

The fishing and seafood sector in the time of COVID-19: Considerations for local and global opportunities and responses

Israel Ruiz-Salmón, Ana Fernández-Ríos, Cristina Campos, Jara Laso, María Margallo and Rubén Aldaco

Abstract

This article provides an overview of the impact of the COVID-19 pandemic on the fishing sector over the world, including several economic, social, environmental, and health challenges that the fisheries have had to face during the early days of the health crisis, and some of them still continue today. These problems, in short, are translated into a decrease in seafood demand, loss of jobs, changes in food consumption habits, economic losses, or increased vulnerability of the industry. As a consequence, governments have been forced to implement regulations and measures in support of this sector. However, a positive aspect of the pandemic also stands out, the opportunity to transform the food system to be greener, more inclusive, and resilient against future shocks.

Addresses

Departamento de Ingenierías Química y Biomolecular, Universidad de Cantabria, Avda. de Los Castros, s.n., Santander, 39005, Spain

Corresponding author: Aldaco, Rubén (ruben.aldaco@unican.es)

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Keywords

Seafood, COVID-19, SARS-CoV-2, Fisheries, Pandemic.

Introduction

Pollution, overfishing, and the impacts of climate change are the main damages for oceans and, consequently, for fishing and the whole supply chain. Some recent news exemplifies a global problem from a European context: the microplastic ingestion frequencies were 87% in anchovies and sardines from the north coast of Spain [1]; the 51% of the European stocks were outside of safe biological limits, and only 15% of the stocks have sizes

that are above the level that can produce maximum sustainable yields [2]; the decline of southernmost European Atlantic salmon populations is driven by climate environmental changes in the North Atlantic and natal freshwaters [3]. To deal with these issues, the 14th Sustainable Development Goal (SDG) promotes the conservation and sustainable use of the oceans, seas, and marine resources, which links to zero hunger (2nd SDG), sustainable consumption and production (12th), or the urgent action to combat climate change and its impacts (13th), among others [4]. The COVID-19 pandemic, an unexpected target in the 3rd SDG (health), clearly damages the commitments proposed by the United Nations, adding an important handicap. Nevertheless, it also opens the window to rethink the current status of the seafood sector, which are the challenges and opportunities, and how to deal with them.

Previous to the COVID-19 outbreak, the Common Fisheries Policy established the shared management of the European waters [5], and recent policies to combat climate change or the circular economy plan [6] represent progress is still insufficient. A deeper work in common beyond European borders but also making flexible the internal limits between continental states is required. Furthermore, synergies through specific actions in the medium and long term would benefit the whole seafood supply chain, that is, from fish extraction and processing to distribution and consumption and, finally, the end of life (i.e. landfill, recycling, incineration, etc.). Thus, some tools may improve the seafood system. For instance, a robust inventory to improve the initial design of products, processes, and services and to apply preventive and corrective actions would minimize the environmental impact associated to the life cycle phases, including some of the most relevant in each phase: marine debris in the capture, food waste and discards in the process, distribution, packaging in the use, or final residue treatments. This approach is in progress on the Neptunus project [7], focused on the species caught in the European Atlantic region and the fishing gears applied. The evaluation of the current status will allow determining the best practices to carry on in the near future. On the other hand, an ecolabel based on the water–energy–food nexus which would

provide essential information on water and energy footprints and nutritional content is a unique and beneficial indicator for both retailers (introducing their products into the green market) and consumers (easily accessible information for healthier and sustainable habits). A certification, Pescaenverde, is already applied in the market in the fishing and seafood sector since some years ago, offering both the environmental impact and the nutritional information [8].

The first half of 2020 was marked by widespread lockdowns and travel restrictions, including maritime activities [9]. Although it might be thought that we gave a short truce to the oceans and the extraction of their finite resources, more intense than the limiting quotas and fishing periods of each year, there is no clear evidence. On the one hand, in some cases, quotas have not been filled because of low demand and lack of storage for a perishable product [10]. On the other, the International Council for the Exploration of the Sea suggested an increase of 24% in the herring quota but a decrease of 8% in the mackerel quotas for the Northeast Atlantic in 2021 [11] or the 5%, 16.5%, and 25% reduction of catches in 2021 for hake, cod, and saithe, respectively, in contrast with the increment of 65% in haddock [12]. Indeed, global aquaculture production is projected to decline by around 1.3% [10]. We should not forget that life and the economic derivatives are not possible without keeping the sustainability of the marine environments: oceans absorb the 25% of human-related greenhouse gas emissions—and the corresponding acidification due to carbon dioxide—whereas the fishing industry produces the 1.5% greenhouse gases, but also experience worrisome changes, such as ‘plastic islands’ or alteration in ocean circulation caused by melting glaciers [13]. Consequently, how we produce and consume needs to become more efficient, reducing the raw material and the long distance for distribution and guaranteeing food sovereignty through local economy support.

