

# Assessing the impacts of COVID-19 on small-scale fisheries and aquaculture in selected sites in Southeast Asia

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The COVID-19 pandemic severely impacted economies worldwide, including the fisheries and aquaculture value chain. In the Southeast Asian region, although small-scale fishers and fish farmers are significant actors in the fish value chain, they are also among the vulnerable groups. Therefore, it is necessary to assess the impacts of COVID-19 on their livelihood to provide appropriate support and carry out measures to mitigate such impacts. SEAFDEC Training Department conducted a study to assess the impacts of COVID-19 on the small-scale fisheries and aquaculture sub-sectors, *i.e.* marine capture fisheries, mariculture, inland capture fisheries, inland aquaculture, and aquatic bank in Lao PDR, Myanmar, Philippines, and Thailand from 2020 to 2021. The small-scale fishers and farmers were interviewed in selected sites using a questionnaire based on the recommendations of FAO to describe the impacts of the COVID-19 pandemic specifically on their quantity of catch/harvest, number of market channels, price of catch/harvest, access to transportation, cost, and income. It was found that the impacts of the COVID-19 pandemic on small-scale fishers and fish farmers include reduction in catch and harvest, reduction in the number of marketing channels, reduction in the price of catch or harvest, reduction in access to transportation, reduced cost, and reduced income. The recommendations provided in this study should be considered to mitigate such impacts. The results of this study could support the development of appropriate policies to sustain the livelihood and enhance the resilience of small-scale fishers and farmers to other pandemics and disasters in the future.

On 11 March 2020, the World Health Organization (WHO) declared coronavirus disease 2019 (COVID-19) as a global pandemic (World Health Organization, 2021). Consequently, countries around the world enforced regulations and containment measures such as lockdowns, curfews, home confinement, travel restrictions, border closures, business terminations, and others to control and prevent the COVID-19 outbreak. As of the end of 2021, the ASEAN Member States (AMSs) had a total number of confirmed cases of 14,876,739, a total number of confirmed deaths of 304,755, and a total number of people fully vaccinated against COVID-19 of 204,412,6350 (Figure 1). The COVID-19 regulations and measures imposed by the governments of the countries disrupted all human activities and resulted in severe impacts on livelihood, food security, social activities, and economies at various levels and scales, including the fisheries and aquaculture sector of the Southeast Asian region.

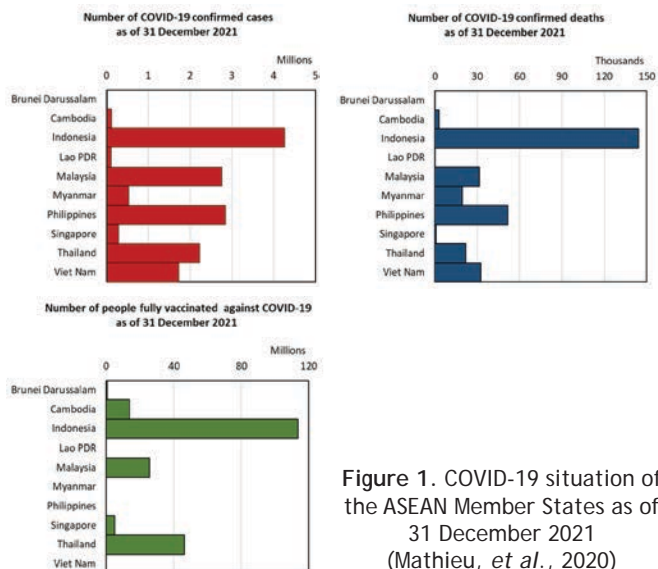


Figure 1. COVID-19 situation of the ASEAN Member States as of 31 December 2021 (Mathieu, *et al.*, 2020)

In Southeast Asia, the majority of fishers and fish workers are engaged in small-scale fishery activities including pre-harvest, harvest, and post-harvest. Small-scale fisheries and aquaculture use relatively small production units with low input and output, and low levels of technology or capital investment where fishing for sport or recreation is excluded (FAO, 2022). In 2016, small-scale fisheries contributed at least 40 % of the world's catch, and 90 % of the people employed along capture fisheries value chains operated in small-scale fisheries (FAO *et al.*, 2022) making this sector crucial in food security and nutrition, poverty eradication, and sustainable resource utilization. However, small-scale and aquaculture in the region face several challenges such as resource decline, habitat degradation, illegal fishing, post-harvest loss, and climate change, among others (SEAFDEC, 2022), which are aggravated by the COVID-19 pandemic.

