

Small-scale producers and the governance of certified organic seafood
production in Vietnam's Mekong Delta

by

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A thesis
presented to the University of Waterloo
in fulfillment of the
thesis requirement for the degree of
Doctor of Philosophy
in
Geography

Waterloo, Ontario, Canada, 2012

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners. I understand that my thesis may be made electronically available to the public.

Abstract

As food scares have hastened the growth of safety and quality standards around the world, certification schemes to assure various attributes of foods have proliferated in the global marketplace. High-value food commodities produced in the global south for export have been the subject of such schemes through third-party environmental certifications, providing regulatory and verification mechanisms welcomed by global buyers. As certification becomes more common, re-localization in the current global context can also mean the projection of place onto a food commodity to highlight its origin or attributes secured by transparent verification mechanisms. However, environmental food certification is often criticized for its inapplicability in the context of the global south, due to the extensive documentation requirements and high costs.

The key question here is the process for small-scale producers in the global south to navigate increasing international regulation of food safety and quality. This dissertation examines (1) how the environmental standards (as defined by the global north) were translated in the rural global south through international certification schemes, and (2) what the implications are at the local level, especially where producers had not yet integrated into conventional global markets before the introduction of certification. The dissertation also analyzes the influence of such certification in determining the development trajectories of rural society in the global south. A case study is used to examine newly-introduced certified organic shrimp production in Ca Mau Province in Vietnam's Mekong Delta. The selected shrimp production site is the first pilot organic shrimp project in Vietnam working with an international third-party certification scheme. It is located in rural Vietnam where, as in other parts of Southeast Asia, an accelerated process of agrarian transition is underway. Whereas elsewhere the trend with intensified regulation has been the consolidation of large-scale farms and the exclusion of small-scale farms from international agrofood markets, this case study demonstrates comparative advantages of small-scale farms over large-scale farms in producing sensitive high-value crops.

This dissertation employs two main analytical approaches. The first approach is to examine the network of actors and the flow of information, payment and shrimp at the production level using environmental regulatory network (ERN). In contrast to chain analyses, which can be useful in identifying linear structure of supply chains for global commodities, ERN can capture the interrelatedness of actors in the network built around environmental certification for agrofood products. The second analytical lens is that of agrarian transition. Countries experiencing agrarian transition at present are doing so in a very different international context from countries that accomplished their transitions in the past.

Results of this research indicate that technical and financial constraints at the time of initial certification are not the primary obstacles to farmers getting certified, since the extensive farming

method employed at the study site is organic by default. In spite of this, many farmers unofficially withdrew from the organic shrimp project by simply shifting their marketing channel back to a conventional one. Inefficient flows of information and payments, and a restrictive marketing channel within the environmental regulatory network that does not take into account local geographical conditions and farming practices, all contributed to limiting the farmers' capacity and lowering their incentives to get involved in the network. The analysis also indicates that, by influencing those agrarian transition processes, food standards and certification based on values developed in the global north may modify, reshape and/or hold back agrarian transition processes in agricultural sectors of developing countries.

The potential benefits of environmental certification are enhanced rural development, by generating opportunities for small-scale farmers to connect to global niche markets. The findings of this dissertation highlighted that such certification schemes or their environmental regulatory networks need to ensure information sharing and compensation for farmers. As an empirical finding, this dissertation also captures where ecological credibility and market logic meet: the success of this kind of certification depends on finding a balanced point where standards are ecologically (or ethically) credible to the level that does not attract too much criticism for being green washing, but not too unrealistic to become a disincentive for farmers to participate.

Key words: Shrimp Farming, Agrarian Transition, Small-Scale Farming, Global South, Agrofood Certification, Environmental Regulatory Network

Acknowledgements

This thesis would not have been possible without the patient support of my supervisors. Thanks to Dr. Steffanie Scott for her inspiring inputs and Dr. Susan Wismer for her pertinent insights.

A special thanks to all people who made the fieldwork possible in Vietnam especially to Mr. Lai, Mr. Loi and my friend Phuong.

To Hajime, thank you for your encouragement and jokes to make me laugh.

Finally, my last thanks goes to my family, Mom, Dad and Ryoko for the great support throughout, including flying from Japan to meet me in Waterloo.

I also would like to express my gratitude to the Challenges of Agrarian Transition in Southeast Asia (ChATSEA) project and to the Social Sciences and Humanities Research Council (SSHRC) for providing funding for my research.

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Chapter 1: Introduction

Re-localization has become a prominent theme in activism for food system sustainability and in agrofood studies. According to Guthman (2004, p. 233), the term “re-localize” has two meanings in food commodity studies: one is to downsize the actual physical space in which a food commodity is produced and consumed, and the second is to project “place” onto a food commodity to show its origin or identity by creating a transparent commodity chain.

Industrialization of global food sector and technological advance that allows seasonal and perishable food to reach the other side of the world hastened spatial dis-embeddedness of agrofood. Also, food scares associated with infectious disease among livestock (BSE, avian flu, etc.), and consumer and retailer preferences in food (in terms of health, ethics, identity, ideology or culture), have all contributed to the (re-)appearance of some forms of agencies that create alternative commodity networks. These events also support the emergence of spatial embeddedness of agrofood commodities or re-localization of food in the global context. While food scares have hastened the growth of safety and quality standards (Fulponi, 2006) around the world, increased awareness of ethical food production contributes to the growth of voluntary certification schemes in the global market, schemes which determine how and under what conditions agro-foods are produced. Food commodities produced in the global south for export have also been the subject of such schemes, giving a form of “regulatory and verification mechanisms” (Hatanaka, 2005, p. 355) and providing a way to project attributes onto products no matter what the physical distances are between producers and consumers. Much attention has been directed to the impact of voluntary third-party certification for food on the livelihoods of small-scale producers in the global south, especially the capacity of such certification to integrate farms producing high-value agrofood for export into global markets. Recently, agrofood commodities certifications, which offer a guarantee of how and under what conditions a commodity is produced in disparate global agrofood markets, have become an important research subject (Raynolds, 2007). More recently, consumers have become increasingly concerned about possible environmental problems entailed in food commodities produced at a distance. In addition to food quality and safety issues, the environmental characteristics of agrofood or its production sites have become one of the elements in certification.

