

Ultimately, any decision on whether a country should allow exports of coral reef species—and if so, at what level—must take into account the economic and social importance of the industry, the capacity of the resource to sustain harvests, and the effects of harvesting on the activities of other reef users. It is critical that the total quantity of organisms in trade does not exceed the natural rate of replacement, that the methods of collection should be as benign as possible, and that significant areas of habitat set aside for non-extractive uses. Mariculture alternatives must be critically examined to ensure that they do not contribute to additional coral reef losses through spread of disease or introduction of non-native species that can out-compete native organisms. By improving collection, handling, and transport, mortality will decline throughout the chain of custody. Improved survival in captivity would translate to a manageable demand for wild specimens, thereby diminishing the negative effects of the trade on the threatened coral reef ecosystems of the world.

The development of management plans that result in sustainable harvests is essential to the marine ornamental industry. But more importantly, such plans could also provide a crucial boost to local economies. Once it has become a sustainable industry, the trade in marine ornamentals could provide steady and permanent income for coastal communities in the Southeast Asian region.

3.7 Challenges and Future Direction

Throughout the past decades, the Southeast Asian countries have been confronted with even more stringent requirements that aim to ensure the sustainable utilization of fishery resources. Among several measures toward such direction are those that point towards conserving and assuring the existence of species that are possibly under threat, such as those specified under the framework of the Code of Conduct for Responsible Fisheries (CCRF), particularly the IPOA for Conservation and Management of Sharks, and transboundary and highly migratory species that are being managed by RFMOs.

In addition, CITES is another important Convention that aims to regulate the international trade of species that are listed under its Appendices. During the past decade, several proposals for listing of commercially-exploited species have been accepted for the CITES Appendices. Listing of aquatic species into the CITES Appendices could result in several problems in trading and sustainable utilization of the species, because of difficulties in identifying look-alike species and some species that are being traded only in part, or in processed forms. Furthermore, difficulties in issuance of Non-Detriment Findings (NDF) document to allow trading of some specimens could face problems due to several requirements, while down-listing or delisting

of species from the CITES Appendices could also be complicated or almost impossible.

Moreover, listing of the commercially-exploited species of Southeast Asia into the CITES Appendices would result in discontinuity of data collection. Most developing countries tend to follow the results from the CITES Conference of Parties and add the said species into their respective list of protected species at the national level. As catching of such species is no longer allowed, catch data would no longer be recorded by the countries in any formal data collection system. This results in difficulties in monitoring the status and trends of such species in the future. While several aquatic species, either target or non-target species, have already been listed in the CITES Appendices, several commercially-exploited aquatic species are under consideration by the CITES Conference of Parties and could be accepted for listing in the near future. This concern therefore needs to be closely monitored and countries should be well prepared for any circumstance.

In order for the countries in the region to be always well prepared, monitoring of the status of relevant species that may be subject to international conservation and management measures should be enhanced. Countries may need to consider incorporating long-term data collection of such species in their respective national statistical systems. This would also facilitate the development of science-based management measures for such species at the national and regional level, as well as in coming up with common or coordinated positions that could be used during discussions on the species at international fora, particularly at CITES Sessions organized biennially. Furthermore, establishment of a mechanism in obtaining joint positions of the Southeast Asian countries towards CITES proposals needs to be considered. Other management measures that aim specifically at assuring sustainable utilization of the species as well as enhancing the wild population for species under international concern (*e.g.* from development of breeding and nursing technologies and stock enhancement strategies, etc.) should also be explored and documented for future reference.

4. UTILIZATION OF FISHERY RESOURCES

4.1 Status, Issues, and Concerns

The Codex Alimentarius Commission (2004) defines traceability or product tracing as “the ability to follow the movement of a food through specified stages of production, processing, and distribution.” In an increasingly complex food system, traceability has become the most important tool to deal with issues and problems associated with food safety and quality assurance, thus allowing business to avoid the risks and gain the consumers’ trust.

