The Aftermath of a Marine Disaster
Food Anxieties, Fish Production and Social Change in Contemporary Vietnam

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In April 2016, a marine disaster seriously disrupted fisheries and aquaculture facilities in and around Hà Tĩnh Province, Vietnam. The environmental disaster has strengthened Vietnamese distrust for domestic products, especially seafood. Food anxieties have driven many Vietnamese consumers to the streets to demonstrate for changes in the food system and demand environmental justice. In recent decades, seafood, in particular fish, has played a significant role in Vietnam's economic growth and has become an important export commodity. Pangasius fish from the Mekong Delta, for instance, is not only one of Vietnam's key export products, but also a key tool for poverty reduction. However, global and domestic anxieties over food safety and environmental degradation constitute a threat to the industry. At the same time, these anxieties provide incentives for changing to sustainable farming practices. Applying transition theory in food practices, this article examines how current food anxieties, global as well as domestic, affect sustainable pangasius production. It also addresses the question of whether new food practices can contribute to economic and social change in Vietnam.

Keywords: Food safety, pangasius fish, transition theory, environmental disaster, Đổi Mới

In April 2016, 70 tons of dead fish washed ashore in Central Vietnam. An official investigation two months later revealed that a Taiwanese steel factory named Formosa in Hà Tĩnh Province had leaked toxic waste and caused the death of these fish ("Vietnam blames toxic waste", 2016). This environmental disaster changed domestic consumption: for several months afterwards, few Vietnamese purchased and consumed seafood. Seafood consumers were so concerned about delayed governmental responses and unreliable information that many of them stopped buying seafood altogether. The marine disaster also disrupted fishing and aquaculture, affecting hundreds of thousands of farmers and fishermen. This is a clear example of the fact that people's livelihoods are susceptible to environmental changes, especially in economically marginalized communities (Adger, Kelly, & Ninh, 2001).

The disaster was all the more disruptive because fish is such an important food commodity in Vietnam. It not only provides comparatively cheap protein, improving the standard of national nutrition, but has also played an important role in Vietnam's economic growth (Danida, 2010). Vietnam has a long coastline and favourable geographical conditions for the development of aquaculture. According to the General Statistics Office of Vietnam (2015), many small farmers got out of poverty thanks to farmed fish, and aquaculture products account for more than 60% of Vietnam's seafood export value. Tra fish fillet (Pangasius bocourti, also referred to as pangasius, basa fish, or catfish) from the Mekong Delta is one of the key products that have contributed to exponential export growth.

Vietnam is an emerging economy with a growing middle class (Hansen, 2015). An increasing number of well-educated people with high incomes in urban areas care about food safety and put their trust in traceable products sold in supermarkets (Thai & Pensupar, 2015; Eliot et al., 2016). The demand for safe, healthy, environmentally friendly and labelled products from a new generation of critical consumers is increasing. The hypothesis explored in this paper is that such demand-driven changes may help establish sustainable farming practices and thus contribute to solving local environmental problems, especially in an emerging economy such as Vietnam. Similar changes took place in Europe during the 1950s and 1960s, when consumers questioned the safety of the "convenience" food industry and demanded changes in food law, which led to stricter control. In addition, alternatives to large-scale industrial food production were developed, and organic food production grew in the 1980s (Van Otterloo, 2012).

My analysis is grounded in the theory of "transitions and transition management" (Spaargeren, Oosterveer, & Loeber, 2012). With the objective to study "processes of change happening in a specific time and space, carried

by specific actors who try to block or enhance the transition depending on the interests at stake", transition theory can expose "specific rules of the game of food production, retail and consumption" (Spaargeren, Oosterveer, & Loeber, 2012, p. 4). These specific rules, or "food practices" as they may be called, can in turn shape social change towards a sustainable future. To my knowledge, this paper is the first academic analysis of domestic food anxieties about seafood products and social change in Vietnam. I will first analyze current events and ongoing environmental problems as consequences of the marine disaster in 2016. My analysis relies on observations from domestic and international media. In relation to this, I discuss consumers' concerns over food safety and environmental change, as well as recent developments in domestic food consumption. In the second part, I explore the farming practices and the production of the fish pangasius in the Mekong Delta, in order to examine my hypothesis about consumption-driven changes and sustainable production. The second part uses secondary data from scientific research on pangasius production, trading, and distribution. Lastly, I address the question of whether the new food practices will lead to economic and social change in contemporary Vietnam.