Farmed shrimp, the subject of this dissertation, is one of most widely traded commodities between the global south and north. The ecological impact resulting from shrimp farming, such as clearance of mangrove trees and the use of antibiotics, has also become the subject of such certification. Regardless of this increasing attention and demand, certified organic seafood traded at the international level, especially between the South and North, is relatively new on the market, and few academic studies have focused on this emerging industry - especially its influence in the producing regions. In this regard, the influences of such certification on overall rural development trajectories have not yet been fully analysed. This case study offers new analytical insight in

demonstrating that the introduction of global certification can help to preserve current production practices in the global south within the framework of alternative agrofood production. It can be expected that participation in a alternative agrofood network at the global level might bring different changes than those brought about by integration into the conventional global agrofood system. In other words, introduction of the concept of alternative agriculture—born in the European context, where industrialization and globalization penetrated much earlier and further—to the global south may have valuable implications for Southern farmers. I use the concept of agrarian transition, which is generally described as a series of processes toward industrialization in relation to the increasing importance of the market economy, as the basis for this analysis.

1.1 Classification of certification scheme and eco-labellings

Certification schemes in general are categorized by a compliance assessment process (Deere, 1999) depending on the levels of independence of the producers from assessors (Ward & Philips, 2008):

1. First-party certification schemes: in this type of certification scheme, companies, setting standards based on their own positions around targeted issues, are the users of the standard and the assessor. This kind of certification is also called “self-declaration”.
2. Second-party certification schemes: this type of certification scheme is usually established by industry associations for products produced by member companies. Verification of compliance is done by internal functions or an employed external certifying body.
3. Third-party certification schemes: in this type of certification scheme, standards are established by external independent organizations. Verification of the compliance process is accredited (most robust certifications contract with accreditation bodies) to other auditing bodies or certification bodies. The label or logo is usually licensed to certified producers and may appear on product packages to support consumers in making purchasing decisions based on knowledge. This type of certifications scheme is most preferred and trusted by consumers and environmental organizations for its fair, verifiable and transparent procedure.

In addition to the above three categories of certification schemes, participatory guarantee systems (PGS) are increasingly recognized as an alternative to third-party certifications. PGS supports growth of organic agriculture and livelihood generation based on active participation and interaction of/between stakeholders including producers and consumers at a local level. PGS involves capacity building and problem solving to help producers meet standards.

The Rio Declaration on Environment and Development adopted at the United Nation’s earth summit in 1992 mentioned that, “*Governments, in cooperation with industry and other relevant groups, should encourage expansion of environmental labelling and other environmentally related product information programmes designed to assist consumers to make informed choices*”

(*Agenda 21, 4.21*) (Keating, 1993). As is also raised in Agenda 21, food certification schemes in general are “market-based solutions” (Dietsch & Philpott, 2008, p. 248), aiming to solve specific problems. The labelling associated with such certification generates a “market-based incentive” (Deere, 1999, p. 4) to producers and supports consumers in making “informed choices” (Ward & Philips, 2008). Interests of each food certification scheme include environmental concerns (“eco”-products), health or quality assurance (including traceability), socio-economical concerns (e.g., fair trade) and animal welfare (Lee, 2008). One of the most distinctive features of eco-labelling systems for products of any kind is internalisation of any external environmental cost, which is not otherwise paid by direct users. The case study introduced in this dissertation uses a third-party certification scheme established in Europe, which offers a consumer-directed eco-label program as well.

Certification schemes for seafood products

The growth of farmed seafood production around the world has been remarkable, with an average annual growth rate of 9% since 1970. In comparison, the average growth rate for terrestrial farmed meat and capture fisheries were 2.9% and 1.3% respectively (FAO, 2002). Globalization and technological innovations (such as the internet, fishing gears and improved transportation systems) have been contributing to the increase of wild fish consumption, especially of products which previously did not appear on the international market (Taylor, Leonard, Kratzer, Goddard & Steward, 2007). Global demand for farmed seafood (aquaculture) has increased primarily as a result of (1) noticeable decline in capture fisheries (Goldburg, 2008), (2) consumers switching away from a meat diet due to diseases such as BSE and avian flu, (3) interest in healthier diets, and (4) the sharp increase in seafood consumption especially in emerging economies due to higher incomes and population growth (Peterson & Fronc, 2007). In general, as the standard of living improves in a society demand for seafood products increases faster than the demand for other food items (Knudson & Peterson, 2007). For example, China currently consumes five times more seafood per capita and 10 times more fish than in 1961 (Halweil, 2006). As a result of this increased demand, aquaculture has become the primary seafood supply source in the world, with nearly half of the seafood consumed as direct food worldwide from aquaculture (Goldburg, 2008; Halweil, 2008).

However, with the development of industrialized aquaculture producing high-value carnivorous species in intensive farming methods, various social and environmental problems have also emerged. For example, Goldburg, Elliot and Naylor (2001) defined six environmental impacts of aquaculture: biological pollution¹, depletion of wild species for fish meal and fish oil production²,

¹ Biological pollution includes the potential hybridism and disease/parasites transmission between wild native species and escaped farmed species (non-native species and genetically modified species).

² Roughly 25-30% of wild fish catch is used for animal feed materials, most of which goes to aquaculture production (Goldburg, 2008). Fishmeal and fish oil is processed mainly from small and oily fish

organic pollution and eutrophication (excess organic matter), chemical pollution, and habitat modification. This increased demand not only puts pressure on already over-exploited wild fish stocks but also is consuming what could be eaten as a protein source by people in developing countries.

More specifically, there is a wide range of literature that points out the ecological impacts of shrimp aquaculture³. For example, mangrove forests, which are often cleared to make room for shrimp farms, are crucial as a bio-filter for trapping excessive nutrients and pollutants and even the suspended solid waste from shrimp ponds to keep coastal water clean (Folke & Kautsky, 1992; Gautier, Amador & Newmark, 2001). Shrimp aquaculture also influences natural environments needed for other sectors such as agriculture and fishing⁴. Thus, there is now increasing demand for farmed seafood that is produced in ecologically responsible and also socially responsible ways. In addition, in fisheries and aquaculture sectors, as compared to land-based sectors, less defined boundaries and ownership make externalized costs less visible and thus harder to internalise into the market price. International environment and health agreements specific to aquaculture have not yet been achieved (VanderZwaag, 2006). This all means that individual private certification can play crucial roles.

