

How is Covid-19 outbreak impacting the fisheries and aquaculture food systems and what can FAO do

FAO Fisheries and Aquaculture Department

(This document will be updated periodically as the situation with COVID-19 develops)

INFORMATION PAPER

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1. Introduction

The purpose of this **first information paper** is to examine how COVID-19 and the measures taken to contain the spread of the virus are impacting and transforming the fisheries and aquaculture food systems and to highlight some solutions with specific recommendations on how FAO and its partners can help alleviate the crisis and build a more resilient fish supply chain. The paper relies on information collected through interviews,¹ secondary sources (e.g. media articles), and publicly available data. The Annex contains information collected as of April 7, 2020.

2. Key messages

- Fish is safe to eat. Misleading perceptions in some countries have led to decreased consumption of fish and fish products. Yet, the coronavirus pandemic is not related to fish and fish products.
- Each stage of the fisheries and aquaculture supply chain is susceptible to being disrupted or stopped by impacts arising from COVID-19. Only by protecting each stage of the supply chain can human consumption of fish and fish products be achieved.
- Supply chain disruption because of changing consumer demand or market access and logistics problems related to transportation and border restrictions will have upstream implications. There is already evidence of a reduction in fishing effort in parts of Africa, Asia and Europe. In aquaculture there is growing evidence that unsold production will result in increasing live fish stocks, higher costs for feeding as well as risks of fish mortalities.
- Further downstream, demand for packaged and frozen products has spiked as households look to stock up on non-perishable food at the expense of fresh seafood options. Online distributors are reporting increased interest as house-bound consumers explore retail alternatives. But overall demand has been sharply reduced and prices have fallen for many species, particularly those that are important for the hotel, restaurant and catering industries.
- To avoid food shortage, it is important to ensure that food trade flows continue to be as free as possible.
- It is important to work with sectoral and regional organisations to develop a range of adaptations to manage fisheries and aquaculture during the pandemic, that support job protection and ensure a fast recovery of the sector, including by assessing and adjusting transport and market development options.
- Many of those involved in fisheries and aquaculture value chain activities are in the informal sector, making it challenging to access government support. Adequate

¹ FAO regional and subregional fisheries and aquaculture officers, FAO field offices, project partners as well as regional organisations are gratefully acknowledged for their most valuable inputs to this paper.

coverage of the fisheries and aquaculture sector, including informal workers, should be provided.

- Recognizing their specifically vulnerable role, as food producers, processors, vendors and carers, women should be considered, and access to government support should be secured.
- Levels of Monitoring, Control and Surveillance of fishing activities need to be maintained to ensure management control measures are enforced and the risk of Illegal, Unreported and Unregulated (IUU) fishing activities does not increase.
- Uncertainty dominates the outlook, particularly with regard to the duration and severity of the pandemic, but a prolonged market downturn can be expected even after current restrictions are lifted or relaxed. This is likely to bring long-term transformations to the sector.

3. Overview of fisheries and aquaculture before the virus outbreak

In 2018, global fisheries and aquaculture production (excluding aquatic plants) reached an all-time record of nearly 179 million tonnes in live weight equivalent. Overall capture fisheries, with 96.4 million tonnes represented 54 percent of the total, while aquaculture, with 82.1 million tonnes, accounted for 46 percent. For the last three decades, aquaculture has been the main driver of the increase in fish production, but the capture fisheries sector still remains dominant for a number of species and vital for domestic and international food security. Developing countries, mainly in Asia, are by far the predominant producers and China, Indonesia, India, Viet Nam and Peru were the key producers in 2018.

About 89 percent of fish production is directed to human consumption, with the rest destined to non-food uses, including reduction into fishmeal and fish oil. About 45 percent of the fish destined for human consumption is marketed in live and fresh form, followed by frozen (34 percent), prepared and preserved (11 percent) and cured (dried, salted, in brine, fermented, smoked at 10 percent). World apparent per capita fish food consumption has significantly grown during the last few decades, from 9 kg in the 1960s to about 20.3 kg in 2017. At the global level, fish accounts for about 17 percent of the world population's intake of animal proteins and provides about 3.3 billion people with almost 20 percent of their average per capita intake of animal proteins and 5.4 billion people with 10 percent of such proteins.

The fisheries and aquaculture sectors operate in an increasingly globalized environment. Fish can be produced in one country, processed in a second and consumed in a third reflecting the sector's degree of openness and integration into international trade. Fish and fish products are among the most traded food commodities worldwide with a significant share of total fish production (about 38 percent, live-weight equivalent) being exported. International trade has also played an important role in broadening fish consumption by providing wider choices to consumers. A sizeable and growing share of fish consumed in North America, Europe and Africa consists of imports, owing to steady demand, also for non-locally produced species, combined with static or declining domestic fish production. Salmonids (salmons, trouts, etc.) became the most important commodity traded in value terms since 2013 and account for about 18 percent of the total value of internationally traded fish products. The other main groups of exported species are shrimps and prawn with around 17 percent, followed by

groundfish (9 percent e.g. hake, cod, haddock and Alaska pollock) and tuna (9 percent). Preliminary figures for 2018 indicate a further growth of trade of fish and fish products to reach a new record of US\$163 billion. Developing countries had a share of 54 percent of these exports by value and 59 percent by quantity (live weight equivalent) and for many of these countries fish trade represents a significant source of foreign currency earnings in addition to the sector's important role in income generation, employment, food security and nutrition. China is not only the main fish producer, but also the main exporter of fish and fishery products and third major importer. Norway is the second major exporter, followed by Viet Nam, India, the United States of America and Thailand. Developed countries still dominate fishery imports, although with a declining share in recent years (about 70 percent compared to 88 percent two decades ago). The European Union, the United States of America and Japan are by far the major markets.

In 2017, about 59.7 million people were employed in the primary sector of capture fisheries and aquaculture. Of this total, 40.4 million people were engaged in fisheries and 19.3 million in aquaculture. Most of the people directly employed, on a full-time, part-time or occasional basis, as fishers and fish farmers are artisanal and small-scale producers, with the bulk of them in Asia. Worldwide, about 200 million people are directly and indirectly employed along the value chain, from harvesting to distribution. Women play an important role in this workforce and represent about 13 percent of the people employed in the primary sector and half of them if the secondary sector is included.²

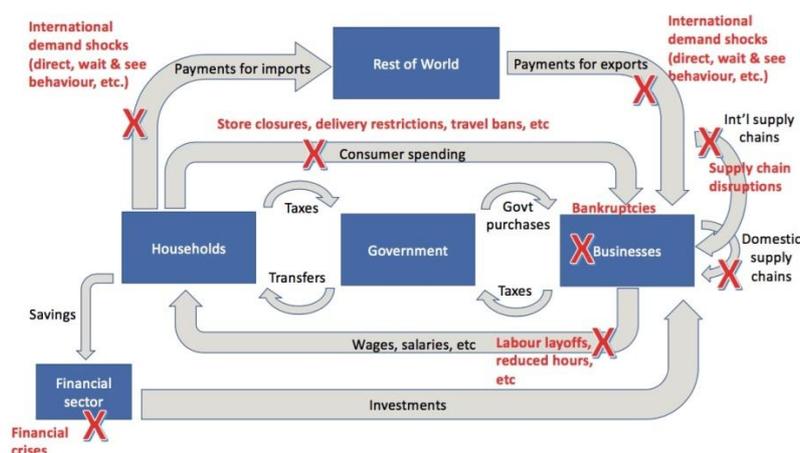
4. What makes the fisheries and the aquaculture food systems vulnerable to COVID-19 related shock?

The full range of activities that are required to deliver fish and fish products from production to the final consumers are complex. Globally, technologies employed vary from artisanal to highly-industrial. Value chains include local, regional and global markets. Key activities in a fisheries or aquaculture supply chain are fishing, aquaculture production, processing, transport of inputs, distribution, wholesale and retail marketing. Each of these activities are of equal importance to the success of the supply chain. Each stage of the chain is susceptible to being disrupted or stopped by impacts arising from COVID-19. If one of these buyer-seller links is ruptured by the disease or containment measures, the outcome will be a cascading chain of disruptions that will affect the economy. This point is partially illustrated in Figure 1 below.

