or crisis.

B9.2 A summary of industry and market responses

In addition to the support from the authorities, reference should also be made to examples of the extent and effectiveness in the way industry and the private sector adapted and responded to this pandemic crisis.

Despite the number of COVID-19 cases nationwide and within the sector (both reported and unreported) the implementation of and adherence to, strict hygiene conditions within the processing and aquaculture sub-sectors undoubtedly helped in containing the spread of the virus and allowed these industries to continue operating. A similar case can be made for the practice of long-term semi-quarantine conditions onboard purse-seiners with the crew confined onboard their vessels for extended periods, with essential supplies provided by auxiliary boats and personnel.

Many industry stakeholders had to apply for corporate or individual credit financing not only to keep their businesses open but also to meet their basic living expenses and investments were postponed/deferred or finance restructuring with extra payment instalments arranged.

Most of the aquaculture businesses had to decrease their daily feed usage to postpone marketing of the products to overcome low market demand and fresh/chilled produce was channelled to processing lines which in turn caused overloading of cold-storage facilities. Exporters resorted to investigating previously non-accessed markets as well as diversifying their product line and market penetration strategies into slightly affected markets and/or those regions showing fast recovery signs from the pandemic.

Logistics companies took innovative steps to overcome distribution problems by changing drivers of at the borders to partially overcome the restrictions of cross-border movements of people. The fast adaptation to, and adoption of, e-marketing throughout the value chain of

processed, frozen and fresh-chilled products was a notable innovation in the industry, supported by a growth in restaurants and some retailers adapting to providing a home delivery service for cooked or semi-cooked seafood.

B10 Conclusions and lessons learnt

An OECD report published in June 2020 entitled 'Fisheries, aquaculture and COVID-19: Issues and Policy Responses' (OECD, 2020) provides some early (in the pandemic) key points of concern and observed responses, as well as policy recommendations, that are of relevance to this study. Of particular note from the OECD report (in italics and in no specific order of priority) regarding the impact and consequences of the pandemic:

1. *Changes in food consumption and difficulties in reaching consumers have significantly impacted domestic and international demand and prices*.

The closure of fish markets, decline in demand from the HORECA sector, constraints in some distribution channels, consumer preferences for contactless deliveries, and minimum intervention of middlemen for health reasons, have all accelerated changes in consumer preferences and the development of more direct fish marketing and home delivery services. Some of the observations documented by the industry in this report include:

- Increased popularity of healthy eating products;
- At home consumption has increased in Central Europe and the USA;
- Demand has increased for fresh chilled and modified atmosphere packaged products; and,
- E-commerce business focused on home delivery have prospered

On the basis of these emerging trends, and future predictions with respect to practices such as an increased working from home, avoidance of crowded restaurants, and the increased openness to (and adoption of) innovative products, the following is suggested:

- The market for home cooked and snack type seafoods will grow in volume and value;
- For the fresh chilled aquaculture market, the preference will be for larger size products/fish;
- Processed, frozen, packaged, canned seafood will continue to be important due to their attributes of a lengthy shelf life, easy storage and buying/delivery advantages; and,
- Some restaurants might convert their kitchens (or part of) to support the home delivery of seafood meals.

An important question is whether the crisis will result in a long-term and permanent shift to such alternative distribution channels? Whilst some changes have undoubtedly been observed within Turkey's domestic market it remains to be seen whether these market trends continue (and grow) with the re-opening of the HORECA market. This issue will be reviewed as part of the seafood market development strategy later in this study.

2. *Production capacity and costs have been affected by the need for additional health and safety measures and reduced labour mobility all along the supply chain*.

Some of these impacts (such as the increased need for PPE) will undoubtedly stay for some time to come but may also be mitigated over time as the COVID-19 pandemic becomes a manageable endemic infectious disease. Any longer-term impact for the private sector will inevitably have to be absorbed by the market and consumer in the form of higher prices, but these are likely to be marginal.

This reportconcludes that the Turkish fishery and aquaculture sectors, aside from the early constraints and ongoing restrictions until mid 2021 (see Table 5), has been relatively moderately affected by the pandemic and shown fast signs of recovery.

3. *Whilst too early* (at the time of writing of the OECD report) *to assess the impact of the crisis on the natural resource base, investment in monitoring is crucial.*

There is no published data (as far as the consultant is aware) on the current status of commercially important fish stocks in Turkey so the impact of the crisis on the marine (and to a lesser extent inland) capture fisheries sector is unknown. Further analysis of the government's fisheries policy and management responses to the crisis (which go beyond the scope of this study) will determine how they have affected fishing in the recovery.

The GoT is encouraged to maintain the long-term protection of its natural resources and ecosystems, and economic viability of its fisheries. With the support of ongoing scientific and fisheries MCS data collection by the authorities, the pandemic period offers an (possibly unique in the modern era) opportunity to learn about the potential for reduced fishing pressure to restore and increase the country's natural resource base.

4. *Potential implications for global food security and livelihoods call for urgent yet calibrated responses from governments and industry.*

Economic, equity and environmental considerations all point to similar best practices, namely: supporting the incomes of those most in need rather than subsidising inputs or fishing effort; and, ensuring that evidence-based management remains in place and is enforced. Transparency in policy responses will also help build trust in the future of fish value chains and markets and enable learning from the crisis to improve the sustainability and resilience of the sector.

The results of the findings from this study and the field survey of responses from stakeholders' points to the need for a well-coordinated, inclusive, longer-term intervention strategy and implementation plan (as referred to in Section B9.1). This is contrary to the sector specific responses and actions taken during the pandemic, much of which was focused on short term remedies to support the economic sustainability of export orientated seafood businesses. The majority of the industry now reportedly shares the view that the important export markets and the supply chain logistics (through production, transport, processing etc.) that go to service these markets required a heightened degree of strategic planning and preparedness measures. These measures need to include, but not limited to:

- Simplified access to financial support and deferred mandatory payments to the government as well as the easing of credit payments to banks:
- Financial assistance with worker and crew salaries, welfare, health, social security, PPE and relevant health and safety equipment and tools;
- Access to on-the-spot information;
- Subsistence payments and extra support to the self-employed fishers and the entire marketing channel were raised as essential government coordinated actions to ease the impacts of disasters and crisis.

With regard to support to the seafood industry and their marketing mix,[50] a global preference for fresh seafood has re-emerged during the summer of 2021, and the market for pelagic species has also increased. The success of the Turkish fisheries sector (and aquaculture exports in particular) in meeting this re-emerging demand has been well documented in various online articles and extracts from articles by two news agencies is provided Annex 1 to this report.

[50] The four Ps of marketing (product, price, place and promotion) are often referred to as the marketing mix.

B10.1 A summary of sector specific needs

The following provides a summary, in no specific order of importance, of the commonly agreed findings from the COVID-19 pandemic agreed by both industry and public sector administrative bodies concerning the needs of the sector in addressing future crisis:

1. Extra incentives to promote processing and storage capacity of industry as well as improvement to the producer group logistics and the coordination of focused investments.
2. Extra incentives to capture fishery companies and producer groups to diversify and/or integrate their activities (as appropriate) along the value chain.
3. The establishment of a comprehensive domestic and international market information system in support of improved sector (market and production) planning.[51]
4. The establishment and designation of an appointed crisis monitoring/assessment and response team and provincial focal points.
5. Promotion of, and support for, a social security system that supports fishing crews and self-employed individual fishermen, including assistance (new employment opportunities and/or vocational training) for those laid-off or have reduced work due to the pandemic
6. Improvements and diversification of a fisheries and aquaculture production and related value chain insurance system (for example TARSIM[52]), to include an emergency and disaster focused insurance system for all fisherfolk.
7. The Inclusion of producer groups (fisheries and aquaculture coops and producer unions) in diversified sector wide coordination, support and reporting activities.
8. The coordinated and participatory preparation of a sector specific, ecosystem-based emergency response and resilience strategy and plan and securing government and industry funding to implement the plan.
9. Comprehensive crisis and emergency response participatory training.
10. Enhanced gender focused programmes and assistance mechanisms for women and the inclusion of more women in MCS activities, fisheries sector social policy decision making and fisheries sector research activities.
11. Support to encourage the recruitment of youth into all stages of the seafood supply/value chain, including implementation of a long-term strategy and plan to support multi-disciplinary vocational training activities.
12. Establishment of medical support centres and the supply of PPE and equipment at the main fishing ports and aquaculture hubs.
13. The inclusion of the fisheries and aquaculture sectors in national disaster relief mechanisms and strategies.
14. Assistance and incentives for coordinated product development and market diversification initiatives, including support mechanisms for domestic and international Turkish seafood promotion and awareness campaigns in the case of problems with existing export markets or trade restrictions.

[51] The only information system functioning at present is one run by the export councils, plus what can that provided by the government (TURKSTAT).

[52] TARSIM (www-tarsim-gov-tr) is a government backed insurance scheme for the agriculture, livestock and food sector, including insurance for aquaculture farms that covers:

- All kinds of diseases, with the exception of the certain specified diseases;
- Pollution and poisoning beyond the control of the grower;
- Storm, tornado, earthquake, flood and flood risks;
- Accidental damage, predator and algal blooms; and,
- Fish transfers between cages/ponds.

Optional additional risks that can be covered include theft and damage to cages and nets.

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Translation from an online article: Ticaret Gazette (trade newspaper), 16/10/2021
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The Turkish aquaculture and animal products sector, which aims to reach an export volume of USD 3.5 billion by the end of 2023, presented its seafood and animal products to importers from all over the world at the ANUGA Food Fair held in Cologne, Germany. Mr Sinan Kızıltan, Chairman of the Sector Board of the Turkish Fisheries and Animal Products Exporters' Association, reported that 290 companies from Turkey participating in the Anuga Fair, which hosts the world's largest meeting of the food industry. Pointing out that the Turkish aquaculture and animal products sector has increased its exports by 38 percent from USD 1.731 billion to USD 2.382 billion in the period January to September 2021, Mr Kızıltan was quoted as saying:

“From seafood to poultry meat and eggs, from honey to dairy products….we have a product range that meets nutritional needs. The increase in healthy food consumption demand during the epidemic has had a positive impact on our export figures. Although we could not organise physical fairs and sectoral trade delegations, we are having a successful period. Our annual exports exceeded USD 3 billion for the first time. We continue our promotional activities in order to reach the USD 3.5 billion export target we set for 2023.”

The Aegean Fisheries and Animal Products Exporters' Association, which has increased its exports by 31 percent in the last year from USD 932 million to USD 1.226 billion and became the leading union representing food exporters in the aegean region, participated in the Anuga Fair…….where Turkish companies made their presentations in nine different specialist food halls and the aquaculture and animal products sector took their place in Hall 4.1, where frozen products are predominant.

Translation from an online article: Anadolu Agency (state run news agency), 5/8/2021
https://www.aa.com.tr

According to information compiled by AA correspondent from data provided by the Aegean Exporters' Association, Turkey's aquaculture and animal products exports were recorded as USD 1.345 billion from January to July 2020. Exports by the sector, which saw an increase in demand due to the epidemic, reached USD 1.796 billion, an increase of 33.5 percent in the same period of this year compared with 2020. This is a record for the export of fishery products in a seven-month period.

Fisheries exports alone were USD 547.38 million in the January-July period of last year (2020), increasing by 40 percent to 763.66 million in the same period in 2021. Sea bass took first place in the export of seafood with a value of USD 256 million. During this same period, USD 212 million worth of sea bream and USD 91 million of trout were exported. Turkey's ‘shining star’ in aquaculture, Turkish salmon, increased exports from USD 15.29 million to USD 88.47 million.