Certification for seafood products can be divided into several categories: either voluntary or mandatory, for farmed or wild capture seafood, organic or non-organic, and labelled or un-labelled on the final product. Mandatory standards are to ensure public health, to inform consumers, to protect against fraud and to conserve minimum levels of environmental integrity (Hagarty, 2007). Codex Alimentarius and Hazard Analysis and Critical Control Point (HACCP) are the most widely applied international food standards. These international food standards have become the norm in the food industry and acquiring them might not give any special prestige to products these days.

There are many regional and international certifications and eco-labelling programs for capture fisheries. The focus of these programs varies from concerns about including endangered fish species, to accidental by-catch (e.g., dolphins caught by drift gill nets aiming to catch tuna) to standards for fishing operations such as recycling, pollutant disposal and work conditions for

including sardines and anchovies (Goldburg et al., 2001) and is used to feed farmed carnivorous species.

³ Loss of the mangrove ecosystem, enrichment and eutrophication of coastal water, longevity of chemicals and toxicity to non-target species, development of antibiotic resistance, and introduction of exotic species are the some of the problems (Primavera, 1997; Cruz-Torres, 2000).

⁴ Discharged effluent from shrimp aquaculture that contains chemical fertilizer, antibiotics, and toxic chemicals cause death of fish and shrimp (Rajagopal, 2002). Low salinity shrimp culture ponds built in the middle of the central region often called the 'rice bowl' of Thailand have had serious effects on rice production (Vandergeest, Flaherty & Miller, 1999). Coastal erosion due to the loss of mangrove from direct shrimp aquaculture ponds and, for example, dike construction to protect shrimp aquaculture from flooding has been reported (Winterwerp, Borst & Vries, 2005). In addition, mangrove forest is also crucial as a biofilter by trapping excessive nutrients and pollutants and even the suspended solid waste from shrimp ponds to keep coastal water clean (Folke & Kautsky, 1992; Gautier et al., 2001).

fishermen. Certification for farmed seafood can be first sorted into organic and non-organic. The difference between wild and farmed seafood, however, has become fuzzy with the emergence of “ocean ranching” and other practices that enhance the survival rate of wild fish. (May, Leadbitter, Sutton & Weber, 2003).

The focus of this dissertation is an international third-party certification scheme for organic seafood with an accompanying eco-labelling program that provides information to consumers who value food attributes beyond food safety. Such certifications largely remain voluntary but are becoming popular with consumers, especially those who are concerned about environmental degradation caused by farmed seafood. The actual certification scheme employed in this case study is from Naturland – a German based standard setting organization that publishes standards for organically produced shrimp. The general standards for organic aquaculture have been fully modified specifically for the study area by Naturland. “International standards for organic aquaculture, part production of shrimp” (Naturland, SIPPO & IMO, 2002 see appendix A for the summary) defines organically raised shrimp as it is grown under the following circumstances (details in chapter 5): the shrimp farms need to have a certain ratio of mangrove trees, only native species stocked, no dependence on purposely caught wild shrimp larvae, a certain stock density, and no application of artificial feed. The third-party certification body (an assessor) for this case is Institute for Marketecology (IMO) based in Switzerland.

1.2 High-value, organic agrofood production and certification as a development tool

The case discussed in this dissertation is the first organic shrimp production project in rural Vietnam supported with collaboration between the Vietnamese central government, a European quasi-development agency and a European retailer, which created a governance model to deliver final products to a specific market in the North. This section examines the issues around agrofood certification schemes, which are increasingly being introduced into the global south as a development tool. While many advantages of small-scale farms are identified, the review also reveals constraints due to the higher regulatory requirements of such schemes.

Many donor agencies and developing countries’ governments have shifted to export-oriented seafood production as a solution to poverty alleviation in developing countries (Primavera, 1997). The impact of such programs on small-scale producers has been subject to debate, especially the capacity of small-scale producers to perform on equal terms with larger producers in the global market, where certification is becoming mandatory (Bene, Hersoug & Allison, 2010). Establishing a successful niche market can create jobs and bring economic diversification and wealth sharing between urban areas and rural areas (OECD, 1995). In developing countries, especially, establishing a niche market such as organic food is often mentioned as a useful way to reduce

poverty and encourage positive involvement of local populations in the global economy (OECD, 1995). A niche market established in a developing country can encourage wealth transfer from rich regions to poor regions. To do so however, a niche market requires effective governance and good market strategies (OECD, 1995). As shown in this case study, a specific certification scheme is one way to direct a special commodity to a specific market regardless of the distance between the production site and consumption sites. However, there still are governance issues, especially regarding post-certification arrangements including market access and delivery of the price premium to producers. In the following section, the advantages and constraints of small-scale farming in rural developing countries in general are discussed.

Comparative advantages of small-scale farms

According to some authors, small-scale farms are far more efficient than large-scale farms in terms of use of resources and labour, especially in supplying high-value crops that require intensive labour or sensitive care (such as herbs and spices) (Boselie, Henson & Weatherspoon, 2003; Henson, Masakure & Boselie, 2005), and in the variety of production outputs per unit (Ellis, 2000; Rosset, 1999). Small-scale farmers have high levels of commitment to production due to its economic importance to their livelihoods. The traditional farming knowledge of small-scale farmers can respond to the supermarkets' demands more flexibly than can the intensive methods used by larger growers. A spatial fragmentation of small-scale producers can be an effective risk-spreading strategy for supermarkets (Boselie et al., 2003). However, in many cases, well-coordinated local institutions and organizations are the variables crucial for succeeding in implementing and sustaining alternative food systems (Pimbert, 2006).

A growing literature also identifies the advantages of organic farming as a tool for development for small-scale farmers in the global south. Organic farm land in developing countries is expanding rapidly (Sahota, 2007). As a result, much of the organic food consumed world-wide is produced in developing countries. Many articles in the literature suggest there are positive effects of organic farming for development, both in developed and developing countries (FAO, 2002; Mansfield, 2004; Krug & Karcher, 2005; IFAD, 2005). The main advantages cited are that it can:

- Preserve rural family farms by providing niche markets.
- Offer comparative advantages with large-scale farm products .
- Preserve local culture, identity or scenery.
- Preserve biodiversity⁵.

