Sustainable Development of Vietnam's Fisheries Industry

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Abstract
In the context that natural aquatic resources are increasingly depleted, it is urgent to shift to developing marine aquaculture in the direction of a modern and sustainable industry. To meet the target by 2030, the export turnover will reach 14-16 billion USD. It is necessary to have a drastic change in management direction, preferential policies, and strong enough support to form a farming industry with large-scale sea freight... Developing fisheries into an essential national economic sector, producing significant commodities in association with industrialization - modernization, sustainable development, and proactive adaptation to changes climate; have a reasonable structure and organizational form of production, high productivity, quality, and efficiency; has a prestigious brand name, competitiveness, and international integration; people's material and spiritual life is constantly improving, ensuring social security; contribute to ensuring national defense and security, maintaining the independence and sovereignty of the sea and islands of the Fatherland.
Keywords: Sustainable development, Fisheries, Vietnam

1. INTRODUCTION

Seafood is one of the most traded commodities in the world (FAO, 2021). The economic value of global aquaculture production is estimated at $362 billion, of which aquaculture reached $232 billion in 2016 (FAO, 2018a). Seafood consumption per capita increased from 9.0 kg in 1961 to 20.2 kg in 2015 and is estimated to reach 20.3 kg in 2016 and 20.5 kg in 2017. The most extensive fishery product in the world relies on imports from developing countries; importing countries consume about 60% of the total global fisheries exports and account for 54% of the total value of international fisheries trade. (FAO, 2018a). The fisheries sector employs approximately 19.3 million workers in aquaculture and 40.3 million in fishing (FAO, 2018a).

With many favorable natural conditions for developing the fisheries industry1, Vietnam has become the region's leading producer and exporter. Fishery output (mainly fish and shrimp) grew by more than 30.8% in the period 2010 - 2016, from 5,142.7 thousand tons (in 2010) to 6,728.67 thousand tons (in 2016). Aquaculture production in 2016 reached more than 3,604 thousand tons, up 2.6%. The output of caught fisheries reached more than 3,124,000 tons, up 2.9% compared to 2016. In terms of exports, overcoming difficulties in supply and demand and export markets, in 2021, fisheries continued to affirm is the export industry with the most significant turnover of the entire agricultural sector with a value of 7 billion USD.

In the development of the fisheries sector, the issue of building and developing value chains

has received the attention of all levels, reflected in the content of the Central Resolution, the Prime Minister's decision on regulations, agricultural planning, and restructuring. Vietnam's fisheries development strategy for 2020 (approved in Decision No. 1690/QD-TTg dated September 16, 2010) orients the development of the whole industry, which requires "consolidation and development of economic models" forms of organization of production and exploitation of fisheries such as production teams, cooperatives, forms of collective economy, joint ventures, associations, logistics, and service models for consumption of products at sea"; organize suitable models such as “private investment model; model of joint ventures and linkages between economic sectors.” In particular, the Strategy also states that it is necessary to “reorganize production, build linkages and share benefits among enterprises, producers, and scientists to create a favorable environment to improve production efficiency. Export”. One of the critical solutions is to "strongly attract investment from enterprises, develop models of economic organizations for cooperation, joint ventures and linkages between processing and consumption enterprises and farmers". . In addition, building a mechanism to link farmers and fishermen producing raw materials with fisheries processing factories, especially the production of food, biological products, and aquatic veterinary drugs in the form of a variety of methods. Ownership also shares risks and benefits among parties, simultaneously replicates effective models, attracts the whole community's participation, and effectively uses resources.

Resolution No. 26-NQ/TW, dated August 5, 2008, on agriculture, farmers, and rural areas, provides solutions to "renovate and build effective economic models and forms of production organization in rural areas." In rural areas, adopt policies to encourage the development of linkages between farm households and businesses, cooperatives, scientific organizations, and industry associations. Decision No. 124/QD-TTg dated February 2, 2012, approving the master plan on the development of agricultural production until 2020 with a vision to 2030 also requires “facilitating the development of the household economy.” Develop commodity production to expand farm scale; support poor households to overcome poverty and get rich. Encourage the development of linkages of farmers with enterprises, cooperatives, scientific organizations, and industry associations in the production and consumption of products. Decision No. 899/QD-TTg dated June 10, 2013, approving the agricultural restructuring project towards enhancing added value and sustainable development has oriented to restructure the production organization system, purchasing, processing, and consuming products; encourage enterprises to associate and sign contracts for production and consumption of agricultural products with farmers; develop voluntary cooperative farmer groups, link production along value chains.