To assess the impacts of the COVID-19 pandemic on small-scale fisheries and aquaculture in the Southeast Asian region, SEAFDEC Training Department (SEAFDEC/TD) conducted a series of surveys in 2020–2021 at the sites of the projects “Gender Dimension in the Value Chain of Small-scale Fisheries and Aquaculture in Southeast Asia” and “Small-scale Fisheries Management for Better Livelihood and Fisheries Resources” (Figure 2 and Table). SEAFDEC/TD developed a questionnaire based on the recommendations of FAO (2020) which was utilized to interview the fishers and fish farmers from the small-scale fisheries and aquaculture sub-sectors, *i.e.* marine capture fisheries, mariculture, inland capture fisheries, inland aquaculture, and aquatic bank. The respondents were

Table. Study sites and date of data collection for assessing the impacts of the COVID-19 pandemic on small-scale fisheries and aquaculture in Southeast Asia

Small-scale fisheries and aquaculture sub-sectors	Study site	Date of data collection
Marine capture fisheries	Ranong Province, Thailand	5-11 Oct 2020
	Infanta, Quezon Province, Philippines	16-19 Nov 2021
Mariculture	Surat Thani Province, Thailand	28 Aug-1 Sep 2020
Inland capture fisheries	Kyauktan, Yangon Region, Myanmar	24-28 May 2021
Inland aquaculture	Bolikhamxay Province, Lao PDR	25-29 Jan 2021
Aquatic bank	Buriram Province, Thailand	1-5 Mar 2021



Figure 2. Map of study sites for assessing the impacts of the COVID-19 pandemic on small-scale fisheries and aquaculture in Southeast Asia

asked about the impacts of the COVID-19 pandemic on their fishing and aquaculture activities specifically on the quantity of catch/harvest, number of market channels, price of catch/harvest, access to transportation, cost, and income. The results of this study will be useful for developing appropriate policies to support the sustainable livelihood of fishers and farmers during the pandemic and other disasters.

## Impacts of the COVID-19 pandemic

### Marine capture fisheries

#### • *Ranong Province, Thailand*

The study site in Ranong Province was located at Ban Ha Sai Khao Village. The village has approximately 137 families who are engaged in fisheries, agriculture, and labor. About 90 % of the households do fishing, and there were 60 small-scale fishery vessels in the village. The main species caught include shrimp, cuttlefish, sillago, and cuttlefish.

There were 42 respondents including 12 females and 30 males. Among the interviewed fishers, 69 % indicated that there was no change in the quantity of catch, while 60–74 % said that



there was a reduction in the number of market channels, price of catch, and access to transportation. About 55 % said that there was no change in cost; however, 96 % of the respondents said their income was reduced (**Figure 3**).

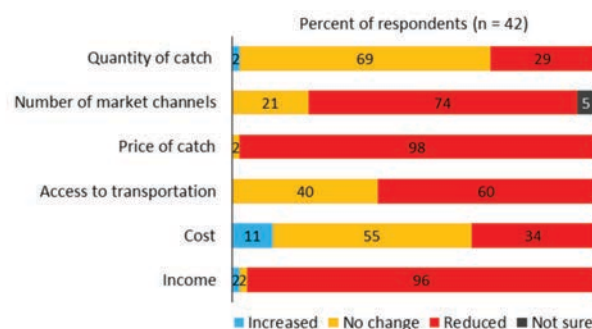


Figure 3. Impacts of COVID-19 on marine capture fisheries in Ranong Province, Thailand