Figure 1: COVID19's multiple strikes in the circular flow of income diagram³

² Monfort, M.C. 2015. The role of women in the seafood industry. GLOBEFISH Research Programme Vol. 119, Rome, FAO. 67 pp. (also available at <http://www.fao.org/3/abc014e.pdf>).

³ In: Mitigating the COVID Economic Crisis: Act Fast and Do Whatever it Takes. 2020. Edited by Richard Baldwin and Beatrice Weder di Mauro. CEPR Press, London.



The red crosses show where the shocks are disrupting the chain, and while it is not fisheries-specific, the diagram is useful to explain some of the Covid-19 disruptions in the sector: Households experiencing financial distress may slow down their spending.⁴ The reduction of household demand, also influenced by containment measures (e.g. closure of food services, places of tourism, etc.) affects production, processing and distribution, and cause disruption in international and domestic supply chains. The fact that live, fresh or chilled fish, which represent 45% of fish consumed, are highly perishable presents additional logistical challenges in the supply chain.

Furthermore, the reduction in domestic demand and widespread containment measures hits the nation's imports and reduces foreign incomes, with significant consequences on a sector highly dependent on international trade, such as fish and fish products. Finally, businesses experience financial distress, leading to a reduction in wages, working hours or labour layoffs. As the financial sector is in difficulty, it has fewer resources to sustain the economic losses incurred. In addition, it is unlikely that insurers will cover businesses interruptions due to events such as the COVID19 disease.

In summary, a flow disruption anywhere causes a slowdown everywhere. Only by protecting the buyer-seller links and each stage of the supply chain can human consumption of fish and fish products, and therefore the successful and continuing completion of the supply chain, be achieved. It is therefore of paramount importance to provide all possible protection to each stage of the fisheries and aquaculture food chain.

5. How is the pandemic affecting the fisheries and aquaculture food systems

The COronaVirus disease 2019 (COVID-19) started as a locally circulating infection. On March 11 2020, the World Health Organization (WHO) characterized COVID-19 outbreak as a pandemic with a growing number of cases reported outside of China, from Eastern Asia to Europe and Northern America.⁵ Since then, the pandemic has been progressing, threatening other regions of the world, including many fish producing and/or fish consuming countries.

⁴ Initial estimates of the International Labour Organization (ILO) indicate a significant increase in unemployment and underemployment in the wake of the pandemic (draft HLPE Issue paper, dated 24 March 2020).

⁵ <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19--11-march-2020>

While fishing and aquaculture and the distribution of their products are considered an essential activity in most countries, the measures adopted to contain the spread of infection have caused significant direct and indirect challenges to the sector, as explained below.

5.1. Fisheries production

The 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 (e.g. UK and Ireland) and on higher value species (e.g. lobsters) are likely to be more impacted. In Ireland and the UK, for example, the National Federation of Fishermen's Organizations speaks of a "very severe shock to British fishing" with European and Asian exports (which constitute 70% of the UK catches), in particular to Spain, Italy and France, having now largely closed.⁶ 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. 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.⁷

In addition, the tuna industry reports movement restrictions for professional seafarers and marine personnel who are not allowed to disembark in ports and transit through national territory (i.e. to an airport), preventing crews to be changed and seafarers to be repatriated.⁸

5.2. Aquaculture (inputs, production)

The aquaculture production sector is extremely diverse, but it nevertheless relies heavily on labour, inputs, financing and markets, which have been and will continue to be impacted during and after the Covid-19 pandemic. In many countries, fish production is considered an essential activity contributing to income, household resilience and food security, so it is expected that farmers will continue to take care of their fish, and not give them away as gifts nor dispose of them.⁹ However, 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 current lockdown and economic slowdown.¹⁰

⁶ <http://www.rfi.fr/es/europa/20200320-el-mercado-de-pescado-fresco-se-derrumba-en-europa-por-el-coronavirus>

⁷ <https://www.comite-peches.fr/la-peche-francaise-dans-le-brouillard/>).

⁸ The WHO and the International Maritime Organization (IMO) have issued a joint-statement to call upon member government states to respect the requirements of "free pratique" for ships under the International Health Regulations (IHR 2005, article 28). Available here: <http://www.imo.org/en/MediaCentre/HotTopics/Documents/Circular%20Letter%20No.4204Add.6%20%20Coronavirus%20Covid-19%20Preliminary%20List%20Of%20Recommendations.pdf>

⁹ <https://www.letelegramme.fr/finistere/pleyben/le-confinement-oblige-la-pisciculture-de-la-douffine-a-donner-ses-truites-16-04-2020-12539962.php>

¹⁰ <https://chinadialogueocean.net/13453-coronavirus-hits-sustainable-aquaculture/>

Labour layoffs may also increase, due to confinement measures on the short-term, but also because of financial or cash flow issues faced the farmers, or travel barriers for seasonal or migrant workers, on the medium to long-term.¹¹ Some countries have exempted the aquaculture sector from lockdown measures¹² or established guidelines to regulate the exercise of the free movement of workers during COVID-19 outbreak.¹³

At present the constraints on inputs are not the main immediate concern, but some shortages on seeds, lack of feeds and of some other items that need to be imported (e.g. vaccines) have been reported and could affect the industry more significantly on the medium-term.¹⁴ Exacerbated competition for sourcing or transport services from competing agribusiness or the wide range of restrictions on cargo movements and airport clearings may create additional difficulties for a number of aquaculture operators, whether they are relying on inputs imports or exports (e.g. hatchery farmers and broodstock traders).

But the low market demand is currently the main concern for most aquaculture operators worldwide. The farmers supplying the live fish markets are currently struggling with growing live fish stocks that cannot be sold but still must be fed for an undetermined period.¹⁵ Cash flow and access to credit might soon become another challenge because of the additional costs incurred in the absence of revenue, especially if aquaculture clients are also affected by the crisis and they delay payment for past deliveries.¹⁶ Some species farmed for export have also been reportedly affected by the closure of international markets (e.g. China, E.U.)¹⁷ whereas several fish and shellfish aquaculture operations have been severely impacted by the closure of food services (e.g. tourism, hotel and restaurant market) and wholesales. One emerging adaptation observed globally has been to develop direct retail sales,¹⁸ through internet ordering and home-delivery or aquaculture drive-in.¹⁹ Another adaptation has been to process and freeze fish that have been reached their commercial size, to keep them in cold storage (see section 5.3.below).²⁰

On the other hand, small-scale aquaculture and fish farming operators in areas where fish imports are important may benefit from reduced competition, especially if they can secure their retail markets (see section 5.3. below).²¹

¹¹ https://www.arec.vaes.vt.edu/arec/virginia-seafood/research/Impacts_of_COVID19.html

¹² <https://www.undercurrentnews.com/2020/04/13/india-exempts-aquaculture-from-lockdown-with-extension-to-measures-expected/>

¹³ [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020XC0330\(03\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020XC0330(03))

¹⁴ https://lemarin.ouest-france.fr/sites/default/files/2020/03/13/courrier_crise_coronavirus_maa.pdf

¹⁵ Idem.

¹⁶ <https://www.aecoc.es/articulos/c84-javier-ojeda-tenemos-que-dar-salida-a-la-acumulacion-de-stock-de-peces-y-asegurar-la-liquidez-de-las-empresas/>

¹⁷ <http://vietfishmagazine.com/news/pangasius-industry-has-been-hit-by-covid-19.html>

¹⁸ <https://www.seafoodsource.com/news/supply-trade/seafood-suppliers-traders-forced-to-adapt-quickly-to-shifting-demand>

¹⁹ <https://france3-regions.francetvinfo.fr/nouvelle-aquitaine/correze/brive/coronavirus-confinement-pecheur-sachant-pecher-ne-peut-plus-pecher-1802604.html>

²⁰ <https://www.efegro.com/noticia/las-empresas-de-acuicultura-reducen-sus-ventas-un-55-en-marzo-y-abril-por-la-covid-19/>

²¹ <https://www.bbc.com/afrique/region-52092657>

5.3. Post-harvest, market and trade

The wild and farmed seafood sector, along with the majority of industries, is having to deal with a bleak demand outlook as well as an array of supply challenges. With the effective shutdown of the restaurant industry in many places, food service demand has reduced substantially, while retail sales have been marked by extreme volatility.

