

Securing the Niche of ASEAN Fishery Products in the Global Market: Traceability System for ASEAN Aquaculture Products

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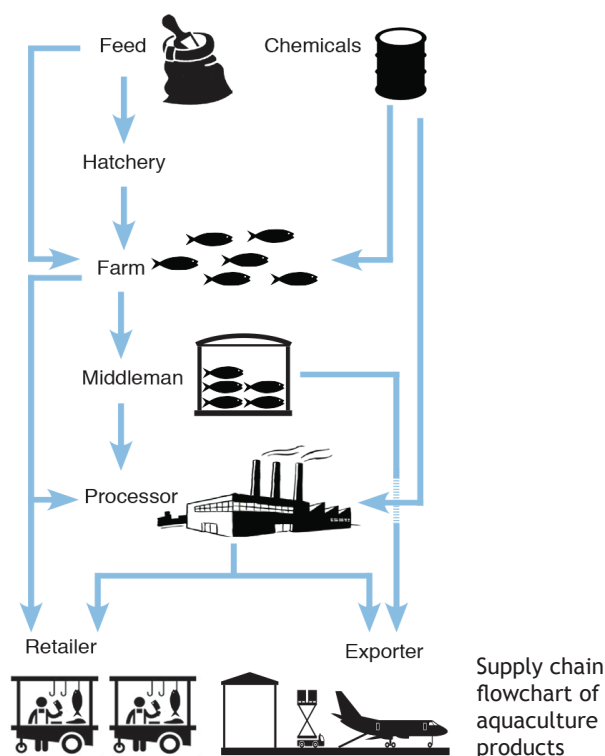
The Codex Alimentarius Commission defines traceability or product tracing as “the ability to follow the movement of a food through specified stage(s) of production, processing and distribution”. In an increasingly complex food system, traceability has become the major tool to deal with issues/problems associated with food safety and quality assurance, thus allowing business to prevent risk and gain consumer trust. Meanwhile, the strengthened ties between countries across the globe encourage and facilitate bilateral trade, and it is not uncommon for food to travel thousands of miles to reach a market. In food trade, records of traceability are used as proof of compliance to food safety, bio-security and regulatory requirements, and ensure that quality and other contractual requirements are fulfilled. Thus, it is imperative that traceability of food products should be strengthened to support food safety worldwide. In a situation of a food recall, robust traceability systems allow efficient tracing of affected products throughout the supply chain. Traceability has also been used in the aquaculture supply chain to ensure the safety and quality of aquatic organisms, and to verify that such organisms are farmed in compliance with national or international management requirements or meet national security and public safety objectives. In order to enhance the competitiveness of the Southeast Asian region’s fish and fishery products, as well as facilitate trade with major importing countries, e.g. the United States of America, the European Union as well as Japan, traceability has become a vital tool and requirement for necessary market penetration and securing the niche of the region’s fish and fishery products in the world market.

Many ASEAN Member States (AMSs) export significant volumes of aquaculture fish and fishery products to regional and global markets annually. As traceability becomes a trade requirement for eligibility to export aquaculture products to major markets, such as Japan, the European Union (EU) and the United States of America (USA), establishing reliable traceability system is crucial for the sustainable development of the aquaculture industry in the AMSs. Tapping the demand for aquaculture fish in the global market requires that aquaculture companies in the AMSs comply with the stringent export requirements imposed by the international market. Thus, governments and organizations around the world have developed various systems of seafood traceability, e.g. TraceFish (EU), TraceShrimp (Thailand).

Meanwhile, the USA through a Presidential Memorandum in June 2014 established the Presidential Task Force on Combating Illegal, Unreported, and Unregulated (IUU)

Fishing and Seafood Fraud (Task Force) which includes recommendations for combating IUU fishing and seafood fraud throughout the seafood supply chain. The Task Force also promoted the actions to address the issues through additional traceability requirements that include establishing an integrated risk-based traceability program that tracks the path of seafood products from harvest or production to entry into the US market (NOAA Fisheries, 2016). In an effort to address such requirements, many countries in the ASEAN region which are major seafood exporters, e.g. Malaysia (shrimp), Thailand (shrimps), Viet Nam (catfish and shrimp), have developed and implemented their respective traceability systems for their aquaculture products.

In addition to the stringent regulatory requirements imposed by international markets, the greatest pressure for businesses to implement traceability systems for aquaculture products comes from the general public. A new generation of educated consumers with high level of awareness drives a growing market demand for food safety, security and sustainability for 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 can ensure food safety and quality.