Through the strengthened ties between countries across the globe, bilateral trade is encouraged and facilitated, therefore, it is not uncommon for food to travel thousands of miles to reach a market. In trade, records of traceability are used as proof of compliance to food safety, biosecurity, and regulatory requirements, where these records also ensure that quality and other contractual requirements are fulfilled. Thus, it is imperative that traceability of food products is strengthened to support food safety worldwide. In situations where there is a food recall, robust traceability systems allow efficient tracing of affected products throughout the supply chain.

In the aquaculture supply chain, traceability is necessary to ensure the safety and quality of aquatic organisms and to verify that these are farmed in compliance with national or international management requirements or meet national security and public safety objectives. In trading with specific countries such as the United States of America (USA), the European Union (EU), and Japan, traceability is considered a vital tool and requirement for necessary market penetration.

Many AMSs export significant quantities of aquaculture fish and fish products annually to regional and global markets. As traceability becomes a trade requirement for eligibility to export aquaculture products to major markets such as Japan, EU, and USA, establishing a reliable traceability system is crucial for the sustainable development of the aquaculture industry in the Southeast Asian region. While tapping the demand for aquaculture fish in these markets, several large-scale aquaculture companies of the region are able to comply with the stringent export requirements. Governments and organizations around the world have also been developing different systems of seafood traceability, e.g. TraceFish (EU), TraceShrimp (Thailand). Some countries in the region which are major seafood exporters have begun implementing traceability systems for their aquaculture products such as Malaysia and Thailand (shrimp), and Viet Nam (catfish and shrimp).

Besides the stringent regulatory requirements, the greatest pressure for businesses to implement traceability system for aquaculture products has been coming from the general

public. It is the new generation of educated consumers with higher level of awareness that drives a growing market demand for safety, security, and sustainability of aquaculture products. Consumers are getting more and more cautious over what they eat – whether the food comes from a safe and sustainable source, and whether production, transportation, and storage conditions could ensure food safety and quality.

National and Regional Initiatives

Implementation of traceability system for aquaculture products differs among the AMSs, for example, some countries which are major exporters of fish and fishery products implements traceability systems for their aquaculture products such as Malaysia (shrimp), Thailand (shrimp), and Viet Nam (catfish and shrimp). However, with increasing requirements for traceability in the international markets, there is an urgent need for all countries in the region to implement traceability systems in their aquaculture industry so as to comply with the regulations of importing countries. Nonetheless, countries on the one hand that already have their traceability systems in place allowing them to export their aquaculture products to the EU or USA for example, have already established a certain degree of legal framework as well as computerized or electronic traceability systems to track the aquaculture products from farm to fork. On the other hand, some countries that are in the process of implementing traceability systems have been enhancing their capabilities by building up the legal framework for traceability implementation and introducing traceability system to their industry through government support such as regulatory requirements, education and training. The status of implementation of traceability systems in AMSs is shown in **Box 7**.

At the regional level, SEAFDEC through its Marine Fisheries Research Department (MFRD) Programmes has initiated and implemented a project on traceability for aquaculture products in the region. Implemented from 2010-2015, which is in line with the 2011 ASEAN-SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020 and with the SEAFDEC Program Thrust

Box 7. Status of implementation of traceability systems in ASEAN Member States

Brunei Darussalam	Three private companies engaged in blue shrimp aquaculture implement traceability in their operations. Under such scheme, the shrimp farmer maintains records of date of stocking, feeding, and harvest. The country is the sole supplier of blue shrimp fry which are cultured by private companies, and harvested and sold to local shrimp buyers for domestic market or to a processing company which also operates shrimp hatchery in the country.
Cambodia	Although the country's aquaculture production is meant only for domestic consumption, the Fisheries Administration (FiA) has issued the Aquaculture Technical Guidelines and a technical manual on Good Aquaculture Practices (GAqP) which include some elements of product traceability, to ensure the safety and quality of aquaculture products. Training on GAqP has also been provided to fish farmers and model farms have been selected for GAqP certification. Considering that GAqP implementation entails high cost, many concerned fish farmers are finding it difficult to obtain better prices for their aquaculture products.