Fresh fish processing is affected by worker health and resulting staff shortages due to COVID-19 illness and resultant quarantining of staff. Processing operations may also be disrupted due to worker demand for better health and safety conditions. This reduces processing capacity and output. Furthermore, the low demand for fish leads to production disruption and a need for processors to increase storage capacity to cope with incoming raw material and finished product. Proactive processors react by putting stringent controls in place, including the spacing out of workers and temperature tests.

Demand for packaged and frozen products has spiked as households look to stock up on non-perishable food. At the same time, online distributors are reporting increased interest as house-bound consumers explore retail alternatives, e.g. private box schemes. Overall, however, demand has sharply reduced and prices have fallen for many species, particularly those that are targeted at the food service industry, e.g. hotels, restaurants and catering. Changes in demand are also affecting storage, resulting in increased food loss and waste. Overloaded storage facilities are particularly a current reality in aquaculture production due to delayed production cycles, associated with broken supply chains.

Meanwhile, suppliers and processors are struggling with business closures all along the supply chain as well as a number of other logistical difficulties. Transportation by road or sea must contend with closed or restricted borders and customs and health inspection delays, while the large-scale cancellation of flights has directly affected trade in some high-end fresh products that are transported by air. All these aspects have increased transport costs.

Many wholesale and retail fish markets in less developed countries are often congested and crowded providing risks to traders as well as consumers, who therefore take significant risks to maintain their livelihoods and to buy fresh fish to eat. In some countries retail markets have become highly regulated to secure physical distancing, which has reduced demand and thus incomes. It is important to highlight that informal fish value chains are facing more stringent impacts, due to the lack of formal contractual relationships (no established cold chain, insurance, among others).

In the area of international trade, in a joint effort to ensure that trade flows continue to be as free as possible, the heads of FAO, the World Trade Organization (WTO) and the World Health Organization (WHO) called for the prevention of disruptive border restriction measures on trade in food to avoid food shortage, emphasizing that the dissemination of information on food-related trade measures is fundamental.²² Another consequence of the virus outbreak, linked to global trade, is the cancellation of key seafood trade events across the world.

Uncertainty dominates the outlook, particularly with regard to the duration and severity of the pandemic, but a prolonged market downturn can be expected even after current restrictions are lifted or relaxed.

²² The full report is available at https://www.wto.org/english/news_e/news20_e/igo_26mar20_e.htm

5.4. Vulnerable groups, working conditions, health & safety and gender

The pandemic may give rise to negative economic impacts for processors and vendors, with disproportional impacts on women. This is primarily because women contribute over half of the workforce in the fisheries and aquaculture secondary sector.²³ The reduction of fish and fish farming activities will reduce the fish available for processing and trade, as will mobility restrictions and thus the transfer of fish to the markets. Food loss and waste could also increase if processors do not have access to appropriate storage and cold chain facilities. In addition, women fish vendors can be exposed to a greater risk of infection, since some markets are a place of promiscuity and have limited sanitation and hygiene facilities. Special attention and support must also be given to women and children who are particularly vulnerable to sexual exploitation and abuse in times of crises, as also observed during the 2013-2016 Ebola outbreak in West Africa.²⁴ A surge of domestic and family violence cases has already been observed in China, the United Kingdom²⁵, the United States, Italy, Malaysia, Indonesia, Singapore and Australia as a result of confinement measures.²⁶

Working conditions and safety of fishers at sea will be affected should the number of fishers being available to crew vessels be reduced. The number of available crew could be reduced owing to *inter alia* contracting the virus, restrictions on movements or wider lockdowns. In addition, it is difficult for fishermen to be more than a metre apart from each other on board a fishing vessel. Should fishing vessels be forced to operate with less crew, this may result in working longer hours and compromise safety measures putting the wellbeing and health of fishers at risk.

Crew on large scale industrial vessels (pelagic trawlers, purse seiners), which are working on/off for several weeks and then get replaced by another crew during their work break, are unable to travel home due to flight restrictions and quarantine periods. As a consequence, they have to work longer periods on board, which increases fatigue and stress (also relevant to the health of family members back home). The longer working periods lead to additional on-board accidents.

Large scale fishing vessels of distant water fishing fleets can also be confronted with COVID-19 cases among their crew members while far away at sea. The virus may spread rapidly among all the crew of a vessel and medical assistance is not always readily available. When trying to enter a port, crew that are not from the port State may not be allowed to enter the country.

Given the migratory behaviour of many fishers, plus the frequent international visitors to fishing communities (e.g. cross border movements) there is potential for coastal fishing

²³ <https://english.manoramaonline.com/news/columns/straight-talk/2020/03/28/opinion-coronavirus-impact-on-fishing.html> and https://reliefweb.int/sites/reliefweb.int/files/resources/COVID-19_CommunityEngagement_130320.pdf

²⁴ <file:///Users/roxanemisk/Downloads/GiHA%20WG%20Advocacy%20Brief%20Gender%20Impact%20COVID19.pdf>

²⁵ <https://www.dailymail.co.uk/news/article-8167143/Husband-69-accused-Britains-self-isolation-murder.html?>

²⁶ <https://www.channelnewsasia.com/news/commentary/coronavirus-covid-19-family-violence-abuse-women-self-isolation-12575026> AND <https://www.eco-business.com/news/covid-19-and-the-increase-in-domestic-violence-in-asia-pacific/>

communities to become “hotspots” for the rapid spread of the virus. Countering this is a challenge but education and awareness raising must be part of the solution.

Fishing and fish farming communities are often located far away from the main cities and the medical facilities (health clinics, hospitals) are often not of high standards, compared to those in the cities. Transport to the cities during the COVID-19 outbreak could be restricted to reduce the spread of the virus, and consequently, the access of fisherfolk and their families to good quality health care, medicines and drugs may be limited.

Finally the wide informality in the sector constitutes an added barrier for fishers and fish farmers to access protection from labour market policies and contributory social protection mechanisms. These might exacerbate the secondary effects of COVID-19, including poverty and hunger.

5.5. Fishery and aquaculture research and management implementation

Surveys for collecting data into stock assessments’ processes have been postponed or cancelled in some countries but there is no clear overview of the extent of these delays. In the North Atlantic, springtime is the most critical time to select data to provide Total Allowable Catches (TACs) for fish stocks. The situation now, with restrictions of how many persons can work near each other, with working from home policies in many countries and even some crew members or researchers becoming infected means that cancelling stock assessment activities is the only possible solution. In these circumstances, estimating the stock sizes for long-lived fish species may be possible for some species by using trends or the same results as the year(s) before. However, for short living species (1-3 years) this could be challenging and result in highly uncertain TACs, resulting in deteriorations in stock status, in case TAC is overestimated, or decrease in potential production, if TAC is underestimated.

RFMOs and RFABs have an important role in contributing to scientific research of many important shared fisheries around the globe and this is achieved through Scientific Committees and dedicated Working Groups set up to work on specific tasks. For many of the larger RFMOs, these meetings are convened many times each year. The function of Scientific Committee is to direct and review all stock assessments, analyses and recommendations presented by the working groups. Based on their assessments, the Scientific Committee will then make recommendations to the decision-making body regarding work plans and priorities and this may include setting of catch or fishing effort limits. Whilst efforts may be made to conduct some scientific meetings remotely, where possible, cancelled and postponed RFMO Scientific Committee meetings, and meetings of other international organisations dealing with stock assessment and research matters, will have medium to long term negative consequences on the research and the subsequent management decisions of many shared fish stocks globally.

The majority of Regional Fisheries Management Organizations (RFMOs)²⁷ have also the capacity to adopt binding management measures while Regional Fishery Advisory Bodies (RFABs) endorse management measures. Postponement of Regional Fisheries Bodies

²⁷ Regional Fisheries Management Organizations (RFMOs) are intergovernmental organisations set up to manage shared fish stocks, mostly, but not exclusively in international waters. For more info see FAO Technical Paper 651 <http://www.fao.org/3/ca7843en/CA7843EN.pdf>

(RFBs)²⁸ science and management meetings will delay implementation of some necessary measures. The capacity to hold these international meetings online is limited. Cancelled and postponed meetings will have negative consequences on the management of many shared fish stocks.