Recognizing such concerns, the ASEAN-SEAFDEC Member Countries adopted in 2011 the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020 (SEAFDEC, 2011). Specifically, Resolution No. 19 stipulates that the ASEAN-SEAFDEC Member Countries should “*Support the competitiveness of the ASEAN fish trade through the development of procedures and programs that would certify, validate or otherwise indicate the origin of fish to reflect the need for traceability, sustainable fishing practices and food safety, in accordance with international and national requirements.*”

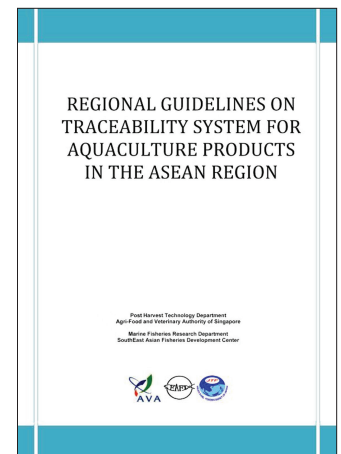
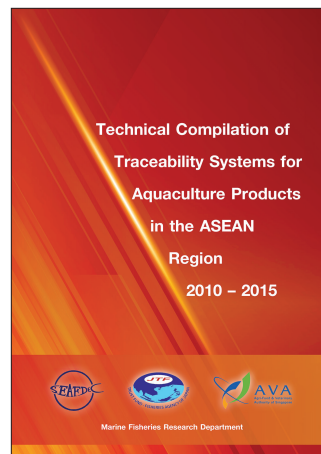
Moreover, Plan of Action No. 40 specifies that the concerned countries should “*Develop and implement ASEAN guidelines for environment-friendly and responsible aquaculture and good aquaculture practices that cover: (i) the integration of quality and safety management systems for products with significant trade potential; (ii) the harmonization for chemical use and food safety in aquaculture; (iii) the development of product traceability systems from farm to market; and (iv) harmonization of the quarantine and inspection/sampling procedure and Sanitary and Phytosanitary (SPS) measures for aquaculture products to secure food safety;*” Plan of Action No. 60 indicates that the countries should “*Develop traceability systems, with mechanisms as needed to certify or validate the information, for the whole supply chain, and establish regulations and enforcement schemes in line with international standards. Align Member Countries’ inspection systems and incorporate strengthened port inspections in the process as a means to improve inspection systems;*” and Plan of Action No. 68 encourages the countries to “*Establish regional/ASEAN standards applicable for fishery and aquaculture*

products that are in line with international requirements and applicable to the region. Harmonize standards, technical regulations and conformity assessment procedures as inputs for the establishment of the ASEAN Policy Guidelines on Standards and Conformance, to increase the competitiveness of fishery products on regional and international markets.”

Guided by such stipulations, the AMSs had initiated their respective quality, safety and control management systems to be able to expand their fish trade and enhance competitiveness of fish and fishery products for regional and international trade. More particularly, the AMSs also heeded the recommendation on the need to improve traceability methodology and capacity to deal with new emerging export requirements (SEAFDEC/MFRD, 2011). As a result, government agencies and industries in the AMSs have to ensure food safety and quality of their fish products (including aquaculture products) by providing additional information, *i.e.* source, harvest/production including processing, and distribution to the supply chain up to the consumers (Wongchinda, 2011).

In an effort to assist the AMSs in developing and implementing traceability systems in aquaculture production and the supply chain, SEAFDEC through its Singapore-based Marine Fisheries Research Department (MFRD) implemented the Project on Traceability Systems for Aquaculture Products in the ASEAN region from 2010 to 2014. Supported by the Japanese Trust Fund and carried out by the Post-Harvest Technology Centre of the Agri-Food and Veterinary Authority of Singapore as the Collaborating Center of MFRD programmes, the Project aimed to provide a platform for sharing of information and experiences among the AMSs on implementation of traceability systems for aquaculture products in the region; and to enhance regional capability on implementation of traceability systems for aquaculture products and promote their implementation in the region.

Throughout its duration, the Project was able to collate and compile information that were used as inputs for the Technical Compilation on Traceability Systems for Aquaculture



The Technical Compilation and Regional Guidelines on Traceability System for Aquaculture Products in the ASEAN Region

Products in the ASEAN Region, and the Regional Guidelines on Traceability Systems for Aquaculture Products in Southeast Asia published in 2016 (SEAFDEC, 2016). The Technical Compilation includes the AMSs country reports on the status of implementation of traceability for aquaculture products, the difficulties encountered by the AMSs in the implementation of traceability systems, and the benefits of implementing such systems. Developed through consensus of and in accordance with the collective inputs and efforts of the AMSs, the Regional Guidelines would serve as useful resource and common reference for the AMSs in the implementation of traceability systems for aquaculture products and in the future formulation and development of national programs and activities promoting traceability.

