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The Economy of Vietnam In The Integration Period: Opportunities and Challenges

Paper submission

New challenges for the Vietnamese aquaculture sector

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1. Introduction

Behind the many products of animal origin that we consume are hidden agricultural sectors that involve multiple actors. In Vietnam, these sectors still play a major role in terms of employment, income and food security. However, the evolution of modes of production, exchange and consumption threatens current models. Continued population growth and rising standards of living including advance global demand for aquaculture products, and a consequent increase in pressure on natural resources and negative effects on the environment.

Vietnam's (VN) production in the fishery sector has grown exponentially and this growth can be attributed to continued expansion in aquaculture, which increased from a 30 percent share of production in the fishery sector in 1990 to 52 percent in 2010. Accordingly, the sector plays an important role in the country's economy.

During previous years, along with the overall development of Vietnam, the fisheries sector has made great progress in terms of output and has remained as a very important sector of Vietnam's economy. The average growth rate of this sector has been 7.9% per year - contributing greatly to the industrialization and modernization of the agriculture and rural sectors of the country. Since 2006, Vietnam has been globally ranked among the top 10 leading exporting countries in fisheries.

To cope with these new circumstances, the aquaculture sector must grow while reducing emissions and pollution. Moreover, the value they generate should be distributed fairly, in order to improve the living conditions of producers, while the risks must be shared among all stakeholders.

Yet, the supply chain of seafood in Vietnam has not been effectively designed and operated, and has not contributed to the sustainability of the sector. Problems include the protection of resources, limitations in traceability, food safety issues and lack of branding/eco-certification. Environmental certification such as the one managed by the Marine Stewardship Council (MSC) has already showed promising results in Vietnam as a way to improve sustainability of the fisheries sector. It should continue to be used and more formally linked to sector strategies and policy dialogues including those addressing subsidies. Moreover, the government and supply chain actors need to pay more attention to the MSC (UNEP, 2009).

The objective of this article is first to characterize the recent development of this sector of economic activity. Particular attention will be linked to the importance of aquaculture in the trade balance of Vietnam. The authors also describe the issues that arise in the various constituent links in the aquaculture industry in Vietnam.

2. General overview of the aquaculture sector

Vietnam's (VN) production in the fishery sector has grown exponentially and this growth can be attributed to continued expansion in aquaculture, which increased from a 30 percent share of production in the fishery sector in 1990 to 52 percent in 2010. Accordingly, the sector plays an important role in the country's economy (Nguyen Minh Duc, 2011).

In Vietnam, overall fisheries and aquaculture production amounted to 4.6 million tons in 2008. Only 15% of this production volume was exported. Nevertheless, the contribution of the fisheries sector to the country's export earnings has increased rapidly over the previous decade. Aquaculture has grown considerably in recent years with an average growth rate estimated at over 17% since 2000 (GSO, 2012). Aquaculture accounted for 3.1 million tons of products in 2012, more than the fish catches (2.6 million tons). There are now about 500,000 Vietnam aquaculture farms with more than one million hectares for breeding, double the figure of 2000. The Vietnamese aquaculture sector generated an estimated US \$ 3 billion in 2011 and employs more than 1.6 million of Full Time Equivalents, including a majority of women. A part of aquaculture production is exported and thus helps to balance the trade deficit.

Given its vital role, the Government of Vietnam has strongly committed to its development. The Government of Vietnam aims to turn the country into a global leading seafood exporter which is set out in the fisheries development strategy plan to 2020. Under this plan, the seafood industry is expected to contribute 30-35 % of agro-forestry-fisheries GDP (total fisheries production will reach 7 million tons, of which aquaculture production will accounts for 65-70 % by the end of 2020).

In 2015, export turnover of Vietnam's fishing industry reached \$ 6,5 billion, which increased 16 times in the last 20 years. This growth process has led Vietnam to become one of 5 largest seafood exporters in the world together with Indonesia and Thailand, and the third in fishery production and aquaculture, after China and India, and the 13th on fishing yields.