Fish and shellfish farming business are complex and facing multiple issues related to Covid-19. Regarding research and management, challenges will be to either compensate or maintain ongoing indoor or field research, since movements restrictions on some places could possibly destabilize or delay ongoing research, either by lack of personnel or needed supplies. Compensations for loss of production is not sufficient, for example, as fish keeps growing and have to be fed while sales are dried up. Therefore, management and policy measures must also consider the loss of income in addition to loss of production.²⁹ Contingency plans should be prepared in case of fish mortalities occurring as a result of the shortage of feed or external drivers (e.g. drought, disease).

5.6. Monitoring Control and Surveillance (MCS)

Lockdowns could be leading to reduced capacity in Fisheries Monitoring Centres (FMCs), as was the case in West Africa during the 2013-2016 Ebola outbreak – not only were staff not available, but limited national resources were directed to funding emergency activities and this left the FMCs unable to function effectively. Fishers who are “safely out at sea” in their microcosm know this and may keep operating or adapt their operations to benefit from the MCS shortcomings to engage in illicit activities.

RFMOs have an important role contributing to MCS and combating IUU fishing for many important shared fisheries around the globe and this is achieved through convening regular dedicated Compliance Committee meetings. For many of the larger RFMOs, these meetings can be convened twice a year. The function of Compliance Committee is to monitor, review and assess implementation of and compliance with adopted conservation and management measures (CMMs). This includes but not limited to giving special consideration to MCS, data reporting and IUU CMMs. The Compliance Committee will make recommendations to the decision-making body on actions to be taken in regard of *inter alia* non-compliance and development of new measures to address non-compliance. A lack of monitoring and enforcement of shared stocks may encourage some States fishing on these stocks to revert to a less responsible level of management, monitoring and control of fishing operations. Cancelled and postponed RFMO Compliance Committee meetings will have negative consequences on the MCS of fishing activities and the fight against IUU fishing globally.

5.7. Food security and safety

Fish and fish products are a vital part of a healthy diet. Misleading perceptions in some countries have led to decreased consumption of fish and fish products. Yet, coronavirus cannot infect ectothermic³⁰ aquatic animals (finfish, reptiles, amphibians and invertebrates

²⁸ Regional Fisheries Bodies (RFBs) is a collective term for both RFMOs and RFABs

²⁹ <https://www.undercurrentnews.com/2020/04/08/eu-aquaculture-group-says-new-measures-still-lack-level-playing-field-with-fishing/>

³⁰ Ectothermic animals are cold-blooded and have much lower body temperatures than that of humans, which fluctuate with the environment.

such as crustaceans and molluscs), and so these animals do not play a role in spreading the disease.³¹

The possibility that processing and transport business will be forced to reduce, stall or completely slowdown, will result in reduced levels of food security and increased issues related to malnutrition. Many developing countries and small island developing states (SIDS) are reliant on fish for animal protein, especially in rural settings and communities that were already considered vulnerable before the Covid-19 crisis began. Of the 34 countries where fish contribute more than one-third of total animal protein supply, 18 are Low Income Food Deficit Countries (LIFDCs), and five are Small Island Developing States (SIDS), where fish serve as the backbone to healthy diets. In addition, fish supplies important vitamins and minerals in bioavailable form for the human body and has an enhancing factor on absorption of minerals (such as iron and zinc) in predominantly plant-based diets that are typical in many developing countries. Fish is also an important source of fatty acids - such as EHA and DPA – with evidence showing consumption of fish linked to positive outcomes for our cardiovascular system (Peter et al. 2013).³² It is therefore important that countries most dependent on fish for their food security do not run short of fish supply.

The reduction in fish consumption could further exacerbate issues related to the “triple burden of malnutrition” – undernutrition (underweight, stunting and wasting); overweight and obesity; and micronutrient deficiencies; which already affected over 200 million children globally (stunted, wasted and overweight) and over 2 billion adults (overweight or obese) and cost society up to USD 3.5 trillion per year (Global Nutrition Report, 2018).³³

As many countries are restricting movements outside of the home, vulnerable fishing communities are becoming even more vulnerable - not only due to reduced supply of affordable animal protein, micronutrients and fatty acids through direct consumption of fish caught, but also through reduced income from limitations on livelihood activities, further reducing their purchasing power to afford a diverse range of foods to meet their dietary needs. Globally, 59.7 million people work in the primary sector of fisheries and aquaculture, with even more working in the secondary sector, including post-harvest activities.

As women are often responsible for household food purchasing, preparation, and child feeding, they may be disproportionately affected by limitations in livelihoods activities. Women face a great time burden for balancing work outside of the home as well caretaking, facing trade-offs that directly affect the family’s and children’s health and nutritional status, and these trade-offs are exacerbated during crises (FAO, 2020).³⁴ It is important to support women through this crisis to ensure the family’s wellbeing, food security and nutrition.

³¹ The National Fisheries Institute in the United States have developed a website dedicated to seafood safety and COVID-19: <https://seafoodsafetycovid19.wordpress.com>

³² Peter et al. 2013: doi: [10.4103/2230-8210.111630](https://doi.org/10.4103/2230-8210.111630)

³³ Global Nutrition Report, 2018. Chapter Two: The Burden of Malnutrition. Accessed from: <https://globalnutritionreport.org/reports/global-nutrition-report-2018/>

³⁴ FAO, ECA and AUC. 2020. Africa Regional Overview of Food Security and Nutrition 2019. Accra. <https://doi.org/10.4060/CA7343EN>

6. Future possible pathways

Two scenarios seem to be profiling. If the virus continues spreading across States and continents, national policies could move towards reshoring.³⁵ If, on the other hand, the crisis is only temporary, current globalization trends may not be affected. Under this latter scenario, the private and public sectors will want to restart their businesses as normal (assuming they can) but correct the vulnerabilities that the health crisis has brought to light.

In the first scenario, where there is prolonged uncertainty in the ability to transport goods and difficulty in logistics due to the measures to contain the spread of the virus, proximity to markets and investment in domestic or nearby supply chains (including markets and processing) will be preferred. Producing fish domestically (through investment in land-based aquaculture for instance) may also seem more attractive. In the short term, consumers' preference may shift towards pre-packed fish which, from a food safety angle, may be more reassuring than fresh fish,³⁶ while increased online retailing (e.g. digitization) may develop further.³⁷

In the return to business as usual scenario, the public and private sectors will want to restart the supply chain and reconquer the markets, which may have been lost during the lockdown. Yet they may also want to reduce the costs from possible future occurrence of similar outbreaks by correcting the vulnerability in the supply chain (as for example not being dependent on one supplier). This could involve diversifying suppliers/processors to have more supply chain control.

It is unclear which scenario will prevail, but it is becoming clear that regardless of the scenario many of the changes forced by the pandemic will prevail. These may include increased digitization and traceability, and increased volume of processed (referenced to fresh) fish. At present, it seems that countries are focusing on policies and economic tools that protect the industry, jobs as well as ensure a fast recovery of the sector, with limited attention to long term consequences.

7. What can FAO and partners do

FAO is supporting countries through this COVID-19 pandemic, by providing policy recommendations as well as technical advice and support. The below provides an overview of some of the on-going responses or recommended actions by FAO partners.

Management and policy measures

- Collect data, as well as support research, on the impact of the COVID-19 pandemic on fisheries and aquaculture systems.
- Develop assistance packages and contingency plans with specific fisheries and aquaculture measures.
- Maintain close engagement with small and large scale industry to ensure a good understanding of the issues facing fishers, fish farmers and other seafood businesses

³⁵ i.e. moving a business or part of a business that was based in a different country back to its original country.

³⁶ While fish is safe to eat, misleading perceptions in some countries have led to decreased consumption of fish and fish products.

³⁷ <https://www.intrafish.com/opinion/9-ways-coronavirus-is-changing-seafood-forever/2-1-775088>

and working closely with the latter to ensure that measures considered are targeted and proportionate.