Box 7. Status of implementation of traceability systems in ASEAN Member States (Cont'd)

Indonesia	Implementation of a traceability system for aquaculture products in Indonesia is being piloted in three provinces, namely: Lampung, East Java, and South Sulawesi. This traceability system is implemented since 2016, and the government has encouraged stakeholders to be involved in the implementation of this established traceability system. The Directorate General of Aquaculture of the Ministry of Marine Affairs and Fisheries as the competent authority for aquaculture conducted a number of training workshops, socialization programs, and activities to build the stakeholders' awareness on traceability to support the implementation of the traceability system in Indonesia. Various data and information gathering systems for internal record keeping in hatcheries, farms, processing plants, and feed mills as well as establishing farmers' identification have also been developed and promoted to support the implementation of the traceability system. However, a strong legislation is needed to ensure that the system could be carried out successfully. Currently, Indonesia is developing such a government regulation for the implementation of the traceability system that can help improve traceability of the country's aquaculture products.
Lao PDR	Presently, traceability for aquaculture products is yet to be implemented in Lao PDR. The country has only document inspection for import, export and transit of commodities, as well as inspection at the International Checkpoint before entering into Lao PDR.
Malaysia	The country's Aquaculture Product Traceability System has been developed to support its shrimp aquaculture industry in exporting their products to the USA and the EU. Developed in 2011 and fully established in 2012, the system mainly aims to ensure the availability of information on the origin and food safety of aquaculture products. Currently, the traceability system is paper-based but an electronic system is being developed. Malaysia has also implemented its Live Fish Traceability System for ornamental fish to certify the health of fish and minimize or prevent the spread of fish diseases.
Myanmar	Myanmar is in the process of implementing traceability systems throughout the supply chains of its aquaculture products. The Department of Fisheries (DOF) of Myanmar has already initiated GAqP for fish and shrimp farming since 2011, and recently, the DOF has issued GAqP certificates for a total of 1549.2 ha devoted to fish, shrimp, and soft-shelled crab farming. GAqP training is also being conducted for fish inspectors, extension aquaculture officers, fish farmers, and other stakeholders in the aquaculture supply chain.
Philippines	Traceability for aquaculture products in the Philippines is being implemented under the purview of the Bureau of Fisheries and Aquatic Resources (BFAR). As the competent authority for aquaculture and fishery products, BFAR implements programs and activities that enhance and strengthen the implementation of the traceability systems. Specifically, BFAR Administrative Circular Order No. 251 of 2014 on traceability system for fish and fishery products provides the requirements for documentation of traceability for wild caught, farmed fish, and other aquatic products. The Circular applies to all fishery and aquaculture business operators directly or indirectly involved in production and processing of fishery and aquatic products for export. Based on this Circular, the aquaculture supply chain is divided into three main sections, namely: 1) pre-production (hatchery and nursery, feed mill and aquatic veterinary products); 2) production (grow-out farm); and; 