Annex 2 Turkey Fisheries and Aquaculture Statistical Database (2000-2020)

Year	Capture Fisheries		Total (Capture)	Aquaculture		Total (Aqua)	Grand Total	Fish Meal & Oil	Export	Import	Waste	Domestic Market[53]
	Marine	Inland		Marine	Inland							
2000	460,521	42,824	503,345	35,646	43,385	79,031	582,376	71,001	14,533	44,231	2,309	538,764
2001	484,411	43,323	527,734	29,731	37,524	67,255	594,989	62,755	18,978	12,971	8,383	517,844
2002	522,744	43,938	566,682	26,868	34,297	61,165	627,847	156,001	26,861	22,532	1,231	466,286
2003	463,074	44,698	507,772	39,726	40,217	79,943	587,715	120,001	29,937	45,606	13,254	470,129
2004	504,897	45,585	550,482	49,895	44,116	94,011	644,493	105,001	32,804	57,694	8,523	555,859
2005	380,381	46,115	426,496	69,673	48,604	118,277	544,773	30,001	37,655	47,676	3,809	520,984
2006	488,966	44,082	533,048	72,249	56,694	128,943	661,991	60,001	41,973	53,563	15,843	597,737
2007	589,129	43,322	632,451	80,841	59,033	139,874	772,325	170,001	47,214	58,022	8,436	604,696
2008	453,113	41,012	494,125	85,629	66,557	152,186	646,311	95,742	54,526	63,222	3,989	555,276
2009	425,275	39,187	464,462	82,481	76,248	158,729	623,191	90,211	54,354	72,686	5,715	545,597
2010	445,682	40,259	485,941	88,573	78,568	167,141	653,082	168,073	55,109	80,726	5,565	505,061
2011	477,658	37,097	514,755	88,344	100,447	188,791	703,546	228,709	66,738	65,698	5,756	468,041
2012	396,322	36,121	432,443	100,853	111,558	212,411	644,854	94,201	74,007	65,384	9,682	532,348
2013	339,047	35,074	374,121	110,375	123,019	233,394	607,515	87,896	101,063	67,531	6,378	479,709
2014	266,078	36,134	302,212	126,894	108,239	235,133	537,345	73,667	115,682	77,545	5,182	420,359
2015	397,731	34,176	431,907	138,879	101,455	240,334	672,241	176,138	121,053	110,761	6,072	479,739
2016	301,464	33,857	335,321	151,794	101,601	253,395	588,716	93,096	145,469	82,074	6,139	426,086
2017	322,173	32,145	354,318	172,492	104,011	276,503	630,821	130,917	156,681	100,444	2,093	441,574
2018	283,955	30,139	314,094	209,371	105,167	314,538	628,631	47,276	177,501	98,315	3,115	499,054
2019	431,572	31,596	463,168	256,931	116,426	373,357	836,524	209,109	200,226	90,684	3,234	514,639
2020	331,282	33,119	364,401	293,175	128,236	421,411	785,812	138,683	183,371	72,485	2,768	533,475

[53] Domestic market consumption = grand total (capture fisheries & aquaculture) plus imports, less fish meal & oil production, exports and fish to waste.

Source: Compiled by the consultant from data from TURKSTAT, DEIK and DGFA, 2021

Annex 3 Turkish import and export data (ITC Trade Map, 2020)

Tables A3.1-A3.4: Anchovy (HS Codes 030242 & 160416)

A3.1: HS CODE 030242 - List of supplying markets for fresh or chilled anchovies imported into Turkey in 2020

Exporters	Value imported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Turkey's imports (%)	Quantity imported in 2020 (MT)	Growth in imported quantity 2016-2020 (%, p.a.)	Concentration of importing countries
World	**438**	**-95**	**100**	**2,309**	**-7**	
Georgia	346	-346	79	2,184	28	1
Greece	92	-55	21	125	2	0.7

A3.2: HS CODE 030242 - List of importing markets for fresh or chilled anchovies exported from Turkey in 2020

Importers	Value exported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Turkey's exports (%)	Quantity exported in 2020 (MT)	Growth in exported quantity 2016-2020 (%, p.a.)	Concentration of supplying countries
World	**343**	**-95**	**100**	**124**	**1**	
United States of America	166	166	48.4	26	15	0.39
Switzerland	53	53	15.5	9	-2	0.44
Cyprus	43	43	12.5	52	14	1
Greece	37	-55	10.8	20	-18	0.89
Canada	28	28	8.2	4		0.17
Lebanon	12	12	3.5	11	13	
Netherlands	2	2	0.6	1		0.64
Iraq	1	1	0.3	1		0.8

A3.3: HS CODE 160416 - List of supplying markets for prepared or preserved anchovies, whole or in pieces (excluding minced) imported into Turkey in 2020

Exporters	Value imported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Turkey's imports (%)	Quantity imported in 2020 (MT)	Growth in imported quantity 2016-2020 (%, p.a.)	Concentration of importing countries
World	**1**	**125**	**100**			
Peru	1	-1	100			0.16

A3.4: HS CODE 160416 - List of importing markets for prepared or preserved anchovies, whole or in pieces (excluding minced) exported from Turkey in 2020

Importers	Value exported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Turkey's exports (%)	Quantity exported in 2020 (MT)	Growth in exported quantity 2016-2020 (%, p.a.)	Concentration of supplying countries
World	**126**	**125**	**100**	**22**	**-49**	
United States of America	107	107	84.9	17	-30	0.24
Cyprus	10	10	7.9	3	49	0.35
Georgia	4	4	3.2	1	-19	0.84
United Arab Emirates	3	3	2.4	1		0.34
Panama	1	1	0.8			0.87
Kazakhstan	1	1	0.8			0.35

Tables A3.5-A3.8: Bonito (HS Codes 030233 & 160414)

A3.5: HS CODE 030233 - List of supplying markets for fresh or chilled skipjack or stripe-bellied bonito imported into Turkey in 2020

Exporters	Value imported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Turkey's imports (%)	Quantity imported in 2020 (MT)	Growth in imported quantity between 2016-2020 (%, p.a.)	Concentration of importing countries
World		**2**	**100**			
Greece		2				0.56

A3.6: HS CODE 030233 - List of importing markets for fresh or chilled skipjack or stripe-bellied bonito exported from Turkey in 2020

Importers	Value exported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Turkey's exports (%)	Quantity exported in 2020 (MT)	Growth in exported quantity between 2016-2020 (%, p.a.)	Concentration of supplying countries
World	**2**	**2**	**100**	**1**	**0**	
Greece	2	2	100	1	0	0.68

A3.7: HS CODE 160414 - List of supplying markets for prepared or preserved tunas, skipjack and bonito, whole or in pieces (excluding minced) imported into Turkey in 2020

Exporters	Value imported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Turkey's imports (%)	Quantity imported in 2020 (MT)	Growth in imported quantity between 2016-2020 (%, p.a.)	Concentration of importing countries
World	**10,704**	**-9,730**	**100**	**2,769**	**30**	
China	6,502	-6,502	60.7	1,891	66	0.11
Ecuador	2,064	-2,064	19.3	418		0.1
Spain	1,200	-1,198	11.2	243		0.22
Viet Nam	559	-559	5.2	132	-34	0.28
Peru	168	-168	1.6	36		0.24
Portugal	90	-87	0.8	19		0.15
Papua New Guinea	69	-69	0.6	14		0.23
Thailand	34	-34	0.3	10		0.11
Philippines	13	-13	0.1	5		0.11
Netherlands	4	16		1		0.12
Denmark	1	1				0.35

A3.8: HS CODE 160414 - List of importing markets for prepared or preserved tunas, skipjack and bonito, whole or in pieces (excluding minced) exported from Turkey in 2020

Importers	Value exported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Turkey's exports (%)	Quantity exported in 2020 (MT)	Growth in exported quantity between 2016-2020 (%, p.a.)	Concentration of supplying countries
World	**974**	**-9,730**	**100**	**222**	**-10**	
Syrian Arab Republic	504	504	51.7	115	29	0.84
Germany	296	296	30.4	68	30	0.15
Azerbaijan	26	26	2.7	6		0.36
Netherlands	20	16	2.1	3		0.17
Liberia	11	11	1.1	3		0.43
Lebanon	10	10	1	2	0	0.55
Malta	10	10	1	3		0.28
Marshall Islands	10	10	1	3		0.63
Panama	9	9	0.9	2		0.21
Venezuela	9	9	0.9	2		0.31

Tables A3.9-A3.10: Horse Mackerel (HS Code 030245)

A3.9: HS CODE 030245 - List of supplying markets for fresh or chilled horse mackerel imported into Turkey in 2020

Exporters	Value imported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Turkey's imports (%)	Quantity imported in 2020 (MT)	Growth in imported quantity between 2016-2020 (%, p.a.)	Concentration of importing countries
World	**14**	**69**	**100**	**39**	**-47**	
Russian Federation	11	-11	78.6	29		1
Georgia	2	-2	14.3	8	-61	1
Greece	1	4	7.1	2		0.65

A3.10: HS CODE 030245 - List of importing markets for fresh or chilled horse mackerel exported from Turkey in 2020

Importers	Value exported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Turkey's exports (%)	Quantity exported in 2020 (MT)	Growth in exported quantity between 2016-2020 (%, p.a.)	Concentration of supplying countries
World	**83**	**69**	**100**	**13**	**-5**	
United States of America	57	57	68.7	8	37	0.25
Cyprus	10	10	12	2	-12	
Canada	6	6	7.2	1		0.48
Greece	5	4	6	1	-29	0.77
Switzerland	4	4	4.8	1		0.63

Tables A3.11-A3.12: Sea Bass (HS Code 030284)

A3.11: HS CODE 030284 - List of supplying markets for fresh or chilled sea bass imported into Turkey in 2020

Exporters	Value imported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Turkey's imports (%)	Quantity imported in 2020 (MT)	Growth in imported quantity between 2016-2020 (%, p.a.)	Concentration of importing countries
World	**11**	**196,247**	**100**	**2**	**-38**	
France	11	1,797	100	2	19	0.18

A3.12: HS CODE 030284 - List of importing markets for fresh or chilled sea bass exported by Turkey in 2020

Importers	Value exported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Turkey's exports (%)	Quantity exported in 2020 (MT)	Growth in exported quantity between 2016-2020 (%, p.a.)	Concentration of supplying countries
World	**196,258**	**196,247**	**100**	**43,182**	**15**	
Italy	25,864	25,864	13.2	6,391	4	0.35
Netherlands	24,397	24,397	12.4	5,118	-1	0.53
Greece	18,894	18,894	9.6	4,623	62	1
United States of America	18,457	18,457	9.4	3,193	19	0.37
Russian Federation	17,033	17,033	8.7	3,740	13	0.97
United Kingdom	15,147	15,147	7.7	3,390	7	0.37
Spain	14,946	14,946	7.6	3,635	22	0.5
Kuwait	12,579	12,579	6.4	2,239	20	0.71
United Arab Emirates	7,831	7,831	4	1,720	23	0.7
Israel	7,347	7,347	3.7	1,568	22	0.47
Portugal	7,221	7,221	3.7	1,506	67	0.27
Qatar	5,858	5,858	3	1,352	68	0.99
Ukraine	5,758	5,758	2.9	1,296	53	0.86
Canada	2,968	2,968	1.5	434	72	0.44
Germany	2,353	2,353	1.2	558	-6	0.16
Lebanon	2,331	2,331	1.2	730	-4	1
France	1,808	1,797	0.9	384	28	0.19
Romania	1,119	1,119	0.6	244	39	0.6
Cyprus	869	869	0.4	239	-1	0.97
Bulgaria	782	782	0.4	180	22	0.39
Jordan	656	656	0.3	139	31	
Lithuania	498	498	0.3	116	37	0.39
Syrian Arab Republic	461	461	0.2	147	0	1
Georgia	412	412	0.2	89	55	1
Kazakhstan	224	224	0.1	42	39	0.93
Bahrain	189	189	0.1	42	79	0.89

Tables A3.13-A3.14: Sea Bream (HS Code 030285)

A3.13: HS CODE 030285 - List of supplying markets for fresh or chilled sea bream imported into Turkey in 2020

Exporters	Value imported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Turkey's imports (%)	Quantity imported in 2020 (MT)	Growth in imported quantity between 2016-2020 (%, p.a.)	Concentration of importing countries
World	**30**	**224,057**	**100**	**7**	**-43**	
France	30	3,021	100	7	24	0.24

A3.14: HS CODE 030285 - List of importing markets for fresh or chilled sea bream exported by Turkey in 2020

Importers	Value exported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Turkey's exports (%)	Quantity exported in 2020 (MT)	Growth in exported quantity between 2016-2020 (%, p.a.)	Concentration of supplying countries
World	**224,087**	**224,057**	**100**	**54,870**	**8**	
Italy	36,766	36,766	16.4	9,557	3	0.26
Greece	34,686	34,686	15.5	8,957	56	0.96
Netherlands	24,959	24,959	11.1	5,818	1	0.74
Spain	19,537	19,537	8.7	4,952	15	0.4
Russian Federation	15,452	15,452	6.9	3,583	4	0.96
Portugal	15,126	15,126	6.8	3,192	-1	0.22
United Arab Emirates	10,878	10,878	4.9	2,582	11	0.92
Lebanon	10,641	10,641	4.7	3,145	-10	1
United Kingdom	10,488	10,488	4.7	2,303	9	0.52
Germany	7,749	7,749	3.5	1,978	-3	0.2
Ukraine	7,479	7,479	3.3	1,848	49	0.95
Israel	6,670	6,670	3	1,492	-1	0.5
Jordan	3,899	3,899	1.7	979	1	
Romania	3,082	3,082	1.4	674	18	0.54
France	3,051	3,021	1.4	692	4	0.25
Kuwait	2,392	2,392	1.1	513	16	0.71
Lithuania	2,381	2,381	1.1	602	48	0.86
Canada	1,752	1,752	0.8	245	100	0.29
United States of America	1,629	1,629	0.7	294	15	0.25
Qatar	1,310	1,310	0.6	302	47	0.9
Syrian Arab Republic	1,093	1,093	0.5	351	16	1
Cyprus	913	913	0.4	284	0	0.49
Georgia	532	532	0.2	131	37	1
Bulgaria	487	487	0.2	116	9	0.5
Bahrain	332	332	0.1	77	45	0.5
Iraq	238	238	0.1	75	84	1
Kazakhstan	206	206	0.1	41	41	0.96
Austria	151	151	0.1	35	42	0.35
Azerbaijan	62	62		17		1
Belarus	55	55		12		0.35
Denmark	38	38		9		0.73
Slovenia	28	28		8		0.65
Oman	21	21		5		0.53
Luxembourg	2	2				0.41