- Prioritize the most vulnerable, such as crew members, fish workers, women processors and vendors.
- Support food supply chains and avoid disruptions in movement and trade of fish and fish products, to ensure that they function smoothly in the face of the crisis and increase resilience of food systems so that they can support food security and nutrition.
- Provide clear communications regarding how the virus is transmitted and that it is not related to seafood.
- Promote seafood consumption and facilitate direct sales of fish and fish products.
- Work with the industry and regional organizations on developing a range of management options as well as on measures to protect jobs and ensure a fast recovery, including assessment of transport and market development options.
- Management packages could include:
 - Fishing effort to be controlled (in conjunction with any established catch limits ‘quotas’ etc) by limiting vessels numbers to match market size. To ensure safety only vessels with a full complement of crew to be permitted to leave harbour to conduct fishing operations.
 - Allow for the roll-over of uncaught quota to the next fishing season.
 - Extending fishing season.
 - Licence fees and levies waived for a certain number of months.
 - Where possible, enhance remote surveillance and non-observer monitoring programmes (cameras, log-books, electronic reporting systems).
 - The owners and crew of vessels prevented from fishing to receive compensation for not being able to work.

Measures to provide adequate hygiene and sanitation:

- Improve hygiene and sanitation in the fish market and on board of vessels (including provision of facial masks, gloves, etc.)

Measures to support the supply chain:

- Fisher, processor and distribution workers to be designated as “Essential Workers” as they provide food to the nation.
- Visa expediting for temporary, seasonal foreign labor for the harvesting and processing of seafood.
- Ensure supply chain access. For those fishing operations that sell their products overseas, ensure continued access to and cooperation from officials at ports, rail, and border crossings so that they can maintain their sales.
- Stability of fisheries access by reducing unnecessary regulatory burdens that are preventing access to and sustainable harvest from fishing grounds.
- Where possible link fishing centre or village to, for example, the local level community kitchen in the area. Smaller varieties of fish can be easily fried (sardines, mackerels, anchovies) and, where possible, be supplied there for a fixed price.
- Continue support the supply chain: e.g. Use temporary storage of fish, divert fish to the home market working with processors to adjust supply to the home market and replace product previously prepared for the export market.

- Fish which remains unsold to be processed (e.g. salted or stored in ice as appropriate). For the latter, the supply of medium-sized insulated fish boxes by the Department of Fisheries is desirable.
- Explore the possibility of freezing fish productions with fish processing, refrigerating and distribution companies.
- Promote new technologies (WhatsApp group etc) to get fresh fish delivered directly to the consumers taking the adequate safety measures.
- Promote new and climate smart low cost technologies (e.g. e-commerce using ICT platform) to facilitate the interface between the supply (producers/fishers) and demand (consumers), anticipate problems.
- Activities to strengthen and regain confidence in producer/buyer relationships
- Activities to promote the benefits of fish consumption and strengthen end demand

Measures to ensure adequate access to finance and social protection systems

- Declaration of a fisheries disaster to open up aid options.
- Increase access for fishers and others in the fisheries and aquaculture value chain to credit and micro-finance programmes with reduced interest rates, flexible loan repayment, and options for restructuring of loans and related payment schedules.
- Grant programs to cover economic losses in order to maintain domestic seafood supply chains and to ensure continued operations.
- Loan forgiveness for loans used to maintain payroll, grants for maintenance to keep vessels in good working order, and low-interest loans to refinance existing debt would help.
- Payment relief i.e. suspension of certain financial obligations such as utilities, real estate tax, and mortgages.
- Payroll and unemployment assistance. Additionally, many vessel crew members and small-scale producers are considered self-employed and do not currently qualify for unemployment or paid leave, so relief efforts must also be extended to these workers.
- Government to expand purchase of seafood for institutional use (i.e. prisons, hospitals, school feeding programs, etc.) as well as for distribution as food assistance.
- Cash and in-kind transfers by local institutions (where no national social protection schemes exist) to support most vulnerable.
- Where social assistance (cash-in kind transfers) or social insurance programs exist, adapt the program design (delivery schedule, level of benefits) and relax conditionalities (e.g. waivers on contributions) to ensure wider and adequate coverage of the fisheries and aquaculture sector, including informal workers.
- Support inter-institutional coordination, through data information exchange between authorities responsible for fisheries development and governance to ensure coverage of fishers by social development.

8. Annex: How are governments, the private sector and small communities organizing to address changes in the fish food system

The following section provides an overview of some national policies and responses to COVID-19 as collected through secondary information and interviews.³⁸ It also includes a description of impacts when available. The section is organised by FAO regions. It is not meant to be comprehensive.

Africa

It is too early to say what are the impacts of COVID-19 on fisheries and aquaculture in the Africa region. In South Africa, the export price of Rock Lobster has significantly declined with the closure of Chinese fish market which is impacting small scale as well as large scale fisheries. In Kenya, it is reported that local fish sales have boomed for fear of contracting the virus through the Chinese fish exports.³⁹ In Madagascar, some transport disruption have been reported for aquafeed, and the early closure of markets to reduce disease spreading has required some adjustments in the fishermen and fish farmers habits. In Algeria, most fish markets and restaurant are closed, impacting fishermen supplying these markets.

Some countries are already applying total lockdowns like Angola, Eritrea,⁴⁰ Mauritius, Namibia and South Africa, Zimbabwe. In Angola, for example, the Government has declared a state of emergency. Restriction of people free movement, disruption of transport system, closure of commercial establishments will reduce the mobility of the workforce, the market available for commercialization of agrifood products (including seafood) as well as will impact the logistics and transportation of products.

In some other countries (e.g. Angola, Cabo Verde, Liberia), fisheries ministries/departments have been requested to determine the necessary measures that are indispensable to ensure continuity in the production, processing, transportation, distribution, and supply of fisheries and aquaculture products.

In response to rock lobster market closure, the Department of Environment, Forestry and Fisheries (DEFF) of South Africa has extended the nearshore fishery in Western Cape until June and the Offshore and Northern Cape until September to help fishers compensate for the economic losses incurred. In addition, fishers in both the Western Cape Rock Lobster Association (WCRLA) and linefish sectors will be able to land their catch over weekends.

Asia and the Pacific

As the largest producer, exporter and one of the biggest importers of fish, China has been on the frontline suffering from the COVID-19. The impacts are mainly demonstrated in several aspects: firstly the nationwide lockdown has inevitably halted the logistics and, domestic distribution channels were almost cut off. This paralysis has resulted in the shortage of feed for producers but has led to an over stock in the farm due to the poor transportation and lower demand; secondly, the closure of wholesale markets, supermarkets and restaurants has translated into low demand that household consumption has apparently not been able to

³⁸ FAO fisheries and aquaculture officers in headquarters and (sub)regional offices and FAO partners are gratefully acknowledged for their most valuable inputs to this section.

³⁹ BBC documentary available : <https://www.bbc.com/news/business-47611076>

⁴⁰ Eritrea has begun a nationwide lockdown for 21 days to stem the spread of coronavirus (<https://www.bbc.com/news/live/world-africa-47639452>).

offset, putting more pressure on the farmers. The processing industry has played increasingly important roles to absorb the raw material and convert them into processed/prepared products, which can be preserved for longer periods. The global fish trade pattern has been disrupted, with stagnant demand. Chinese exporters of tilapia, catfish, as well as the processors of whitefish are struggling to maintain orders from abroad.

The Chinese government has conducted a series of measures to stabilize the fisheries and aquaculture industry. On February 15 2020, a joint declaration from the Ministry of Agriculture and Rural Affairs, National Development and Reform Commission and Ministry of Transport of China was announced to assist the aquaculture industry:⁴¹

1. Resumption of processing enterprises. Except for cities with severe epidemics, such as Wuhan, feed and processing enterprises should be allowed to resume work in various places without restricting conditions. Priority should be given to protecting workers of related enterprises, moreover, water, electricity and gas supplies to that industries are secured.⁴²
2. Ensure the smooth transportation of raw materials and feed ingredients, such as corn and soybean meal. Transportation of necessary materials cannot be blocked.
3. The government has set up a special fund to encourage the leading companies who have cold storage facilities to pre-purchase fresh fish from individual farmers to reduce their financial burden.
4. All localities are establishing online information platforms to coordinate the demand and supply. Information is collected on buying and selling activities and priorities are given to those poorer counties and towns.