Knowing today more about pandemic and consequences, managing maritime ecosystem goods and services keeping old strategies of increasing exploitation of resources and not considering the new public health demands added to the climate emergency and social needs will undoubtedly mean a failure with inexcusable consequences for small communities and global socioeconomic impacts.

Year 2020: when the seafood sector changed

The COVID-19 pandemic in 2020 has caused a global change. Particularly, in the fishing sector, several policies have been forced to be implemented to deal with health and environmental effects and socioeconomic implications that have been triggered. In view of all these problems, it is necessary to adopt certain guidelines that will facilitate this situation in the near future.

Policy framework: answers from remote offices

Several policies in support of the fishing sector have emerged during the COVID-19 pandemic. These regulations are focused on the proposal of measures for an immediate response against the economic and social consequences of the crisis. For instance, the reports ‘CORONAVIRUS: Emergency response to support the fishing and aquaculture sectors’, published by the European Commission [14], and ‘Fisheries, aquaculture and COVID-19: Issues and Policy Responses’, developed by the Organization for Economic Cooperation and Development [15], present a series of actions that support financial aid from the European Union (EU) and national budgets, as well as the creation of campaigns to encourage fish consumption and other actions to consider for the producers’ organizations, such as ‘Un país infinito en productos del mar y recetas’ (‘A country full of seafood and recipes’) or ‘Yo consumo en lonja de Cantabria’ (‘I consume at the fish market in Cantabria’). Parallely, Brexit has overlapped with the pandemic, which has added a new item to the scenario, and currently, the negotiations on quotas in shared waters between Great Britain and the EU still continue. Likewise, the Food and Agriculture Organization of the United Nations proposes a series of considerations for legislative responses and legal measures to protect all the stages on the seafood supply chain, alongside recommendations for rapid recovery from the economic impact in the reports ‘Legal considerations in responses to COVID-19 to mitigate the risk of disruption to fisheries and aquaculture food system’ [16] and ‘The role of finance in mitigating COVID-19 impacts in fisheries’ [17]. Finally, the consequences of the pandemic in fisheries have been also exposed by the Food and Agriculture Organization, among which are the restrictions imposed on fishing activities (management, production, and supply of fisheries products), worse working conditions (concerns and difficulties to work in the safe and confidential environment, disruption of at-sea surveys affecting stock assessments), and the decrease in sales due to the closure of the hospitality industry [18,19].

Health and environmental effects: adapting household habits

Health is the main factor that has been profoundly affected by the COVID-19 outbreak, and the seafood sector partially contributed to give an answer. For instance, several clinical assays have been conducted in which fish oil has been implanted as a nutrient (by parenteral route) for critically ill patients [20,21]. Besides, fish is one of the products that has antiviral properties [22], and the existence of peptides derived from tuna protein has been identified as potential SARS-CoV-2 inhibitors [23].

In the environmental field, diverse effects have also been observed such as biological and chemical reduction in coastal waters, and fishing activity has decreased in the

months of the pandemic [24]. This has also led to a decrease in anthropogenic factors in the marine ecosystem [25] and significant reductions in metals because of the fact that there were few discharges of wastewater from seafood-based industries during the closure. It was the case of the industrial city of Tuticorin (India), where the reduction of NO₃ (56%), total coliforms (52%), and faecal coliforms (48%) indicated less organic waste water from the fishing industries, as per the samples taken before (10th and 11th February 2020) and during the lockdown (19th and 20th April 2020) periods [24]. All these have generated modifications in adaptive household habits such as social distance to buy secure organic fish [26] and the intention of consumers to buy fish that reduces infection and promotes a healthier diet [27,28]. Nevertheless, the reduction in purchases was attributed to products such as fish and seafood [29,30] whose consumption has decreased [31,32]. For example, seafood intake has decreased by 53.1% in China in the postlockdown period [33], whereas Poland, Italy, and Spain reduced fish and seafood household consumption by 17%, 22%, and 33%, respectively [34]. Besides, the seafood has been one of the food categories which has suffered a price increase (1% more in March 2020, compared with January and February of the same year) [35]. In addition, the mobility of fishing vessels was limited because they were among the first identified sources of transmission [36]. This issue, added to reduced demand of the food service and tight restrictions on international trade, has caused the fishing sector to suffer many disruptions including lower catches, imports, and exports of fresh seafood and increased delivery and collection services for this product. Therefore, it is necessary to focus support on the sectors most affected, such as industries dependent on fisheries and aquaculture [37].