Tables A3.15-A3.18: Trout (HS Code 030211 & 030314)

A3.15: HS CODE 030211 - List of supplying markets for fresh or chilled trout imported into Turkey in 2020

Exporters	Value imported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Turkey's imports (%)	Quantity imported in 2020 (MT)	Growth in imported quantity between 2016-2020 (%, p.a.)	Concentration of importing countries
World	**2,549**	**33,884**	**100**	**410**	**-7**	
Norway	2,467	-2,467	96.8	396	-8	0.1
Russian Federation	82	29,760	3.2	15	32	0.99

A3.16: HS CODE 030211 - List of importing markets for fresh or chilled trout exported by Turkey in 2020

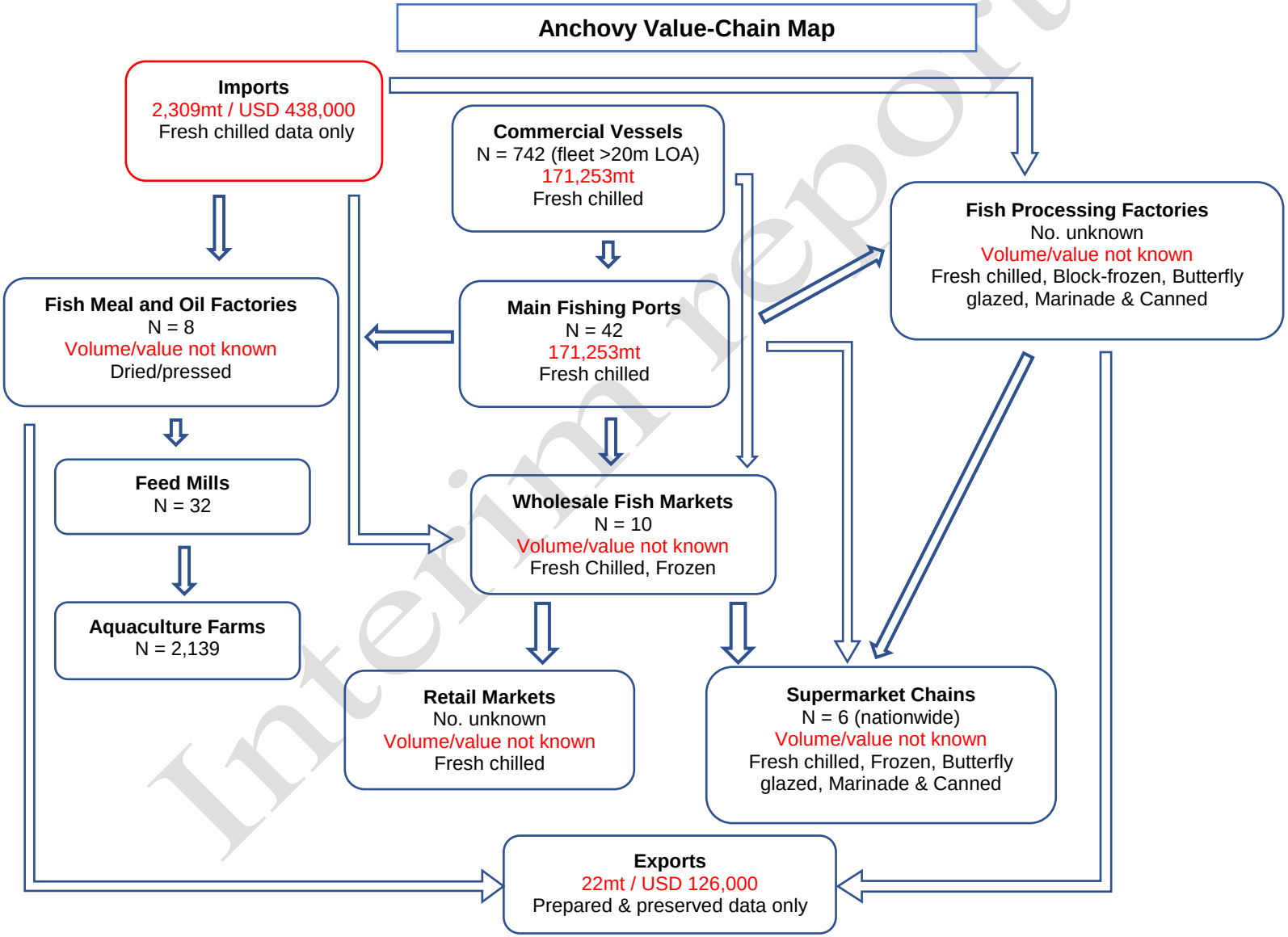
Importers	Value exported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Turkey's exports (%)	Quantity exported in 2020 (MT)	Growth in exported quantity between 2016-2020 (%, p.a.)	Concentration of supplying countries
World	**36,433**	**33,884**	**100**	**8464**	**14**	
Russian Federation	29,842	29,760	81.9	6478	34	0.46
Romania	2,775	2,775	7.6	853	-21	0.21
Georgia	1,487	1,487	4.1	491	83	1
Ukraine	953	953	2.6	260	19	0.83
Poland	396	396	1.1	73	-29	0.31
Cyprus	305	305	0.8	63	66	0.78
Greece	216	216	0.6	69	27	0.5
Belarus	147	147	0.4	33		0.53
Syrian Arab Republic	94	94	0.3	74	-25	1
Netherlands	69	69	0.2	15	97	0.41
Iraq	26	26	0.1	19	-51	1
Jordan	24	24	0.1	4		1
Azerbaijan	23	23	0.1	8		0.78
Lebanon	18	18		10	54	1
Germany	16	16		4	-30	0.25
Qatar	16	16		3	32	0.85
United Arab Emirates	16	16		5	-23	0.7
Lithuania	9	9		2	-63	0.28
United States of America	1	1				0.7

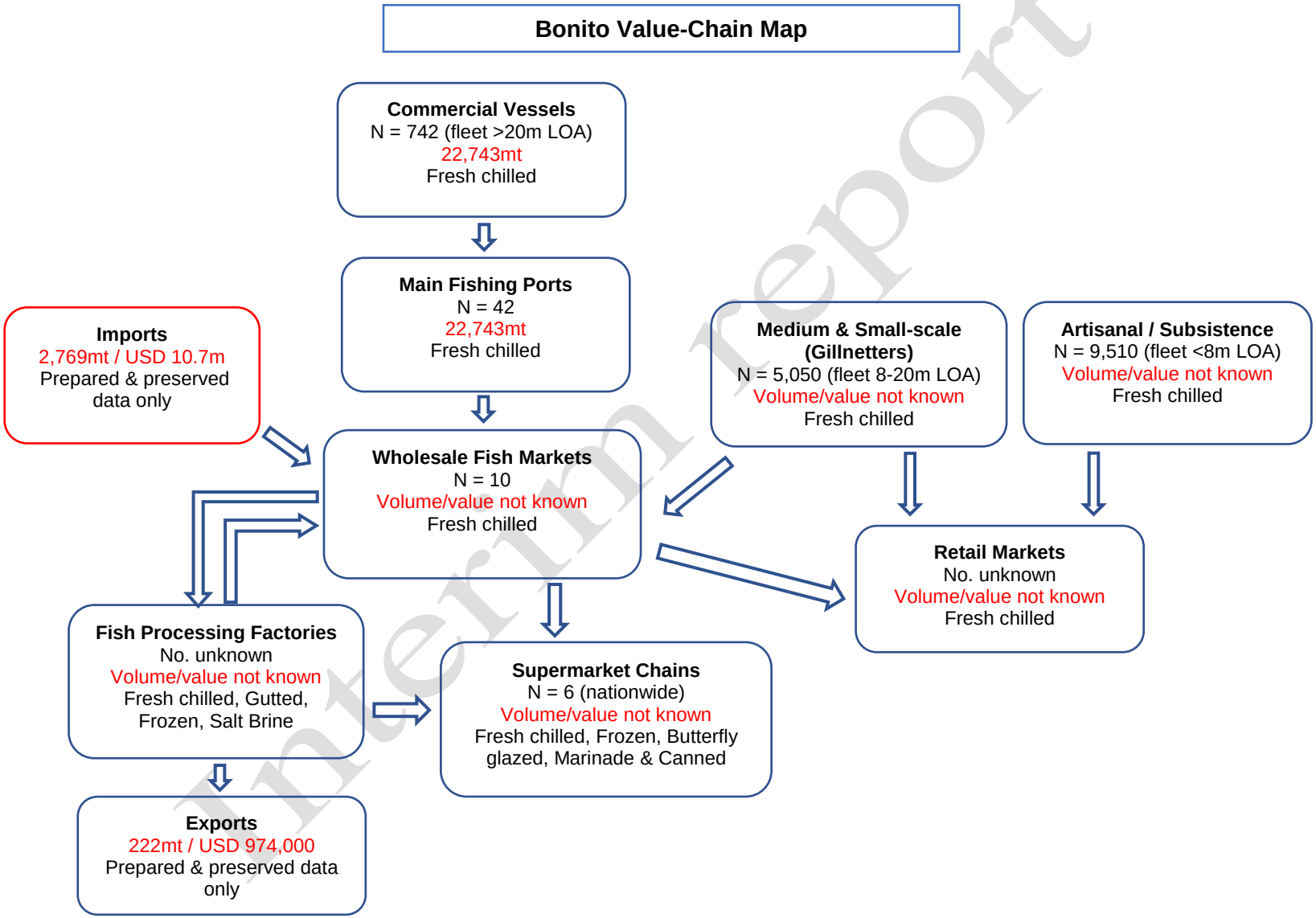
A3.17: HS CODE 030314 - List of supplying markets for frozen trout imported into Turkey in 2020

Exporters	Value imported in 2020 (USD thousand)	Trade balance 2020 (USD thousand)	Share in Turkey's imports (%)	Quantity imported in 2020 (MT)	Growth in imported quantity between 2016-2020 (%, p.a.)	Concentration of importing countries
World	**433**	**90,367**	**100**	**72**	**-9**	
Russian Federation	307	56,673	70.9	42	-18	0.32
Croatia	81	69	18.7	20		0.46
Netherlands	41	574	9.5	9	32	0.49
Norway	4	-3	0.9	1		0.11

