

As a follow-up, the ASEAN Regional Action Plan for Combating Marine Debris (2021-2025) was developed from October 2019 to July 2020 through extensive consultation with relevant experts and stakeholders. This regional action plan proposes the phased implementation of a systematic and integrated response to guide regional actions in addressing the issue of marine plastic pollution in ASEAN over the next five years (2021-2025). The potential solutions along the value chain to overcome unsustainable plastic consumption, waste management, and marine debris pollution were identified. There are 3 elements of west value chine 4 framework components and 14 regional actions for the Asian Member states (**Figure 103**). The Actions are aimed at addressing plastic issues along the value chain and are categorized according to the four Framework of Action Components (ASEAN Secretariat, 2021).

Furthermore, with the concerns in reducing marine pollution issues, a resolution was adopted by the United Nations under Goal 14 of its “Sustainable Development Goals,” specifying in Target 14.1 that: “By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution” (UN, 2017). Recently, the “Sustainable Development Goals” became the measurement guide for countries in the region to develop their respective resolutions to address aquatic pollution issues.

### Way Forward

In implementing the aforementioned recommendations, the contribution and cooperation of the fisheries sector could form the key success in combating aquatic pollution in the Southeast Asian region. The specific roles of the fisheries sector are therefore summarized below:

- The fisheries sector plays a significant role in improving marine debris and microplastics situation because its activities directly affect the aquatic ecology, and to mitigate the seriousness of the situation, governments should establish national and regional policies and action plans that put more focus on the fisheries sector, *e.g.* strengthen the fishing ports’ sewage and garbage management to handle the debris originating from fishing vessels
- Publish guidebooks for the fisheries sector on combating debris and microplastic pollution that provide the guiding principles in reducing and/or eliminating the number of marine debris and microplastics in the marine ecosystem
- Research institutions and the academe to conduct studies on new fishing technologies and practices, and promote the results of such studies to the stakeholders in the fisheries sector, *e.g.* use of biodegradable fishing gear and fishing gear marking would facilitate decomposition and disposal of fishing gears, and

ensure that fishing gear are disposed of in a sustainable manner, and subsequently, reduce the impacts and numbers of ALDFG at sea that continue to catch fish and other animals for a long period

- Study and monitor the effect of marine debris and microplastics generated by the fishery sector from damaged fishing vessels and equipment to the reduced potential catch and a potential drop in fishery product demand
- Build up the awareness of fishers through the promotion of fishers’ awareness programs or activities integrating activities on combating marine debris and microplastics pollution, promotion of the practices and achievements of the programs to encourage fishers to take actions on their own towards minimizing pollutions in the oceans by controlling the dumping of marine debris and microplastics into the waters
- Establish fishery combatting marine debris and microplastic working group and platform to put each plan into action in cooperation with supporting bodies, and share knowledge and implementation successes and failures with the ASEAN Member States (AMSs), especially taking into consideration the best practices, design principles and experiences in combating marine debris for the benefit of all AMSs

### 8.3 Impacts of COVID-19 Pandemics on Fisheries and Aquaculture

The coronavirus disease 2019 (COVID-19) was declared a global pandemic by the World Health Organization (WHO) on 11 March 2020 as a rapid response to prevent further infections mainly in people. Since then, COVID-19 has immensely threatened public health, created an economic crisis, and destabilized food security. Since the onslaught of the virus has been worldwide, associated measures had been enforced to decrease the extent of risks and the numbers of infected persons, and mortality rates, such as social distancing, transportation restrictions, and home confinements, travel bans, business closures, among others, consequently affecting global economy resulting in uncertainties not only in the livelihood opportunities but also in the sustainability of supplies at the international and domestic supply chains (UN, 2020).