Socioeconomic implications: the reality of a pandemic

The fishing sector has been seriously affected by the pandemic and has led to the closure of marine distribution channels and many fisheries (less crew, less time, and fewer resources during the coronavirus pandemic) [38,39]. This has grave socioeconomic implications as the sector has had to deal with the immediate decline in employment due to the lack of income for companies [40,41]. On the other hand, the impact of COVID-19 on the aquaculture sector focuses on the reduction of seafood in national and global demand and the breakdown of fish supply chains. In addition, it has been occasionally observed that face masks and derived microparticles are easily ingested by fish and other aquatic life organisms, which will affect the food chain [42]. Seafood exports have been affected and require functional diversity in supply chains [43] and early adaptation responses to restore the sector. However, the contraction of economic output in the fisheries sector did not have a

significant impact on the overall economy because of the small size of the sector [10]. Even so, the role of fishing in the economy of certain countries and regions cannot be neglected. For instance, almost all fishermen from small fishing communities in Cyprus surveyed in May 2020 described the negative impact of the COVID-19 outbreak on their income as very high or high. Besides, the majority (62%) also believed that the current financial compensation tools implemented by the Cyprus government and the EU were not enough [10].

Learnings and opportunities in the near future

Despite the clear negative consequences that COVID-19 has had on the fishing sector, the pandemic presents an opportunity to transform the food system to be greener, more inclusive, and resilient [44]. The use of alternative seafood networks, that is, seafood distribution models that serve local and regional food systems and deliver seafood directly to consumers, presents a segment of the food system that has not been fully taken advantage of it before. Alternative seafood networks have implications with respect to the organization of production and distribution of food, as well as for policy options for enhancing the systemic resilience of seafood systems moving forward, allowing the sector to respond effectively and to recover for future shocks [45,46]. On the other hand, the use of technologies can facilitate the adaptation of the commercial sector on the pandemics, allowing companies to promote their products and connect with consumers [47]. Therefore, maintaining and building diversity and connectivity at the community, company, and country level are ways to build resilience and guard against bad outcomes. With respect to the product, the sale of shelf-stable and frozen seafood, instead of live-fresh fish, is an important option to consider because it guarantees less food loss and waste [45] but may become unviable for the sustainability of small fisheries. Moreover, the promotion of shorter food supply chains, namely fresh meat and fish, under 'zero km' strategies, also minimizes the environmental impact associated to the transport [48]. Thus, the lifestyle during pandemic changed, making local purchasing to gain importance in the collective thinking. Indeed, mobility restrictions, even in small towns, favor this. These local markets represent a more resilient and sustainable solution, reducing transportation, providing a better supply–demand balance, creating more transparency, and tracking and contributing to waste reduction [49]. Finally, regarding the policies, COVID-19 provides an opportunity to integrate wider policies that are more coherent and make sense from an ecological perspective, considering the management of fisheries and protecting populations throughout their life cycle. The opportunity presented by the COVID-19 slowdown should be used to encourage inefficiencies within the system to reduce

energy use, limit catch, and allow stocks to recover and profits to increase [50].

Conclusions

The COVID-19 pandemic has weakened the commitments proposed by the United Nations, making policies related to climate change and other environmental issues in fishing take a backseat and highlighting other social, health, and economic aspects, hindering the improvement of the seafood sector. Economic crisis and poorer material conditions for citizens, concern about COVID infections on boats due to reduced spaces and work at great distances from their home ports, closure of distribution channels, or eventual plastic pollution in oceans from extra personal protective equipment delivery are few examples of what this pandemic has caused in short and long terms. This requires that life and economic derivatives maintain the sustainability of marine environments, and consequently, it is necessary that the way in which it is produced and consumed is more efficient, reducing raw material and long-distance distribution and assuring food sovereignty by supporting local economies.

Therefore, certain support policies for the fisheries sector have had to be brought with immediate responses against the economic and social consequences of the pandemic crisis. In addition, to deal with the effects on health, fish oils have been used as a nutrient for the sick. Environmentally, the quality of coastal waters has greatly improved, and certain socioeconomic problems have appeared such as the closure of marine distribution channels and many fisheries. Despite the clear negative impact of COVID-19 on this sector, the pandemic presents an opportunity to transform the food system to be more environmentally friendly, inclusive, and durable.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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