National Initiatives

The status of traceability system development and implementation for aquaculture products differs among the AMSs. Countries which are major exporters of fish and fishery products have implemented traceability systems for their aquaculture products, such as Malaysia (shrimp), Thailand (shrimps) and Viet Nam (catfish and shrimp). However, with increasing requirements for traceability in the international markets, it has become necessary for all AMSs to implement traceability systems in their aquaculture industry to comply with the regulations and requirements of importing countries. Moreover, countries that have already put to practice traceability systems that allow their aquaculture products to be exported to the EU or USA, also established certain degree of legal frameworks as well as computerized/electronic traceability systems to track aquaculture products from farm to fork. Other countries that are still in the process of implementing traceability systems have been enhancing their capabilities by building up their respective legal frameworks for traceability implementation and introducing such traceability systems to the aquaculture industry through government support such as regulatory requirements, education and training.

Brunei Darussalam

The three private companies in Brunei Darussalam engaged in blue shrimp (*Litopenaeus stylirostris*) aquaculture have implemented traceability in their operations. Under the guidance of these companies, shrimp farmers maintain records of their aquaculture operations, *i.e.* date of stocking, feeding and harvest. The country has been a sole supplier of blue shrimp fry for culture by shrimp farmers of the private companies. The harvest is sold to local shrimp buyers for the domestic market or to a processing company. One of the country's private companies, Golden Corp is the first to breed organic blue shrimp in the country (Business Times, November 2014). Its total production contributed to the country's total blue shrimp production of 6,000 metric tons in 2014 and the company's aquaculture of the blue shrimp has been accredited by ECOCERT, an organic inspection and

certification body of France (Borneo Bulletin, January 2015) and a leading certifier of fair trade food based on its Fair Trade Standards. Currently, the country's blue shrimps are exported to Australia, China, Japan, and USA.

Cambodia

Although aquaculture production of Cambodia is only for domestic consumption, the Fisheries Administration (FiA) ensures that the country's aquaculture products comply with safety and quality requirements. Such requirements had been established by FiA through the issuance of the Aquaculture Technical Guidelines and a technical manual on Good Aquaculture Practices (GAqP) which include elements of product traceability. In order that the requirements are understood by stakeholders, FiA provided training sessions on GAqP to fish farmers and model farms have been selected for GAqP certification. However, FiA also noted that the implementation of GAqP entails a high cost for the fish farmers to comply with and that some farmers are having difficulties in obtaining better price for their products.

Indonesia

The traceability system for aquaculture products in Indonesia is being piloted in three provinces, namely: Lampung, East Java and South Sulawesi, and is expected to be gradually implemented in 2016. Indonesia recognizes the need to encourage stakeholders to be involved in the implementation of the established traceability system. The Directorate General of Aquaculture (DGA) of the Ministry of Marine Affairs and Fisheries as the competent authority for aquaculture had 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. In the process, the DGA has initiated data/information gathering systems for internal record keeping of hatcheries, fish farms, processing plants, and feed mills as well as establishing farmers' identification to support the traceability implementation. The DGA however, suggested that a strong legislation is needed to ensure the system could be carried out successfully. Currently, Indonesia is developing such a government regulation to ensure the implementation of the traceability system that can help improve aquaculture products' traceability.

Lao PDR

Presently, traceability for aquaculture products had yet to be implemented in Lao PDR. Nevertheless, the country has developed document inspection for import, export and transit of commodities, as well as inspection of seafood at the International Checkpoint before this enters into Lao PDR.

Malaysia

Malaysia's Aquaculture Product Traceability System has been developed to support the aquaculture shrimp industry and enable the country to export shrimps to the USA and EU. Developed in 2011 and fully established in 2012, the

system is mainly aimed at ensuring the origin and food safety of aquaculture products. Currently, the country's traceability system for aquaculture products is paper-based but an electronic system is being developed. Malaysia has also implemented another Live Fish Traceability System for ornamental fish to make sure that its ornamental fishes are healthy and spread of fish diseases is minimized or prevented.