Decree No. 67/2014/ND-CP dated 7/7/2014 on several policies on fisheries development and Decree No. 89/2015/ND-CP dated 07/10/2015 amending and supplementing several Article of Decree No. 67/2014/ND-CP also sets out solutions to improve the

efficiency of aquaculture production, including strengthening linkages between businesses and fishermen and farming households.

In the past, there have been many direct and indirect policies to develop agriculture along the linkage chain but mainly focused on developing the rice value chain. At the same time, the fisheries sector still stopped at this point. Some pilot models have no specific policy to build value chains.

2. DEVELOPMENT SITUATION OF THE SEAFOOD INDUSTRY IN VIETNAM

Due to the industry's over-commercialization, fisheries production faces serious sustainability challenges. Environmentally, aquatic ecosystems around the globe are in danger of being depleted (Myers and Worm, 2003), with about 75% of fish stocks being overexploited or severely depleted (Garcia et al. and Moreno, 2001). In addition, about 40% of the oceans are being severely affected by human activities such as pollution, depletion of fishery resources, and loss of coastal habitats, etc., and land. In addition, 13,000 plastic bottles can be found per square kilometer of the ocean (UNDP, n.d.), which presents a new threat to marine species. United Nations Sustainable Development Goal 14 focuses on marine species, redressing marine pollution, conserving marine ecosystems, regulating fishing practices, and ending overfishing. Overexploitation. In addition to environmental issues, the sustainability of the global fisheries sector includes broader socio-economic dimensions related to international trade dynamics, livelihoods, and social equity. Due to the growing pressure of fishing and global consumption, the proportion of aquaculture production has increased rapidly since the 1990s, gradually catching up with the balance of wild-caught fishery output. Even in recent years, aquaculture production has exceeded wild catch. Today, aquaculture in the fisheries sector plays an essential role in the global fisheries supply chain. Of the 171 million tons of global fishery production, aquaculture accounts for 47% or 53%, excluding the percentage used for non-food purposes (fishmeal and fish oil) (FAO, 2018a). Asia is the primary beneficiary of the fisheries industry.

As of 2016, approximately 85% of the workforce in fishing and aquaculture was Asian (FAO, 2018a). In Vietnam, the fisheries sector is vital to the economy, society, and environment. After China and Norway, Vietnam is the world's third-largest fisheries producer and exporter (FAO 2016). In 2016, Vietnam produced 4.62 million tons of aquatic products and raised 3.6 million tons. Since 2016, Vietnam's fisheries production has increased by about 86% (World Bank, n.d.). According to the Ministry of Agriculture and Rural Development, Vietnam produced 8.41 million tons of fishery products in 2020. Saltwater and freshwater fisheries will reach nearly 3.85 million tons in 2020, while Aquaculture will provide more than 4.56 million tons (MARD, 2020). 6 From 1995 to 2020, Vietnam's fishery production quadrupled, with an average annual growth rate of 6%. During the same period, aquaculture productivity increased by an average of 10% annually, from 425,000 tons

in 1995 to 4.6 million tons in 2020. The expansion of aquaculture activities is concentrated mainly in the Dong Dong area. Mekong Delta accounts for 95% of pangasius and 80% of shrimp production (VASEP, 2021a). In 2016, Vietnam exported 7.3 billion USD worth of fisheries products (accounting for 5.1% of total global export value) (FAO, 2018a); this figure increased to nearly 8.5 billion USD. in 2020 (VASEP, 2020b), accounting for about 6% of the value of global fisheries exports. Vietnam's most exported fisheries products are pangasius and shrimp (Nguyen and Jolly, 2020), accounting for about 62% of total fisheries export value (VASEP, 2020b; VASEP, 2020c).

Vietnam is the world's third-largest producer of farmed shrimp (FAO, 2020a). Regarding pangasius, Vietnam's export volume accounts for 91% of global trading volume (Nguyen and Jolly, 2020). According to data in 2020, Vietnam exports fisheries to 160 countries and territories, especially to 5 primary markets: the US (19.3% of the total export value of the fisheries industry) and Japan (16). .8%), China (16.5%), Europe (11.4%), and Korea (9.2%) (VASEP, 2020b). Specifically, Europe, the US, Japan, and China (Hong Kong) are significant markets for shrimp exports, accounting for nearly 75% of Vietnam's total shrimp export value. At the same time, China (Hong Kong), the US, Europe, and ASEAN (mainly Thailand, Malaysia, and the Philippines) are major pangasius export markets. In recent years, Vietnam's fisheries industry is becoming less competitive due to lower productivity than countries such as India and Ecuador, which are expanding shrimp farming areas and increasing farming productivity to supply the global market. Meanwhile, China is also expanding its fish farming area and improving its self-sufficiency in raw materials for the domestic market, enhancing its competitiveness in fisheries export markets.