Financially, the government has facilitated the direct communication between banks and enterprises to materialize the financial aids and to implement special loans with discounted interest rates. During the COVID-19, deferred payments of electricity, water and gas for related enterprises were allowed.

In response to the announcements, traditional farming and processing regions in China, like Guangxi and Hainan, have implemented respective measures following the notice from the Ministry with more detailed guidance to reduce the pressure of the farmers.

In the capture fishery sector, the Ministry of Agriculture and Rural Affairs also developed specified notices to the distant fishing vessels. For example, the daily reporting system should be applied to all the vessels by asking the vessel owner to be responsible for all the preventative measures combatting the COVID-19; the fuel supply and crew member recruitment should be conducted in safer ports, with relevant information communicated to the Fisheries Bureau.⁴³

Chinese Aquatic Products Processing and Marketing Alliance,⁴⁴ under the guidance of the Ministry, urgently put into place the National Fish Demand and Supply Information Platform where many leading companies and small-scale enterprises are invited to register. By mobilizing the resources, the platform has successfully helped thousands of fishermen to sell their products.

⁴¹ http://www.yyj.moa.gov.cn/gzdt/202002/t20200228_6337881.htm

⁴² http://www.yyj.moa.gov.cn/gzdt/202002/t20200224_6337617.htm

⁴³ http://www.yyj.moa.gov.cn/gzdt/202003/t20200317_6339180.htm

⁴⁴ <http://www.cappma.org/view.php?id=4718>

On top of that, the companies of the alliance voluntarily donated their products and cash to the severely hit provinces and areas in China; many leading companies have played major roles in combating the virus. It has been discovered that those who have better processing facilities are in better place to cope with the market distortion because they are able to store the processed products for longer periods without adding too much cost.

As the COVID-19 spreads across the country, all related Korean government ministries jointly announced, on 28 February, a series of joint measures to minimize the disease impacts and to overcome it as early as possible at the national level.⁴⁵ In this context, Ministry of Maritime Affairs and Fisheries (MoF) has prepared a set of comprehensive support measures considering the requirements of fishers and under the primary direction of joint actions of related ministries, to keep the economic vitality of the fisheries and aquaculture sector as follows:

- (1) supports overseas marketing activities and liquidity with diverse fund mechanisms for seafood exporters;
- (2) promotes the seafood consumption through e-commerce and offline market transaction for local small scale fishers and local seafood companies;
- (3) provides public finance with low-interest rates for small-scale fishers to relieve their business difficulties;
- (4) maintain the growth engine for the fisheries and aquaculture sector along with budget early implementation, expansion of SOC investment, and the introduction of "the Public Benefit Debit System".

Japan is a large fish producer – the seventh largest in the world, accounting for 2.1 percent of global fishery production in 2017 (3.5 percent for capture fisheries and 0.9 percent for aquaculture). Japan was the second largest fish import market in 2017, accounting for 10 percent of global fish imports, by value. It absorbed a large portion of global imports (by value) of several major aquatic species groups, such as brown seaweeds (nearly 90 percent), river eels (60 percent), clams/cockles/arkshells (30 percent), cephalopods (15 percent), tunas/bunitos/billfishes (15 percent), shrimps/prawns (12 percent) and salmons/trouts/smelts (9 percent). Japan also had substantial fish export which accounted for 1.3 percent of the world total in 2017. The Covid-19 pandemic has dramatically reduced seafood prices in Japan, particularly for high-end products, e.g. bluefin tuna, due to lower demand from restaurants and hotels.⁴⁶ The pandemic has also affected fish/seafood trade operations e.g. the suspension of the “simultaneous auction” in the central wholesale market in Sapporo in order to prevent infection.⁴⁷ The global spread of the virus also affects Japan’s fishing operations, disrupting its pelagic tuna fisheries due to the increased number of countries that regulate boarding and disembarking of crew members at major supply ports overseas.⁴⁸

In Indonesia , there is no lockdown and the domestic supply chain is working normally, but some issues have been reported across social media on difficulty with the fish export market. This seems to have resulted in stocks for some fish processors, which cold storages are full.

⁴⁵ <http://www.mof.go.kr/article/list.do?menuKey=383&boardKey=17>

⁴⁶ <https://www.nippon.com/en/news/yjj2020022900479/new-coronavirus-affecting-fish-trade-in-japan.html>

⁴⁷ https://www.fis.com/fis/worldnews/search_brief.asp?l=e&id=106723&ndb=1

⁴⁸ <https://www.seafoodnews.com/Story/1167571/Coronavirus-Traps-Fishing-Crew-of-Japanese-Long-Distance-Tuna-Vessels>

In Nepal, the lockdown had an impact on the breeding of Common carp, Silver carp, Bighead carp and grass carps. Some disruptions for fish feeds have also been mentioned.

In the Philippines, the lockdown is in effect in the whole island of Luzon. Agriculture and fisheries production workers are considered essential for food security and are still operating. The transport of agriculture and fisheries products to markets is still going on, with the government support. Wet and supermarkets are still open with restrictions. In some cities, food products are brought closer to consumers who do not have means of transport. Only issue reported so far relates to imported seeds.

There is no lockdown in Cambodia but preventive measures are in place to avoid crowding. Some fresh and processed fish are sold online and home delivered. In terms of supply of fish, the wild fishery is important as well as the importation of aquaculture fish from neighbouring countries, which normally makes up any shortfall in domestic fish availability (in urban areas) in a poor fishing year like 2019/20. Note that 2019/2020 was a very poor year for the Cambodian inland fisheries (due to dry year, closure of Mekong dams and major impact on Tonle Sap fishery) which is a major cornerstone of food and nutritional security. Some larger aquaculture farms in Cambodia are also suffering from water shortages due to the ongoing drought and high temperature at this time of year. The closure of borders of neighbouring countries and restrictions on border trade may constrain fish imports and to a lesser extent exports. This will further pressurize supply of fish. There is an additional pressure of the 25,000 plus migrant workers returning from Thailand (due to COVID-19 related turn down in jobs) to the Tonle Sap provinces, who will not be able to subsist on fishing or agriculture until May/June at the earliest. Some will be likely to turn to NTFPs (and TFPs) thereby increasing pressure on forest resources.

In Myanmar,⁴⁹ the Myanmar Fisheries Association said that if there were a lockdown due to COVID-19, there would be problems in shrimp companies related to shortage of labour and long-term storage. The buying and selling of dried fish has stopped. MFA is asking buyers to buy their fish and maintain the market flow.

On April 7th, the Thai Department of Fisheries organized a meeting with key actors along the shrimp value chain, mostly vannamei and small portion of *Macrobrachium rosenbergii* and *monodon*. Indirect impacts from COVID-19 include: i) over supply - harvest 15,000 tonnes (28% of respondent farms) in the next 3 months; ii) Low price - nearly zero import order; iii) High production cost, low sale, no profit/loss which may bring farmers to give up production if there is no support. If farmers abandon their production, all actors in the value chain will be affected, i.e. hatcheries (as of 7 Apr 2020, over supply of post-larvae of 625 million PLs), feed industry, processing plants and their workers, etc. Measures/support proposed by key actors to DoF are to:

- 1) Discuss with associations of input trade and feed production if they can help reduce input prices.
- 2) Government to provide direct support, i.e.:
 - Government buys harvest and later trade (G2G).
 - Price stabilization programme - set acceptable farm-gate price (F), processing companies buy at X price which is lower than F and government subsidize F-X.

⁴⁹ Irrawaddy News, 2 April 2020.

- Pledging programme (shrimp pledging in 2547 and 2550-51) – government buy, store and sell shrimp. Ideally, farmers should retrieve their shrimp from the programme at certain point, but in the past it did not happened.
 - Promote even more of domestic consumption – online internal trade
- 3) Continue negotiation on reduction of electricity price.

In the coming weeks, it was agreed that farmer groups will collect/compile data of total shrimp output this year by size and production cost by size, and that the Department of Fisheries will meet again with key actors/associations along the value chain to put together the information and submit a request to the next ministerial meeting.