Food anxieties and social change in contemporary Vietnam

In 1986, the Vietnamese government implemented a number of economic reforms, called "Đổi mới", which led to the transition from a planned economy to an open economy with a free-market orientation. These reforms led to a process of decentralization, allowing local authorities to invite foreign investors. Foreign investment capital has since contributed to the rapid growth of the industrial and service sectors, creating jobs and reducing poverty. However, provincial authorities compete fiercely with each other in order to attract foreign investment, often disregarding public health and environmental consequences (Hansen, 2016). As a rule, local authorities grant permission to foreign investment projects and factories without seriously considering their environmental impact. For instance, there are several cases involving toxic waste that has escaped from these factories, which has lead to environmental degradation and threatened people's safety (Thai, 2009).

In 2016, the Vietnamese government took a cautious approach to the environmental degradation caused by Formosa. While pictures of dead fish and Formosa's suspicious waste processing system were widely spread on the (social) media, the state's scientific institutions initially denied the Taiwanese investor's involvement, stating that the mass starvation of fish might have been caused by the natural growth of poisonous seaweed in the ocean (Khadka, 2016). But the public was not easily convinced; through various media both inside and outside the country, people put pressure on the authorities to confess the real cause of the disaster. Scientists detected cyanide, phenol and iron hydroxides in the waste near the Formosa steel factory complex (Tiezzi, 2016). In the end, the state conceded, acknowledged the role of Formosa Ha Tinh, and made them pay half a billion US dollars in order to compensate the affected communities ("Vietnam blames toxic waste", 2016).

The leakage of toxic waste has led to environmental destruction and food anxieties. It has caused long-term damage, not only to marine ecosystems, but also to fishing villages along the coast in central Vietnam. Fishermen in Hà Tĩnh are no longer able to sell the fish they have caught near the coast. They cannot catch fish further away from the coast either because of territorial conflicts between Viet-

nam and China (Fels & Vu, 2016), so they have stopped fishing altogether (Nguyen, 2016). The environmental degradation has also affected and reduced consumers' trust in fish and seafood products (personal communication with seafood consumers in Hội An, June and July 2016).

Environmental pollution and public health are two factors that can undermine a state's legitimacy. Food safety and other public health concerns are among the most prominent topics of everyday conversation among Vietnamese people nowadays. Media have reported on unsafe amounts of pesticides and chemicals in a range of contaminated agricultural products, including some of Vietnam's main export products such as rice, fruit and vegetables, fish and shrimp (Hansen, 2017; "Vietnamese killing themselves", 2017). These are also the main domestic consumption items that constitute the staple diet for many Vietnamese families. Many people talk about their food anxieties, but they do not know how to solve the problem.

In addition to enforcing domestic food anxieties, the disaster has led to political unrest in the whole country. The environmental disaster in April was not the first case where toxic waste had escaped from a factory and entered the food chain. It was, however, the straw that broke the camel's back. Many people protested in the big cities in Vietnam in May 2016, and some were beaten and briefly imprisoned by the regime as a result ("Vietnam protest", 2016). A state investigation at the time did not find any connection between Formosa's waste system and the fish death ("Chưa có bằng chứng", 2016). It was not until the end of June that the state finally admitted the role of Formosa in the disaster, but they still had to deal with public anger over the compensation process that the company had put in place. Demonstrations continued for several months. On 2 October 2016, local people gathered in front of the Formosa factories - some even climbed over the closed gates - and asked the company to leave the country ("Biểu tình Formosa", 2016).

As North (1990) has predicted, new technologies can reduce transaction costs, thus encouraging social transformation and institutional change. Internet access is available virtually everywhere in Vietnam, and social media provide people with information outside the official channels. In spite of the strict censorship in Vietnam, more and more people raise their voices on blogs and social media about current issues, including food safety, toxic waste and local environmental depletion. Social media were used to mobilise people to join the demonstration in May 2016. Social media, therefore, have the potential to undermine local authorities. However, they can also help a weak state realize its vulnerability and act upon public concerns, thus preventing social and political instability. In other words, the spread of new communication technologies in Vietnam can lead to new policy approaches.

The political unrest during 2016-2017 points to social change in Vietnam, central to which are the ongoing transitions in food practices. According to Spaargeren, Oosterveer, & Loeber (2012), the transition of food practices has three dimensions: socio-cultural, socio-technical, and policy/governance. These three dimensions are all visible in the April 2016 incident. Public concerns over toxic waste have led to a change in value orientations with regard to seafood products. Consumers are no longer only interested in buying fish products with low prices, but also want to reduce food risks and assure personal health (socio-cultural change). Anxieties for food safety expressed on social media thus create a need for food traceability and certified food (a socio-technical development). When the need turns into a demand, it is in the interest of food producers, certification organizations and state actors to

act upon it (policy/governance).