In addition, in developing countries, expected benefits include:

⁵ Preserving biodiversity used to focus on natural ecosystems until recently. However, such preserved area covers less than 10% of the earth's surface. Thus, the effort has switched to taking care of agricultural land, which occupies 37% of the surface and therefore has many species interacting with that (Krug & Karcher, 2005).

- Less environmental degradation and thus more environmentally sustainable.
- Suitable for small-scale farms (needs less inputs and uses locally available technology and knowledge).
- Good international markets (niche market with premium prices).
- Fairer payment for products.
- Higher productivity to achieve food security

In general, in addition to economic and environmental benefits, local level coordination with external institutions and human capital that gives increased social capacity to solve problems is expected to be strengthened (FAO, 2002).

Small-scale producers' constraints

International certification schemes have been gaining a reputation as quality/safety verification mechanisms in the global agrofood market. However, literature suggests there are constraints facing small-scale farmers who participate in trading regardless of the advantages listed above. Technical and financial burdens are often identified as factors preventing small-scale producers, especially those in the South, from getting certified, entering the global commodity market, and enjoying the benefits of high-value agrofood market (Hatanaka, 2005; Henson et al., 2005). Furthermore, high profit margins have led to the consolidation of large-scale farms, part of a process of so-called conventionalisation of organic production (Constance, Choi & Lyke-Ho-Gland, 2008; Gomez Tovar, Martin, Gomez Cruz & Mutersbaugh, 2005) and thus exclusion of small-scale farms from the market for some particular crops such as coffee.

Beside technical and financial constraints, Belton, Mahfujul, Little and Sinh Le Xuan (2011) imply in their study of Pangasius farming cases in Vietnam and Bangladesh that success in acquiring eco-certification and market access for small-scale producers in the global south depends on the degree of adaptive capacity to organizational structures of certification schemes. In other words, it is not a matter of higher environmental performance as long as the practice meets minimum requirements, but it is capacity to modify the organizational structure of farmers in which the produce can be graded and larger farms have better institutional adaptive ability.

Another constraint for small-scale farmers in producing high value food products for export is less transparent and slow payment distribution mechanisms considering the shortened commodity supply chains downstream. In one case of certified specialty coffee production in Central America, the payment came in stages and the average time for full payment was 73 days (Bacon, 2008). Often small-scale farms rely on payment from the last crop to re-invest into the next crop and late payment simply does not work in their production cycle. Unless in combination with fair-trade certification, most environmental certification projects for food products, including ones for wild-caught fish or organic food, do not specify delivery of the price premium in their standards.

The next section reviews national institutional settings in which international certification for alternative agrofood is introduced and expand. Attention is paid to the roles of the state.

Re-appearance of states in food sector with different roles

Institutional and financial conditions created by national policy or national social structures also influence the organizational structures for food production. Thiers (2005) claims that organic farming expansion in China is enhanced not through market incentives but rather via political control. Many farmers in China participate in ecological farming programs in response to the central and local governments' focus on export markets (Paull, 2008). In Mexico, where the government has recognized certified organic agriculture as a short-term strategy to increase exports and foreign currency earnings, large-scale farms with investments from US distributors are replacing the farms of indigenous local people (Gomez Tovar et al., 2005). In more direct cases, states financially and legally support the expansion of certification schemes. The government of the Netherlands made €1.5m available for fishery certifications and ten Dutch fisheries were granted money to be spent on the Marine Stewardship Council (MSC) certification (Marine Stewardship Council, 2009a). In another case, in Australia, MSC certification was adopted by the government as an alternative to the Australian government's Environment Protection and biodiversity Conservation Act (1999) certificate, which is required in order to export seafood products (Marine Stewardship Council, 2009b).

The rising influence of transnational companies (TNCs) as a result of reduced state power over agrofood has been debated. For example, global commodity chain analysis (GCC) has been employed to identify the role of global buyers in determining the structure of supply chains of global commodities (Islam, 2008) since, in general, global conventional commodity chains have been structured largely by multinational buyers who decide what to produce under which conditions. GCC analysis is often used in "non-state, market-driven" (Cashore, 2002) agrofood regulation. However, the discussion above indicates that states are also prominent influential actors in alternative food production. In other words certification schemes have offered an opportunity for states to be involved in setting institutional requirements through which certification schemes expand (rather than being in complete control). In order to identify participants and their motives for certification, Vandergeest (2007) suggests what he calls "Environmental Regulatory Networks (ERNs)". At the same time, environmental issues that have been almost solely dealt with by governments in the past, have shifted to "network" approaches (Hatanaka, 2010b) involving a wider range of corporate and NGO actors.

1.3 Research objectives

Ibery and Bowler (1999) indicates that producer networks (i.e., the market arena),

institutional networks (i.e., the regulation arena), and consumer networks need to be well coordinated in order to create benefit for small-scale farmers, especially in the global south. Accordingly, recent literature emphasizes the need for new perspectives and frameworks for analysing such coordination through which agrofood gain values in the global markets (Ruben et al., 2006).

This dissertation describes factors determining the capacity of an international environmental food certification scheme to permeate and establish its socio-economic role in rural Southeast Asia. It also analyses how this certification scheme influences the development trajectories of one rural society in the global south. The discussion draws upon a case study looking at newly introduced certified organic shrimp production in Ca Mau Province in Vietnam's Mekong Delta.

Research objectives

The overall goal in this dissertation is to determine the impact of organic third-party certification on small-scale producers in the South and on their capacity to perform equally with larger producers in global markets where certification is becoming mandatory. In order to seek answers to this question, the following specific research objectives are raised:

1. To determine whether eco-certification for high value food crops for export be a viable livelihood option for small-scale farmers in the global south when there are no technical and financial constraints;
2. To identify how has organic seafood certification been an influence in determining agricultural transition paths and livelihood opportunities for one group of shrimp producers in Ca Mau province; and
3. To explain the implications of alternative notions of food production in a place where the peasantry has been preserved and has not yet been integrated (or has been less integrated) into the global agrofood system.