All aspects of the fisheries supply chain, *e.g.* capture fisheries, aquaculture, transportation, post-harvest processing, and trading of fish and fishery products have been strongly impacted by the measures to contain COVID-19 outbreaks. As the Southeast Asia region has been a major contributor to the world’s total fish and fisheries production, therefore, such measures could also result in disruptions to fish production and fish consumption across the value chains in the region (FAO, 2021). While much attention has been focused on the impacts on fisheries

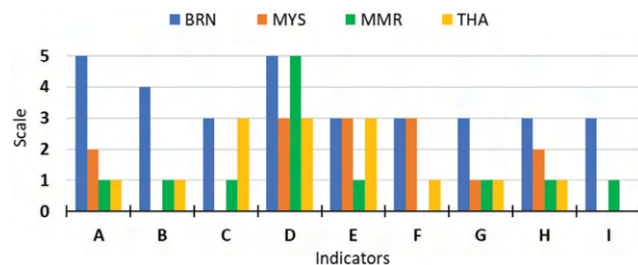
and aquaculture related activities at various levels, efforts have also been exerted to cope and maintain functioning at each stage of the fisheries and aquaculture activities which had been disrupted by the measures enforced throughout the coronavirus pandemic restrictions (OECD, 2020).

So, with support from the Japanese Trust Fund, SEAFDEC conducted the study on the “Impacts of COVID-19 Pandemic on the Fisheries Sector of the ASEAN-SEAFDEC Member Countries” to assess the impacts of COVID-19, identify the mitigating measures, and develop policy recommendations on possible actions to be undertaken by the respective countries’ fisheries sub-sectors. Through a questionnaire survey, the study focused on the data and information provided by the countries on their COVID-19 situations, especially in relation to their respective fisheries and aquaculture sector. The results of the study, which would be published for dissemination to the region, is summarized below.

**Impacts on marine capture fisheries**

*Small-scale fisheries*

As shown in **Figure 104**, the number of people engaged in small-scale fishing activities had increased in Brunei Darussalam, while it slightly decreased in Malaysia and decreased in Myanmar and Thailand. For the number of small-scale fishing vessels in operation, there was a slight increase in Brunei Darussalam and a decrease in Myanmar and Thailand. The duration/period of fishing activity was not affected in Brunei Darussalam and Thailand but decreased in Myanmar. The cost of fishing operation had increased in Brunei Darussalam and Myanmar but there was no change in Malaysia and Thailand. While in Brunei Darussalam, Malaysia, and Thailand, the amount of catch per fishing trip was not affected but this had decreased in Myanmar. The price of catch in wholesale markets/landing centers was stable in Brunei Darussalam and Malaysia but decreased in Thailand. The logistics/access of fishers to markets was



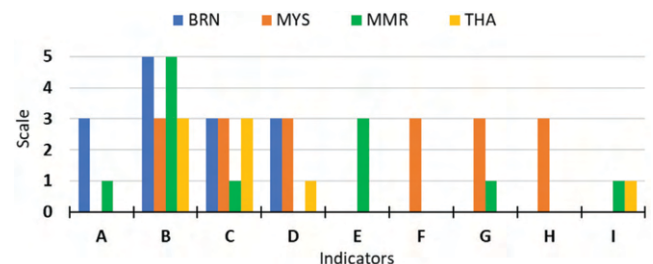
**Figure 104.** Impacts of COVID-19 on small-scale fisheries of selected ASEAN Member States

(BRN- Brunei Darussalam, MYS-Malaysia, MMR-Myanmar, THA-Thailand. Scale: 0-Not applicable/no answer; 1-Decreased; 2-Slightly decreased; 3-Stable/no change; 4-Slightly increased; and 5-Increased. Indicators: A-Number of people engaged in small-scale fishing activities; B-Number of small-scale fishing vessels in operation; C-Duration/period of fishing activity; D-Cost of fishing operation (fuel, ice, bait, equipment, maintenance, etc.); E-Amount of catch per fishing trip; F-Price of catch in wholesale markets/landing centers; G-Logistics/access of fishers to markets (transportation, buyers, etc.); H-Income of fishers from small-scale fishing activities; I-Liquidity and income of small-scale fishers from other activities)

not affected in Brunei Darussalam but had decreased in Malaysia, Myanmar, and Thailand. Specifically in Brunei Darussalam, the income of fishers from small-scale fishing activities was not affected but it slightly decreased in Malaysia and decreased in Myanmar and Thailand. The liquidity and income of small-scale fishers from other activities were stable in Brunei Darussalam but decreased in Myanmar.