In addition, significant fluctuations in raw material prices have directly impacted the selling prices of fisheries enterprises. In addition, due to increasing standards in Vietnam's export markets, such as Europe and the US, the Vietnamese fisheries industry needs help complying with these standards (Lee et al., 2010), especially for small-scale production facilities. The COVID-19 pandemic, closure, and social distancing have also sharply reduced the purchasing power of some customers and major distribution channels such as restaurants, hotels, and food retail systems, so The demand for fisheries is diminished, causing disruptions in transport and export activities. An extensive and long-term challenge for the fisheries export industry is the issue of environmental impact and climate change. Vietnamese shrimp and pangasius products used to have a bad reputation. They were even denied entry to export markets due to unsustainable farming conditions, as intensive farming of fish and shrimp often creates large volumes of waste (feces), as well as the use of large quantities of chemicals and antibiotics (for disease prevention), which are then discharged or released into the nearby aquatic environment. Therefore, to ensure sustainability and efficiency in shrimp and pangasius farming, appropriate actions must be taken to minimize and radically address the degradation and environmental impacts that threaten the survival of shrimp and fish. Of

shrimp and pangasius farms. Therefore, strengthening sustainable practices in the fisheries supply chain benefits the environment and producers, enhancing the competitiveness of their products in the international market. Economy, especially after the EU-Vietnam Free Trade Agreement (EVFTA) was enacted in 2020 (European Parliament, 2020). In addition, the fisheries supply chain is a complex system with many components such as feed mills, hatcheries, local growers, intermediaries, processing facilities, exporters, etc. importers, domestic/international wholesalers, domestic/international retailers, and domestic/international consumers. Understanding the linkages between relevant components in the fisheries supply chain is necessary to develop sustainable production and consumption measures for the fisheries industry.

3. SUSTAINABLE PRODUCTION AND CONSUMPTION IN THE SEAFOOD INDUSTRY

Aspects of the sustainability of the fishery industry: Currently, the production and consumption methods of the fishery industry are not sustainable, causing tremendous pressure on the marine ecosystem and leading to a significant decline in marine biomass. . Current biomass levels of large predatory fish are only about 10% of pre-industrial levels, which could seriously threaten ecosystem dynamics (Myers and Worm, 2003). One study predicts that unsustainable management of fisheries production and its impacts on the marine environment will lead to the disappearance of fisheries by the middle of this century (Worm et al., 2006). Current research on fisheries sustainability tends to view the industry as a critical natural resource management issue (Farmery et al., 2015), including fisheries management. Based on ecology (Hilborn et al., 2015), issues of biodiversity (Silva et al., 2009), disease control (BondadReantaso et al., 2005), chemical use, and health human health (Burridge et al., 2010). The systematic study of the fisheries supply chain is a new approach (Farmery et al., 2015), along with the growing public demand for social responsibility throughout the supply chain (Lee et al. associates, 2010). The FAO document "The Five Principles of Food and Sustainable Agriculture" focuses on resource efficiency, conservation of natural resources, equity, social well-being, resilience, and resilience of people and communities, and effective management mechanisms (FAO, 2018a).

A more pragmatic approach was taken in the special issue of "Sustainability of Seafood Production and Consumption" of the Cleaner Production Journal. The nine aspects of sustainability considered include (i) fish harvest practices, (ii) fisheries processing, (iii) life cycle assessment, (iv) ecological efficiency, (v) waste management, (vi) fisheries distribution and consumption, (vii) total energy costs, (viii) eco-labeling, and (ix) resource conservation and biodiversity (Ayer) et al., 2009). Nutrition and food security: Fisheries are an essential source of nutrients for humans, a source of high-quality protein at an affordable price. The nutritional value of fisheries is mainly omega-3 fatty acids, which are necessary for brain development (Hibbeln et al., 2007) and an excellent source of micronutrients, especially for those malnourished people (Roos et al.,