One hypothesis underlying the research questions is that agrarian transition (AT) might be accelerated toward industrialization or reshaped by globalized application of regulation and introduction of alternative farming. In this context, this dissertation analyses (1) how the environmental standards (i.e., environmental appropriateness defined by western nations) were translated into one rural setting in the global south through an international certification scheme, (2) which stakeholders involved in the translation process and (3) the implications at the local level.

Principal findings

Past studies have reported that technical and financial burdens often prevent small-scale producers in the South from getting certified to international standards and benefiting from

international high value commodity markets (Perez-Ramirez et al., 2012; Henson et al., 2005). However, the fieldwork results indicate that the shrimp farming method employed in the case study is organic by default and therefore technical constraints often created by the need to comply with standards are not the farmers' primary obstacles to getting or remaining certified. Moreover, farmers do not pay an assessment fee. In spite of this, many farmers unofficially withdrew from the organic shrimp project by simply shifting their marketing back to conventional approaches. The interviews with farmers also revealed that about one quarter of the shrimp farmers who declared that they were certified were actually not certified on official certification records. What this result means is that updates on the certification status of farmers are not delivered properly, and furthermore, shrimp farmers do not receive official certificates or assessment reports.

The unique features of this case in regard to certification management are: 1) this is a joint program initiated by European stakeholders and the Vietnamese government, 2) farmers who are certified do not pay for the cost of certification, 3) farmers are not able to see their assessment reports or official certification documents, 4) the premium for certified organic shrimp is delivered to farmers more than two-and-a-half months after the shrimp are sold, 5) certified shrimp intermediaries act as a single information hub or screen between shrimp farmers and other stakeholders due to the geographical conditions that allow only small boats to reach the shrimp farms. One possible factor that prevents information sharing among stakeholders is that the Vietnamese authorities do not allow European partners to directly contact farmers (e.g., to hold seminars).

A number of factors have contributed to lowering the farmers' willingness to participate and stay in the program: inefficient flows of information and payment of premiums; a restricted marketing channel for organic shrimp which does not take into account the local geography, farming practices or marketing arrangements.

The most important contribution of this dissertation is to offer the new insight that the introduction of international organic shrimp certification can be valuable, not because it changes things by upgrading local food production to a global commodity, but because it may help the system remain the same by justifying peasant-like production methods in a framework of alternative commodity production through certification.

Therefore, I argue that alternative agrofood certification has the potential to reshape the trajectory of agrarian transition in the global south. Although technological innovation led to a bloom in many Asian coastal nations in industrialized (export-led) shrimp farming in the 1980s (Hall, 2004), Vietnam was one step behind, and upgrades in terms of production systems and technologies spread very slowly. Thus, until the mid-1990s, much of the increase in production came from expansion of the total area under production rather than intensification of shrimp farming (Lebel et al., 2002). However, in Vietnam too, intensification has been under way. This project is, in this

perspective, going against the broader trajectory of shrimp farming proactive in Southeast Asia.

The implication of this case study, the only case of organic shrimp farming in Vietnam, for other places in Vietnam and other Southeast Asian countries, is that organic shrimp farming or agricultural farming based on locally developed farming methods is not impossible. However, the key for a successful project is the mechanism of networking which can maintain incentives for all stakeholders.

1.4 Challenges of Agrarian Transition in Southeast Asia (ChATSEA)

The fieldwork for this dissertation was primarily funded by the Challenges of Agrarian Transition in Southeast Asia (ChATSEA) program. ChATSEA was a Major Collaborative Research Initiatives (MCRI) of the Social Sciences and Humanities Research Council of Canada (SSHRC). ChATSEA's main research objective was to understand the ongoing agrarian transition as societies are continuously moving from rural societies relying on agricultural production toward urbanization, industrialization, capitalization and market-based societies. ChATSEA project has identified central processes associated with agrarian transition in Southeast Asia including agricultural intensification and territorial expansion; greater market integration; urbanization and industrialization; heightened population mobility; the intensification of regulation; and attendant environmental changes and impacts.

This dissertation complements ChATSEA's study on Vietnam and food-related issues in Southeast Asia, especially on market integration, intensification of regulation and environmental changes and impacts. One of this dissertation's main arguments is centered on how some of the agrarian processes underpinned by international certification, which itself is also an agrarian process (intensification of regulation), influence the local population's livelihood.

1.5 Organization of the dissertation

This dissertation consists of seven chapters. The following chapter introduces the conceptual framework for the study and provides a review of relevant literature. Chapter Three explains the research methods for the case study. Chapter Four describes the structure of the Vietnamese seafood sector, including government policy regarding seafood aquaculture, and particularly shrimp farming. Chapter Five is devoted to examination of the case study. Chapter Six, synthesizes and illuminates the conceptual issues raised in the case study. Chapter Seven provides a discussion of agrarian transition, while the final chapter provides the conclusions and identifies opportunities for further research.

Chapter 2: Literature review and Conceptual Frameworks

This chapter offers the literature review and conceptual framework used to analyse the case study presented in Chapter 6. This chapter is divided into three main sections. The first section is devoted to a review of the transition in food studies in accordance with changes in global agrofood systems, explaining how research interests have shifted in relation to changes in global agrofood systems. The next section examines analytical frameworks employed in the case study analysis. There are two main analytical approaches used here. Agrarian Transition (AT) is useful as an analytical approach to explain trajectories of farm sector development. Countries experiencing agrarian transition at present are doing so in a very different international context than in the past. As a useful overview of the global agrofood system, food regime concepts are also reviewed. A second main analytical concept for this research is agrofood “networks” (in contrast to agrofood “chains”), useful for analysing how participants are connected through an international third-party environmental certification working as an environmental regulatory mechanism. The last section explains the history of organic farming, the definition of organic agrofood, organic food in development, and the definition of organic seafood in order to clarify the meaning of “certified organic shrimp”.