3) post-harvest (auction market, transport, processing establishment, cold storage, shipment). Each stage in these main sections of the supply chain requires a documentation system for traceability. For large operators, there is an internal traceability system for various stages of the supply chain, such as within hatcheries, farms, processing plants, and feed mills. However, external traceability that links all parts of the supply chain has yet to be strengthened. Nevertheless, the fact that most small-scale aquaculture operators and the auction markets have minimal records for traceability needs to be examined and addressed. The Code of GAqP developed by BFAR, which focuses on food safety, animal health, and traceability, was approved and adopted as a Philippine National Standard by the Bureau of Agriculture and Fisheries Standard (BAFS, 2014). Based on the RA 10654, ammendment to the Philippine Fisheries Code of 1988, fish farmers are required to implement the GAqP to minimize the risks associated with aquaculture production.
Singapore	<p>The Agri-Food & Veterinary Authority of Singapore (AVA) is the national authority responsible for aquaculture development in Singapore and issues licenses to all marine food fish farms and land-based farms in the country. At the farm level, the AVA leverages on the Good Aquaculture Practice for Fish Farming (GAP-FF) scheme for the traceability of the country's aquaculture products. Launched in August 2014, the GAP-FF is a voluntary scheme which consists of a set of consolidated practices or Code of Practices (COP) formulated by AVA for on-farm safe and quality fish farming. The COP, which is based on the concept of Hazard Analysis of Critical Control Points (HACCP) and quality management principles, focuses on six key aspects, namely: farm structure and maintenance, farm management, farming and packaging practices, fish health management, farm environment, and human health and safety. The GAP-FF scheme is aimed at promoting responsible management practices in food fish farming as well as the guidelines for GAP-FF that provide the basis and framework for farms to implement some elements of traceability in their farm products.</p> <p>Under the GAP-FF's COP guidelines, farms are required to document all farming activities such as fish species, culture or stocking period, stocking size and density, source of stock, feeding regime, and seasonal stocking trends. Farms certified under this scheme must stock fish from known origin, <i>i.e.</i> from hatchery source for traceability purposes. Records and invoices of incoming fish stocks should be kept for verification and audit purposes, and there must be proper documentation of fish stocks in the various net cages and that records of fish movement between net cages must be tracked and updated. GAP-FF certified farms are encouraged to use dry formulated pelleted feeds which can be traced to source. Other than farm feeding records, the farms are also expected to have in place records on farm environment monitoring, health and disease treatment, and fish mortality. Prophylactic measures and disease treatment regime must be documented as part of health management records. In addition, certified farms are required to maintain and update farm Standard Operating Procedures (SOPs), instruction manuals, laboratory tests, log records, and other information required under GAP-FF certification. GAP-FF is a positive step forward in the implementation of traceability in the Singapore aquaculture industry. Only GAP-FF certified farms are allowed to use the GAP-FF logo when marketing their farm products. AVA conducts yearly audit checks on the GAP-FF certified farms and certification is also renewed</p>