The table 1 (see below) based on the statistics of General Department of Vietnam Customs (GDVC) present the evolution of export value from 2007 to 2015:

Table 1
Vietnam Seafood export by Value: 2007-2015

Year	Value (Million US\$)	Growth rate (%)
2007	3.762	
2008	4.500	20
2009	4.250	-6
2010	5.033	18
2011	6.089	21
2012	6.076	0
2013	6.677	10
2014	7.775	16
2015	6.558	-16

Source: GDVC, 2016

Currently, shrimp is the largest export product, accounting for 36% of total export value in 2012, followed by pangasius (29%), tuna (9%), and other fish (15%), squid and octopus (8%). With respect to the market, the US is the largest importer for Vietnam (19% of export value in 2012), followed by Japan (18%), EU (18%) (Nguyen Minh Duc, 2011).

In recent years, the fishing industry of Vietnam has made remarkable achievements in export turnover, which contributes to jobs creation, economic growth in local areas. However, Vietnam seafood businesses are facing many difficulties including funding and expanding market issues, complicated diseases, and especially raw materials shortage. The rate of import value over the export value continuously grows from 4% to 11% in the 2007-2012. These issues negatively affect business efficiency and sustainable development of the industry (Nguyen Minh Duc, 2011).

3. Aquaculture exports to EU

So far Vietnam has exported its aquaculture products to more than 100 countries and territories, of which three main markets are the U.S, EU and Japan (VASEP, 2013).

Aquaculture exports transferred approximately 1.2 billion USD in the last years from Vietnam to EU. The table 2 presents recent evolution:

Table 2: Structure of Vietnam exported fishery products to the EU by value (Million US\$): 2011 – 2015

	2011	2012	2013	2014	2015
	Value (Million US\$)	Value (Million US\$)	Value (Million US\$)	Value (Million US\$)	Value (Million US\$)
Shrimp/prawn	421	316	395	672	539
Mollusks	179	149	107	101	77
Pangasius	543	420	370	332	277
Tuna	84	116	137	128	94
Others	138	136	139	163	169
Total	1365	1137	1149	1396	1156

Among others, aquaculture has created the most important value flow of the total food exchange between VN and the EU. In 2012, earnings from aquaculture products exported to EU reached to 1.15 billion USD.

Aquaculture brings the most important value flow concerning food exchange between VN and EU. Aquaculture exports contributes a great proportion of total export value from Vietnam to EU member markets, especially Germany, Italia, Spain, the Netherlands, England, France, and Belgium. The two main aquaculture product lines are shrimp and catfish. However, exports of aquaculture products of Vietnam have faced more difficulties and challenges, such as stronger competition, strict application of technical barriers to trade measures, food safety management and anti-dumping measures of import countries. In order to improve the capacity

of aquaculture exports, Vietnam has to apply comprehensive economic and technical solutions, especially serious enforcement of importers’ regulations on food safety and traceability.

By supporting shrimp trade to EU, Belgium plays a key connector for Vietnamese aquaculture products exported to the EU. Normally, Vietnamese products are firstly exported to Belgium and then redistributed to other EU members. In that manner, Vietnamese exporters are able to approach other customers via Belgium. At present, cooperative efforts between Belgium and VASEP to establish a centre for import, auction and distribution of Vietnamese goods, especially aquaculture products in Zeebrugge port of Belgium, are underway (Vietnam Fishery Magazine, 2013).

4. Feed industry

Feed in Vietnam is either from compound feed mills or mixed on farm, where local farmers use local ingredients like corn, rice, rice polish, cassava and potato, along with protein concentrates produced by the compound millers. The industry is highly fragmented; most businesses are small or medium sized operations. There are about 15 large feed producers owned by foreign companies or joint ventures that produce about 50-60% of all of Vietnam's manufactured animal feed in which CPVT is 18%, Proconco 12%, Cargill 8% and JLV 5%.

Total feed capacity is unknown as methodology for measuring capacity varies. Estimates of total feed use in Vietnam are around 28MMT of which around 17MMT (64%) is commercial with around 3 MMT of this being aqua feed. The balance of feed is on-farm formulated by small and medium sized farms from an array of inputs, including waste materials ex sugar, vegetables, potatoes etc., and a reliance on concentrates and premix from feed mills.

Demand for feed increased 13-15% per annum from 2005-2012 which saw relatively high margins, assisted by the fact that much of the tonnage consists of specialty feeds (aqua, young pig feeds and concentrates), but that has dropped to 5.2% in 2014.

The location of Vietnamese feed mills is primarily driven by the availability of port facilities (as the industry is dependent on imported raw materials) and population (meat/fish demand). This results in the majority of production being in the Red River Delta and the South East.

