## Scopus

## **Documents**

John, A.<sup>a</sup>, Khan Chowdhury, A.J.<sup>b</sup>, Munir, M.B.<sup>b</sup>, Abdullah, R.<sup>b</sup>, Zainal Abidin, Z.A.<sup>c</sup>, Nordin, N.F.H.<sup>d</sup>

# Fishery Resilience in Covid-19 Post-Pandemic Era: Sustainable Environmental Approach for Potential Challenges in Asia

(2025) Environmental Science and Engineering, Part F97, pp. 149-167.

**DOI:** 10.1007/978-3-031-47757-7 9

#### **Abstract**

The COVID-19 pandemic has had a substantial impact on the global fishery industry, causing widespread disruption to supply chains and market demand. This has led to significant economic challenges for fishing communities, particularly in developing countries where fishing is a major source of livelihood. In the challenge of the pandemic, it is important to consider ways to build resilience in the fishery industry to ensure its continued viability in the time to come. One approach to achieving fishery resilience is to focus on sustainable fishing practices. This involves implementing measures to minimize the impacts of fishing on the natural aquatic environment by reducing human intervention such as bycatch and protecting critical habitats. Additionally, investment in aquaculture can help to reduce dependence on wild-capture fishing and provide a more controlled and sustainable source of fish for human consumption. Another important aspect of building fishery resilience is improving supply chain management. This involves establishing more efficient and effective processes for catching, processing, and distributing fish and seafood products, to minimize waste and ensure that products reach markets in a timely manner. Improving supply chain management can also help to reduce the economic impacts of the pandemic by ensuring that fish and seafood products are available for sale even in the face of market disruptions. In conclusion, the COVID-19 pandemic has had a profound impact on the global fishery industries especially Asia-Pacific region, highlighting the need for greater resilience in this critical sector. By means of focusing on sustainable fishing practices and improving supply viability for generations to come chain management, the industry can develop a more sustainable and resilient future, ensuring its viability for generations into the near future. © The Author(s), under exclusive license to Springer Nature Switzerland AG 2025.

## **Author Keywords**

COVID-19; Fishery management; Fishery sector; Supply chain; Sustainable practice

## Index Keywords

Fish, Fishing (oil wells), Macroinvertebrates; Chain management, Economic challenges, Fisheries management, Fisheries sector, Fishery industry, Global fisheries, Market demand, Natural aquatic environments, Seafood products, Sustainable practices; Fisheries

## References

- Alam, G.M.M., Sarker, M., Gatto, M., Bhandari, H., Naziri, D.
   Impacts of COVID-19 on the fisheries and aquaculture sector in developing countries and ways forward
   (2022) Sustainability, 14 (3), p. 1071.
- Azra, M.N., Kasan, N.A., Othman, R., Noor, G.A.G.R., Mazelan, S., Jamari, Z.B., Sar, G., Ikhwanuddin, M.
  - Impact of COVID-19 on aquaculture sector in Malaysia: Findings from the first national survey (2021) *Aquac Rep*, 19.
- Belton, B., Rosen, L., Middleton, L., Ghazali, S., Mamun, A.A., Shieh, J., Noronha, H.S., Price, C.
  - **COVID-19** impacts and adaptations in Asia and Africa's aquatic food value chains (2021) *Mar Policy*, 129.

<sup>&</sup>lt;sup>a</sup> College of Marine Sciences and Aquatic Biology, University of Khorfakkan, Sharjah, United Arab Emirates

<sup>&</sup>lt;sup>b</sup> Faculty of Agriculture, Universiti Islam Sultan Sharif Ali (UNISSA), KM 33, Jalan Tutong, Kampung Sinaut, Tutong, TB1741, Brunei Darussalam

<sup>&</sup>lt;sup>c</sup> Department of Biotechnology, Kulliyyah of Science, International Islamic University Malaysia, Pahang Darul Makmur, Kuantan, 25200, Malaysia

<sup>&</sup>lt;sup>d</sup> International Institute for Halal Research and Training, International Islamic University Malaysia, Level 3, KICT Building, Selangor, Jalan Gombak, 53100, Malaysia