2007). Seafood consumption has increased rapidly, doubling per capita since 1960 (FAO, 2018a). The rapid increase in fisheries consumption is due to the increasing awareness of the benefits of fisheries to human health. The demand for premium fisheries in developed countries has also increased sharply (Naylor and Burke, 2005). Accordingly, the fisheries industry's trade is rising, especially products from developing countries exported to developed markets. Fisheries are a valuable source of nutrients, providing more than 20% of animal protein per capita, especially in developing countries (FAO, 2018a). In coastal areas, fisheries account for 50-90% of animal protein consumption (Belt et al., 2011). In addition, fisheries are an essential source of income and livelihood (Thompson and Amoroso, 2014), contributing to food security and nutrition in developing countries. Resource Efficiency and Cleaner Production (RECP): As outlined in the National Action Program on Sustainable Production and Consumption, Resource Efficiency and Cleaner Production are essential to reduce pollution levels—consumption of resources and raw materials in aquaculture production. Resource efficiency and cleaner production adopt a life cycle perspective, considering resource use and environmental impacts from extraction to disposal. This approach also highlights the critical issue of resource scarcity (UNIDO, 2017).

The fisheries production process includes many stages, making processing a critical step. In this process, many resources are consumed, including raw materials, energy, and water. In addition, production processes often generate external and unintended impacts that can adversely affect the environment and human health or social stability. Guidance with clear strategies will reduce the waste of resources and avoid negative externalities from production activities. Implementing Resource Efficiency and cleaner production will also improve product quality and value in the market. Resource efficiency and more sanitary production measure “resource efficiency” and “pollution level” and are applied to the enterprise level. Resource efficiency is assessed as product yield per unit of energy, raw materials, or water. The degree of pollution is measured by the level of carbon emissions, waste, and wastewater per unit of output (UNIDO, 2010a). Resource efficiency and cleaner production provide many significant environmental benefits, such as reducing greenhouse gas (GHG) emissions and improving local ecosystems, as well as help to human health. . In addition to environmental and social benefits, implementing Resource Efficiency and Cleaner Production also bring many benefits to businesses such as cost savings, reduced waste of raw materials and energy, increased operational efficiency and improve product quality through the utilization and recovery of by-products (UNIDO, 2010).

Waste and loss of fisheries: Food waste in fisheries consumption is an increasingly worrying issue. About 35% of the global fish catch is not consumed. North America and Oceania have the highest fish loss rates at 50% (Gustavsson et al., 2011). Postharvest losses account for over 70% of the fisheries supply chain (FAO, 2014). The leading causes of fish loss are the disposal of non-targeted species and consumer food waste

(Gunders, 2012). About 27% of fish caught is lost or wasted from capture to consumption (FAO, 2018a). Some studies have concluded that the causes of fish loss include lack of knowledge and skills in postharvest handling, inadequate infrastructure, technology, cultural aspects, society, management, regulation, and enforcement (Diei-Ouadi et al., 2015; Wibowo et al., 2017). In addition, in developing countries, in rapidly urbanizing cities, changing eating habits and consumption patterns also lead to food waste at the consumer and household levels. Family increases (Liu et al., 2020). Environmental aspects of sustainability: The ecological impacts of the fisheries industry span the entire supply chain and continue to grow (Tyedmers et al., 2005). In wild fisheries, overfishing and ocean pollution cause the most damage. The environmental impacts of aquaculture are increasingly diverse: intensive farming of high-value species (Paez-Osuna, 2001), loss of fish protein sources for animal feed (Naylor et al. associates, 2000); eutrophication of water resources (Folke et al., 1992), depletion of benthic organisms (Findlay et al., 1995), chemical discharges (Hastein, 1995), and decline in wild species for seed harvesting (Mungkung et al., 2006). Life cycle assessment (LCA) tools have been developed to measure adverse environmental impacts systematically.

These tools are standardized by the International Organization for Standardization (ISO) to measure the "end-to-end" environmental impacts related to the energy and raw materials use of plant products and processes (Pelletier and Tyedmers, 2008). Aquaculture is highly dependent on the conditions of the surrounding ecosystem, so the calculation of environmental impacts needs to be extended beyond private aquaculture farms. 10 Quantitative tools such as “ecological footprints” are fixed, reflecting many fundamental factors at a particular time (Folke et al., 1998; Global Footprint Network, 2020). According to the ecological footprint approach, the environmental impacts of the fisheries sector are concentrated at the production and transport stages of the value chain. They are significantly influenced by the technological process used (Avetisyan et al. associates, 2014). For example, “miles traveled in food transport” – a popular tool for measuring ecological footprints – is not one of the most critical factors in the environmental impact of the fisheries industry. , it is the mode of transport used that leads to the effects to a greater extent (Coley et al., 2013; Edwards-Jones et al., 2008).