#### • *Quezon Province, Philippines*

Infanta was the study site in Quezon Province located along the coast of the Philippine Sea. As of 2021, the total number of registered fishers and fish farmers was 5,005 composed of 1,312 females and 3,693 males. The livelihoods are fish capture (44 %), gleaning (16 %), fish vending (14 %), aquaculture (8 %), and others (18 %). The common fishing gear includes handline, longline, multiple hook and line, squid jigger, fish spear, crab pot, beach net, gillnet, and scissor net.





a population of 1.06 million. For aquaculture, the freshwater species are fish and frogs, while the marine species are shrimp, fish, and crab. More than 900 small- and large-scale mariculture farms are registered in the province.



A total of 40 respondents composed of 18 females and 22 males were interviewed. For the quantity of catch, 46 % indicated that it did not change and 46 % said it reduced. From 50 % to 73 % of the respondents specified that there was a reduction in the number of market channels, price of catch, and access to transportation. More than half of the interviewed fishers said that there was no change in the cost, but 83 % had reduced income.

The total number of respondents was 93 composed of 29 females and 64 males. Among the interviewed fish farmers, about 63 % said that there was no change in the quantity of harvest. About 66 % said that the number of market channels reduced and 95 % indicated that the price of harvest decreased. There was no change in access to transportation and in cost which was specified by 78 % and 67 % of respondents, respectively. Nonetheless, 93 % of the interviewed fish farmers had a reduction in income.

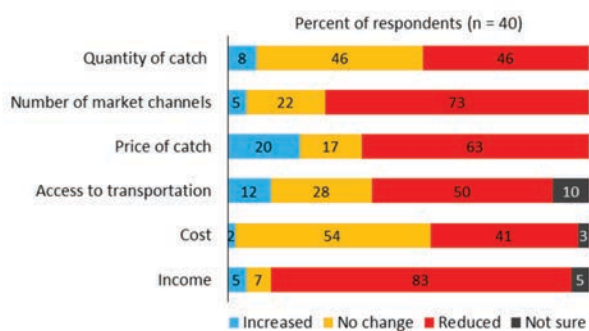


Figure 4. Impacts of COVID-19 on marine capture fisheries in Quezon Province, Philippines

## Mariculture

### • Surat Thani Province, Thailand

The study site in Surat Thani Province includes seven Districts, namely: Mueang, Kanchanadit, Don Sak, Chaiya, Tha Chana, Tha Chang, and Phunphin. Surat Thani Province is in the southern part of Thailand with an area of 12,891 km<sup>2</sup> and

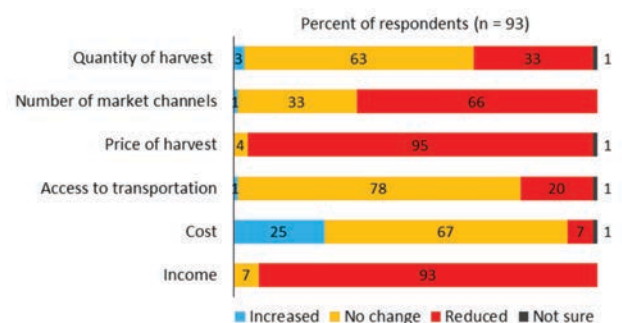


Figure 5. Impacts of COVID-19 on mariculture in Surat Thani Province, Thailand

## Inland capture fisheries

- **Yangon Region, Myanmar**

The study site in Yangon Region was located in Kyauktan with a total population of 170,635 (86,795 females and 83,840 males). The livelihoods of the people include farming rice, bean, and crop, industry/factory, aquaculture, and fishing. There were 472 fishers and the fish species they caught included threadfin (*Polynemus* sp.), catfish (*Arius* sp.), croaker (*Johnius* sp.), hilsa (*Tenualosa ilisha*), and basa fish (*Pangasius* sp.)



A total of 40 fishers were interviewed including 12 females and 28 males. Almost all of the respondents specified that the COVID-19 pandemic resulted in a decrease in the quantity of catch, number of market channels, price of catch, level of accessibility of transportation, cost, and income.