Box 7. Status of implementation of traceability systems in ASEAN Member States (Cont'd)	
Singapore (Cont'd)	<p>annually after the audit checks. Currently, four farms have been certified with the GAP-FF scheme and more farms have expressed interest in joining the scheme.</p> <p>In response to changes in consumers' preference, some local farms are value-adding their aquaculture products. Harvested fish are sent to AVA-licensed fish establishments or processors for further processing into fillets before being sold to retailers such as supermarkets. AVA-licensed fish processors are GMP/HACCP certified and under the licensing conditions, these establishments are required to keep proper documented records for all their incoming raw materials as well as all outgoing finished products. This traceability system enables the manufacturer or distributor to promptly remove any unsafe products along the food supply chain in order to safeguard public health.</p>
Thailand	<p>Thailand has implemented traceability system for its aquaculture shrimp since 2002 as it is one of the main export products of the country's fisheries industry. From a manual paper-based system known as "Fry Movement Document" or FMD and "Movement Document" or MD, the Department of Fisheries (DOF) of Thailand with assistance from the French Government developed a computerized traceability system known as TraceShrimp in 2005 to provide a reliable traceability management tool not only for the Thai stakeholders in the aquaculture shrimp production and supply chain but also for their local and foreign buyers. TraceShrimp is a voluntary scheme managed by the DOF and requires membership by the Thai stakeholders. TraceShrimp member can give access to its local and foreign buyers all information on a given lot of shrimp identified by means of lot number, invoice number, delivery bill number, client or buyer name, or operation date through the TraceShrimp website. The lot of shrimp can be traced back all the way to the broodstock origins.</p>
Viet Nam	<p>In Viet Nam, the aquaculture product supply chain is managed by three agencies, where the stage from stocking to harvest is managed by the Directorate of Fisheries (DoF) under the Ministry of Agriculture and Rural Development (MARD); the stage from harvest to processing is managed by the National Agro-Forestry-Fisheries Quality Control Department (NAFIQAD), also under MARD; and the retail stage (sale in the market to consumers) which is managed by the Ministry of Industry and Trade. Ministerial Circular No. 03/2011/TT-BNNPTNT dated 21/01/2011 (hereinafter called Circular No. 03) is a Regulation that traces and recalls fishery products that fail to meet food quality and safety requirements. Circular No. 03, which provides the legal basis for MARD to regulate traceability of fisheries products from farming to processing, also applies to organizations and individuals involved in fisheries production and in fisheries business such as selling of feeds, chemicals, products for treatment and improvement of environment, seeds, equipment and materials for nursery and rearing. However, the Circular does not apply to households and individuals producing fisheries products for own use without selling these in the market; and producers of products of aquatic origin which are not used as food. Article 5 of Circular No. 03 requires that organizations and individuals involved in fisheries production and business in fisheries shall establish traceability system that meets the following requirements:</p> <ul style="list-style-type: none"> • The system shall be under the one step back-one step forward principle to enable the identification and tracking of a product unit in specific steps of production, processing, and distribution • The system shall be able to trace the products' origin through information, including the system of product identification codes (coding) stored throughout production process of the establishment • Information shall be stored and provided to enable identification of production lots, receipts, suppliers and delivery, and recipients of the lots • Measures that clearly separate receipts of lots, production lots, and delivery of lots should be adopted to ensure accuracy of information <p>The Ministerial Decision No. 1503/QĐ-BNN-TCTS of 5 July 2011 on the National Standard on Good Aquaculture Practices in Viet Nam and which was subsequently replaced by Decision No. 3824/QĐ-BNN-TCTS issued on 6 September 2014, makes it compulsory for fish farmers to adopt the Vietnamese Good Agriculture Practice (VietGAP) standards in their farming process. The VietGAP was based on the 1999 FAO Code of Conduct for Responsible Fisheries: General Principles, Technical Guidelines on Aquaculture Certification (FAO, 2011), AseanGAP, and other international standards (GlobalGAP and ASC, GFSI, ISO, Codex). The scope of VietGAP covers general requirements, food safety, animal health and welfare, environmental integrity, and socio-economic aspects. Starting in 2015, pangasius (catfish or tra) farming and processing have been obliged to apply the VietGAP standard. VietGAP certification is now applied for other aquaculture species such as shrimp and tilapia. Under the VietGAP standard, aquaculture farms shall record adequate information on the production process until harvest of each culture pond, and records must be kept for 24 months from harvest date. Therefore, all farms certified by VietGAP have adequate records that would make it easy to trace the products when required. The records related to traceability shall include:</p> <ul style="list-style-type: none"> • Records of receipt and delivery, use, storage of products, inputs • Records of handling of expired products and hazardous waste • Records of movement of farmed aquatic animals and identification of locations, products with or without VietGAP application • Records of seedstock • Diary of each culture pond • Records related to control and handling of diseases • Records of harvest, transportation including details of buyers <p>As of 1 August 2015, Viet Nam catfish farmers have applied and obtained VietGAP certification for nearly 2,500 ha of aquaculture water surface area. The DoF/MARD has set up a website (http://vietgap.tongcucthuysan.gov.vn/) for VietGAP certified producers.</p>