The production stages in fishing and aquaculture are significant contributors to the carbon emissions of the fisheries sector, which is also a vital aspect of the ecological footprint assessment model. Therefore, to reduce the industry's environmental impact, recommendations are made to apply to the entire fisheries production, distribution, and consumption system (Farmery et al., 2015). Eco-labeling and certification: Eco-labelling contributes to increased recognition of environmentally friendly products through awareness-raising programs, mainly in developed countries (FAO, 2018b)). Only about 14.2% of global fisheries production has standard certifications or eco-labels. However, certified aquaculture products are

rising twice as fast as wild-caught fish (FAO, 2018b). Ecolabelling can also create barriers for manufacturers in developing countries to access global markets if they lack the funding and capacity to certify their products (FAO, 2014). These disadvantages can adversely affect smallholder farmers and producers with limited economic resources and knowledge about eco-labeling. For example, a Marine Stewardship Council assessment costs about $2,000 - $20,000, and the complete evaluation and certification fee needs an additional $10,000 - $500,000.

The average cost of Friend of the Sea certification for wild-caught fisheries is $5,800, and for farm-raised fishing is $3,500. Therefore, for many production facilities, especially small-scale establishments, the cost of certification depends on support from the government or NGOs and retailers (FAO). , 2018b). In addition, there are criticisms that the government should subsidize large-scale industrial production units instead of small-scale production facilities (Jacquet and Pauly, 2008), hence the granting of certificates. Getting small-scale producers to support their access to the global market remains a challenge.

Sustainable fisheries consumption: Currently, increasing consumer demand for green fisheries products can be the driving force toward sustainable consumption. Research shows that when consumers are well informed about the environmental aspects of a product, such as the product's carbon footprint, they can change their behavior in making decisions. Shopping and consumption contribute to reducing environmental impact (Vázquez- Rowe et al., 2013). Consumer campaigns, often run by NGOs, can help encourage a shift in demand toward green products. It is also suggested that producers need to be more accountable instead of just focusing on consumers so that government, NGOs, and the fisheries sector can build good accountability within the supply chain to change production patterns in addition to changing consumer demand. However, sustainability campaigns have produced little change in the fisheries sector, mainly because they focus on specific fish species and lack enforcement measures against establishments' involuntary production (Iles, 2007). The links between producers and consumers through information transparency in the supply chain are essential because it aims to promote sustainable fisheries industry development. It is more effective for governmental and non-governmental organizations to take specific actions to inform fisheries producers on what to do about particular supply chain processes than it is to do so focus only on ecolabelling aspects and recommendations (Iles, 2007).

3. SOLUTIONS TO IMPROVE THE EFFICIENCY OF SUSTAINABLE DEVELOPMENT OF THE SEAFOOD INDUSTRY IN VIETNAM

The development strategy of Vietnam's fisheries sector to 2030 with a vision to 20454 sets the target that the total domestic fishery production by 2030 will reach 9.8 million tons (of which aquaculture production will get 7 million tons). tons, fishing output reached 2.8 million tons) (VASEP, 2021). Export value surpasses 14-16 billion USD annually, creating jobs for 3.5 million people. By 2045, Vietnam will be one of the world's top three fisheries-producing and exporting

countries. In 2019, fisheries exports from Vietnam reached US$8.6 billion, accounting for 20.8% of agricultural export turnover. Currently, shrimp and pangasius species, most of which are products from aquaculture, account for the majority of the fisheries export market (US$3.37 billion and US$2.0 billion in 2019, respectively) (VASEP). , 2020a).

Firstly: Develop synchronous fisheries infrastructure.

Formulate and complete national master plans, programs, schemes, and projects in the fisheries sector. Concentrate resources to invest in the infrastructure of the fisheries sector synchronously, in line with master plans, programs, and projects in the fisheries sector, and meet the criteria and regulations of the Fisheries Law, including Career centers, large fish, fishing port, storm shelter for fishing vessels; concentrated aquaculture areas, marine aquaculture areas, focused marine seed production areas, marine breeding areas; national and regional aquatic breeding centers; aquaculture testing and inspection activities; MPAs; research, investigation, protection and development of aquatic resources; establishments that build and repair fishing vessels and produce fishing gear; logistics center; system for monitoring and supervising the activities of fishing vessels at sea; information system, a national database on fisheries; environmental monitoring and warning system, disease in aquaculture.