- Bennett, N.J., Finkbeiner, E.M., Ban, N.C., Belhabib, D., Jupiter, S.D., Kittinger, J.N., Mangubhai, S., Christie, P.
   The COVID-19 pandemic, small-scale fisheries and coastal fishing communities (2020) Coast Manag, 48, pp. 336-347.
- Campbell, S.J., Jakub, R., Valdivia, A., Setiawan, H., Setiawan, A., Cox, C., Kiyo, A., Rosa, E.
   Immediate impact of COVID-19 across tropical small-scale fishing communities (2021) Ocean Coast Manag, 200.
- Cashion, T., Le Manach, F., Zeller, D., Pauly, D., Frölicher, T.L. **Most fish destined for fishmeal production are food-grade fish** (2017) *Fish Fish*, 18 (5), pp. 837-844.
- Chuan, O.M., Ghazali, A., Md Amin, R., Bhubalan, K., Nie, L.J., Tuan Omar, T.M.F., Khalil, I., Chuen, Y.J.

Mohd Yusoff N et al (2021) Positive and negative effects of COVID-19 pandemic on aquatic environment: A review Sains Malaysiana, 50, pp. 1187-1198.

. Clavelle, T.

Global Fisheries During COVID-19—Global Fishing Watch (2020) *Global Fishing Watch*, (, May 12)

- Coll, M., Ortega-Cerdà, M., Mascarell-Rocher, Y.
   Ecological and economic effects of COVID 19 in marine fisheries from the Northwestern Mediterranean Sea (2021) Biol Conserv, 255.
- Cooke, S.J., Twardek, W.M., Lynch, A.J., Cowx, I.G., Olden, J.D., Funge-Smith, S., Lorenzen, K., Weyl, O.L.F.
   A global perspective on the influence of the COVID-19 pandemic on freshwater fish biodiversity (2021) *Biol Conserv*, 253.
- COVID-19 Pandemic: Challenges and Recommendations,
- Daw, T., Gray, T., Mombeshora, B.
   Stakeholder engagement in fisheries management: Lessons learnt from the Lake Victoria fisheries management initiative

   (2006) Afr J Ecol, 44 (3), pp. 303-312.
- de Silva, R.P., Karunarathne, M.D.S.D.
   Fishery supply chain management: A review of recent trends, challenges, and prospects for sustainability
   (2021) Ocean Coast Manag, 207.
- de Silva, S.S.
   Fisheries in the future: The challenges ahead
   (2020) Rev Aquac, 12 (1), pp. 1-22.
- (2021) EPA (2020) Frequent Questions about Disinfectants and Coronavirus (COVID-19), Available online, July
- Fahlevi, H., Chan, S., Hasibuan, P., Fadli, N., Sofyan, S.E., Rianjuanda, S.M., Saidi, T., Dawood, R.

The feasibility of a cold storage facility for fish in Aceh during the COVID-19 pandemic

(2021) IOP Conf Ser Earth Environ Sci, 674.

- Fiorella, K.J., Bageant, E.R., Mojica, L., Obuya, J.A., Ochieng, J., Olela, P., Otuo, P.W., Okronipa, H.
   Small-scale fishing households facing COVID-19: The case of Lake Victoria (2021) Kenya. Fish Res, 237.
- Food and Agriculture Organization of the United Nations (FAO–COFI) (2021) Declaration for Sustainable Fisheries and Aquaculture, Rome
- The state of world fisheries and aquaculture. Contributing to food security and nutrition for all. Rome, p 200
   (2016) License: CC BY-NC-SA 3.0 IGO,
- The state of the world fisheries and aquaculture—meeting the sustainable development goals. Rome, p 210 (2018) License: CC BY-NC-SA 3.0 IGO,

٠

- The state of world fisheries and aquaculture. Sustainability in Action. Rome, p 244 (2020) *License: CC BY-NC-SA 3.0 IGO*, (b)
- Food and Agriculture Organization of the United Nations FAO (2020C) Blockchain Application in Seafood Traceability, Retrieved from
- The effect of COVID-19 on fisheries and aquaculture in Asia (2020) Bangkok, (d)
- FAO (2020E) FAO Report on Overcoming Water Challenges in Agriculture,
- Gephart, J.A., Pace, M.L., Harfoot, M.B.
   The impacts of climate change on fishery production: A global analysis (2021) ICES J Mar Sci, 78 (1), pp. 33-42.
- Ghafoor, D., Khan, Z., Khand, A., Ualiyevab, D., Zaman, N.
   Excessive use of disinfectants against COVID-19 posing a potential threat to living beings