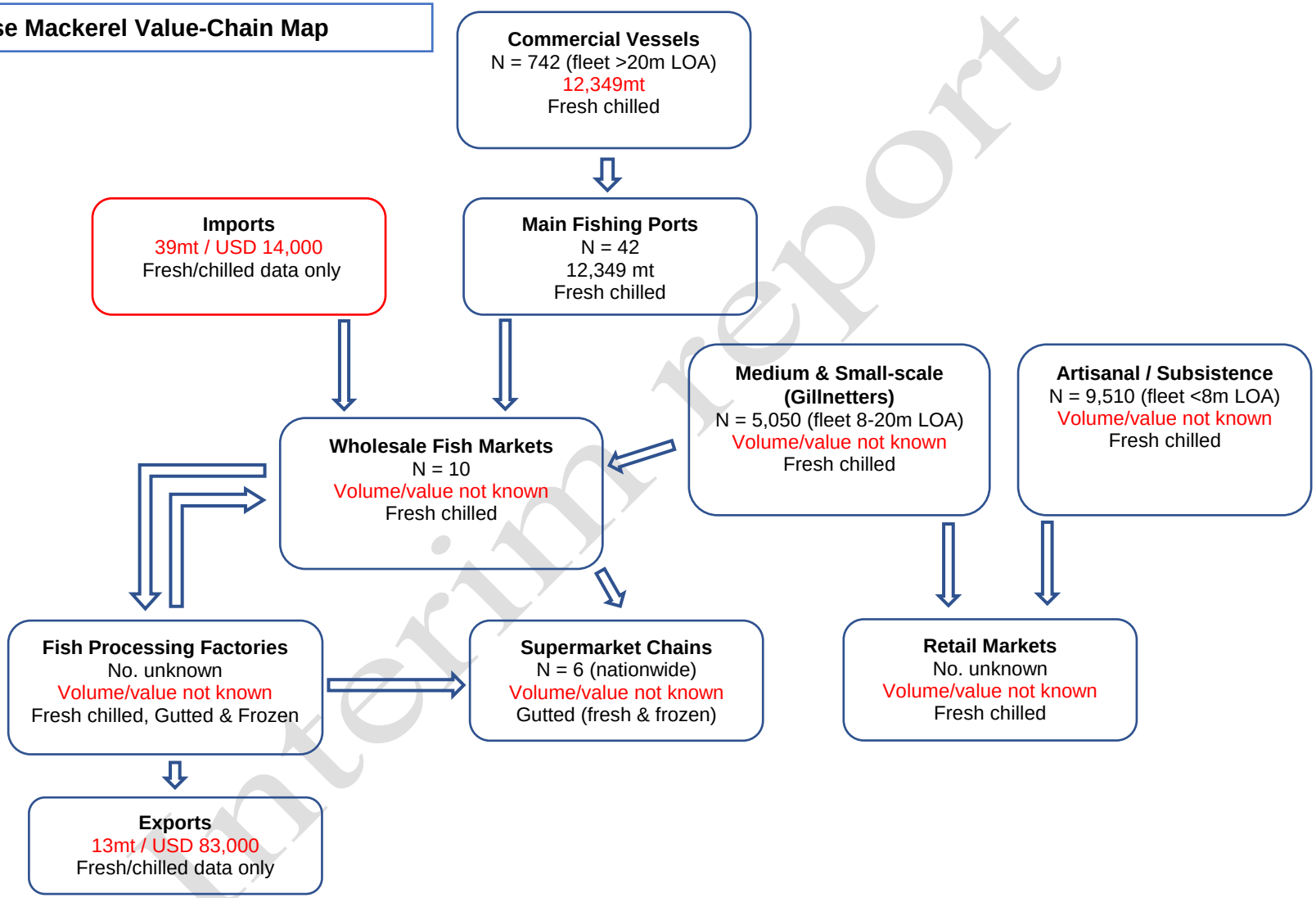
A3.18: HS CODE 030314 - List of importing markets for fresh or chilled trout exported by Turkey in 2020						
Importers	**Value exported in 2020 (USD thousand)**	**Trade balance 2020 (USD thousand)**	**Share in Turkey's exports (%)**	**Quantity exported in 2020 (MT)**	**Growth in exported quantity between 2016-2020 (%, p.a.)**	**Concentration of supplying countries**
World	**90,800**	**90,367**	**100**	**21,438**	**17**	
Russian Federation	56,980	56,673	62.8	12,389	89	0.36
Germany	14,703	14,703	16.2	3,729	-7	0.48
Viet Nam	5,313	5,313	5.9	1,264	29	0.3
Romania	1,972	1,972	2.2	618	2	0.46
Poland	1,872	1,872	2.1	581	-22	0.19
Serbia	1,867	1,867	2.1	620	-3	0.66
Japan	1,328	1,328	1.5	293	147	0.62
Czech Republic	958	958	1.1	295	-18	0.97
Netherlands	615	574	0.7	183	-1	0.25
Austria	610	610	0.7	178	30	0.74
Belarus	568	568	0.6	109		0.44
Hungary	458	458	0.5	139	3	0.7
Georgia	394	394	0.4	127	-10	0.33
Spain	362	362	0.4	115	101	0.97
United States of America	320	320	0.4	88	8	0.33
Azerbaijan	290	290	0.3	107	-12	0.66
Bulgaria	247	247	0.3	79	8	0.45
France	233	233	0.3	54	106	0.41
Slovenia	227	227	0.3	76	-2	0.33
Denmark	196	196	0.2	48	-6	0.62
Thailand	171	171	0.2	37	58	0.45
Belgium	167	167	0.2	32	87	0.33
Iraq	155	155	0.2	38	-29	1
Croatia	150	69	0.2	46	-25	0.46
Kazakhstan	121	121	0.1	37	53	0.73
Slovakia	120	120	0.1	37	-19	0.65
Israel	76	76	0.1	22	-26	0.83
Singapore	54	54	0.1	16	-5	0.52
Ukraine	50	50	0.1	18		0.59
United Kingdom	43	43	0	11	-19	0.33
Cyprus	41	41	0	11	83	0.4
Italy	29	29	0	8	24	0.3
Switzerland	29	29	0	9	20	0.34
Macedonia, North	19	19	0	7		0.77
Kuwait	12	12	0	3		1
Portugal	10	10	0	3	32	0.79
Marshall Islands	8	8	0	2		1
Liberia	8	8	0	2		1
Lebanon	7	7	0	2		
Jordan	4	4	0	1		
Hong Kong, China	3	3	0	1		1
Panama	3	3	0	1		1
Malta	3	3	0	1		
Bahamas	2	2	0	0		1
Antigua and Barbuda	1	1	0	0		0.76
Norway	1	-3	0	0		0.76

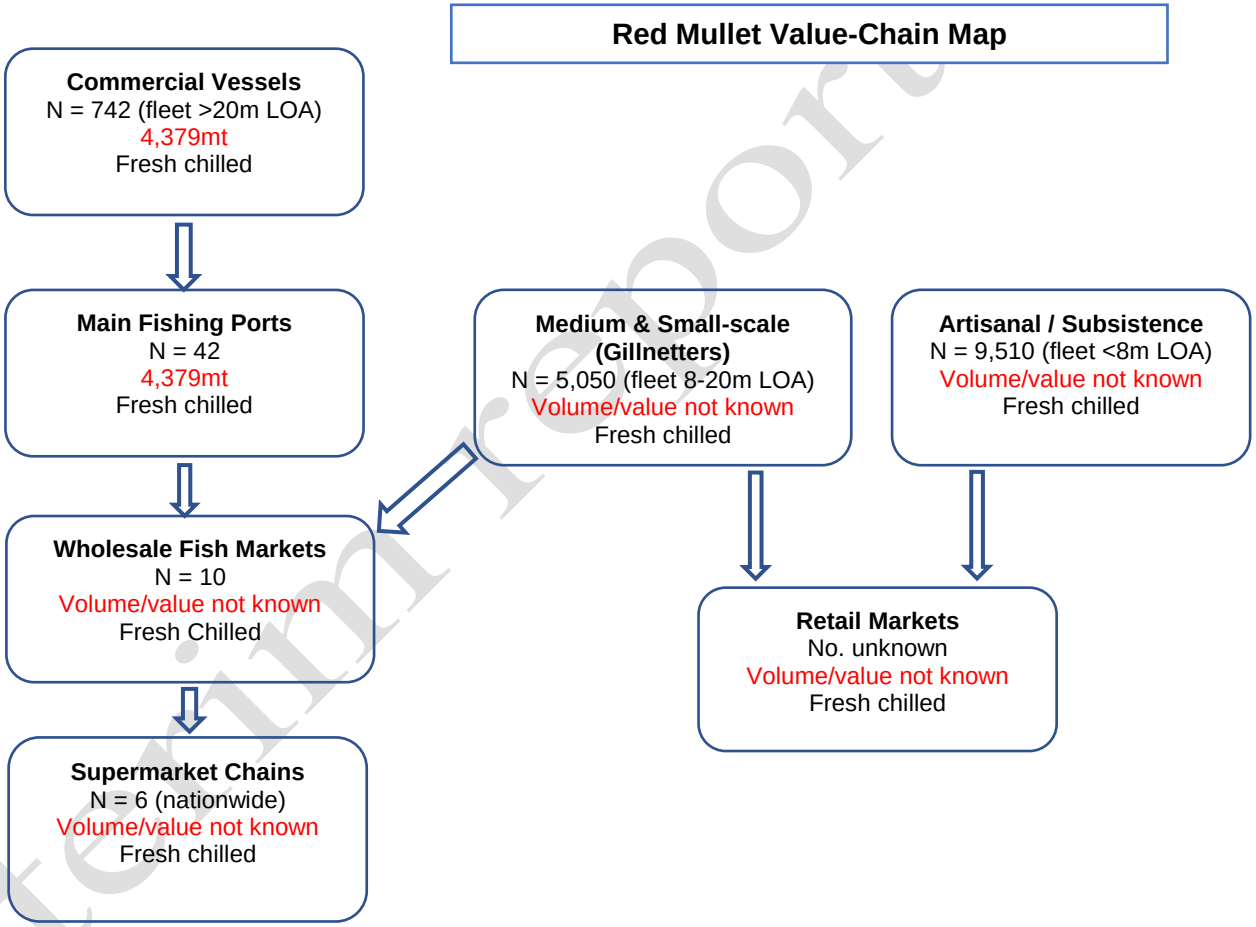
Annex 4 Value chain mapping of key indicator species