Secondly: The development and application of science and technology

Science and technology are the key and essential solutions, deciding to increase productivity, reduce costs, and increase the value of fishing, aquaculture, and fisheries processing. Focus on solving the following issues: (1) Promote the socialization of investment resources for research, transfer, and application of advanced science and technology; formulating and implementing policies to encourage enterprises to participate in research and technology transfer into production; (2) Research and apply advanced science and technology in gene preservation and aquatic breeding to preserve and develop indigenous, endemic, endangered and valuable aquatic species study, high economy; investigate and evaluate aquatic resources and habitats of aquatic species, form artificial habitats for aquatic species; (3) Researching and applying information technology and digital technology in the management and protection of aquatic resources, forecasting fishing grounds and resources, and monitoring fishing vessel activities; mining technology; aquaculture management; mechanization, automation in mining; post-harvest product preservation; building and completing the national database on fisheries. Application of e-commerce trading floor for aquatic products; (4) Research, improve, and apply fuel and energy-saving technologies in aquatic product production; (5) Domestication and breeding of key farming species (black tiger shrimp, white leg shrimp, pangasius, etc.) to meet the demand for high quality, the disease-free seed for aquaculture development. Researching, transferring, and applying seed production technology for several cultured species that are still dependent on seed sources exploited from the wild (lobsters, mollusks, marine fish,...); (6) Research, transfer, and apply aquaculture

technology with high productivity, quality, circulation, save water and energy, reduce production costs, protect the environment, especially for aquaculture. Intensive, super-intensive, organic and ecological farming systems; (7) To step up research and production of drugs and biological products in service of disease control and control; application of information technology and artificial intelligence in diagnosis, prevention, and treatment of diseases; reduce or replace the use of chemicals and antibiotics in aquaculture; (8) Research, transfer and application of technology to produce pharmaceuticals, cosmetics, functional foods from algae, algae, and other aquatic species; (9) Research and application of technology to recycle and reuse waste by-products from fisheries production activities.

Thirdly: Training and development of human resources

Training scientific and technical staff, especially those specialized in fisheries (application of digital technology and biotechnology in fisheries management, exploitation of aquatic resources, aquaculture, etc.) aquaculture, genetics, selection of varieties, diseases, nutrition, environment, preliminary processing technology, preservation of post-harvest products,...); Training, fostering, retraining and developing human resources with deep expertise and high skills, including Human resources for the protection and development of aquatic resources, fishing, aquaculture, and fisheries processing; Training fisheries managers to meet international integration requirements, capable of applying high technology in management and administration. Training on corporate governance, trade, and market development for fisheries enterprises; Attracting global resources in cooperation, training, and development of high-quality human resources for the fisheries industry; Linking and connecting between training institutions, research institutes, and enterprises in training and developing human resources to meet the needs of the labor market.

Fourth: Mechanisms and policies

Research, develop, and perfect several fundamental mechanisms and policies as follows: (1) Policy on land and water surface; Policy on allocation, lease, recovery, and requisition of allocated land, water surface, and sea areas for aquaculture according to the provisions of law; (2) Financial and credit policy. The state budget prioritizes investment and support: Developing infrastructure for the fisheries sector synchronously; Reducing the intensity of fishing to protect, regenerate and develop aquatic resources; changing occupations from fishing to other disciplines; supporting fishermen during the ban on fisheries; participating in search and rescue at sea, participate in defense and security protection of sea and island sovereignty; Training, improving management capacity and developing human resources in the fisheries sector; Research and apply high technology to enhance the quality of product and value, reduce post-harvest losses, reduce production costs, protect the environment, and adapt to climate change; Support the implementation of co-management in the protection of aquatic resources for community organizations participating in the management, security, and development of aquatic resources; Support and encourage the

development of marine aquaculture. Effectively implement tax and fee incentives for activities in the fisheries sector to facilitate the development of fisheries into an essential national economic sector. Credit for development investment: Organizations and individuals engaged in activities in the fisheries sector are entitled to borrow the State's development investment credit by current laws. Completing and effectively implementing insurance policies, the state budget supports the purchase of insurance for fishing vessels and crew members, workers, and aquaculture establishments on the variable. (3) Trade policy: Importing aquatic materials and setting up technical barriers by international regulations to protect domestic fisheries production; Reorganize the fishery product consumption system in association with linked chains, ensuring traceability in line with the requirements of international integration; To encourage investment, build auction centers and e-commerce trading floors to introduce and promote aquatic products.