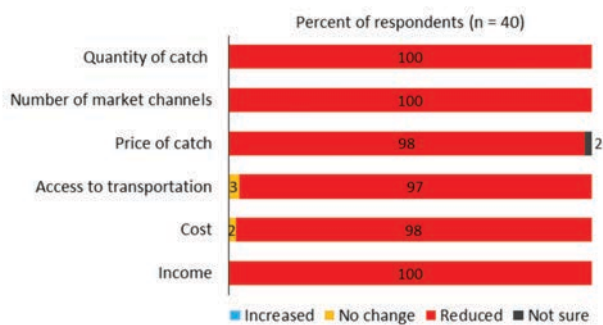


Figure 6. Impacts of COVID-19 on inland capture fisheries in Yangon Region, Myanmar

## Inland aquaculture

- **Bolikhamxay Province, Lao PDR**

Bolikhamxay Province is in the central part of Lao PDR with an area of 14,083 km<sup>2</sup> and a population of 273,691. The study sites were located in three villages of Pakxan District, namely: Pakxan, Pakpeuk, and Sivilai. The cultured species for inland aquaculture are fish, frog, and shrimp with an average annual production of 5,469 t.



The total number of respondents was 28 fish farmers, comprising 20 males and 8 females. About 57 % of interviewed fish farmers said that there was no change in the quantity of harvest. The reduction in the number of market channels and price of the harvest was experienced by 61 % and 71 % of the respondents, respectively. The access to transportation did not change for 57 % of respondents, while it reduced for 43 % of respondents. About 39 % of respondents indicated that there was an increase in cost, while 22 % of respondents specified that there was a reduction. About 64 % of interviewed fish farmers had reduced income.

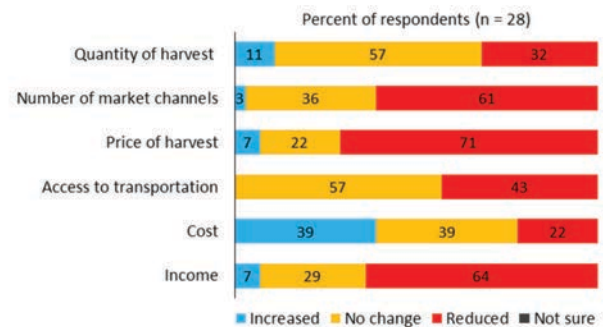


Figure 7. Impacts of COVID-19 on inland aquaculture in Bolikhamxay Province, Lao PDR

## Aquatic Bank

- **Buriram Province, Thailand**

The study site in Buriram Province is located at Ban Sub Sombon Village. The village has an Aquatic Bank which was established in 2017 with support from the Department of Fisheries, Thailand. The Aquatic Bank is a natural pond that serves as the food source of the community. The fish species in the Aquatic Bank include silver barb, tilapia, giant freshwater prawn, and others.

The total number of respondents was 49 fishers composed of 32 females and 17 males. About 65 % of the respondents said there was no change in the catch quantity. For the number of





market channels, 44 % said there was no change while 46 % indicated that there was a reduction. The reduction in the price of catch, access to transportation, and cost was experienced by 74 %, 69 %, and 58 % of the respondents, respectively. There was no change in the income of 74 % of the respondents. The adverse impacts of COVID-19 were not significant on the community since fishing is not the main livelihood and the catch is mainly for household consumption; and the people were able to secure their food from the Aquatic Bank.