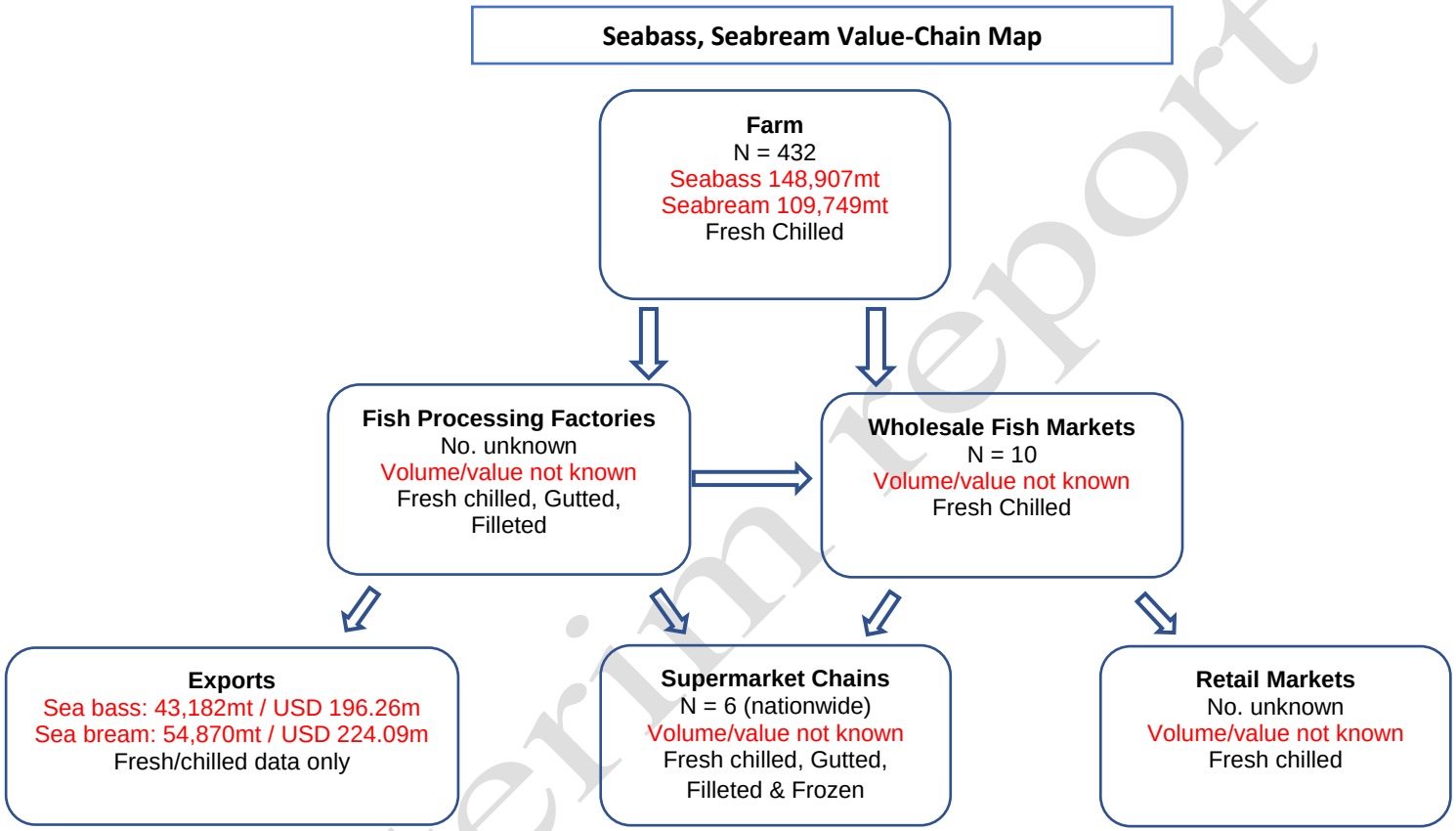


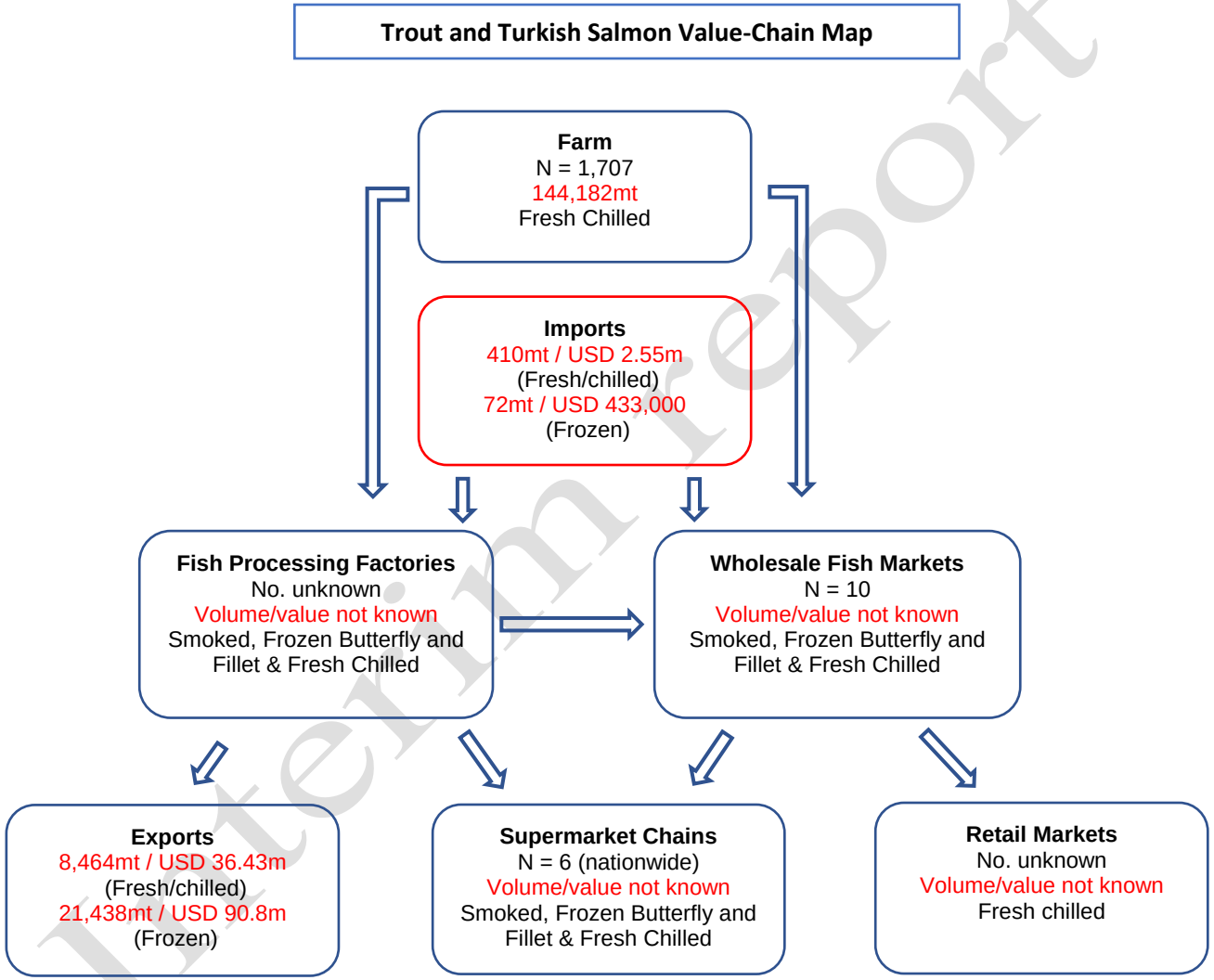


Horse Mackerel Value-Chain Map









Yönetici Özeti – Temel Bulgular ve Öneriler

Giriş ve metodoloji

1. Balıkçılık ve Su Ürünleri Yetiştiriciliğinin COVID-19'a Karşı Sektörel Hazırlığı ve Müdahalesi Projesi'nin (TCP/TUR/3801/C1) amacı: *COVID-19 veya gelecekte yaşanabilecek genel işleyişi kesintiye uğratan benzer durumlara uyum ve müdahale için sektörel kapasitenin geliştirilmesi* olarak ifade edilmiştir. Bu amaca, iki çıktının elde edilmesi sayesinde ulaşılacaktır ve bu çıktıların ilki: *Acil durum hazırlık ve müdahale planının geliştirilmesi için stratejik planlama* olarak belirlenmiştir. İşbu çalışma sadece Çıktı 1'in hayata geçirilmesine odaklanmaktadır.

2. İki bölümden oluşan bu rapor (Bölüm A – deniz ürünleri değer zincirinin haritalandırılması – ve Bölüm B - COVID-19 etki değerlendirmesi), proje kapsamında planlanan (toplam dört raporlama çıktısından) birinci ve ikinci raporlama çıktısını oluşturmaktadır. Rapor, Haziran ve Ekim 2021 tarihleri arasında Sayın Simon Diffey (FAO uluslararası danışmanı), Sayın Binhan Ganioğlu ve Sayın Murat Canbaz (FAO ulusal danışmanları) tarafından derlenmiştir.

3. Devam etmekte olan koronavirüs pandemisi, uluslararası danışmanın bu görev sırasında Türkiye'yi ziyaret etmesini engellemiştir, bu nedenle bu rapordaki analizler yalnızca internet üzerinden, akademik makalelerden ve özellikle yerel analizlerden elde edilen verilere ve ulusal danışmanlar tarafından tamamlanan saha çalışmalarının sonuçlarına dayanmaktadır.

4. Bölüm 2'de, değer zinciri analizi ve COVID-19 etki değerlendirmesi için kullanılan metodolojinin detayları ortaya konulmaktadır.

5. Türkiye, deniz ve iç su avcılığı alanında hedeflenen pek çok türün yanı sıra, deniz ve iç su balıkları yetiştiriciliği sektöründe de az sayıda ama önemli çiftlik türüne sahiptir. Bunun yanı sıra, yurtiçi ve yurtdışı değer zinciri içinde pazarlanan çok çeşitli hasat sonrası ürünler de bulunmaktadır. Bu türlerin/ürünlerin tümüne bakılabilmesi bu çalışmanın kapsamı dışında olduğundan, çalışmanın başlarında, sadece bir dizi temel gösterge türe odaklanmasına karar verilmiştir. Bu gösterge türler, bir iç su balıkçılığı sektöründen, bir deniz balıkları yetiştiriciliği sektöründen olmak üzere, başlıca deniz balıkçılığı alanlarının (Karadeniz, Marmara ve Ege Denizi) her birine ait en az bir değer zincirini temsil edecek şekilde belirlenmiştir. Üzerine odaklanılmasına karar verilen türler aşağıdaki gibidir:
   - Deniz Avcılığı: Hamsi, Palamut, İstavrit ve Barbun
   - Deniz Balıkları Yetiştiriciliği: Levrek ve Çipura
   - İç Su Balıkları Yetiştiriciliği: Alabalık (genel olarak "Türk Somonu" olarak da adlandırılmaktadır)

6. Türkiye'deki son derece karmaşık ve çeşitlilik arz eden balıkçılık sektörüne yönelik tam bir değer zinciri analizinin yapılması, bu çalışmanın gerek kaynakları (zaman ve bütçe) gerekse görev alanı açısından mümkün değildir. Bu durum, analiz ve raporlamaya da yansıdığı üzere, gösterge türlerden herhangi biri için ayrıntılı bir değer zinciri haritalandırması yapılabilmesi için, değer zincirine yönelik ciddi bir veri eksikliği ile de pekişmektedir.

7. Etki değerlendirmesinin temelinde, mevcut literatüre yönelik bir masa başı analizin yanı sıra, bu çalışmanın bir parçası olarak yürütülen ve üzerinde anlaşmaya varılmış bir anket formatı kullanılarak gerçekleştirilen bir saha araştırmasının sonuçlarının analizi de yer almıştır. Temmuz ve Eylül 2021 tarihleri arasında gerçekleştirilen anket çalışması kapsamında, ülke çapında altı farklı noktada 74 farklı paydaşla toplantılar düzenlenmiştir.

8. Anket sorularına verilen yanıtlar, danışmanların sektörün pandemiden ne derece etkilendiğini belirlemelerine yardımcı olmuştur ve ayrıca danışmanların bu çalışmanın bir sonraki raporlama çıktısı çerçevesinde, gelecekteki pandemilere veya benzer acil durumlara daha iyi hazırlanabilmek için Türk Hükümeti'nin dikkate alabileceği bir taslak strateji geliştirmelerini sağlayacaktır.

Bölüm A: Deniz ürünleri değer zincirinin fonksiyonel analizi

9. Türkiye'nin deniz avcılığı (yüzde 42,2), iç su avcılığı (yüzde 4,2), deniz balıkları yetiştiriciliği (yüzde 37,3) ve iç su balıkları yetiştiriciliğinden (yüzde 16,3) oluşan toplam balıkçılık üretimi 2020 yılında 786.000 ton olmuştur. Kişi başına balık ve balıkçılık ürünleri tüketimi ise 2016 yılında 4,9 kg olarak gerçekleşmiştir (FAO, 2019).

10. Sektör, ulusal GSYİH'ya tahmini yüzde 0,7'den fazla katkı sağlamakta ve 1,0 milyar ABD dolarını aşan ihracat gelirleri ve uluslararası alanda 80'den fazla ülke ile yapılan ticaret ile pozitif bir ticaret dengesine ciddi biçimde katkıda bulunmaktadır. Balıkçılık ve su ürünleri yetiştiriciliği sektörünün toplam ihracatı 2013 yılından bu yana her yıl artarak 2020 yılında 1,064 milyar ABD doları değere ve 201.157 tona yükselirken, (aynı dönemde düşüş eğiliminde olan) ithalat, 156,93 milyon ABD doları değerinde ve 85.267 ton olarak gerçekleşmiştir. Dolayısıyla sektör ihracatçı olarak 906,9 milyon ABD doları dış ticaret fazlasına sahiptir.

11. Avcılık sektörüne, filo büyüklüğü ve istihdama ve su ürünleri yetiştiriciliği sektörüne hızlı bir genel bakışın ardından, bu raporda yer alan Bölüm A'da, altı gösterge türe yönelik nihai pazar analizi ve değer zinciri haritalandırılması sunulmaktadır. Her gösterge tür için sunulan uluslararası ticaret piyasası değerlendirmeleri, büyük ölçüde Uluslararası Ticaret Merkezi Ticaret Haritası web sitesinde (www.trademap.org) yer alan verilerin analizine dayanmaktadır. Her türe yönelik 'tedarikçi/ithalatçı ülkeler yoğunlaşma' analizine özel atıfta bulunulmaktadır.[1]

12. Hamsi (taze veya soğutulmuş):
    - Türkiye, bu ürün için küresel değer bakımından ithalatta 13. sırada, ihracatta ise 14. sırada yer almaktadır. İspanya (%35,9 pazar payı) ve İtalya (%16,4), birlikte küresel tüketici (ithalatçı) pazarının yarısından fazlasını oluşturmaktadır ve ihracat pazarına üç ülke hakimdir: Portekiz (%28,2), İspanya (%22,2) ve İtalya (%21,1). Türkiye'nin 95.000 ABD doları tutarında negatif bir ticaret dengesi (ithalatın değeri > ihracat) bulunmaktadır.
    - Küresel 'ithalatçı ülkeler yoğunlaşma' endeksi, listede yer alan sadece iki ülke (Gürcistan ve Yunanistan) için yüksektir ve bu da yoğunlaşmış bir ithalat tedarik zincirine işaret etmektedir.
    - Küresel 'tedarikçi ülkeler yoğunlaşma' endeksi, Kıbrıs, Yunanistan ve Irak gibi endeks değeri 0,8 olan yüksek yoğunluklu pazarlardan, ABD ve Kanada gibi endeksi 0,4'ün altında olan ve daha geniş bir çeşitlilik arz eden ihracat pazarlarına kadar değişiklik göstermektedir.
    - İthalat/ihracat ticaret verileri, 2020 yılından beri ithalatta oldukça önemli bir düşüş olduğunu ve ihracatta da gecikmeli olarak (2021 ikinci çeyreğinde) benzer bir düşüşün yaşandığını göstermektedir. Her iki eğilim de büyük olasılıkla, sınırların uzun süre kapalı kalmasının, son derece kolay bozulan deniz ürünleri üzerindeki etkisini ve balık ununa olan talepte ve dolayısıyla endüstriyel av çabası/karaya çıkışlarda yaşanan değişiklikleri yansıtmaktadır.

[1] Küresel 'ithalatçı ülkeler yoğunlaşma' endeksi, Türkiye'ye ihracat yapan ülkeleri ifade etmektedir. Buna karşılık, 'tedarikçi ülkeler yoğunlaşma' endeksi ise Türkiye'nin ihracat yaptığı ülkeler anlamına gelmektedir.