Fifthly: Market and international integration: (1) Market and trade promotion: Strengthening trade promotion activities and developing markets in countries and regions that have signed and are signing trade agreements. Free trade; develop and expand key and potential markets; Improve the exchange capacity, access to market information, and trade in fisheries for businesses, managers, and related parties. Having policies to proactively create resources for industry associations to build, develop markets, and promote trade and consumption of aquatic products; Developing and expanding the domestic market, diversifying processed products from traditional and new species; paying particular attention to introducing, promoting, and guiding the consumption of aquatic products to urban areas, tourist resorts, industrial parks, and residential areas; Building brands and product quality standards, giving priority to critical aquatic products, meeting the requirements of quality, design, and specifications of marine products of the consuming markets; Develop specific export orientations and plans for fisheries products corresponding to each target market, to have an appropriate development approach, and at the same time to allocate resources appropriately, to maximize exploitation. Vietnam's competitive advantages in the international market; Promote the process of market opening negotiations, and remove barriers for Vietnamese fisheries products in import markets. (2) International integration: Review mechanisms and policies to develop fisheries production by the provisions of the Fisheries Law 2017, free trade agreements, and international treaties to which Vietnam is a member. Member; effectively implement the Agreements and Agreements; Establish and maintain hotlines with countries in the region and international organizations to resolve disputes in fishing and protect aquatic resources; respond to climate change, search, and rescue, ensure safety for fishermen exploiting at sea; To develop forms of cooperation and joint ventures in the fields of equipment production, fishing gear, feed, seed, aquaculture with regional and international countries. Cooperate with regional fisheries management organizations, explore and exploit aquatic resources in deep sea areas, cooperate in offshore fishing;

Strengthen international cooperation in training highly qualified personnel for the fisheries sector in the application of new and high technologies, disease-free seed production technology, new breed breeding, marine, and aquaculture technology. Industry, production of aqua feed, biological products, disease prevention and treatment for aquatic products, waste treatment, environmental improvement, and disease prevention.

Sixthly: Improving fisheries processing capacity:

Innovating equipment and technology, investing and upgrading fisheries processing plants to increase productivity, reduce production costs, and protect the environment. Promote the application of quality management programs and information technology. Developing new, high-value, biologically active products from aquatic raw materials and by-products; Ensuring quality, food safety, and environmental protection to meet domestic and international standards, regulations, and regulations on quality, food safety, traceability, social responsibility, and development. Sustainable development; Increase the proportion of processed products with high quality and competitiveness for domestic consumption and export; rationally shift the product structure towards increasing the proportion of deeply processed products with high added value. Promote building models of development of traditional and specialty aquatic products, following the chain of links associated with perfecting the technology, upgrading quality and food safety, improving product designs, and implementing registration of new products. Sign a mark associated with a place name; Build several brands for the group of Vietnamese fisheries products such as brackish water shrimp, catfish, tuna, and mollusks,...; To form several large groups and industrial zones for fisheries processing in association with raw material areas. Organize the construction of a logistics system that closely connects producers, collectors, and processors with fisheries distributors; Expand the import market of legal raw materials, stable in quantity and quality to meet the processing needs for export and domestic consumption.

Seventhly: Capacity building for disease prevention and control and environmental protection:

Propaganda and education to raise awareness of farmers and fishermen in ecological conservation and disease prevention in aquaculture,...; Effectively deploying the development of epidemiological maps to control dangerous diseases and epidemics in aquatic products, proactively zoning and stamping out epidemics in disease prevention and control. Maintain and maintain the area, optimize the production capacity of ecological farming areas, and develop areas and objects for organic aquaculture. Apply new, advanced, and environmentally friendly technologies to reduce and handle environmental pollution in aquatic product production. Take measures to manage and encourage research and application of technology to recycle waste by-products from fisheries production activities; Strengthen the inspection and control and organize the management and supervision of the community to manage the environment and apply severe penalties to production

facilities that do not comply with the provisions of the law; Invest in perfecting the infrastructure system for production, especially waste and wastewater treatment in the production process to ensure strict compliance with the requirements of the law on environmental protection.