*Commercial fisheries*

As shown in **Figure 105**, the duration/period of fishing activity was not affected in Brunei Darussalam but decreased in Myanmar. Meanwhile, the cost of fishing operation had increased in Brunei Darussalam and Myanmar but there was no change in Malaysia and Thailand. The amount of catch per fishing trip had not changed in Brunei Darussalam, Malaysia, and Thailand but decreased in Myanmar. Although the price of catch in wholesale markets/landing centers had been stable in Brunei Darussalam and Malaysia, this decreased in Thailand. The transshipment at sea and cold chain systems were not affected in Myanmar and Malaysia, respectively. While access to fish ports was not affected in Malaysia but this decreased in Myanmar. The capacity of cold storage facilities had been stable in Malaysia, and the liquidity and income of fishing operators from fishing had decreased in Myanmar and Thailand.

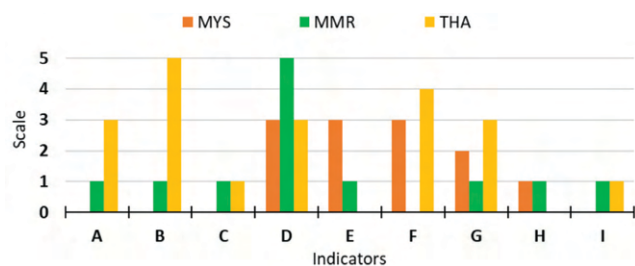


**Figure 105.** Impacts of COVID-19 on commercial fisheries of selected ASEAN Member States

(BRN- Brunei Darussalam, MYS-Malaysia, MMR-Myanmar, THA-Thailand. Scale: 0-Not applicable/no answer; 1-Decreased; 2-Slightly decreased; 3-Stable/no change; 4-Slightly increased; and 5-Increased. Indicators: A-Duration/period of fishing activity; B-Cost of fishing operation (fuel, ice, bait, equipment, maintenance, etc.); C-Amount of catch per fishing trip; D-Price of catch in wholesale markets/landing centers; E-Transshipment at sea; F-Cold chain system; G-Access to fish ports; H-Capacity of cold storage facilities; I-Liquidity and income of fishing operators from fishing)

*Inland capture fisheries*

**Figure 106** shows that the number of active fishing vessels engaged in inland fisheries operations had decreased in Myanmar but remained stable in Thailand, while the number of people engaged in inland capture fishing activities had decreased in Myanmar but this increased in Thailand. The duration/period of fishing activity had decreased in Myanmar and Thailand. Although the cost of fishing operations was not affected in Malaysia and Thailand, it had increased in Myanmar. There was no change in the amount of catch per fishing trip in Malaysia but there was a decrease in Myanmar. The price of catch in wholesale



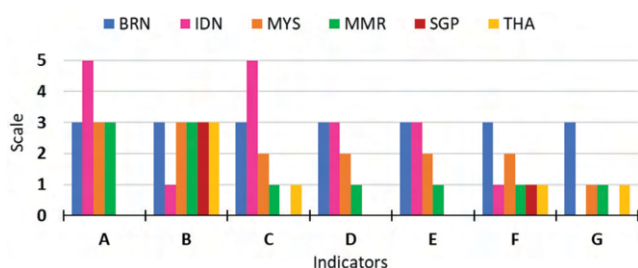
**Figure 106.** Impacts of COVID-19 on inland capture fisheries of selected ASEAN Member States

(MYS-Malaysia, MMR-Myanmar, THA-Thailand. Scale: 0-Not applicable/no answer; 1-Decreased; 2-Slightly decreased; 3-Stable/no change; 4-Slightly increased; and 5-Increased. Indicators: A-Number of active fishing vessels in operation; B-Number of people engaged in inland capture fishing activities; C-Duration/period of fishing activity; D-Cost of fishing operations (fuel, ice, bait, equipment, maintenance, etc.); E-Amount of catch per fishing trip; F-Price of catch in wholesale markets/landing centers; G-Logistics/access of fishers to markets (transportation, buyers, etc.); H-Income of fishers from inland fishing activities; I-Liquidity and income of fishers from other activities)

markets/landing centers was stable in Malaysia but slightly increased in Thailand. The logistics/access of fishers to markets had slightly decreased in Malaysia and decreased in Myanmar but have not been affected in Thailand. The income of fishers from inland fishing activities had decreased in Malaysia and Myanmar, and the liquidity and income of fishers from other activities had decreased in Myanmar and Thailand.