13. Hamsi (hazırlanmış veya salamura):
    - Türkiye, hazırlanmış veya salamura (kıyılmış dışında, bütün veya parça halinde) hamsi ticaretinde küresel olarak ithalatta 131. sırada, ihracatta ise 31. sırada yer almaktadır.
    - İspanya (%22,7 pazar payı) ve İtalya (%21,8) küresel tüketici (ithalatçı) pazarına hakimdir. İhracat pazarına ise beş ülke hakimdir: İspanya (%21,5), Fas (%18,8), Peru (%15,4), İtalya (%13,7) ve Arnavutluk (%9,6). Türkiye'nin 101 milyon ABD doları tutarında negatif bir küresel ticaret dengesi (ithalatın değeri > ihracat) bulunmaktadır.
    - Bu ürünün Türkiye'ye/Türkiye'den ithalat ve ihracat hacmi az olmasına rağmen, Türkiye'nin 125.000 ABD doları tutarında pozitif bir ticaret dengesi (ihracatın değeri > ithalat) bulunmaktadır.
    - 2016 yılından bu yana ithalat neredeyse tamamen durmuştur ve son altı yılda ihracatta da istikrarlı bir düşüş yaşanmaktadır. İhracatta yakın zamanda yaşanan yükseliş, tüm yıl boyunca devam ettirilebilirse 2018 yılındaki hacme ve değere ulaşabilmesi mümkündür. Bu değişimler muhtemelen, büyük ölçüde karaya çıkışlardaki döngüsel değişikliklerden (hamsi bolluğunun genellikle, iki sene az/bir sene çok şeklinde seyreden bir nüfus döngüsü olan palamutla da bağlantılı olmasından) kaynaklanmaktadır.
14. Palamut (taze veya soğutulmuş):
    - Türkiye bu ürünün ithalatçısı olan ülkeler arasında yer almamaktadır ve bu ürünün ticaret değerine göre, küresel olarak ihracatta 24. sırada bulunmaktadır. İspanya (%26,6 pazar payı) ve Fransa (%21,9) birlikte küresel tüketici (ithalatçı) pazarının neredeyse yarısını oluşturmaktadır. İhracat pazarına ise Sri Lanka (%48,7) ve İspanya (%42,7) hakimdir.
    - Küresel 'ithalatçı/tedarikçi ülkeler yoğunlaşma' endeksinde sadece bir ülke (Yunanistan) yer almaktadır. Bu G.T.İ.P. ürün kodu için, son altı yıldaki (2016 - 2021 ikinci çeyrek arası) ithalat ve ihracat miktarı ve değerindeki eğilimi haritalandırmak için yeterli ticaret ve/veya ticaret verisi bulunmamaktadır.

15. Palamut (iişlenmiş veya muhafaza edilmiş):
    - Türkiye 2020 yılında, ağırlıklı olarak konserve palamut ticaretinden kaynaklanan 8,32 milyar ABD doları tutarında bir ticaret ile (ithalatla ölçülen), küresel olarak ithalatta 62. sırada, ihracatta ise 58. sırada yer almıştır.
    - ABD (%15,5 pazar payı), beş AB ülkesi (%34,4), Birleşik Krallık (%5,8) ve Japonya (%4,5) küresel tüketici (ithalatçı) pazarının yüzde 60'ını temsil etmektedir. Tayland (%29,1), Ekvator (%12,7) ve İspanya (%8,2) ise en büyük ihracatçılardır.
    - Türkiye 9,73 milyon ABD doları tutarında negatif bir ticaret dengesine (ithalatın değeri> ihracat) sahiptir. Küresel 'ithalatçı ülkeler yoğunlaşma' endeksi tüm ülkeler için genel olarak düşüktür (<0,4). Küresel ticaretle kıyaslandığında Türkiye'ye ithal edilen miktar azdır ve bunun yüzde 60'ı Çin tarafından sağlanmaktadır. Küresel 'tedarikçi ülkeler yoğunlaşma' endeksi, Suriye gibi endeks değeri 0,84 olan yüksek yoğunluklu pazarlardan, Almanya ve Hollanda gibi 0,2'nin altında olan ve daha geniş bir çeşitlilik arz eden ihracat pazarlarına kadar değişiklik göstermektedir.
    - Türkiye'nin ithalat ve ihracat verileri analiz edildiğinde, 2020'den 2021'e ithalatta kayda değer bir düşüş yaşandığı, ancak ihracat seviyesinin değişmediği gözlemlenmektedir.

16. İstavrit (taze veya soğutulmuş ve dondurulmuş):
    - Türkiye bu ürünün ticaretinde, küresel olarak ithalatta 50. sırada, ihracatta ise 24. sırada yer almaktadır. Nijerya (%44,3 pazar payı) ve Portekiz (%11,7) birlikte küresel tüketici (ithalatçı) pazarının yarısından fazlasını oluşturmaktadır. İhracat pazarına ise İspanya (%34,1) ve Danimarka (%21,7) hakimdir.

- Bu ürün için Türkiye'ye yapılan ithalat ve Türkiye'nin yaptığı ihracat miktarları kayda değer değildir ve Rusya Federasyonu ithalat hacminin %79'unu sağlamaktadır. Küresel 'tedarikçi ülkeler yoğunlaşma' endeksi sınırlı sayıda ülke için çeşitlilik arz etmektedir.
- Türkiye'ye yapılan ithalat ve Türkiye'den yapılan ihracatın miktarı ve değerindeki eğilim analiz edildiğinde, 2017 yılından bu yana ithalatta oldukça önemli bir düşüş olduğu, ancak 2021 birinci çeyreğe kadar ihracat seviyesinin korunduğu gözlemlenmektedir. 2021 ikinci çeyrekte ihracatta yaşanan düşüş, balıkçılığın mevsimsel doğasından kaynaklanıyor ve pandemiyle bağlantısız olabilir.
- Türkiye, dondurulmuş istavrit ticaretinde, küresel olarak ithalatta 69. sırada, ihracatta ise 38. sırada yer almaktadır. Türkiye'nin bu ticaretteki pazar payı kayda değer nitelikte değildir.

17. Barbun:
    - Bu tür genellikle 'Başka Bir Yerde Belirtilmemiş veya Gösterilmemiş' şeklinde adlandırılan (ve G.T.İ.P. kodlamasına atıfta bulunulan) bir dizi diğer türle birlikte yer aldığından, Uluslararası Ticaret Merkezi Ticaret Haritası veri tabanı barbun için herhangi bir ayrıştırılmış veri sunmamaktadır. Bu da, bu üründeki uluslararası ticaretin kayda değer olmadığı ve/veya kayıt dışı kanallardan gerçekleştiği anlamına gelmektedir. Bu nedenle bu türe yönelik uluslararası ticaretin daha geniş bir analizi mümkün olmamıştır.

18. Levrek:
    - Hazırlanmış veya salamura levrek için özel bir G.T.İ.P. kodu bulunmamaktadır ve bu ürünün ticareti, G.T.İ.P. Kodu 160419 altında bir dizi diğer ürünle birleştirilmiştir. Bu nedenle ticaret analizi sadece taze/soğutulmuş ürünlerle sınırlı kalmıştır.
    - Türkiye bu ürünün ticaretinde, küresel olarak ithalatta 75. sırada, ihracatta ise 2. sırada yer almaktadır. İtalya (%24,7 pazar payı), ABD (%11,7), İspanya (%11,1) ve dört Avrupa ülkesi (%23,7) küresel tüketici (ithalatçı) pazarının neredeyse yüzde 75'ini oluşturmaktadır. İhracat pazarına Yunanistan (%39,4) ve Türkiye (%30,6) hakimdir.
    - Küresel 'tedarikçi ülkeler yoğunlaşma' endeksi, 26 ülkenin yer aldığı kapsamlı bir endekstir ve Yunanistan ve Lübnan gibi endeksi 1,0 olan (tek tedarikçinin Türkiye olduğu yüksek yoğunluklu ihracat pazarlarından) 0,16 (Almanya için) ve 0,27 (Portekiz için) gibi düşük endekslere kadar değişiklik göstermektedir. Bu da, AB içinde, bir dizi tedarikçi ülkeden ithalat yapan ve daha geniş çeşitlilik arz eden pazarlar olduğuna işaret etmektedir.
    - Türkiye'ye ait ithalat ve ihracat ticaret verileri incelendiğinde, 2020 yılında ithalatta bir düşüş yaşandığı (ihracata yönelik ticaretin birkaç ay boyunca sınırlı kalması sebebiyle yerel pazarda ihtiyaç fazlasının doğmasına bağlı olarak beklenen bir durumdur) ancak 2021 yılında (şimdiye kadar) normale dönüş olduğu gözlemlenmektedir. İhracat seviyesi, 2016 yılından bu yana, yıllık bazda sürekli bir artış göstermiştir ve birinci ve ikinci çeyrek sonuçlarına göre bu eğilimin 2021 yılında da devam etmesi beklenmektedir.

19. Çipura:
- Türkiye, taze veya soğutulmuş çipura ticaretinde, küresel olarak ithalatta 67. sırada, ihracatta ise 2. sırada yer almaktadır. İtalya (%25,4 pazar payı), İspanya (%18,6) ve Portekiz (%10,1) küresel tüketici (ithalatçı) pazarının yarısından fazlasını oluşturmaktadır. İhracat pazarına Yunanistan (%42,3) ve Türkiye (%27,8) hakimdir.
- Levrekteki uluslararası ticaretle uyumlu olarak, küresel 'tedarikçi ülkeler yoğunlaşma' endeksi, 34 ülkenin yer aldığı kapsamlı bir endekstir ve endeksleri 0,95-1,0 arasında değişen Yunanistan, Lübnan, Suriye ve Ukrayna gibi (tek tedarikçinin Türkiye olduğu) ülkelerden oluşmaktadır. Buna karşılık, 0,2 (Almanya için) ve 0,26 (İtalya için) gibi düşük

endeksler de vardır ve bu da bir dizi tedarikçi ülkeden ithalat yapan ve daha geniş çeşitlilik arz eden pazarlar olduğuna işaret etmektedir.
- Türkiye'ye ait ithalat ve ihracat ticaret verileri incelendiğinde, 2020 yılında ithalatta bir düşüş yaşandığı, ancak levrekte görülen durumun aksine, 2021 yılında (şimdiye kadar) normale dönüşün daha az olduğu gözlemlenmektedir. İhracat seviyesi, 2016 yılından bu yana yıllık bazda sürekli bir artış göstermiştir ve birinci ve ikinci çeyrek sonuçlarına göre bu eğilimin 2021 yılında da devam etmesi beklenmektedir.

20. Alabalık (Gökkuşağı) (taze/soğutulmuş):
- Türkiye, taze veya soğutulmuş alabalık ticaretinde, küresel olarak ithalatta 29. sırada, ihracatta ise 6. sırada yer almaktadır. ABD (%12,2 pazar payı) ve Rusya (%11,1) küresel tüketici (ithalatçı) pazarının neredeyse yüzde 25'ini oluşturmaktadır; Belarus, Ukrayna ve İsveç de yine yüzde 25'lik bir paya sahiptir. İhracat pazarına Norveç (%40,7) hakimken, bu ülkeyi İsveç (%10,6), Ermenistan (%6,5) ve Birleşik Krallık (%6,2) takip etmektedir.
- Küresel 'ithalatçı ülkeler yoğunlaşma' endeksinde, Norveç ve Rusya olmak üzere sadece iki ülke yer almaktadır. Küresel 'tedarikçi ülkeler yoğunlaşma' endeksinde ise, Gürcistan ve bir dizi Orta Doğu ülkesi gibi (tek tedarikçinin Türkiye olduğu) endeksin 1,0 olduğu ülkelerden, 0,21 (Polonya için), 0,25 (Almanya için) ve 0,28 (Litvanya için) gibi düşük endekslere kadar değişen endeksleri olan 19 ülke yer almaktadır ve bu da AB içinde daha geniş çeşitlilik arz eden pazarlar olduğuna işaret etmektedir.
- Türkiye'ye ait ithalat ve ihracat ticaret verileri incelendiğinde, 2021 yılında ithalatta ciddi bir düşüş yaşandığı gözlemlenmektedir. İhracat ticaret verileri ise, 2020 yılında ve 2021 birinci ve ikinci çeyrek sonuçlarına göre önemli bir büyümeye işaret etmektedir.