   (2021) Toxicology, 2, pp. 159-168.
- Hamzah, A., Nurdin, H.S.
   Economic resilience of fishermen community during COVID-19 pandemic (2021) IOP Conf Ser Earth Environ Sci, 715.
- Hossain, M.S., Alam, M.A.
   Sustainable fishery supply chain management: A review of challenges and opportunities
   (2021) J Clean Prod, 303.
- Impacts of COVID-19 on the fisheries and aquaculture sector in developing countries and ways forward Sustainability, 14, p. 13.
- Islam, M.M., Khan, M.I., Barman, A.
   Impact of novel coronavirus pandemic on aquaculture and fisheries in developing

countries and sustainable recovery plans: Case of Bangladesh (2021) *Mar Policy*, 131.

- Jalal, K.C.A., John, A., Abdullah, R., Musa, N., Ashraf, M.A.
   Impact of Covid-19 on aquaculture and fisheries in ASEAN countries: Some aspects of challenges, mitigations for future strategies in Malaysia
   (2021) Desalin Water Treat, 241, pp. 331-339.
- Kaewnuratchadasorn, P., Smithrithee, M., Sato, A., Wanchana, W., Tongdee, N., Sulit, V.T.
- Knapp, G.

Roheim CA (2007) Poverty, consumption, and fisheries: Recognizing and managing the multiple drivers of marine resource degradation

*Human Dimensions of Global Environmental Change. Springer*, pp. 177-192. Berlin, Heidelberg

- Knight, C.J., Burnham, T.L., Mansfield, E.J., Crowder, L.B., Micheli, F.
   COVID-19 reveals vulnerability of small-scale fisheries to global market systems (2020) Lancet Planet Health, 4 (6), p. e219.
- Kumaran, M., Geetha, R., Antony, J., Vasagam, K.P.K., Anand, P.R., Ravisankar, T., Angel, J.R.J., Patil, P.K.
   Prospective impact of Corona virus disease (COVID-19) related lockdown on shrimp aquaculture sector in India—a sectoral assessment (2021) Aquaculture, p. 531.
- Blockchain-Based Traceability in the Seafood Supply Chain: A Proposed System for Small-Scale Fisheries in Developing Countries,
- Mandal, S.C., Boidya, P., Haque, M.I.M., Hossain, A., Shams, Z., Mamun, A.A.
   The impact of the COVID-19 pandemic on fish consumption and household food security in Dhaka city
   (2021) Bangladesh. Glob Food Sec, 29.
- Manlosa, A.O., Hornidge, A.K., Schlüter, A.
   Aquaculture-capture fisheries nexus under COVID 19: Impacts, diversity, and social-ecological resilience
   (2021) Marit Stud, 20, pp. 75-85.
- Mejjad, N., Cherif, E.K., Roder, A., Krawczyk, D.A., El Kharraz, J., Moumen, A., Laqbaqbi, M., Fekri, A.
   Disposal behavior of used masks during the COVID-19 pandemic in the Moroccan community: Potential environmental impact (2021) Int J Environ Res Public Health, 18, p. 4382.
- Miao, Z., Zeng, Q., Yang, S.
   A review of fishery supply chain management: Current status and future directions (2022) J Clean Prod, 333.
- (2021) Global Fishery market—growth, Trends, COVID-19 Impact, and Forecasts (2021–2026),
- Monitoring of the COVID crisis in the Spanish Mediterranean fisheries Weathering the Storm of COVID 19 Crisis.,
- Ota, Y., Bundy, A., Roheim, C.A., Sumaila, U.R.
   Towards resilient and sustainable global seafood supply chains (2020) Nature Food, 1 (4), pp. 198-204.
- Paradis, Y., Bernatchez, S., Lapointe, D., Cooke, S.J.
   Can you fish in a pandemic? An overview of recreational fishing management

policies in North America during the COVID-19 crisis (2021) *Fisheries*, 46, pp. 81-85.