• *Fisheries Management*

As shown in **Figure 107**, the application of innovative technologies to combat IUU fishing has not affected Brunei Darussalam, Malaysia, and Myanmar but this had increased in Indonesia. The status of implementation of port State measures in Brunei Darussalam, Malaysia, Myanmar, Singapore, and Thailand had been stable, but there was a decrease in Indonesia. The implementation of MCS was not changed in Brunei Darussalam, while the frequency increased in Indonesia, slightly decreased in Malaysia, and decreased in Myanmar and Thailand. The conduct of regular/routine data collection for fish stock assessment and monitoring of shared stocks/transboundary species had



**Figure 107.** Impacts of COVID-19 on fisheries management of selected ASEAN Member States

(BRN- Brunei Darussalam, IDN-Indonesia, MYS-Malaysia, MMR-Myanmar, SGP-Singapore, THA-Thailand. Scale: 0-Not applicable/no answer; 1-Decreased; 2-Slightly decreased; 3-Stable/no change; 4-Slightly increased; and 5-Increased. Indicators: A-Application of innovative technologies to combat IUU fishing (GIS, remote sensing, etc.); B-Frequency of implementation of port State measures; C-Implementation of MCS; D-Conduct of regular/routine data collection for fish stock assessment; E-Monitoring of shared stocks/transboundary species; F-Conduct of physical meetings/workshops at international/regional/national levels; G-Conduct of research/project activities)

been stable in Brunei Darussalam and Indonesia, slightly decreased in Malaysia, and decreased in Myanmar. The frequency of the conduct of physical meetings/workshops at international/regional/national levels was not affected in Brunei Darussalam, but had slightly decreased in Malaysia and decreased in Indonesia, Myanmar, Singapore, and Thailand. The conduct of research/project activities had been maintained in Brunei Darussalam but had decreased in Malaysia, Myanmar, and Thailand.

• *Fishery resources and aquatic habitats*

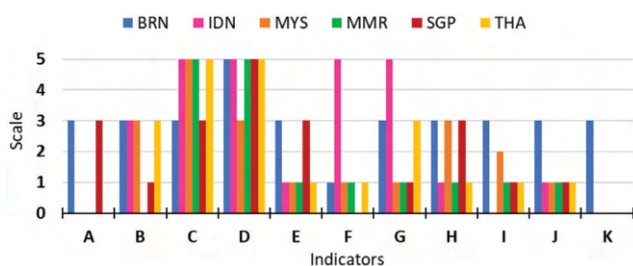
For Brunei Darussalam, the COVID-19 pandemic had not created any impacts on its fishery resources and aquatic habitats. In Malaysia, an assessment of its fishery resources and aquatic habitats was conducted in July–September 2020, and the results indicated that in coastal areas, the amount of the fish stocks tend to be higher, and for its inland fishery resources and habitats, no significant impacts were observed as of September 2020, although fish seed restocking activities were carried out in inland waters during 2010–2020. There were no significant impacts observed on coral reefs and seagrass beds which could be due to the short period of assessment and relatively slow changes in the habitats. However, there was an increase in turtle nesting and hatchling due to reduced human activities. Moreover, the water quality at certain sites had improved.

For Myanmar, fishing pressures have become higher in coastal areas and illegal fishing practices had continued in the mangroves and offshore areas. In inland waters, illegal fishing practices such as intensive usage of electric fishing gears had persisted. The illegal fishing practices continued to occur due to the poverty of the dependent communities and travel restrictions. Therefore, the Government provided the fishers with about USD 16.00 support, while DOF Myanmar, in collaboration with the Maritime Police and local communities, is planning to apprehend illegal fishing practices.