2.1 Transitions in the global agrofood system and in food studies

Since the 1980s, geographers have broadened their interests from the geography of agriculture to the geography of food, which include the non-farm elements of the food system - spatial and temporal linkages in the world food system (Atkins, 1988). The noticeable political dimension of food has also drawn scholars to connect food studies and rural development studies (e.g., Marsden, 2005). With new food value defined by various concepts/ideologies including locality, environment and diversity, and fairer trade between the global north and south, new global agrofood commodity networks have emerged (Marsden, 2000). This trend has also created a new research focus on development and poverty reduction through high value agrofood production.

Food and Geography- Food studies

Until the 1950s agricultural geography was concerned with “spatial distribution of agricultural activities” (Johnston, 2000). In the latter part of the 1980s, however, authors such as Atkins asserted “Agricultural geography is dead: long live the geography of food!” (Atkins, 1988, p. 282). This extended geography’s interest to post-harvest (non-farm) elements of the food system. At the same time, as the amount and variety of internationally exchangeable commodities supported by technological progress, large-scale production and value-added processes has increased, the physical and social distance between production spheres and final consumption spheres has grown globally (Arce and Marsden, 1993). Seen in this perspective, the switch from agricultural geography to the

geography of food that Atkins asserted in the 1980s was a reasonable academic turn for the new era of agrofood production-consumption dynamics.

2.1.1 Food regime concepts

Food studies has a rich variety of disciplinary and theoretical perspectives including historical approaches, cultural and sociological approaches, post-modern and post-structuralist approaches and the system approach (Atkins & Bowler, 2001). The study of the political economy of the food system flourished in the 1980s and 1990s (Atkins & Bowler, 2001), trying to capture the dynamic nature of the geography of food. Working in this line, Friedmann (1982), in her seminal work, generated the idea of the post war international food order. Food regime concepts are criticized as being western-centred (or developed-countries centred), reductionist and structuralist. This is because the concepts attempt to explain the international food complex by using few commodities (Atkins & Bowler, 2001) such as sugar, wheat and coffee, thus ignoring regional diversities. Despite these criticisms, I argue here that the food regime concept is still useful in the context of developing countries for explaining the background of current food production policies in regards to export-led commodities, including farmed shrimp.

Food regime is a concept that emerged from the political economy of Marxist structuralism. The agrarian political economy approach focuses on the relationship between international food regimes and agricultural structures (Arce & Marsden, 1993). It aims to explain the historical transition of food and agricultural structures, including regulations, governance, and the international division of labour. Food regimes reflect changing power relations between stakeholders including states, different social classes, and capital (Friedmann, 1993). In addition, the concept offers systematic explanation of the globalization of food production and consumption (Atkins & Bowler, 2001). Each regime is characterized by particular farm products, food trade structures that connect production and consumption, and regulations which govern capital accumulation (Atkins & Bowler, 2001). They divided the food regimes into three stages: the first food regime (pre-1914), the second food regime (1947-1970s), and the third (1980s-present). While these are for the most part accepted across the field, the exact beginnings and ends, and how a regime is referred to, differ slightly from author to author.

New turn in food regime?

Friedmann (1993) argues that global food regulations in the third food regime, set by agrofood corporations, cannot be sustained for two reasons. Firstly, the flourishing of agrofood corporations is built on very rapid changes, changes which are continually creating new actors and constraints. Secondly, there are no unified interests among agrofood corporations, so they are always competitive. What Friedmann (1993) suggested is “a democratic food policy” that has emphasis on

proximity and seasonality of food - sensitivity to place and time is in contrast to the third food regime in which durability of food, season-lessness, time-lessness and place-lessness are valued. In other words, conventional food production, in which the ultimate goal is to increase productivity, can be described as an attempt to reduce the degree of dependency on nature (Morgan, Marsden & Murdoch, 2006) partly through use of artificial inputs. The desire to change the conventional food system comes from people experiencing poverty, unemployment, health threats, uniformity of food culture, and environmental degradation, among others. For example, the epidemic of Foot and Mouth disease in 2001, and the Bovine Spongiform Encephalopathy (BSE) outbreak in Wales, contributed to strengthening local ties and regional governance, and re-arranged local institutions by unlocking farmers from the intensive agri-industrial production system and allowing them to create a new agenda for sustainability (Marsden, 2005). The “Slow Food Movement” in Italy was created as a way of regaining cultural diversities (Miele, 2003). Along the same line, according to van der Ploeg (2010), a new global agrofood configuration seems to have emerged in the 1990s, represented by a “reversal” or “re-emergence” of the peasantry. He asserts that the “new peasantry” in alternative agrofood production is characterized by two processes: “re-grounding of farming on nature” and “multi-functionality”. This is a form of resistance by farmers against uniform high-input food production which was systemized by large global buyers. One result of the current growth of alternative agrofood production verified by third-party agrofood certification, is that global agrofood trading is indeed “approximated” (Guthman, 2004) in a non-geographical sense by making the system transparent, but it is still designed to smooth the global market to the advantage of global buyers (Hatanaka, 2005; Belton et al., 2011).

Wilson and Rigg (2003) have questioned whether the transition from productivism to post-productivism can be applied to the context in the global south, as the concept emerged especially centred in the UK. They identify indicators of post-productivism used in the UK context including policy change, organic farming and the inclusion of environmental NGOs at the core of policy-making, and discuss whether each of the indicators is applicable in the context of the South. At the same time they also question whether a post-productivist agricultural regime represented by these indicators could happen only when a society has gone through “classic” trajectories through a productivist period. Regarding policy change indicators, the authors observe “a sidelining of national governments (and policy making)” (p. 693) as they are integrated into the global agrofood system characterised by intensification of agriculture in terms of introduction of market crops, new technologies and chemical inputs. For organic farming indicators, the authors argue that the concept of post-productivism is not relevant in the south since the farming practices there have been organic by default, and the authors are not sure whether such organic farming is categorized as post-productivist or pre-productivist. The increased presence of environmental NGOs at the core of policy-making is another indicator of post-productivism in the advanced countries. However, in

many cases in the South, environmental NGOs are not yet well integrated into the decision making procedure but instead they are in the position of criticising governments. With the rise of multi-national corporations, it tends to be that national governments are excluded or have their power reduced in the face of the global agrofood system. This section as an introduction to analytical approaches employed in this dissertation offers explanation on how the focus of geography of food has evolved as the structure of world food regime develops. Furthermore, the diversified values and the verification mechanisms (e.g., third-party certification) of food commodities have created a complex web of actors. This suggests the need for a new analytical approach to capture the global dynamic food configuration and the need to test whether concepts developed in the European context will be relevant in the context of the South. In the following section, the relevance of two key analytical approaches used in this dissertation is explained.