II: Enhancing Capacity and Competitiveness to Facilitate International and Intra-regional Trade. The goal of the project is to enhance the competitiveness of the region's aquaculture products through the implementation of traceability system not only in the aquaculture production and but also throughout the supply chain.

Specifically, the project aspired to establish and promote traceability systems for aquaculture products in the AMSs and enhance the capability and knowledge of stakeholders on the development and implementation of traceability systems for aquaculture products in the AMSs. A major deliverable output, the Regional Guidelines on Traceability System for Aquaculture Products in the ASEAN Region, was developed through a consensus of and in accordance with the collective inputs and efforts from all participating AMSs. The Regional Guidelines will serve as a useful resource and common reference which could be used by Member Countries to assist in their implementation of traceability systems for aquaculture products and in the formulation and development of national programs and activities to promote traceability in aquaculture products in the future.

Despite the progress made to have wider implementation of traceability system for aquaculture products, the industry (especially the small-scale) in the AMSs is still facing various issues and difficulties that include the following:

Inadequacy of resources

In the AMSs, the supply chain of aquaculture products largely comprises individual small-scale stakeholders, *i.e.* hatcheries, feed mills, farmers, middlemen, among others. These stakeholders, unlike big operators, usually face the challenges in maintaining their product quality. With inadequate resources, it would be difficult for them to maintain relevant records of their products. Being small in size and with limited income, small-scale stakeholders' operations are often tightly run with limited manpower and funds. Record keeping is a key component of a traceability system that usually entails the need to hire more manpower to establish and maintain the traceability system. This would require additional funds which is usually not available for many small-scale stakeholders.

Insufficient awareness

Another issue facing the implementation of traceability system for aquaculture products in the AMSs is lack of awareness or knowledge of the significance of tracing their products. The key stakeholders in the supply chain of aquaculture products are unaware about the benefits and advantages of having traceability system in their

operations. Also, some traditional stakeholders are averse to change and are reluctant to implement any traceability system.

Complexity of the supply chain

The supply chain of aquaculture products in the AMSs is characterized by the presence of numerous small-scale aquaculture farms with limited production capacity. This results in the need for central buying stations and collection centers or middlemen to collect the aquaculture produce from various small farms. In addition, some stakeholders such as middlemen may be averse to sharing information (*e.g.* source of their raw materials) as such information are considered confidential. The presence of diverse stakeholders at each stage of the supply chain results in the mixing of raw materials and end products. The absence of cooperatives to manage these stakeholders accentuates the problem. This forms a complex supply chain framework that makes it more complicated to implement any traceability system.

Lack of legal framework

Some AMSs lack the necessary legal framework for enforcing the traceability of their respective aquaculture industries. Without any legal framework, various stakeholders lack the motivation and incentive to implement traceability system in their operations. For those who are willing, the absence of any technical guidance and assistance hinders the successful implementation of traceability system. In addition, the format of documents to track and record details of aquaculture products had not been established, making it more challenging for the small stakeholders to adopt any traceability system.

4.2 Way Forward

Traceability implementation can be mandatory or voluntary depending on the government or private sector's initiatives or obligations. Nonetheless, whether or not it is a regulatory requirement, traceability is now a common feature in international trade of fish and fish products. According to the FAO Expert Panel Review 5.2 on "Servicing the aquaculture sector: role of state and private sectors," in order to encourage traceability application and implementation, the Governments should provide training and promote capability building on traceability requirements and systems. Other roles of the Government could include provision of infrastructure facilities and financial incentives to enhance implementation of traceability systems to improve safety and productivity. Governments of the AMSs should therefore stipulate the pre-requisites of traceability application in their aquaculture industry through national standards, circular,

laws and regulations. The Governments should also promote or impose the adoption of best practices, e.g. Good Aquaculture Practice (GAP) in their respective countries' aquaculture industry. The private sector, on the other hand, should comply with regulatory provisions to support government initiatives and programs and ensure product traceability. It is also necessary for the private sector to make sure that proper information and records pertaining to the various stakeholders in the aquaculture supply chain, provided to the government are accurately documented and maintained throughout the supply chain.