For Singapore, the marine habitats remained stable due to the restrictions on the number of passengers on dive boats and decreased access to dive sites. On the beaches, there was an increase in the number of visitors but the negative impacts on beaches were slight or negligible because the crowds were well managed.

*Impacts on aquaculture*

The number of operational aquaculture farms was stable in Brunei Darussalam and Singapore (**Figure 108**). Although the access of fish farmers to fish farms was not affected in Brunei Darussalam, Indonesia, Malaysia, and Thailand, this had decreased in Singapore. The duration of the cycle of aquaculture from rearing to harvest had not changed in Brunei Darussalam and Singapore but increased in Indonesia, Malaysia, Myanmar, and Thailand. The cost



**Figure 108.** Impacts of COVID-19 on aquaculture of selected ASEAN Member States

(BRN- Brunei Darussalam, IDN-Indonesia, MYS-Malaysia, MMR-Myanmar, SGP-Singapore, THA-Thailand. Scale: 0-Not applicable/no answer; 1-Decreased; 2-Slightly decreased; 3-Stable/no change; 4-Slightly increased; and 5-Increased.

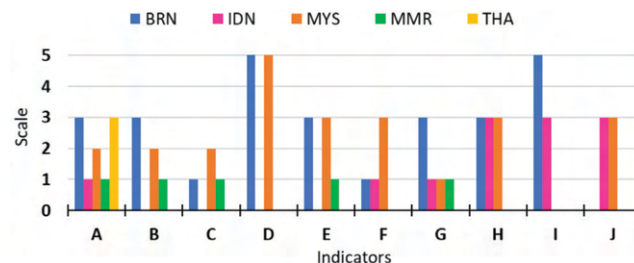
Indicators: A-Number of operational aquaculture farms; B-Access of fish farmers to fish farms; C-Duration of the cycle of aquaculture from rearing to harvest; D-Cost of inputs (feeds, chemicals, power, equipment, maintenance, etc.); E-Quantity of production; F-Quantity of seed production; G-Quantity of production of ornamental fishes; H-Farm gate prices of market-size cultured species; I-Logistics/access of fish farmers to domestic/international markets (transportation, buyers, etc.); J-Income of fish farmers from aquaculture activities; K-Liquidity and income of fish farmers from other activities)

of inputs had increased in Brunei Darussalam, Indonesia, Myanmar, Singapore, and Thailand but Malaysia had not been affected. The quantity of production was stable in Brunei Darussalam and Singapore but had decreased in Indonesia, Malaysia, Myanmar, and Thailand. The quantity of seed production had decreased in Brunei Darussalam, Malaysia, Myanmar, and Thailand, but increased in Indonesia. In Brunei Darussalam and Thailand, the quantity of production of ornamental fishes was stable, increased in Indonesia but decreased in Malaysia, Myanmar, and Singapore. The farm gate prices of market-size cultured species were not affected in Brunei Darussalam, Malaysia, and Singapore, but had decreased in Indonesia, Myanmar, and Thailand. The logistics/access of fish farmers to domestic/international markets were not affected in Brunei Darussalam, had slightly decreased in Malaysia and decreased in Myanmar, Singapore, and Thailand. The income of fish farmers from aquaculture activities was stable in Brunei Darussalam but had decreased in Indonesia, Malaysia, Myanmar, Singapore, and Thailand. The liquidity and income of fish farmers from other activities were not affected in Brunei Darussalam.

### Impacts on fish processing

As shown in **Figure 109**, the number of operational plants/factories was still the same in Brunei Darussalam and Thailand, but had slightly decreased in Malaysia and decreased in Indonesia and Myanmar. The duration of fish processing operations was not affected in Brunei Darussalam, but had slightly decreased in Malaysia and decreased in Myanmar. The availability of raw materials had decreased in Brunei Darussalam and Myanmar and slightly decreased in Malaysia. The operation cost had decreased in Brunei Darussalam and Malaysia. The processing lines were not affected in Brunei Darussalam and Malaysia but had decreased in Myanmar. The types of processed fish and fishery products had decreased in Brunei Darussalam and Indonesia but remained the same in Malaysia. The

quantity of production was stable in Brunei Darussalam but decreased in Indonesia, Malaysia, and Myanmar. The price of processed fish and fishery products was stable in Brunei Darussalam, Indonesia, and Malaysia. The storage capacity of plants/factories had increased in Brunei Darussalam and remained the same in Indonesia. The application of product certification schemes was not affected in Indonesia and Malaysia.