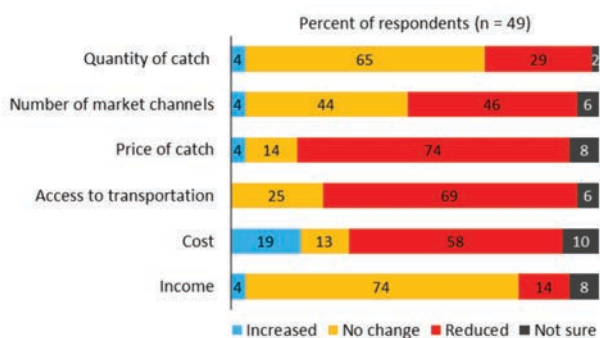


Figure 8. Impacts of COVID-19 on Aquatic Bank in Buriram Province, Thailand

Generally, an average of about 60 % of all respondents in all study sites specified that there was no change in the quantity of catch/harvest, while 45 % experienced a reduction. The reduction in the number of market channels, price of catch/harvest, and access to transportation was endured by 57–83 % of all respondents in all study sites. This reduction could be attributed to the COVID-19 lockdown and restriction measures imposed by the governments of the respective

countries where the movement of people, transportation, and other activities were limited. For the cost, 38 % of all respondents specified that there was no change while 43 % said there was a reduction. Nevertheless, the income of about 75 % of all respondents in all study sites was reduced.

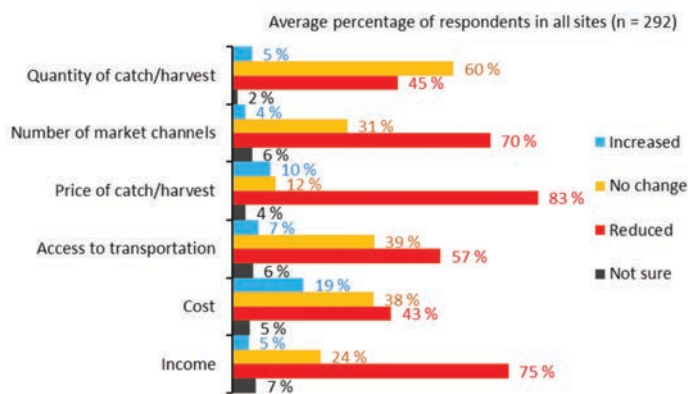


Figure 9. Impacts of COVID-19 on small-scale fisheries in selected sites in the ASEAN Member States in 2020-2021

## Conclusion and Recommendations

The impacts of the COVID-19 pandemic on small-scale fishers and fish farmers in selected sites in Southeast Asia include reduction in catch and harvest, reduction in the number of marketing channels, reduction in the price of catch or harvest, reduction in access to transportation, reduced cost, and reduced income.

The reduced catch and harvest of small-scale fishers and fish farmers could result in a decrease in their income and a shortage in the supply of fish and fishery products. In order to sustain the quantity of catch and harvest, a special permit should be provided to small-scale fishers/fish farmers for them to continue fish trade activities in markets during curfew/lockdown. Furthermore, the provision of subsistence supplies or allowance, building the capacity to engage in other marketing strategies (e.g. online marketing), and promoting the expansion of market channels (e.g. online market, special market) would mitigate the impacts of COVID-19 on small-scale fishers and fish farmers.

The consequence of the reduction in the number of marketing channels would be a decrease in the income of small-scale fishers and fish farmers. Thus, it is recommended to promote other market channels such as online markets, enhance the skills in preserving the freshness of fish and fishery products, and promote fish processing to develop value-added fish and fishery products.

The reduction in the price of catch or harvest would decrease the income of small-scale fishers and fish farmers. Therefore, the development of value-added fish and fishery products should be promoted to increase the price.

Although a reduction in cost is a positive impact, it was because the catch and harvest were reduced which resulted in a decrease in the income of small-scale fishers and fish farmers. Promoting other marketing strategies such as online selling as well as enhancing the skills in preserving the freshness of fish and fishery products are necessary.

Due to the reduction in access to transportation, the number of market channels and income of small-scale fishers and fish farmers could also decrease. It is recommended to promote other marketing strategies such as online selling as well as enhance the skills in preserving the freshness of fish and fishery products.

The decreased income of small-scale fish and fish farmers could force them to spend their savings and loan money which could bring about stress to their families. The promotion of other marketing strategies such as online selling as well as enhancement of the skills in preserving the freshness of fish and fishery products are recommended. Moreover, enhancing the accessibility to microfinance services would augment the incomes of small-scale fish and fish farmers and mitigate the impacts of COVID-19.

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