As observed by Van Otterloo (2012), changing value orientations in domestic consumption transformed the industrial and mainstream food regime in the Netherlands during the 1950s and 1960s, as they led to the creation of alternatives to large-scale and chemical-based food production. Subsequently, in the 1980s, new perceptions about food value and new food-related anxieties spread among consumers; in response, various new alternatives to industrial food production such as self-sufficient and sustainable communities, organic food and ecolabels, small-scale farms and organic agriculture were developed. Furthermore, consumer initiatives for seeking alternatives to mainstream food regimes have led to changes in food laws, first in the Netherlands, and then, during 1970s and 1980s, at the EU level.

To summarize, environmental destruction poses a big threat to the legitimacy and power of the ruling elite in Vietnam. Regaining state legitimacy, despite the mistakes of provincial elites, requires special attention to food anxiety, and the establishment of more resilient institutions that can impose better regulations on food production (cf. Adger, Kelly, & Ninh, 2001). In response to the marine disaster, the public has made efforts to bring about transitions in environmental legislation and safe food certification. Meanwhile, domestic food anxieties help local food producers and retailers realize the market opportunities provided by certification and labelling schemes. By adopting new farming and distributing practices to meet higher standards, local food actors may change the Vietnamese foodscape. I will now take a closer look at the production of pangasius in the Mekong Delta, in order to examine whether such a transition in food practices indeed exists in the Vietnamese aquaculture sector.

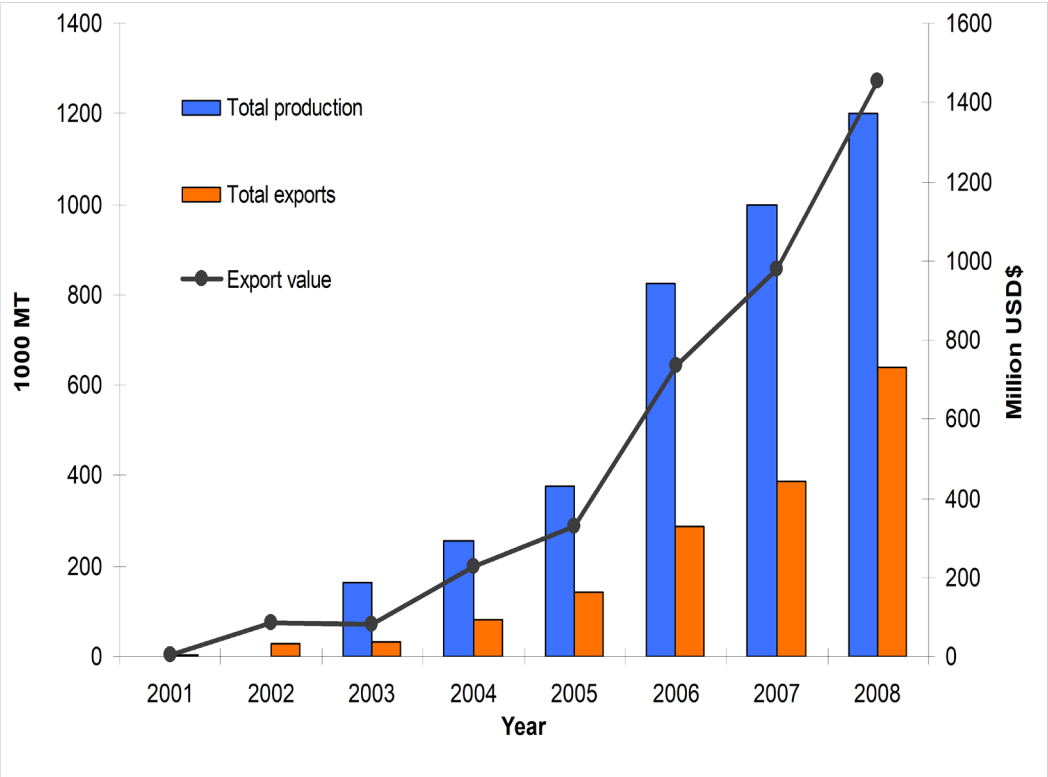

Figure 1: Catfish production in Vietnam (Source: Duc 2011)

Pangasius production and food practices in transition

In 2012, Vietnam produced 1.6 million tons of pangasius (Thong et al., 2017, p. 400). It currently accounts for 75% of the global production, and most of the farming is carried out in the Mekong Delta. Pangasius fish farming in the region has been growing fast; in 2008, it accounted for 47% of the region's aquaculture production (Kam et al., 2012). Graph 1 shows the fast growth of catfish production and export in the 2001-2008 period. The farming of catfish in the region goes back several centuries, but only recently has it been expanded and become commercialized, mainly in the provinces of Cần Thơ, Đồng Tháp, An Giang and Vĩnh Long. Pen and cage cultures account for about 35-45% of the farming practices; the rest is dominated by pond cultures (Halls & Johns, 2013).