21. Alabalık (Gökkuşağı) (dondurulmuş):
- Türkiye, dondurulmuş alabalık ticaretinde küresel olarak ithalatta 44. sırada, ihracatta ise 2. sırada yer almaktadır. Rusya (%27,4 pazar payı), Japonya (%16,6) ve Vietnam (%13,9) küresel tüketici (ithalatçı) pazarının yüzde 50'sinden fazlasını oluşturmaktadır. Şili (%31,6) ve Türkiye (%25,2) başlıca ihracatçılar iken, bu ülkeleri Norveç (%16,4) ve Danimarka (%11,1) takip etmektedir.
- Küresel 'ithalatçı ülkeler yoğunlaşma' endeksinde dört ülke yer almaktadır ve Rusya hakim konumdadır. Küresel 'tedarikçi ülkeler yoğunlaşma' endeksinde ise, Irak ve Kuveyt gibi Orta Doğu'da (tek tedarikçinin Türkiye olduğu) endeksin 1.0 olduğu ve yüksek yoğunluklu daha küçük ihracat pazarlarına sahip 46 ülke yer almaktadır.
- Buna karşılık, Türkiye'den yapılan toplam ihracatın yüzde 79'unu oluşturan en büyük iki ihracat pazarı Rusya ve Almanya sırasıyla 0,36 ve 0,48 endeks değerine sahiptir.
- Türkiye'ye ait ithalat ve ihracat ticaret verileri incelendiğinde, bu ürünün ticaretinin pandemiye bağlı olarak arttığı görülmektedir. Bunun nedeni büyük olasılıkla, pandeminin tedarik zinciri üzerindeki etkileri sebebiyle taze ürünlerin dondurulmuş depolamaya kaydırılmış olmasıdır. İhracat seviyesi, 2017'den bu yana yıllık bazda sürekli bir artış göstermiştir ve birinci ve ikinci çeyrek sonuçlarına göre bu eğilimin 2021 yılında da devam etmesi beklenmektedir.

22. Değer zincirinin haritalandırılması:
- Rapora ait Ek 4'te, altı gösterge türün tamamı için değer zinciri haritaları sunulmaktadır.
- Bu değer zincirlerinin hiçbirine yönelik, yurtiçi değer zincirindeki satışların alt kırılımlarına dair mevcut herhangi bir veri bulunmamaktadır. Bu nedenle, değer zincirinin haritalandırılması için, daha fazla araştırma yapılması ve özellikle de yerel olarak elde edilebilir verilere erişim sağlanması gerekmektedir.
- Barbun özelinde, bu tür için ayrıştırılmış veri bulunmamaktadır, bu nedenle bu ürünün ticaretinin analizi (yerel kaynaklı verilerin yokluğunda) mümkün olmamıştır.
- Levrek ve çipura içinse, hazırlanmış veya salamura ürünler için özel bir G.T.İ.P. kodu bulunmamaktadır. Bu ürünlerin ticareti, G.T.İ.P. Kodu 160419 altında bir dizi diğer

ürünün ticareti ile birleştirilmiştir. Bu nedenle, bu türlerin her ikisinde de uluslararası ticaret sadece taze/soğutulmuş ürünle sınırlı kalmıştır.

- Her gösterge tür için, önemli değer zinciri aktörleri, girdi ve destek hizmeti sağlayıcıları, temel sosyal, ekonomik ve çevresel konular (değer zincirini etkileyen) ve yönetişim ve kurumsal konular hakkında bir özet (Tablo 5'te) sunulmaktadır. Tablo 5'ten elde edilen bulguların analizi, bu çalışmanın bir sonraki aşamasında yapılacaktır.

Bölüm B: COVID-19 etki değerlendirmesi

Raporun bu bölümü, saha araştırmasından elde edilen geri bildirimlerin analiziyle (anket soru formundaki sıraya göre sunulmuştur) başlamaktadır:

23. Sonuçların analizi - COVID-19 ve işletmeniz:
- Avcılık sektöründe kadın istihdamı neredeyse yok denecek kadar azdır ve kadın işçiler genellikle sadece işleme sektöründe istihdam edilmektedir.
- Sektörde istihdam edilen gençlerin (20-25 yaş arası kişiler) sayısı - anket kapsamında görüşme yapılan toplam işgücünün %33'ü – kayda değerdir ve bu rakam tüm sektörü temsil eder nitelikte ise, daha genç nesle (muhtemelen en son aşılanacak olanlara) yönelik özel acil durum müdahale politikalarının ve stratejilerin ortaya konulmasına ihtiyaç olduğunu göstermektedir.
- Görüşülenlerin yarısı, çalışanlarından birinin COVID-19'a yakalandığını belirtmiştir - bu, belki de kalabalık ailelere sahip çalışanların bir veya daha fazla aile üyesine virüs bulaştırmış olma olasılığını ifade eden, yüksek ve geniş çaplı bir 'kurumsal' enfeksiyon oranı olarak görülmektedir. Ankette temsil edilen kişilerin (sektörde istihdam edilen toplam 3.055 çalışan) sadece %9'u aslında COVID-19 hastalığına yakalanmıştır. Bu oran %8,7'lik ulusal ortalama ile kıyaslanabilir düzeydedir.
- Anketin sonuçları, pandemi nedeniyle insanların yaşam koşullarının değiştiğine dair bir algı olduğunu göstermektedir (bu konu pandemiden önce izlenmeli ve altı ay sonra tekrar değerlendirilmeliydi).
- Ülke genelinde uygulanan seyahat kısıtlamaları da dahil olmak üzere çeşitli kısıtlamalar pandeminin ilk günlerinde ciddi bir sorun teşkil etse de, balıkçılık ve su ürünleri yetiştiriciliği sektörüne verilen özel izinler sayesinde balıkçılar, balık çiftçileri ve kıyı işçileri için hayat nispeten hızlı bir şekilde 'yeni normale' dönmüştür.
- Balıkçı tekneleri pandemi döneminde kendi kendilerini karantinaya almış ve genel olarak balıkçılara izin verilmediği için balıkçılar gemilerinden karaya çıkamamıştır. Karaya çıkış limanlarında sosyal mesafe uygulanmıştır.
- Anket sonuçları, sektör çalışanlarının çoğunluğunun pandemi boyunca Kişisel Koruyucu Donanıma (KKD) erişebildiğini, hijyen kurallarına uygun hareket ettiğini ve işleme tesisleri ve pazarlarda KKD kullanımına ve sosyal mesafe kurallarına dikkat ettiğini göstermektedir. Bunun nedeni büyük olasılıkla gıda sektöründeki rolleriyle ilgili olduğu kadar, bunun sektör çalışanları için bir 'sorun olmamasından' da kaynaklanmaktadır.
- Gerektiğinde, sosyal mesafenin sağlanabilmesi amacıyla vardiya sistemi uygulanmış ve tüm çalışanların ateşi günlük olarak ölçülmüştür. Ayrıca 15 günde bir genel sağlık kontrolleri ve COVID-19 testleri yapılmıştır.
- Sektörde faaliyet gösteren tüm şirketlerin çalışanlarından aşılanmalarını istediği bildirilmekle birlikte, Türk hükümeti aşı önceliğini sağlık çalışanlarına ve diğer hizmet sektörlerine vermiş, ancak bu öncelik balıkçıları ve su ürünleri yetiştiriciliği sektörünü kapsamamıştır. Yakın zamanda, aşı programı 12 yaş üzerindeki herkesi kapsayacak şekilde genişletilmiş olsa da, aşı yaptırmaya yönelik herhangi bir zorunluk bulunmamaktadır. Bazı şirketler aşılanmayanlardan haftalık test istemektedir.

24. Sonuçların analizi - COVID-19'un işletmeniz ve balık pazarlama üzerindeki etkisi:
- Anket sonuçları, sektörde COVID-19 nedeniyle işten çıkarma (daimi personel kaybı) yaşanmadığını göstermektedir. Bu soruya sadece üç kurumsal katılımcı "evet" yanıtını vermiş ve temsil edilen 3.055 işçiden toplam sekiz kişi geçici olarak istihdam kaybı yaşamıştır.
- Sektördeki aktörlerin yarısından fazlası (anket sonuçlarına göre) pandemi döneminde finansal olarak etkilenmiştir. En büyük etkiyi yaşayan balıkçılar olmuştur, bunun temel sebebi pazarların ve restoranların kapanması ve bu yüzden genel olarak balığa daha az talep olmuş olmasıdır. Su ürünleri yetiştiriciliğiyle uğraşan şirketler pandeminin ilk dönemlerinde etkilenmiş, ancak daha sonra sınırların ve restoranların açılmasıyla

ciro kayıplarını telafi etmiştir. En az etkilenenler, finansal olarak likiditesi olan (genel giderlerini döndürebilen) şirketler ve entegre tesislere sahip olan (ürünleri depolayabilen) şirketler olmuştur.

- İşyerleri üzerindeki etkiler açısından vurgulanan konular arasında, bazı işyerlerinde sosyal mesafe için yeterli alan olmaması nedeniyle yaşanan sorunlar yer almıştır. Mürettebat gemide tutulduğu ve karaya çıkmalarına izin verilmediği için gemilerde de sorunlar yaşanmıştır.
- Pazarlar ve restoranlar kapalı olduğu için balıkçılar avlarını satamamıştır. Su ürünleri yetiştiriciliğiyle uğraşan işletmeler için, gündeme getirilen konular arasında, kapanma nedeniyle satışlarda ilk başta yaşanan düşüş, piyasada görülen balık üretimi fazlası ve sınırlar kapalı olduğu için ihracat pazarlarının kapanması ile birlikte piyasada fiyatların değişiklik göstermesi gibi konular yer almıştır.
- İşleme sektörü, yurtdışına satış yapamamaktan dolayı ve yurtiçi tedarik zinciri ve dağıtım sisteminde yaşanan seyahat kısıtlamaları yüzünden sıkıntı yaşamıştır. Su ürünleri yetiştiriciliği sektörüne yapılan yem satışları da azalmış ve depolarda stoklar oluşmuştur.
- Avrupa genelinde kamyon dağıtım sisteminde yaşanan ciddi sorunların en şiddetli yaşandığı dönem, sınırların kapalı olduğu pandeminin ilk üç ayı olmuştur.

25. Sonuçların analizi – işletme operasyonları, lojistik ve destek:
    - Pandemi sırasında tedarik zincirinin her aşamasında çeşitli girdilerin tedariki ile ilgili sorunlar yaşanmıştır ve bu, bu girdilerin çoğunun maliyetini olumsuz yönde etkilemiştir. Balık yemi tedarik zincirinde yaşanan depolama sıkıntısı özellikle dikkat çekmektedir.
    - Anket sonuçları, sektöre sağlanan resmi destek düzeyinin genel olarak sınırlı kaldığını göstermektedir. Finansal destek arayanlar, bu desteği esas olarak devlet bankalarından kredi şeklinde sağlamış ve bazı şirketler KOSGEB kredilerinden faydalanmıştır. Daha büyük işleme tesisleri ve dikey olarak entegre edilmiş şirketler devlet destekli sosyal yardım/işsizlik desteği almıştır.
    - Anketten elde edilen sonuçlar, sektörün, en önemli desteğin hükümet gelmesini beklediğini ve finansal desteğin (özellikle krediye daha kolay erişimin) en öncelikli talep olduğunu da göstermektedir. Aileler, faydalı veya uygun bir destek kaynağı olarak görülmemektedir ve bu gibi durumlarda, üretici gruplarından (kooperatifler gibi) sınırlı bir yardım beklentisi olduğu gözlemlenmektedir.

26. Sonuçların analizi – geleceğe hazırlık ve performans değerlendirmesi:
    - Şirketlerin yarısından fazlası, gelecekteki krizleri nasıl yöneteceklerine dair hiçbir fikirleri olmadığını veya bu konuyla ilgili hiçbir adım atmadıklarını bildirmiştir. Görüşülenlerin çoğunluğu (neredeyse %80'i) hazırlık planlarının geliştirilmesine ve/veya test edilmesine katılmak istememektedir. Bu iki sonuç da nispeten endişe vericidir ve krizlerden ders almak ve gelecekteki krizlere hazırlanmak açısından hükümet ve devlet kurumları için ciddi bir zorluk teşkil etmektedir.
    - Sektörün en büyük gereksinimi şüphesiz finansaldır – yani faizsiz veya düşük faizli kredilerdir. Ayrıca kredi ve borçların ertelenmesi talebi de dile getirilmiştir. Raporda, sektörden gelen çeşitli başka özel talepler ve öneriler de yer almaktadır.
    - Anketin sonuçlarına göre, pandemiyle başa çıkmada kamu sektörü ve sektör kurumlarının performansına ilişkin geri bildirimler tutarlı bir biçimde olumsuz olurken, katılımcıların yüzde 31'i devlet kurumlarının müdahalelerinin "çok kötü" veya "kötü" olduğunu söylemiş, yüzde 42'si de sektör organları için aynı şeyi dile getirmiştir. Bu sonuçlar, özel sektörün yetkililerden ve sektör organlarından gelecekteki krizlerde daha fazlasını yapmaları yönündeki beklentisini yansıtmaktadır.

27. Saha araştırmasının ardından rapor, FAO'nun (2020'de) COVID-19 pandemisinin balıkçılık ve su ürünleri yetiştiriciliği sektörleri üzerindeki doğrudan küresel etkileriyle ilgili

yaptığı ilk analizin bir özetini sunmaktadır. Rapor ayrıca, küresel bir bakış açısı ve genel bakışın bir parçası olarak, Sürdürülebilir Balıkçılık Ortaklığı Vakfı tarafından 2020'nin başlarında tamamlanan COVID-19'un etkilerine yönelik bir başka erken dönem analizinde, hükümetler, balıkçılar, işleme tesisleri ve ihracatçılar tarafından alınan kayıtlara geçmiş çeşitli önlemlere de atıfta bulunmaktadır.