- Pilling, G.M., Guénette, S.
   (2019) Drivers of Change in Sustainable Fisheries Management. FAO Fisheries and Aquaculture Technical Paper (634),
- Plagányi, É., Deng, R.A., Tonks, M., Murphy, N., Pascoe, S., Edgar, S., Salee, K., Dutra, L. Indirect impacts of COVID-19 on a tropical lobster fishery's harvest strategy and supply chain

   (2021) Front Mar Sci, 8, pp. 1-14.
- Ruiz-Salmón, I., Fernández-Ríos, A., Campos, C., Laso, J., Margallo, M., Aldaco, R.
   Fishing and seafood sector in the time of COVID-19: Considerations for local and global opportunities and responses
   (2021) Curr Opin Environ Sci Health, 23.
- Salas, S., Chuenpagdee, R., Charles, A.
   Challenges in achieving sustainable small-scale fisheries in the global south (2020) Curr Opin Environ Sustain, 45, pp. 46-52.
- Sarkodie, S.A., Owusu, P.A.
   Impact of COVID-19 pandemic on waste management (2021) Environ Dev Sustain, 23, pp. 7951-7960.
- Silva, A.L.P., Prata, J.C., Walker, T.R., Duarte, A.C., Ouyang, W., Barcelò, D., Rocha-Santos, T.
   Increased plastic pollution due to COVID-19 pandemic: Challenges and recommendations
   (2021) Chem Eng J, 2021 (405).
- Smith, S.L., Golden, A.S., Ramenzoni, V., Zemeckis, D.R., Jensen, O.P.
   Adaptation and resilience of commercial fishers in the Northeast United States during the early stages of the COVID-19 pandemic (2020) *Plos ONE*, 15.
- Song, A.M., Chuenpagdee, R.
   The economic viability of small-scale fisheries: A review (2014) Mar Policy, 45, pp. 41-48.
- Sunny, A.R., Mithun, M.H., Prodhan, S.H., Ashrafuzzaman, M., Rahman, S.M.A., Billah, M.M., Hussain, M., Rashid, A.
   Hossain MM (2021) Fisheries in the context of attaining Sustainable Development Goals (SDGs) in Bangladesh: COVID-19 impacts and future prospects Sustainability, 13 (17), p. 9912.
- Sveinsson, H.
   (2021) Aquaculture 2040—the Blue Revolution 2.0. a Foresight Study on Sustainable Growth in Norwegian Aquaculture.
- Waiho, K., Fazhan, H., Ishak, S.D., Kasan, N.A., Liew, H.J., Norainy, M.H.
   Potential impacts of COVID-19 on the aquaculture sector of Malaysia and its coping strategies
   (2020) Aquac Rep, 18.
- White, E.R., Froehlich, H.E., Gephart, J.A., Cottrell, R.S., Branch, T.A., Agrawal Bejarano, R., Baum, J.K.
   Early effects of COVID-19 on US fisheries and seafood consumption (2021) Fish Fish, 22, pp. 232-239.

Williams, M.J., Kittinger, J.N.
 A framework for identifying the capacity of small-scale fishing communities to adapt

to the impacts of climate change (2017) Sustainability, 9 (10), p. 1834.

- Wiradana, P.A., Widhiantara, I.G., Pradisty, N.A., Mukti, A.T.
- Workie, E., Mackolil, J., Nyika, J., Ramadas, S.
   Deciphering the impact of COVID-19 pandemic on food security, agriculture, and livelihoods: A review of the evidence from developing countries (2021) Curr Res Environ Sustain, 2.

٠

- Yilmaz, I., Erdogan, M.
   Supply chain management practices in the Turkish fisheries industry (2021) Int J Fish Aquat Stud, 9 (5), pp. 490-497.
- Yusoff, F.M., Abdullah, A.F., Aris, A.Z., Umi, W.A.D.
   Impacts of COVID-19 on the aquatic environment and implications on aquatic food production
   (2021) Sustainability, 13 (11281), p. 27.
- Zorriehzahra, M.J., Hassantabar, F., Ziarati, M.
   The impacts of COVID-19 pandemic on aquatic food production: A review (2020) Iran J Aquat Anim Heal, 6, pp. 15-22.

## **Correspondence Address**

John A.; College of Marine Sciences and Aquatic Biology, United Arab Emirates; email: akbarjohn50@gmail.com

Publisher: Springer Science and Business Media Deutschland GmbH

ISSN: 18635520

Language of Original Document: English Abbreviated Source Title: Environ. Sci. Eng.

2-s2.0-86000530614

**Document Type:** Book Chapter **Publication Stage:** Final

Source: Scopus

**ELSEVIER** 

Copyright © 2025 Elsevier B.V. All rights reserved. Scopus® is a registered trademark of Elsevier B.V.

**RELX** Group™