Most of the Pacific does not yet have confirmed cases of COVID 19 (a few in Fiji and some of the other Pacific territories). The strategy has been largely to stop flights and completely halt entry of anyone new to ensure they are not exposed. This has impacted the pearl and giant clam exporters of French Polynesia. At the moment, it is more an issue of restricted imports and increased reliance on domestic goods.⁵⁰

Australia has developed a State by State fisheries responses to the impacts of the virus. Measures so far include assistance package to help alleviate the impacts on affected businesses, quota roll over, etc.⁵¹

Europe and Central Asia⁵²

The European Union and individual member states are taking economic measures to counter the impact of COVID-19. Some of these measures target fisheries and aquaculture which are among the hardest hit sectors, as demand has seen a sudden decline. Below a summary of some of the tools proposed by the European Commission Directorate-General for Maritime Affairs and Fisheries (MARE) and/or adopted at E.U level.

On 13 March 2020, the European Union (E.U) approved the EU Corona Response Investment Initiative of EUR 37 billion and maximum flexibility in the application of the EU Treaties and the potential deviations of EU Countries from budgetary rules (the so called 3% deficit limit) to help countries to spend to contain the epidemic and mitigate the negative socio-economic effects. EUR 1 Billion of the EU Corona Response Investment Initiative was allocated to fisheries and aquaculture support in guarantee, and EUR 8 billion are for small and medium enterprises (SME) fisheries/aquaculture support.⁵³ A week later, the EU Commission adopted a Temporary State aid Framework to enable Member States to provide relief to economic operators hit by the crisis, and allow aid support up to EUR 120,000 per active fishery/aquaculture sector. This can be provided in the form of grants or tax advantages, to help operators in lack of liquidity.

On 2 April 2020, MARE proposed a second package to support the EU fisheries/aquaculture using the EU Maritime and Fisheries Fund (EUMFF) to: support temporary cessation of fishing/aquaculture activities; support producer organizations for fishery/aquaculture products storage and financing of this storage to 100% by the EUMFF. The goal is to allow

⁵⁰ As reported by FAO subregional fisheries and aquaculture officer.

⁵¹ <http://frdc.com.au/media-publications/fish/FISH-COVID19/Key-Issues>

⁵² The information focuses on Western Europe.

⁵³ https://ec.europa.eu/commission/presscorner/detail/en/ip_20_459

greater market stability, mitigate the risk of having high-value seafood products wasted or redirected to non-human food purposes, and help to absorb the impact of the crisis on the return on products. This proposal is retroactive from 1/2/2020 to 31/12/2020.⁵⁴

On 4 April 2020, MARE launched the 2020 European Maritime and Fisheries Fund (EMFF) pre-financing process with EUR 160,3 million, waiving this year on the obligation to refund (as per rule) unspent pre-financing at the 2019 program closure. This allows the Member States to use the funds to accelerate investments in response to the coronavirus outbreak and ease the socio-economic burden caused by the crisis on the fisheries and aquaculture sectors.⁵⁵

The aquaculture industry, processors and traders are requesting that the processing part of the value chain is included in these extraordinary measures; and that import procedures be flexible. Social security protection is also sought. Europêche has called on EU member states to allow fishermen to carry more than 10% of their quotas into the next year, as well as offer fair intervention prices for unsold fish. The industry has also demanded measures guaranteeing the logistical safety of fishermen, such as health protocols for each fleet as well as supplies of masks and gloves to vessels, fish markets and auction halls.⁵⁶

Private initiatives are emerging to adapt to this unprecedented situation. Commercial distributors are offering to freeze producers' fish products (e.g. Picard). Food retailers and e-commerce using ICT platforms are providing options for both consumers and producers.

In France, it has been reported that farmers supply live fish markets (for restocking or sport fishing), restaurants and retail markets (especially trout, shellfish, ornamental, caviar). Processed fish, especially the large-size smoked fish, seem less impacted than the fresh fish sector. The main difficulties encountered relate to the financial impact incurred as a result from market closure and fears that, with the summer season approaching, live fish storage could reduce water availability and entail fish kills. Exports of fertilized eggs and fry are also stopped, as well as integrated tourism-fish farming. Some difficulties are emerging, as for example with the supply of imported products such as vaccines. Small farmers are most affected, but new initiatives like the farmers markets and farmers drive-in where customers can get their products in safe conditions are emerging and easing impacts. Consumers seem to respond positively to these initiatives, and sales have been excellent so far, but the workload for small producers is huge, with 7-8 hours of preparatory work for each farmer's drive-in.⁵⁷

Latin America and the Caribbean

Most countries of LAC are still going through the early stages of the pandemic. In some of them, restriction on population movement are slowly being introduced, so the actual impact on food systems is not yet generally felt.

⁵⁴ https://ec.europa.eu/fisheries/coronavirus-response-fisheries-and-aquaculture_en

⁵⁵ https://ec.europa.eu/fisheries/press/coronavirus-commission-launches-2020-emff-pre-financing-process_en

⁵⁶ <https://www.undercurrentnews.com/2020/03/20/eu-fishing-industry-calls-for-urgent-measures-to-secure-supply-in-wake-of-covid-19/>

⁵⁷ <https://www.facebook.com/lionel.dabbadie/posts/3101260199906169>

In Brazil processing companies that freeze tilapia fillets seem to have increased their sales significantly (+15 percent is mentioned) but the fresh fillet or fresh fish market almost disappeared.³³ In the meantime, the sales to local slaughterhouse have decreased, as a result of demand reduction from restaurant, which are the main client. The live fish market is also impacted, as the *pesque-pague* (“catch and pay”, a popular leisure fishing sector) have been closed. A noteworthy adaptation is the home delivery of cleaned cooked fish.⁵⁸

In Chile, some of the fisheries and aquaculture related measures include:

- Salmon farms are converting their labs into COVID-19 test centers to enable health authorities to carry out tests on coronavirus samples.
- Some fishers face the crisis of the pandemic by doing home delivery sales of fresh and frozen fish.
- Most fish market auctions have been suspended.
- Hard copy documents that are normally submitted to the offices of National Fisheries and Aquaculture Institutions in person are now being sent in digital form, via the Internet.
- National Fisheries and Aquaculture Services are issuing a series of resolutions oriented to adopt measures to reduce the risk of transmission of COVID-19.
- Fishers call for support from governments to help prevent and control coronavirus infection.
- Fisheries and Aquaculture Research Institutions implement a series of safety measures to prevent and control the pandemic.
- National Fisheries and Aquaculture Services are communicating with fish farmers and artisanal fishers throughout the country, through WhatsApp. This is one of the measures that the regulatory agencies are implementing to support women and men during the emergency.
- Efforts are being made to ensure that fishing and aquaculture processing plants continue to work to ensure the continued delivery of fish products whilst safeguarding health and well-being of its workers, through strict compliances with health recommendations provided by the government authorities.
- Contingency plans are being implemented in aquaculture processing plants by working on shifts, separating working areas to ensure social distancing, and creating various points of disinfection, fumigation and surface sanitization; in addition to the delivery of alcohol gel and masks.
- National Customs Service adopt a series of measures to facilitate foreign trade to maintain the logistics chain and, in turn, protect the health of the officials of the institutions and workers of customs agencies that must intervene in person in various customs processes.
- Industrial fishing implement a series of measures in coordination with the Health authorities to protect plant workers and their families.

Some of the common response measures that are being gradually enacted and implemented by governments (not specifically targeting but relevant to fisheries and aquaculture) include:

- Emergency food packages are biweekly being delivered in some countries to riparian communities.
- Tax duties have been relieved for fishing industries for at least three months.

⁵⁸ <https://www.facebook.com/lionel.dabbadie/posts/3101268766571979>

- Setting of a basic income scheme for individuals running their own business or small-business to compensate for the losses due to lockdown or general closure measures.
- Fuel prices have been reduced, particularly for fisher folk.
- Electricity and potable water bills have been suspended for at least three months. This applies for fish farming.
- In at least two countries of the region, bank credit payments (commercial and personal) are being deferred up to three months without additional interests.
- Zero interest loans are being made available by governments, once the crisis is over. This includes fisher folk organizations and aquaculture firms.