Eighthly: Organization of production:

Organizing linkages between stages in the value chain from raw material production to processing and consumption in all fields and product objects, creating cohesion and sharing profits and risks among enterprises, producers, input service providers, and fisheries processing enterprises to increase productivity, quality, and added value of aquatic products; Organize production models according to the characteristics of each field in each region. To develop models of cooperative groups, cooperatives, co-managers, joint ventures, and linkages between processing and consumption enterprises, enterprises, fishers, and farmers. To build large industrial and high-tech aquaculture zones for producing aquatic commodity products; Accelerate the application of scientific and technical advances; widely apply biosafety production, and disease safety, issue code of farming areas associated with traceability, food safety conditions, and practice Good aquaculture (GAP); Linking with other economic sectors to ensure harmonization of interests between economic sectors in the use of natural resources and resources; Reducing the number of fishing vessels and fishing output to restore fishery resources. Establish cooperative groups and cooperatives for fishing. Organize co-management implementation in protecting aquatic resources, joint ventures, and linkages between processing and consumption enterprises, enterprises, and fishermen. Well, organize communication, timely disaster warning for fishermen at sea, ensuring safety at sea, and organize timely rescue when there is a risk. Assigning the right to manage and use coastal waters to fishing community organizations to co-manage, protect and develop aquatic resources Organizations to conserve and exploit marine resources and develop aquaculture Property closely linked and harmonized benefits with the development of other economic sectors such as tourism, energy, transportation, and urban development, industry in marine spatial planning, development planning socio-economic of each region and locality.

Ninthly: Strengthening state management:

Completing the system of specialized state management of fisheries, the organization of Fisheries Control from central to local levels is streamlined, unified, and effective. Force, efficiency; ensure effective fisheries law enforcement; strengthen patrols, inspection and control of fisheries activities, protection of aquatic resources in association with the protection of fishermen and national defense and security on seas and islands; Apply information technology and digital transformation in administrative management and management of fisheries production fields to meet practical requirements and development trends of the fisheries industry in the period of international integration; Implementing decentralization and coordination among governments at all levels in state management from the central to local groups in a unified system; Inspect and supervise the

performance of official duties of agencies and units according to their assigned state management functions and tasks and strictly handle violations according to regulations; Continue to promote administrative reform in the fisheries sector. Focus on perfecting mechanisms and policies for industry management, creating a legal corridor for open, transparent production and business activities that align with international practices. Capacity building for staff, civil servants and officials in the fisheries sector; Strengthening state management measures on inspection, control and supervision: Management of fishing vessels, fishing labor, quotas for fishing licenses; operation of fishing vessels, regulations on fishing gear, fishing zoning, areas where fishing is prohibited and banned from fishing for a definite time; control invasive alien aquatic species and species, primarily ornamental aquatic species; focus on quality management of seed, feed, disease prevention and treatment drugs and biological products in aquaculture; control fisheries quality according to the product chain associated with traceability; Well control waste sources from fishing, aquaculture to fisheries processing, especially fisheries logistics service establishments must meet environmental standards according to current regulations; Completing the system of standards, technical rules, processes and conditions for fisheries production and trading as a basis for management and socialization of a number of stages in the state management of fisheries; Organizing communication, providing information and technical documents on scientific and technological progress; legality and safety in aquaculture, exploitation, processing and consumption of aquatic products domestically and internationally in order to minimize adverse impacts of international media on Vietnamese marine products.

4. CONCLUSION

Building fisheries into a financial industry with a large scale and proportion of goods, with reputable brands, deeply involved in the global supply chain, with high competitiveness and sustainability. Extensive international integration, responsible development in the direction of a circular economy, improving productivity, quality, added value, and efficiency. To step up industrialization and modernization of the fishery industry in a market-oriented, environmentally friendly manner, protect, regenerate, and develop aquatic resources; conserve biodiversity; adapt to climate change; ensure disease safety, biological safety, and social security. To develop fisheries in association with improving people's material and spiritual life, building new rural areas; combine economic development with building a solid maritime defense and security posture, contributing to firmly defending national sovereignty over the country's seas and islands and attracting resources and financial sectors to invest in aquaculture development effectively with business force as the core. To focus on investing in the development of synchronous technical and infrastructure facilities; training, fostering, developing, and effectively using human resources; strengthening research, technology transfer, and application, giving priority to high

technology application and digital transformation; reforming institutions and improving state management capacity; and reorganizing production.

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