Industry estimates of the commercial feed market size and total feed usage in 2012 were as follows:

MT	Industry estimate of commercial feed 2012	Industry estimate of total feed use 2012	Commercial feed as % of total feed 2012
Pig	10,000,000	15,360,000	61%
Broiler	2,000,000	3,500,000	13%
Quail	120,000	112,500	1%
Cow	230,000	225,806	1%
Duck	1,350,000	4,010,000	9%
Aqua	2,500,000	2,500,000	16%
Total	15,639,197	25,708,306	100%

Source: Proconco

Growing demand for aquaculture feed has resulted in an increase in the number of formulated feed suppliers, selling both domestic and imported brands. Feeds are available for freshwater fish and shrimp, catfish and tilapias, with limited import of marine fish diets, mainly for experimental purposes. Foreign investment in feed companies has also increased significantly in the past five years, including CP Group (Thailand), Uni-President of Taiwan, Proconco, Cargill, Cataco and Tomboy of France.

It is observed that in Vietnam there is a hard competition between companies in the feed industry while this sector is not encouraged to cooperate and to exchange information on feed formulation. Moreover, formulated feeds constitute a significant portion of the production costs which form a barrier to their use in aquaculture enterprises. To stimulate the production and adoption of fishmeal replacers, their environmental benefit and avoidance of overfishing should be taken into account. Feeding by trash fish is particularly damaging to the environment due to a fall in substantial proportions of feed. These practices are unsustainable and should be replaced by better feeds and feeding practices.

The development of the aquaculture sector has resulted in an increased demand for aquaculture feed. To feed the fish they produce, aquaculture enterprises often use fishmeal which is produced by reducing cached “low value” fish (trash fish). From a food security and nutrition point of view, a key question is whether some of this trash fish (that is currently used for non-direct human consumption) would not be more “efficient” if it was used for direct human consumption.

As global fish demand increases, lower-value fish resources will experience high demand between three main destinations: (i) the present use as animal feed – increasingly for aquaculture; (ii) food for human; and (iii) food to rebuild predatory fish species stocks (e.g. tuna, cod) that is often overlooked. Alternatives for fishmeal are fish meal replacers including plant proteins, waste products from fish and terrestrial animals and the use of better/improved breeds of aquatic animals with better feed conversion.

Because ‘using fish to feed fish’ is unsustainable, it is necessary to stimulate the production and adoption of fishmeal replacers or feeds with a low level of animal proteins. The promotion of these kinds of aquafeed for different species makes the aquaculture supply chain more sustainable. Based on a sustainability assessment, we will suggest developing a labeling system. Furthermore, the paper will show how the integration of environmental benefits and the avoidance of fish over exploitation within the decision making process can stimulate change in feed selection and production processes.

5. Middlemen

In Vietnam, middlemen play a crucial and critical role in the shrimp farming sector. Small farmers not only depend on middlemen for the farm inputs and working capital, but also depend on middlemen for marketing the shrimp to the processors and exporters. The middlemen offer many services to the farmers, from supplying inputs to harvesting and transporting the yields of the farm.

This position in the supply chain gives middlemen a lot of power and influence in the subsector. At the same time, middlemen have little interest in making the supply chain more efficient and sustainable because they make good profits in the current situation.

The most important issue is that if shrimp are not marketed directly from farmers to exporters, the shrimp changes ownership several times before reaching the processing factory. This can have major implications for issues such as food safety and traceability that are crucial in international trade. Most middlemen are uneducated and unaware of the significance of food safety issues.

One complaint, for example, is that middlemen add special substances to the shrimp they source in order to maintain the weight of the shrimp before it reaches the processing company (Van Duijn, 2012).

However, farmers often prefer to sell to middlemen because exporters are accused of deliberately delaying payment while farmers urgently need the money to immediately pay their debts to banks and others. Also, if they sell to middlemen they always have a 100% guarantee that all the shrimp will be purchased, while some exporters may reject a part of the harvest (Van Duijn, 2012).

As a result of pressure from various export markets, local government agencies, farmers associations and NGOs are making efforts to restructure the value chain and move towards more vertical integration between processors and farmers (Hop & Burny, 2015).

These efforts mostly focus on encouraging farmers to form cooperatives, while at the same time encouraging exporters to build up more direct and long term relationships with producers through contract farming.

Formal relationships between farmers and exporters are uncommon. Only large-scale farmers who have large supply volumes supply directly to exporters. They do this mostly on a spot market basis. Contract farming agreements are scarce but are growing in number due to the efforts to organise farmers in cooperatives, which makes it more lucrative for exporters to invest in longer term relationships.