2.2 Agrarian transition

As the global market transforms over time, the corresponding influence and its result in rural areas has been an important research subject. As one study approach, agrarian transition offers interpretations of development trajectories. Agrarian transition is classically defined as a “range of processes linked to the increasing importance of the market economy, which are at work within the agricultural sector and affect the agricultural as well as the rest of the rural population” (Rigg, 2006). Agrarian questions have long been the center of agrarian transition debate. The focus of agrarian questions has been the relationship between agriculture, capitalist accumulation, and the transition to capitalism in the countryside (Rigg, 2001). However, changes in the focus of agrarian questions over time reflect the core of agrarian transition issues both in the past and now. This is useful to identify how current challenges are different from those in the past.

As the volume and variety of internationally traded commodities have increased, and the relationships between countries - especially between the North and the South - have changed, the trajectories taken by countries experiencing agrarian transition are expected to have changed as well. In the following parts, I review how development trajectories taken in the rural South may be influenced by the emerging global context.

2.2.1 Classic and current agrarian transition debate

Classic agrarian questions

Kautsky posed the question “what are the dynamics of capitalist agriculture?” in 1899 (McLaughlin, 1998). His answer was that small-scale farmers would be eventually disappeared under capitalism economy. The classic agrarian question assumes that transition of societies is a one-way trajectory to industrialization supported by appropriation of surplus labour by large land

holdings (social division of labour), emergence of commodities (emergence of market dependency), and low cost reproduction (high-yield with technological advancements), which allow the industry and the working class to keep growing (Bernstein, 2004). Agrarian transition processes currently sweeping many developing countries are producing various social, economic, and cultural challenges for people, especially in rural areas. These challenges are different from those in the past (e.g., agrarian transition experienced by European countries) partially due to the globalized food supply chain.

Modified agrarian questions

Some scholars have assumed that the agrarian questions in developed countries have been resolved (Bernstein, 2006; Rigg, 2001) by intensification and appropriation of agriculture (Watts and Goodman, 1997) or globalization (Bernstein, 2006). Some have proposed new agrarian questions both in developed and developing countries.

Since the time Kautsky first published his agrarian question thesis in 1899 (although the English translation was not available until almost a century later - Watts, 1996), the agricultural sector has been changing constantly. For example, agriculture began to be called agro-industry as agriculture became contract farming (Rigg, 2001) in the global north and eventually in the South. Marsden (1997) outlines the agendas in research on food networks and food values in the 1990s within the framework of modified agrarian questions. Value of food is not simply the products, but is added through the process, from production to consumption. So, “the design of foods” (in contrast to the physical attributes p. 170) was formed at a distance from farms. Globalization of food has also had direct and indirect influences in rural areas, for example, changes in diet and food availability. Food quality has been increasingly more of a concern than quantity, and state regulation is not always decisive and primary anymore but has increasingly become corporate-driven and at the same time consumer-driven (part of a food re-regulation process). These processes create uneven rural societies and different degrees of rural vulnerability.

Modified agrarian questions in the rural South

In addition to the discussion above, Watts asserts (1996) that agrarian questions are the outcome of certain political and economic phases. Agriculture, which was a catalyst for industrialization in the classic agrarian question, became an industry itself, as the term agro-industry expresses. Quality has developed more meaning than quantity in the international food system, so larger land areas as a main productivity input has become less advantageous (Marsden, 1997). Within globalized capitalism relations, instead, institutional arrangement and regulation in supply chains, and consumption patterns have more meaning and influence on rural agriculture in developing countries.

The transformation of the farm sector as an ongoing process- of agrarian transition

Food regimes as discussed under the political economy of food mainly focus on “‘external’ relations of the farm sector as regards non-farm capitals” (Atkins, 2001, p 56). However, in reality, the condition and outcome of farms are determined by both external relations and local condition and capacity. Bowler and Ilbery identified five trajectories of farm sector development (Atkins, 2001), noting that any one specific farm sector does not necessarily go through all the processes.

1. Intensification in the farm sector

In this stage, rising levels of purchased agri-inputs and increased outputs can be observed. Also displacement of labour from agriculture by machinery occurs, leading to unemployment and depopulation of farming areas. Increased outputs create a situation of over-supply and decreasing product-prices. Farmers then feel forced to introduce newer, cost-reducing technology to be more efficient.

2. Concentration in the farm sector

Through the competitive market process, the less successful farms cease operations and their land is in turn purchased by more successful businesses. Farmland consolidation is the result.

3. Specialization in the farm sector

Farmers attempt to maximize cost-efficiency by limiting the items produced on one farm, or in one region. An increase in the number of specialized farm regions is observed.

4. Diversification in the farm sector

The term ‘diversification’ used here means the introduction of a non-traditional enterprise into a farm business. Non-traditional enterprises include new crops or livestock, value-added activities on the farm and also non-agricultural activities such as farm recreation.

5. Extensification in the farm sector

This implies lower inputs to farming and lower production as a result. This may happen through 1) state intervention in an attempt to control the production at an ideal amount for the market supply (supply management) by providing subsidy or regulation to reduce farm inputs, or 2) farmers who want to produce in a more sustainable way. Organic food production is an example of this stage (although small-scale local organic production and industrial large organic business aiming at international trade need to be separated). Under the idea of food sovereignty the extensification of farms (small-scale) is often reported happening in the rural areas of an economically advanced country (McMichael, 2005) - food produced and consumed locally.

The concept of AT and its five trajectories of farm sector development are one of the core analytical approaches in this dissertation. Agrarian transition works as a tool to project the current world food configuration onto the production site in the global south where the farm sector transformation is underway. Agrarian transition can not only position a farm at one of the five

trajectories but can clearly indicate the external influence on the trajectories which are not necessarily a one way process toward industrialization. In the following section, the other key analytical concept of this dissertation is introduced.