**Figure 109.** Impacts of COVID-19 on fish processing industry of selected ASEAN Member States

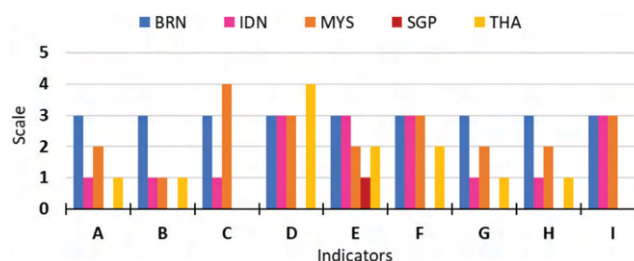
(BRN- Brunei Darussalam, IDN-Indonesia, MYS-Malaysia, MMR-Myanmar, THA-Thailand. Scale: 0-Not applicable/no answer; 1-Decreased; 2-Slightly decreased; 3-Stable/no change; 4-Slightly increased; and 5-Increased. Indicators: A-Number of operational plants/factories; B-Duration of fish processing operations;

C-Availability of raw materials; D-Operation cost (equipment, power, etc.); E-Processing lines; F-Types of processed fish and fishery products; G-Quantity of production; H-Price of processed fish and fishery products; I-Storage capacity of plants/factories; J-Application of product certification schemes)

### Impacts on trade and marketing

#### • Domestic markets

The number of operational markets had remained the same in Brunei Darussalam, but had slightly decreased in Malaysia and decreased in Indonesia and Thailand (**Figure 110**). The duration of operation of markets was unchanged in Brunei Darussalam but had decreased in Indonesia, Malaysia, and Thailand. The number of fish traders was not affected in Brunei Darussalam but had decreased in Indonesia and slightly increased in Malaysia. The supply of fish and fishery products had been stable in Brunei Darussalam, Indonesia, and Malaysia and slightly increased in Thailand. The demand for fish and fishery products was not affected



**Figure 110.** Impacts of COVID-19 on domestic fish trade of selected ASEAN Member States

(BRN- Brunei Darussalam, IDN-Indonesia, MYS-Malaysia, SGP-Singapore, THA-Thailand. Scale: 0-Not applicable/no answer; 1-Decreased; 2-Slightly decreased; 3-Stable/no change; 4-Slightly increased; and 5-Increased. Indicators:

A-Number of operational markets; B-Duration of operation of markets; C-Number of fish traders; D-Supply of fish and fishery products; E-Demand for fish and fishery products; F-Selling price of fish and fishery products; G-Logistics/access of traders to markets (transportation, etc.); H-Logistics/access of consumers to markets (transportation, etc.); I-Liquidity and income of fish traders)

in Brunei Darussalam and Indonesia, but had slightly decreased in Malaysia and Thailand, and decreased in Singapore. There was no change in the selling price of fish and fishery products in Brunei Darussalam, Indonesia, and Malaysia, but there was a slight decrease in Thailand. The logistics/access of traders and consumers to markets was not affected in Brunei Darussalam, but had slightly decreased in Malaysia and decreased in Indonesia and Thailand. The liquidity and income of fish traders were not affected in Brunei Darussalam, Indonesia, and Malaysia.