Catfish in the Mekong Delta are raised in fresh water ponds of about 4-4.5m deep. Most catfish ponds are of the intensive type, and contain monocultures of Pangasius hyphophthalmus or Pangasius boucourti, or polycultures where these two species are bred together with Pangasius conchophilus (Edwards & Allan, 2004). Production cycles last from six to eight months. Intensive cultures lead to the production of fish with white flesh, thanks to a combination of water treatment and the right selection of feed. However, without intervention, the cultured catfish in the Mekong Delta has yellow flesh, which has low export value. Accordingly, the production of good quality fish requires good water quality, which is not easy to achieve given the current water pollution in the Mekong River. Ironically, the fish ponds constitute one of the main causes of pollution in this river (Anh et al., 2010).

In order to sustain the growth and meet the demand for high-quality products in foreign markets, pangasius production in Vietnam is adapting fast to new quality requirements and food safety standards. Such standards include but are not limited to those of the Aquaculture Stewardship Council (ASC), the Global Aquaculture Alliance (GAA) and the global Good Agriculture Practice (GAP) (Alfnes, Chen, & Rickertsen, 2017). The Vietnamese state has adopted ASEAN's GAP system and localized it as VietGAP. The two systems are similar to Global GAP's requirements with some modifications in order to better fit with local conditions (Michida, 2015). While this has been a strategy for the state to strengthen its authority and generate higher income (Marschke & Wilkings, 2014), VietGAP labels have provided domestic consumers with safe and high-quality products (Anh et al., 2014). As for the export market, the recently developed VietGAP for aquaculture is playing a vital role in improving the reputation of pangasius fillets in European and American markets (Prein & Scholz, 2014). Product certification and labelling, such as VietGAP, is an effective tool in sustainable fisheries management in Vietnam (Anh et al., 2014).

However, Bush et al. (2013) have raised the problem of the exclusion of small producers in aquaculture as a result of international sustainability certification schemes. These international standards have failed to take into account the position of small-scale farmers in the Global South, and have marginalized them further by limiting their access to the global seafood market. Recent developments in the farming of catfish include vertical integration, which means that fish processing companies buy grow-out farms, taking charge of brood stocks, breeding, feeding, grow-out facilities, processing, production, and distribution. This type of development can help companies control the quality, meet the growing demand, and fulfill the strict quality requirements of the world market. However, this closed production cycle puts small farms out of business because

they cannot compete with these big companies. In addition, big producers and processors have already acquired international certificates such as those from ASC, GAA and global GAP in order to gain access to export markets (Marschke & Wilkings, 2014). Small farmers, on the other hand, have to compete very hard in order to get access to markets with less strict standards and requirements. Therefore, Marschke and Wilkings (2014) suggest that the Vietnamese aquaculture sector needs to have a separated VietGAP certification scheme for small farmers. In addition, sustainable governance needs to take into account local perspectives.

As many researchers have observed, many farms in the Mekong Delta region suffer losses due to fish diseases, low water quality and high production costs (Edwards & Allan, 2004: Griffiths, Van Khanh, & Trong, 2010; Bush & Belton, 2012; Halls & Johns, 2013). Feed and feeding costs make up a large part of the production costs of pangasius, at times up to 70% (Halls & Johns, 2013). Diseases caused by bacteria pose a serious problem as well (Griffiths, Van Khanh, & Trong, 2010). A common treatment is to use chemicals in the pond preparation period, and antibiotics when diseases are in full swing. The use of chemicals and antibiotics in pangasius production has spurred European consumers' concerns over food safety and environmental pollution in the Mekong River. Such negative information about farming technologies of pangasius has made European consumers reluctant to buy and eat the fish (Bush & Belton, 2012). As a result, pangasius is often the cheapest fish sold in European markets.

During the past two decades, pangasius production in Vietnam was export-oriented; domestic consumers were not accustomed to eating tra fish from the Mekong Delta until recently (Tung, 2017). After losing access to the American market as a result of anti-dumping policies in 2003 and negative perceptions by European consumers (Bush & Belton, 2012), tra fish exporters in Vietnam had to find new consumers in other markets, such as China, Japan and the Middle East (Phong, 2018). The domestic market with 90 million potential consumers and their high demand for seafood appeared lucrative as well. Therefore, Vietnamese pangasius distributors are currently targeting the domestic market, and pangasius products have gradually become familiar to Vietnamese consumers (Tung, 2017).