In the Caribbean, there is a minor boom in direct to consumer sales. The crisis spurred innovation, where a few fishers are delivering directly to households. This includes delivery of fresh fish (where possible) and small value added packages. As governments increase movement restrictions for all persons not involved in an essential business, direct household delivery is a rapidly expanding niche that might help continue demand.⁵⁹

Near East

The main impact of COVID-19 on fisheries and aquaculture for SNG region (GCC States + Yemen) is at the retail level. Following the outbreak of the disease, the authorities have closed or limited the access to fish markets throughout the region.⁶⁰ The markets operating are limiting the number of visitors and the time they spend in the market. They are also implementing preventive measures such the mandatory wearing of gloves and masks, the monitoring of temperature of all entrants, the provision of sanitizers, the regular cleaning of the market, and the good ventilation. When occurrence of positive cases increase, restaurant are also closed. In response, a noteworthy adaptation initiative in the UAE has been to develop the direct sale to consumers by internet, with home delivery.⁶¹ Precautionary and preventive procedures also apply for home delivery. In most countries, the supermarkets remain functioning as primary outlets for fresh fish.

Depending on the countries, fish auctions have also been adapted or cancelled.⁶² Another noteworthy adaptation initiative in this regard has been reported in Oman, where the authorities collaborated with the Omani Fund for Technology to launch an integrated electronic platform, the Behar platform, to allow remote auction to take place at the central fish market of Al Fulajj, with the aim of reducing crowding.⁶³ In Yemen, the authorities also reduced the total number of fishermen authorized in the landing site and implemented social distancing rules as well as isolation centers.

⁵⁹ <https://www.loopnewsbarbados.com/content/fish-vendors-worried-new-closing-times-may-affect-business>; <https://www.forbes.com/sites/daphneewingchow/2020/03/31/five-ways-that-covid-19-has-changed-what-food-insecurity-looks-like-in-the-caribbean/#45c27cad143e>

⁶⁰ <https://sabq.org/bQM6mT>; <https://www.cnbc.com/news/view/64765/%D8%B3%D9%88%D9%82-%D8%A7%D9%84%D8%B3%D9%85%D9%83-%D9%81%D9%8A-%D8%A7%D9%84%D9%83%D9%88%D9%8A%D8%AA-%D9%8A%D9%82%D8%B9-%D9%81%D9%8A-%D8%B4%D8%A8%D8%A7%D9%83-%D9%83%D9%88%D8%B1%D9%88%D9%86%D8%A7.html>; <https://www.al-madina.com/article/678545>

⁶¹ <https://www.khaleejtimes.com/coronavirus-outbreak/covid-19-in-uae-fish-markets-now-home-deliver-fresh-catches>; <https://www.khaleejtimes.com/uae/fujairah/coronavirus-in-uae-now-get-fresh-fish-delivered-at-your-doorstep-in-fujairah>

⁶² <http://alwatan.kuwait.tt/articledetails.aspx?id=612351&yearquarter=20201> https://www.zawya.com/mena/en/business/story/Special_platform_set_up_in_Oman_for_buying_fish-SNG_171255822/; <https://www.bihar.market/web/website/index.php>

In Yemen, fish exports are currently stopped and in some countries, the imports of fresh fish from abroad have also been stopped, at least temporarily.⁶⁴ This led to some temporary shortage and increasing prices⁶⁵ but for the time being, these appear to remain relatively stable. There might also be in-country differences; for example, in Yemen, the quantity of fish offered has increased in the coastal cities but decreased in the other urban centers, as a result of organizational and technical difficulties for interurban transport. As a result, the fish prices decreased in the coastal areas but remained stable or increased a little in the other cities, as the demand has also decreased. In some countries like UAE, the national carriers are also dedicating specific trips to fish producing countries destinations such as Turkey and Greece in order to import seafood back to the country, so that overall, the challenges are considered minor even though some decline in available quantities is expected, in line with the decline in demand due to the current economic slowdown.

The technical impacts of the pandemics on aquaculture are very limited, as key supplies such as feed and juveniles are not disrupted, and the foreign labor force had just returned from annual offseason leave shortly before the crisis. All aquaculture projects contacted are operating as usual, whether it be for growing-out, harvesting or transport of seed/fry. But the situation has brought auditing of third-party quality assurance/sustainability standards to a standstill and the new initial audits will remain on hold. Aquaculture standards bodies are exploring 'risk-based' remote auditing options for farms with existing certification, in accordance with remote auditing policies established by certification bodies such as the Aquaculture Stewardship Council.⁶⁶ Operators of large aquaculture farms in the sub-region mentioned that although the HORECA sales were hugely impacted, so far they had managed quite well to sell their products on the retail market through their commercial departments. This was also confirmed by a government officer who highlighted that the crisis had actually a positive impact on the sales of national aquaculture products in the country. He was even optimistic that this crisis would highlight the importance of food security and national production of aquatic products. The situation may be different for the large-scale aquaculture producers exporting a large share of their production to countries like China, Korea, Japan, EU, USA that are currently affected by the economic slowdown. These export-orientated aquaculture business may be facing greater short-term disruption to impacts of Covid-19 on trade flows to major consumer markets.

As of now, there is no specific policy for the sector, although all government agencies contacted reported that they were monitoring the situation and working with companies, traders and fish transporters to ensure that the economic challenges are resolved, and especially to ensure an uninterrupted supply of fish at the fish markets and distribution outlets, at prices suitable for both consumers and traders. Moreover, most countries have announced financial measures to minimize the economic crisis for individuals and business, but they are not specific to the sector.⁶⁷

⁶⁴ <https://www.albayan.ae/across-the-uae/news-and-reports/2020-03-25-1.3812448>; http://arabic.news.cn/2020-03/03/c_138839687.htm

⁶⁵ <http://alwatan.kuwait.tt/articledetails.aspx?id=612351&yearquarter=20201> ;
https://www.zawya.com/mena/en/business/story/Special_platform_set_up_in_Oman_for_buying_fish-SNG_171255822/

⁶⁶ <https://www.asc-aqua.org/wp-content/uploads/2020/03/ASC-POLICY-ON-AUDITING-DURING-THE-COVID-19-OUTBREAK-26032020.pdf>

⁶⁷ <https://www.thenational.ae/podcasts/pocketful-of-dirhams-affected-by-covid-19-how-to-get-debt-relief-from-your-uae-bank-1.999254>; <https://www.meed.com/closures-extended-to-curb-covid-19-in-mena>

North America

North America's fisheries and aquaculture are very varied. Fishing is still ongoing because it is considered essential. There is concern about loss of market in particular international markets for secondary processing and consumption. There is also concern that the containment measures will affect the availability of the fishing crew and processing workers in some States.

The United States of America (USA) have adopted a relief package of USD2,2 trillion, the largest ever in US history. The package includes some USD300million of direct financial relief to fisheries participants,⁶⁸ who have experienced economic revenue losses as a result of the pandemic. This will be delivered on a rolling basis and within a fishing season.

US seafood harvesters, processors, trade associations and others have requested a combined USD4bn in relief for the seafood industry, including a commitment to buy USD2.5bn worth of seafood. Amongst the measures put forward by the group: essential status for seafood-related workers; grant or stimulus money to cover losses; loan or utility payment relief or suspension; the government purchase of seafood; payroll and unemployment assistance; the expediting of visas for temporary workers; federal fisheries disaster relief; help in providing transportation assistance for seafood exports; and the reduction of unnecessary regulatory burdens that might prevent sustainable harvesting, the promotion of American seafood abroad.⁶⁹

The fishing and aquaculture industry is adapting to COVID19 containment and other measures by building capacity facility (e.g. Maine land-based salmon farmer Whole Oceans), providing direct supply to restaurants and pubs where possible (e.g. New England groundfish harvester Blue Harvest Fisheries), or freezing fish products (e.g. Dungeness crab harvesters in the US state of Oregon).⁷⁰

⁶⁸ Fishery participants are defined to include tribes, persons, fishing communities, aquaculture businesses not otherwise eligible under other provisions or other fishery-related businesses.

⁶⁹ <https://www.undercurrentnews.com/2020/03/27/us-house-passes-coronavirus-stimulus-with-300m-for-harvesters-aquaculture/>

⁷⁰ Idem.