5. FISHERIES MANAGEMENT

5.1 Management of Fishing Capacity and Combating IUU Fishing

The rapidly growing fisheries industry in Southeast Asia since late 1970s has led to increased fishing capacity, especially with the introduction of highly efficient fishing gears such as trawlers and later on the purse seiners, as well as to the increasing capacities of processing plants. Promotion of the surimi industry in the region is one of the examples that significantly increased the capacities of processing industries, while increasing amounts of fish as raw materials are required to supply these processing industries. The fishing areas since the 1970s have been largely expanded to cover international waters particularly the South China Sea and towards the offshore areas of the Southeast Asian countries. The Economic Exclusive Zones (EEZs), which used to be only 12 nautical miles from shore and increased to 200 nautical miles after the adoption of the United Nations Convention on the Law of the Sea (UNCLOS) in 1982, has created significant impacts in many Southeast Asian countries. The expansion of EEZs to 200 nautical miles without effective Monitoring, Control and Surveillance (MCS) and fisheries management schemes was considered as one of the primary reasons that drives the fishing industries to operate illegal fishing activities, later identified as Illegal, Unreported and Unregulated (IUU) fishing in the EEZs of neighboring countries. There could be many forms of IUU fishing activities but among the major forms are unlicensed fishing, landing of fish in neighboring states, using double flags, and use of illegal fishing and practices, among others.

In the practical implementation, many AMSs consider that the implementation of MCS scheme plays a key role in preventing IUU fishing activities, particularly illegal fishing, and in enforcing the necessary countermeasures. Recently, the various market-driven measures enforced by fish importing countries are among the important issues that AMSs have been concerned with, and thus are putting high attention to comply with such requirements otherwise, trading of their fish and fishery products to these importing countries would be hampered. As a result,

improvement of the effectiveness of fisheries management and combating IUU fishing are being promoted at national level. However, the measures or actions could not be implemented in an isolated manner by a single country. Thus, regional collaborative frameworks had been established and promoted through the RPOA-IUU and SEAFDEC. Specifically under the SEAFDEC frameworks, AMSs with support from SEAFDEC have developed several management tools, guidelines, and measures that aim to enhance cooperation among the AMSs in combating IUU fishing and improving the effectiveness of fisheries management. As one of key elements in fisheries management, promotion of effective fishing capacity is essential in making sure that fishing effort is matched with the available resources in order to protect important habitats as well as to enforce regulations that would safeguard the interest of specifically vulnerable groups of people and support the efforts to combat IUU fishing.

5.1.1 Management of Fishing Capacity

During the past three to four decades, Indonesia, Thailand, Philippines, Myanmar, Viet Nam, and Malaysia ranked among the top ten countries with the largest fishing industries in the world, which could be due to the introduction of new fishing gear technologies as well as post-harvest and processing facilities since 1960s leading to the rapid and intensive development of the fisheries industry in the region. The rising number of fishing fleet in the Southeast Asian region coupled with rapid increase in harvesting capacity has not been matched with the development of national capacities and regional or sub-regional cooperation to manage fishing effort with due consideration given to the sustainability of fishery resources. Limited management or regulation and control of active fishing capacity allow fisheries to operate in an “*open-access regime*” leading to continued increase in number of vessels and people engaged in fisheries. It has therefore become necessary to improve and implement licensing schemes and other capacity management measures that would effectively limit entry into the fisheries by replacing the present inadequately designed systems.

Recognizing the need to replace the “*open-access*” with the “*limited access*” regime to ensure sustainable utilization of the resources, several AMSs have been recently working towards improving the management of their respective countries' fishing capacity. These could be gleaned from the available legal institutional frameworks in relation to management of fishing capacity of the respective AMS that were compiled based on their inputs during the Regional Technical Consultation on Development of Regional Plan of Action for Managing of Fishing Capacity in December 2015, as described in **Box 8**.