Myanmar

Myanmar is in the process of implementing traceability systems in all supply chains for aquaculture products. The Department of Fisheries (DOF) of Myanmar has already initiated Good Aquaculture Practices (GAQP) for fish and shrimp farming since 2011. Recently, the DOF has issued GAQP certificates for about 1550 ha of fish, shrimp and soft-shelled crab farming. DOF also conducts training on GAQP 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. As such, BFAR has been implementing programs and activities that aim to enhance and strengthen the implementation of the country's traceability systems. Specifically, BFAR Administrative Circular Order No. 251 of 2014 on traceability system for fish and fishery products provides the requirements on documentation for 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. As indicated in such Circular, the aquaculture supply chain is divided into three main sections, namely: i) pre-production (hatchery/nursery, feed mill/aquatic veterinary products); ii) production (grow-out farm); and iii) post-harvest (auction market, transport, processing establishment, cold storage, shipment). Each stage in these main sections of the supply chain requires documentation system for traceability. For large operators, there is an internal traceability system for the stages of the supply chain, such as within hatcheries, farms, processing plants, and feed mills. However, external traceability linking all parts of the supply chain has yet to be strengthened, considering that small-scale aquaculture operators and the auction markets mostly have minimal records for traceability. Furthermore, the Code of Good Aquaculture Practice (GAQP) developed by BFAR that focuses on food safety, animal health and traceability, has also been approved and adopted as a Philippine National Standard by the Bureau of Agriculture and Fisheries Standard (BAFS, 2014). As prescribed in RA 10654, amendment to the Philippine Fisheries Code of 1988, aquafarmers are required to implement the GAQP to minimize the risks associated with aquaculture production.

Singapore

The Agri-Food & Veterinary Authority of Singapore (AVA) is the national authority responsible for aquaculture development in Singapore and licensing of all marine food fish farms and land-based farms in Singapore. At farm level, AVA leverages on the Good Aquaculture Practice for Fish Farming (GAP-FF) scheme for the traceability of aquaculture products. The GAP-FF scheme which was launched in August 2014 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 6 key aspects, namely: farm structure and maintenance; farm management; farming and packaging practices; fish health management; farm environment; and human health and safety. The objective of GAP-FF scheme is to promote responsible management practices in food fish farming and at the same time the guidelines for GAP-FF provide the basis and framework for farms to implement some elements of traceability in their farm products. Under the GAP-FF's COP guidelines, farms are required to document all farming activities such as fish species, culture/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.e.* from hatchery source for traceability purposes. Records and invoices of incoming fish stocks are to be kept for verification and audit purposes. There must be proper documentation of fish stocks in the various net cages and records of fish movement between net cages must be tracked and updated. GAP-FF certified farms are encouraged to use dry formulated pellet feeds which can be traced to source.

Other than farm feeding records, the farms are also expected to have in place records for 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 renewed annually after the audit checks. Currently, 4 farms have been certified with the GAP-FF scheme and more farms have expressed interest in joining the scheme. Moreover, 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/processors for further processing into fillets before being sold to retailers such as supermarkets.

AVA-licensed fish establishments/processors are GMP/HACCP certified and under the licensing conditions, these establishments are required to keep proper documented records of 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.

Thailand

Thailand has implemented traceability system for its aquaculture shrimp since 2002 as one of the main export products of the country's fisheries industry. From a manual paper-based system known as Fry Movement Document (FMD) and Movement Document (MD), the Department of Fisheries (DOF) of Thailand with assistance from the French Government developed a computerized traceability system in 2005 known as TraceShrimp. This system aims to provide a reliable traceability management tool not only for the country's 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/data on a given lot or consignment of shrimps identified by means of lot number, invoice number, delivery bill number, client/buyer name or operation date through the TraceShrimp website. Any consignment or lot of shrimps can be traced back all the way to the origin of broodstocks.



Circular No. 03/2011/TT-BNNPTNT dated 21/01/2011 – Regulation on tracing and recall of fishery products failing to meet food quality and safety requirements (also known as Circular No. 03) is the legal basis for MARD to regulate traceability for aquaculture products from farming to processing. Circular No. 03 applies to organizations and individuals involved in fisheries production and business in fisheries such as feed, chemicals, products for treatment and improvement of the environment, as well as seed nursery and rearing.

However, Circular No. 03 does not apply to households and individuals producing fisheries products for their own consumption without sale in the market, and producers of products of aquatic origin which are not used as food. Specifically, Article 5 of Circular No. 03 requires that organizations and individuals involved in fisheries production and business in fisheries shall establish traceability system meeting the following requirements:

- 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 product 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: lots of receipt, suppliers and lots of delivery and recipients; and
- Measures should be taken up to clearly separate lots of receipt, production lots and lots of delivery to ensure accuracy of information.