Research on pangasius consumption has only looked at ways in which international consumers' expectations and requirements have affected the production, certification and distribution of pangasius (Little et al., 2012; Bush & Belton, 2012; Prein & Scholz, 2014). Little attention has been paid to domestic consumers, and to my knowledge no research has been conducted on domestic consumption practices and how these practices influence the sustainable production of tra fish in Vietnam. However, it is important to understand Vietnamese consumers' preferences since the domestic market has its own characteristics. Vietnamese prefer fresh fish, while the current distribution system of tra fish needs cold chains, which are supply chains that require refrigerated production, storage and distribution at a desired low temperature range. These cold chains are only available for products sold in the supermarkets or trading centers (Tung, 2017). In areas other than big cities, people stick to their traditional routines, shopping in small and convenient market areas.

Based on the existing literature on the production of pangasius in the Mekong Delta, it appears too early to draw the conclusion that domestic food anxieties lead to changing farming practices in Vietnam. For the time being, it seems international food anxieties are creating change, and the transformation of the Vietnamese fish production takes shape in ac-

cordance with food safety standards in foreign markets.

The application of international standards and certification methods in the Vietnamese aquaculture sector has led to the marginalization of small farmers and to more social inequality (Bush et al., 2013; Hansen & Trifkovic, 2014; Marschke & Wilkings, 2014). There are indications that the industry is changing, but the transition from traditional small-scale farming practices to high integration between pangasius production, processing and distribution is not sustainable if it marginalizes local and small producers (see Marschke & Wilkings, 2014). Therefore, researchers and policy-makers should take into account the small fish farmers' perspectives, for instance when it comes to issues related to product certification and labelling. Globalization brings them opportunities to commercialize their products for export, but the same force may just as well deprive them of their livelihoods, as a result of economic and political marginalization.

Conclusion

Vietnam is generally considered to be a successful development story. The Communist Party is proud that its economic reforms and development policies have lifted millions of people out of severe poverty. Foreign investment has indeed been a cause of economic development, but also of environmental degradation, as the Formosa case illustrates. The emerging Vietnamese economy is characterized by severe environmental challenges and corresponding social tensions. Solving such problems is extremely difficult in an authoritarian regime without an independent civil society, where people have limited space to express their anxieties about environmental issues. The response to the marine disaster, nevertheless, shows a bottom-up approach where a new group of consumers demand a systematic change in food production and distribution. By showing their concerns over local environmental degradation and food safety via public demonstrations, Vietnamese people have asserted their right to receive correct information and the right to freedom of expression – which are, after all, human rights.

As I have argued in this paper, environmental problems pose a threat both to people's well-being and to the legitimacy of the state. Using transition theory in food practices, I explored the hypothesis that domestic food anxieties, which increased after the April 2016 incident, contribute to transitions in local food production and help build up sustainable farming practices. The political unrest following the marine disaster shows that Vietnamese consumers are putting pressure on authorities, pushing for reforms in local environmental management and food production systems. Drawing on the existing scientific literature on pangasius fish production in the Mekong Delta, I discussed changes in the Vietnamese aquaculture sector. However, these changes are driven by international food anxieties, not domestic ones. In particular, consumers in foreign markets are concerned about whether pangasius is produced safely, based on negative information about water pollution in the Mekong River and unsafe chemical use in regional farming. These concerns have led to the adoption of safety standards, certification, and product labelling. This international demand-driven change puts pressure on local fish production, as small-scale farming is marginalized by a process of vertical integration among producers, processors and retailers. For the time being, global safety concerns, rather than domestic ones, appear to have more impact on local farming practices. And it remains to be seen whether Vietnamese fish farming practices are in transformation and transition due to international food safety standardizing

processes.

In this paper, I have discussed two different case studies: the social effects of the Formosa toxic waste disaster, and the impact of global food safety concerns on Vietnamese aquaculture. Although different in terms of scale, both cases point to one important issue: there is a growing food anxiety in the Vietnamese and international seafood markets, both of which have a significant economic and social impact, affecting local Vietnamese livelihoods, consumption patterns, and people's trust in the authorities. It would be useful to see more studies on domestic consumption patterns and local consumers' preferences in seafood products, especially pangasius fish, in the future. As Vietnamese purchasing power is increasing, and food-related anxieties continue to prevail, domestic issues may well gain more importance in years to come. If pangasius farmers in the Mekong Delta succeed in framing their products as safe and sustainable domestically, they may well find a new market in their own country, as Vietnamese consumers may then opt for "safe" pangasius instead of other seafood products.

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