With regards to the *Pengasius* sector, the role of middlemen is not very significant. Most of the time, farmers directly sell their product to processors with the help of companies specialised in harvesting and transporting. Most of these transporters are directly affiliated with processing companies. The reason that the level of vertical integration in pangasius is higher is that pangasius farms have much higher production volumes than shrimp farms (Van Duijn, 2012).

6. Market situation

Global consumption of aquaculture products is forecasted to rise over the long-term and the market prospects for fish and seafood continue to be positive.

Developing countries, in particular in Asia, will continue to drive major changes and expansion in global fishery production, trade and consumption, being the main producers, exporters and growing consumers.

The main drivers affecting the global fish and seafood market will be income and population growth, limited increase in capture fisheries production, high meat prices in the short term, and feed prices.

According to the OECD-FAO, Fisheries production worldwide is projected to expand by 19% between the 2012-14 base period and 2024, to reach 191 Mt. The main driver of this increase will be aquaculture, which is expected to reach 96 Mt by 2024, 38% higher than the base period (average 2012-14) level. Aquaculture will remain one of the fastest growing food sectors, notwithstanding a slowdown of its average annual growth rate going from 5.6% in the previous decade to 2.5% in the projection period. In 2023, aquaculture will surpass total capture fisheries. This development heralds a new era, indicating that aquaculture will increasingly be the main driver of changes in the fisheries and aquaculture sector.

The key uncertainty for the fish projections remains the productivity gains in aquaculture, which might be affected by several factors, including availability and accessibility to land, water, financial resources, improvement in technology, feeds, etc. In addition, animal disease outbreaks have been shown to have the potential to affect aquaculture production and subsequently domestic and international markets depending on the size and the species involved (OECD-FAO, 2015).

At the same time (Nguyet A. Vu, 2013), local demand for fish and other seafood products is expected to increase rapidly over time due to growth of population from 90,7 million to 97,7 million (annualized rate of 0,8% in the 2013-2022 period) and increase of real incomes (GDP per capital is forecasted to increase by 11,8% per year in the same period).

Consequently, consumption in developing countries and in Vietnam is expected to increase. It is obvious that pressure on seafood resources will increase, but there will also be opportunities for the global fishery industry in general and Vietnam's fishery industry in particular.

7. Sustainable aquaculture

Aquaculture is essential to meet future demand for aquatic products. While aquaculture has expanded to supply domestic and export markets, issues concerning the limited capacity in the country to promote and guide its sustainable development, in fresh, brackish, and marine environments. The main concerns are related to quality and sufficiency of seed and feed supply, disease control, and management of environmental impacts, including understanding of carrying capacity of sea and inland water areas, extension services, and marketing channels and quality control systems.

More emphasis can also be placed on expanding aquaculture programmes for poverty reduction. The quality of the product has been a concern in some export markets and anti-dumping cases have revealed the vulnerability of the sector to external factors related to international trade.

There is an increased demand for brand, traceability, trademark and certification/sustainability among these buyers who can influence significantly the supply chain through their purchasing choices/preference. This dynamic is already being seen in some Asian countries where retailers (and in response to consumer "seafood choice" campaigns), aim to sell more eco-friendly products. However, it is unlikely that domestic consumers will take action to change the system.

Sustainability is a word emanating from different schools of thought with a series of interpretations and meanings. These various meanings of the term 'sustainability' as applied in agriculture have been classified according to the issues motivating concern, their historical and ideological roots. This leads to the fact that the definition of sustainability becomes part of the problem due to lack of common agreement on how to define it as any attempt to provide a precise definition is flawed. Consequently, sustainability is not a scientific concept which can be measured according to some objective scale, or a set of practices to be fixed in time and space, but a quality that results from people's application of their intelligence to maintain the long-term productivity of the natural resources on which they depend.

This implies that reaching the goal of the sustainability of a given system is the responsibility of all participants in the system. These include, in the aquaculture sector, farmers, products' traders, policymakers and agricultural development stakeholders with their respective role to play in sustaining the sector. In brief, sustainable agriculture is, not a simple model or package to be imposed but, more a process of learning and adaptation that considers together the environment, economic and social dimensions. This is the challenge not only for the Vietnamese aquaculture subsector but also for research centers and universities.

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