Aquatic Animal Movement Document Form applied by the DOF Thailand

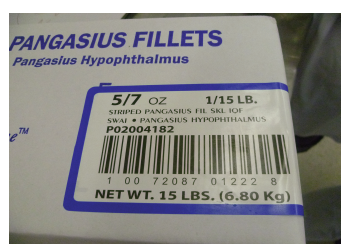
Viet Nam

In Viet Nam the aquaculture product supply chain is managed by three agencies. 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. The retail stage (sale in the market to consumers) is managed by the Ministry of Industry and Trade. Ministerial

Ministerial Decision No. 1503/QD-BNN-TCTS of 5 July 2011 on the National Standard on Good Aquaculture Practices in Viet Nam, which was subsequently replaced by Decision No. 3824/QD-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. Based on the FAO Code of Conduct for Responsible Fisheries, VietGAP for Aquaculture includes: General Principle, Technical Guideline 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. From 2015 onwards, *Pangasius* spp. (catfish/Tra) farming and processing are obliged to apply the VietGAP standard. Subsequently, VietGAP certification will be applied for other aquaculture species such as shrimps and tilapia.



Processing of *Pangasius* fillets and product labelling for traceability



Under the VietGAP standard, aquaculture farms shall record adequate information of the production process until harvest of each culture pond. All records must be kept for 24 months from harvest date. Therefore, all farms certified by VietGAP have adequate records that are easy to trace when required. The records related to traceability shall include:

- receipt/delivery, use, storage of products, inputs;
- handling of expired products/hazardous waste;
- movement of farmed aquatic animals and identification of locations, products with/without VietGAP application;
- seeds used;

- diary of each culture pond;
- information related to control and handling of diseases; and
- harvest, transportation including details of buyers.

As of 1 August 2015, Viet Nam catfish farmers obtained VietGAP certification for nearly 2500 ha of aquaculture water surface area. DoF/MARD has set up a website (<http://vietgap.tongcucthuysan.gov.vn/>) for VietGAP certified producers.

Issues and Concerns Confronting the Implementation of Traceability Systems

Despite the progress made by the AMSs in initiating the development and implementation as well as promote wider implementation of traceability system for aquaculture products, the industry (especially small-scale stakeholders) in the AMSs still continue to be confronted with issues and difficulties, which are summarized below.

Inadequate resources

In the AMSs, the supply chain of aquaculture products largely comprises individual small-scale stakeholders, *i.e.* hatcheries, feed mills, farmers, and middlemen, among others. These stakeholders, unlike bigger operators, usually face challenges in maintaining their product quality. Due to insufficiency of resources, it has become difficult for them to maintain relevant records of their products. The small size and limited income of small-scale stakeholders, lead to tightly run operations with limited manpower and funds. Record keeping, a key component of a traceability system, usually entails the need to hire more manpower to establish and maintain the traceability system. Hiring of manpower requires additional funds which could be insufficient for the small-scale stakeholders.

Insufficient awareness

Another issue that confronts the AMSs during the implementation of traceability system for aquaculture products is the lack of awareness and insufficient knowledge about the traceability system. 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/collection centers or middlemen to collect aquaculture produce from various small farms. In addition, some stakeholders such as middlemen may be reluctant to share information, *e.g.* source of their raw materials, as such information oftentimes considered classified and 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 difficult to implement traceability system.

Weak enforcement of regulations

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

Way Forward

Implementation of traceability systems could be mandatory or voluntary depending on the governmental or private sector initiatives or obligations. Nonetheless, whether or not traceability is a regulatory requirement, it is now a common feature in international trade of fish and fishery 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 application/implementation of traceability, governments should provide training and promote capability building on traceability requirements and system (FAO/NACA, 2012). Other roles of the government could include provision of infrastructure facilities and financial incentives to enhance the implementation of traceability system and improve safety and productivity.

The governments of AMSs should stipulate the pre-requisites of traceability application in their respective aquaculture industries through the issuance of national standards, circulars, laws and regulations. In addition, governments should promote or impose the adoption of best practices, e.g. Good Aquaculture Practice (GAqP) in the industry. For their part, the private sector should comply with regulatory provisions to support governments’ initiatives and programs and to ensure product traceability. The private sector should also ensure that proper information and records pertaining to the various stakeholders in the aquaculture supply chain provided to the governments are accurately documented and maintained throughout the supply chain.

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