28. Rapor, Mart 2020 ile Haziran 2021 arasında uygulanan kısıtlamaların özet bir kaydını sunmaktadır. Kısıtlamaların çoğu ülke çapında uygulanmış olsa da, bazı hafta sonu yasakları ve gece sokağa çıkma yasakları sadece ülkenin en büyük 41 şehirde uygulanmıştır.

29. Raporda, tarım ve gıda sektörü genelinde pandeminin etkileri ve Türk hükümetinin gerçekleştirdiği müdahaleler ve düzeltici önlemlerin detaylı bir değerlendirmesini sunan kapsamlı bir Birleşmiş Milletler ortak çalışmasına (FAO, IFAD & UNDP, 2020) atıfta bulunulmaktadır. Birleşmiş Milletler çalışmasında balıkçılık ve su ürünleri yetiştiriciliği sektörü üzerindeki etkinin spesifik analizi, bir sayfayı biraz geçen bir analizle sınırlı kalmış olmakla birlikte, dile getirilen genel bazı kilit noktalar sektör için geçerli/uygulanabilir durumdadır.

30. Pandeminin sektör üzerindeki etkileri hakkında daha ayrıntılı bir analizin genel olarak eksikliği, kısmen pandeminin ilk dönemlerinde görülen etkilerin açıkça önemsiz ve geçici olmasından (araştırmacılar tarafından algılandığı şekliyle) kaynaklanıyor olabilir. Bu bir dereceye kadar doğru olsa da, COVID-19 pandemisinin çeşitli balıkçılık ve su ürünleri yetiştiriciliği değer zincirleri üzerindeki sosyo-ekonomik etkisi (derecesi değişmekle birlikte) kayda değer boyutta olmuştur. Mevcut literatürden ve danışmanın kendi araştırmalarından açıkça ortaya çıktığı üzere, COVID-19'un balıkçılık üretimi, ekonomik iş hacmi ve sektörün farklı kesimleri üzerindeki sosyo-ekonomik etkisi ile ilgili spesifik bir etki değerlendirmesi (nicel veriye dayalı analiz) eksikliği bulunmaktadır. Bu, gelecekteki pandemilere ve diğer acil durumlara nasıl daha iyi hazırlanılacağını ve bunların nasıl daha iyi yönetileceğini öğrenmede, politika yapıcılar için önemli bir 'ders' olarak görülmektedir.

31. Danışmanların araştırması, ulusal kısıtlamaların ve kısmi/tam kapanmaların av mevsiminin resmi olarak kapanmasına yakın bir dönemde yürürlüğe girmesi sebebiyle pandeminin gırgır ağı ve trol balıkçılığı üzerindeki etkilerinin nispeten küçük olduğunu göstermektedir. Bunun istisnası Mayıs/Haziran aylarındaki (hem 2020 hem de 2021 av mevsimleri için) mavi yüzgeçli orkinos balıkçılığı olmuştur.

32. Çeşitli EUMOFA (Avrupa Balıkçılık ve Su Ürünleri Piyasası Gözlem Evi) raporları, pandemi döneminde AB'nin (özellikle Türk su ürünleri için) önem arz eden balıkçılık pazarında yaşanan belirli değişimleri ve pazardaki daralmayı ortaya koymaktadır. AB genelinde HORECA (otel/restoran/kafe) kanallarının kapatılması ve bazı yerlerde açık pazarların kapanması, başta taze balık satan küçük ölçekli balıkçılık işletmeleri üzerinde olmak üzere, ciddi bir etkiye yol açmıştır. Üçüncü ülkelerden dondurulmuş ürün ithalatına dayanan AB işleme endüstrisi, işleme faaliyetlerinin azalması ve navlun kapasitesindeki sınırlamaların yanı sıra bazı büyük tedarikçi ülkelerin limanlarını kapatması sebebiyle tedarikte sıkıntı yaşamıştır. Restoranlarda pazarlanan balık türlerinin AB'ye ithalatında ciddi miktarda azalma olmuştur.

33. Buna karşılık, perakende sektörüne satış yapan çoğu işleme tesisi için, özellikle konserve, dondurulmuş ve füme balıklara yönelik yoğun talep devam etmiş ve tedarik zincirinin işleme sonrasında yer alan kısımları iyi bir şekilde faaliyet göstermeye devam etmiştir. Pazarın diğer segmentleri için (HORECA kanalları gibi) işleme faaliyetlerinde bulunan işleme tesisleri ise zor durumda kalmıştır. Bununla birlikte kapanma döneminde,

deniz ürünlerine yönelik çevrimiçi satışlarda ve evlere paket serviste hızlı bir artış yaşanmıştır.

34. Raporda, (2020 yılının) 12-17. haftaları arasında AB balık pazarında gözlenen değişimlerin bir özeti sunulmaktadır. EUMOFA verilerinin analizinden elde edilen bulgular, Türk su ürünleri yetiştiriciliği sektörünün 13-17. haftalar arasında (2020 ikinci çeyreği) ihracat hacminde keskin bir düşüş yaşayarak en sert darbeyi aldığını, ancak birim fiyatlar üzerindeki etkinin daha az olduğunu göstermektedir. Yerli (iç pazar) tüketicilerden gelen talepte de ciddi bir düşüş yaşanmıştır.

35. Küçük ölçekli iç su balıkçıları ağırlıklı olarak, tarımla ilgili tüm faaliyetlere yönelik neredeyse Nisan ortasına kadar devam eden ülke çapındaki koruyucu tedbirler sebebiyle işleme endüstrisinin kapanmasından ve ihracat tedarik zincirinde yaşanan sorunlar nedeniyle talebin kısıtlı kalmasından etkilenmiştir. Küçük ölçekli balıkçılar, erişim ve ticarete yönelik kısıtlamalar, azalan talep, turizm faaliyetlerinin durması ve HORECA müşterilerinin kapanması ile, gemi mürettebatı için uygun çalışma koşullarının korunmasına yönelik genel sağlık ve güvenlik sorunları nedeniyle ciddi şekilde olumsuz etkilenmiştir. WWF (Yaban Hayatı Koruma Vakfı) Türkiye tarafından hazırlanan ve sosyo-ekonomik ve çevresel sürdürülebilirlik konularının ele alınmasının gerekliliğine dikkat çeken bir rapora atıfta bulunulmaktadır. Bu raporda ayrıca endüstriyel balıkçılık ve su ürünleri yetiştiriciliği sektörüne özgü olarak dile getirilen bir dizi konu da ele alınmaktadır.

36. Ulusal işgücünün pandemi sebebiyle karşılaştığı, iş ve işletmeyle ilgili faaliyetlerin ve yeni ve sürekli olarak değişen hijyen güvenliği gerekliliklerine uyma ihtiyacının bir sonucu olarak ortaya çıkan ekstra idari iş yükünün getirdiği genel zorluklara ek olarak, balıkçılar/balık çiftçileri, su ürünlerinin işlenmesi ve ticaretiyle uğraşanlar ve aileleri için bir dizi özel sosyo-ekonomik konuya da dikkat çekilmektedir.

37. Türk kültüründe geleneksel olarak ailenin refahından kadınların sorumlu olması sebebiyle, kadınlar ekstra bir yükle karşı karşıya kalmıştır ve birçok ailenin hane içi geçim kaynakları tehlikeye düşmüştür. HORECA sektöründe istihdam edilen kadın sayısı orantısız ölçüde yüksektir, bu nedenle, bu etkiye dair bilinen bir veri veya ölçüm olmamakla birlikte, bu sektörün bir süre kapalı kalmasının etkisi ve iş kaybı ciddi seviyelerde olmuştur.

38. Soğuk hava depolarının dolmasının ardından, su ürünleri yetiştiriciliği ve işleme sektörlerinde çalışan kadın işçilerin işleri azalmıştır ve bu nedenle kendilerine sadece kısmi ödeme yapılmıştır. Özellikle konserve ton balığı fabrikalarında çalışanlar olmak üzere, konserve fabrikalarında çalışan kadınlar daha iyi idare edebilmiş ve fazla mesai yapabilmiştir. Pazarlarda ve perakende hizmet sektörünün pek çok alanında çalışan kadın işçiler, ev tüketiminin tek seçenek haline gelmesi ve perakende satışların genel olarak iki-üç kat artmasıyla, iş fırsatlarından yararlanmıştır. Evlere paket servisi ve al-götür yemek uygulamaları, yemek servisi yapan işletmelerin mutfaklarında çalışan kadınlara iş imkanı sağlamıştır.

39. Pandeminin Türk balıkçılık sektörüne etkisi üzerine yayınlanan bir dizi makaleye ve alınması önerilen önlemlere atıfta bulunulmuştur. Pandeminin balıkçılık ve su ürünleri üretimi ve ticareti üzerindeki etkisini gösteren veriler de sağlanmıştır.

40. Pandeminin daha geniş sektör yönetimi konularındaki etkisi hakkında kayıtlara geçmiş ülkeye özgü bilgiler sınırlıdır. Bilimsel araştırma ve izleme projeleri, genel seyahat ve iş faaliyeti kısıtlamaları nedeniyle ya sekteye uğramış ya da durdurulmuştur. Endüstri eğitim programları ve düzenli eğitim faaliyetleri de durdurulmuş ve e-öğrenme platformları kullanılarak çevrimiçi olarak gerçekleştirilmek zorunda kalmıştır. Ulusal ve

uluslararası kalkınma projelerinde, personelin kendi memleketine/ülkesine geri gönderilmesi sebebiyle gecikmeler yaşanmıştır ve pek çok durumda personel hala evden çalışmaktadır.

41. Balıkçılık ve su ürünleri yetiştiriciliği sektörünün ulusal GSYİH'ya ve döviz gelirlerine önemli bir katkı sağlamasına, ve bunun yanı sıra bu sektörün sosyo-ekonomik açıdan da önemli olmasına rağmen, sektör tamamen her türlü acil durum müdahale planından yoksundur ve gelecekteki krizlerle başa çıkmak için sektöre özgü sürdürülebilirlik ve dayanıklılık geliştirme stratejileri ve politika araçlarının genel olarak eksikliği devam etmektedir.

42. Hükümet desteğinin seviyesini doğrulamaya ve ölçmeye yönelik yayınlanmış herhangi bir veri bulunmamakla birlikte, raporda, pandemiye karşı hükümet, endüstri ve piyasa müdahalelerinin bir özeti sunulmaktadır.

43. Son 18 aydaki deneyimlere dayanarak, Türk deniz ürünleri endüstrisi ve balıkçılık/su ürünleri yetiştiriciliği sektörünün artık, uygun uluslararası en iyi uygulamalar tarafından desteklenen ve geliştirilen; sağlam bilimsel temellere ve değerlendirmeye dayalı, hükümet liderliğinde, koordineli, katılımcı ve sürdürülebilir bir müdahale ve dayanıklılık planına ihtiyaç duyduğu (ve bunu hak ettiği) açıktır. FAO danışmanları, bu çalışmanın bir sonraki aşamasında, Acil Durum Müdahale ve Hazırlık Planı taslağının hazırlanmasıyla dikkatlerini bu konuya odaklayacaktır.
44. Bu çerçevede, bir OECD raporunda (OECD, 2020) atıfta bulunulan temel dersler, Türk balıkçılık sektörü için politika etkilerinin tartışılmasında ölçüt olarak kullanılmıştır:
    - Gıda tüketimindeki değişimler ve tüketicilere ulaşmadaki zorluklar, yurtiçi ve yurtdışı talebi ve fiyatları ciddi ölçüde etkilemiştir.
    - Üretim kapasitesi ve maliyetler, tedarik zincirinin tamamında ek sağlık ve güvenlik önlemlerine duyulan ihtiyaçtan ve işgücü hareketliliğinin azalmasından etkilenmiştir.
    - Krizin doğal kaynaklar üzerindeki etkisini değerlendirmek için henüz (OECD raporunun yazıldığı sırada) çok erken olsa da, izlemeye yatırım yapılması hayati önem taşımaktadır.
    - Küresel gıda güvenliği ve geçim kaynakları üzerindeki potansiyel etkiler, hükümetlerden ve endüstriden acil ancak iyi ayarlanmış müdahaleleri gerektirmektedir.

45. Rapor, COVID-19 pandemisinden elde edilen ve hem endüstri hem de kamu sektörü idari organlarının gelecekteki krizlerin ele alınmasında sektörün ihtiyaçlarına yönelik üzerinde yaygın olarak mutabık kaldığı bulguların (toplamda 14 adet) bir özeti ile sona ermektedir.