• *International trade*

The logistics/access to international markets had decreased in Brunei Darussalam, Indonesia, Myanmar, and Thailand (Figure 111). Although the demand from the international market had increased in Brunei Darussalam and Thailand, it had not affected Indonesia, slightly decreased in Malaysia, and decreased in Myanmar. The types of exported processed fish and fishery products had slightly decreased in Brunei Darussalam and Malaysia, had not changed in Indonesia, and decreased in Thailand. The types of imported processed fish and fishery products had increased in Brunei Darussalam, no change in Indonesia and Thailand, and slightly increased in Malaysia. The traceability of exported/imported fish and fishery products remained stable in Brunei Darussalam and Indonesia, slightly decreased in Malaysia. The application of product certification schemes has not affected Brunei Darussalam and Indonesia but slightly decreased in Malaysia.

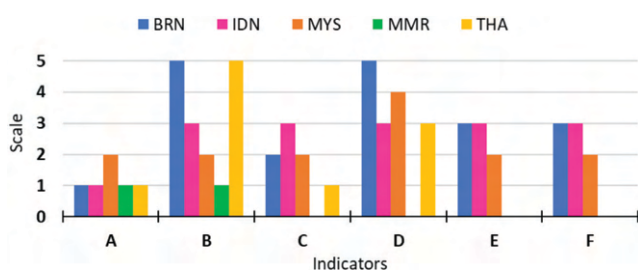


Figure 111. Impacts of COVID-19 on international fish trade of selected ASEAN Member States

(BRN- Brunei Darussalam, IDN-Indonesia, MYS-Malaysia, MMR-Myanmar, THA-Thailand. Scale: 0-Not applicable/no answer; 1-Decreased; 2-Slightly decreased; 3-Stable/no change; 4-Slightly increased; and 5-Increased. Indicators: A-Logistics/access to international markets; B-Demand from the international market; C-Types of exported processed fish and fishery products; D-Types of imported processed fish and fishery products; E-Traceability of exported/imported fish and fishery products; F-Application of product certification schemes)

**Gender Roles**

In Brunei Darussalam, there were no changes in gender roles before and during the COVID-19 pandemic. For small-scale fisheries, women went on helping their husbands in preparing the things needed for going to the sea as well as performing post-harvest processing; while the men, youth, and elderly continued in managing and operating their fishing boats. However, the elderly had reduced their frequency of engaging in fishing activities during the COVID-19. For commercial fisheries, the

men continued to manage and operate fishing vessels and maintain fishing nets.

In Myanmar, there was no change in the roles of women and men in capture fisheries including small-scale fisheries, commercial fisheries, and inland capture fisheries where the role of women in processing and selling fish was retained, while the role of men in fishing continued. For Thailand, the small-scale fishing activities were the same before and during COVID-19, but with more caution during COVID-19. Women sustained processing and selling fish and fishing, while men and youth continued fishing. The elderly still did the housework and looked after the children. For commercial fisheries, women continued to process fish and men continued fishing. For inland capture fishing activities, the fishing activities of men were intensified during the COVID-19.

**Mitigation measures and support programs**

The national mitigation measures and support programs of the government of the respective countries which were intended for the fisheries and aquaculture sector in response to the COVID-19 pandemic are summarized in Box 40.

**Way Forward**

Although efforts have been exerted to respond to the recovery and sustain the operations in the fisheries and aquaculture sector during the pandemic, the complex impacts of the COVID-19 pandemic on the fisheries and aquaculture sector in Southeast Asia has remained unpredictable and unstable. The accurate support should contribute straight away to the short- and long-term sustainability of this sector. Therefore, thorough cooperation among related stakeholders and organizations is the most important key for the management and implementation of the recovery and support schemes for the fisheries and aquaculture value chains.

**8.4 Fisheries Subsidies**

With the global decline of fishery resources, numerous international organizations are striving to lobby their global scenarios in conserving the resources and ending any activities that may jeopardize the resources' long-term viability. Subsidies to fisheries have become a major topic of discussion in the World Trade Organization (WTO), considering that a variety of problems have emerged from the financial support extended by governments to the fisheries sector, with the incentives that appear to encourage overfishing rather than to help in achieving sustainable fisheries. It has been estimated that the global fisheries subsidies could be between USD 14 billion and USD 54 billion each year. Subsidies to reduce the cost of fuel for fishing fleets are the most common, accounting for 22 % of the global subsidies (Sumaila *et al.*, 2019).