2.3 Chain Approach and Network Approach

While agrarian transition is useful as a broad explanation for transitions in rural areas, a network approach can usefully aggregate factors contributing to the transition of one network. A network approach is especially useful when looking at the process of how developed countries' standards and requirements based on value or notion developed in the North are translated into the rural South through certification working as a regulatory mechanism for alternative food production.

Commodity chain/network approaches can help visualize global supply chains in order to demonstrate how the global level of food commodity trading schemes influences local production spheres, especially in the global south. The advantage of commodity studies is the ability to analyse the global economic structure, spatial formation and social organizations in agrofood. Much of the initial commodity chain literature focused on distribution of resources such as money, material, labour, and organizations defined by each governance structure. For example, Raynolds (2004) summarises "commodity system analysis" as focusing on national labour organizations and the relations, "commodity chain analysis" as focusing on global temporal and spatial relations, "filier analysis" as focusing on national policies/regulations, and "value chain analysis" as focusing on international business structures and profitability.

The very beginning of commodity chain studies has its root in early Marxist theory. As globalization became prominent, global commodity chains grew. This put emphasis on the production sphere and was complemented by global value chain analysis which highlights the governance forms that manage stakeholders in the global context (Ilbery & Damian, 2008). Later on, consumption and "meanings and narratives" around food production-consumption, came more sharply into focus (Jackson, Ward & Russell, 2006). However, terminology used in commodity studies is very confusing and sometimes used synonymously, for example, "chain" and "network" (Leslie, 1999), which makes the approach less straightforward. As international trade has increased, a number of approaches have been applied to analyse the trading systems, each with its own emphasis. A number of reviews have been written by various authors (Bair, 2009; Fine, 1993; Raynolds, 2004) in order to sort out these concepts.

2.3.1 Chain Approach

Agrofood commodity chain analysis

Commodity chain analysis first emerged from political economy studies examining

agricultural restructuring from traditional forms (small-scale, family-based) to industrialized agribusiness which reformed the configuration of not only economic but also social and spatial connections- i.e, the “disembedding” of food production from its pre-existing settings (Murdoch & Miele, 2004, p. 105).

Commodity system analysis

According to the review by Hamilton (2009), commodity system analysis was founded by rural sociologist William H. Friedland. In the early 1980s when rural population was decreasing and rural sociologists were focused on “rural identity”, Friedland argued that researchers must look at whole commodity systems that shape rural people’s livelihoods instead of focusing on the rural sphere. He intended, by taking an empirical and systemic approach to food production and consumption, to re-vitalize rural sociology. System analysis focuses on national labour organization and relations (Raynolds, 2004). Commodity system analysis has its root in world system theory and new political economy of food and agriculture (Bair, 2009).

Global commodity chain analysis

Much of global commodity chain (GCC) literature is based on world system theory. GCC pays careful attention to the global dynamics of each node at production, consumption and retailing linkages. In other words, it deals with global temporal and spatial relations (Raynolds, 2004) and focuses on how global division (and integration) of labour is incorporated into the global economy over time (Bair, 2009).

Global value chain analysis

Global value chain (GVC) analysis, which is a relatively new variant of global commodity studies, derives from the global commodity chain approach but favours the tradition of transaction cost economics (Bair, 2009). Bair distinguished three chain (or chain-like) concepts: the commodity system analysis, the systems of provision, and the filiere (by revisiting its origins).

Fine and his colleagues (1993) developed the system of provision concept and proposed integrating relationships between production and consumption, while the new political economy of agriculture tends to focus on production sphere. The systems of provision approach analyses the interactive relationships of production-consumption in a specially structured chain where specific patterns of production and specific patterns of consumption are influenced by and correspond with one another. In other words, systems of provision go beyond capitalist economic transformation by putting stress on how differences in each system are generated as a result of material and cultural interaction bridging a system of goods (Leslie, 1999).The filiere concept extends back to the 1960s in France. Researchers sought to create an analytical framework to apply to developing countries

where agriculture development was centred on commodity trade in French colonial and post-colonial orders. Bair (2009) concludes that the three concepts share some similarity with commodity chains in terms of understanding world system theories.

Chain analysis tends to focus on superficial, macro level systems and flows at the expense of an understanding of local processes (Leslie, 1999; Hughes, 2000). Although global commodity chain analysis has been frequently used in identifying, for example, physical material flow or the role of global buyers under a corporate food regime, there are a number of reasons that make GCC analysis less effective in analysing contemporary conditions surrounding international high value agrofood products. First, there is an increased importance of “credence or non-material characteristics that cannot be detected by consumers” (e.g., ethically grown food) (Vandergeest, 2007, p.1157) and second, ethical production, including organic farming expansion, can be enhanced not through market incentives but rather political control (Thiers, 2005), as shown with the China example in chapter 1. This means that all the invited non-material actors and non-market oriented participants in agrofood “networks” could never be arranged in linear chains. In the following section there is a review of an alternative approach.

2.3.2 Network approach

Commodity network approaches in general, emerged as a part of commodity chain research which analyses global commodity flows and firm relations through production, distribution and consumption, and allows researchers to examine power relations among stakeholders as they use social, political and economic factors to build, maintain or potentially transform networks, pushing its scope beyond what other commodity analysis tools offer (Raynolds, 2004). Furthermore, use of the term networks instead of chains gives the wider view to analyse a “web” of material and non-material relations that cannot stand alone without social, political and economic actors and never represents a linear chain of pure economic activities, unlike the structuralist approach (Raynolds, 2004). Network approaches are especially significant for the agrofood commodities that are largely responding to consumer notions about socially and environmentally superior products. In addition, such notions have become an important analytical element in such commodities (Raynolds, 2004). The late 1990s saw a rethinking of the implications of consumption for the economics and politics of food (Leslie, 1999; Miller, 1995). For example, Fine (1993) argued that the concept of what is healthy to eat comes from socially constructed knowledge, from which consumer behaviour derives. This is an important entry point to understanding why “socio-cultural perception of food”, has become analytical concerns (Arce & Marsden, 1993) and network approach rather than chain approach can only take these factors into account.

2.3.3 The role of global buyers

The transition in global commodity trading can also be examined by looking at the (changing) power relations among major stakeholders in the global market. Leslie among many others pointed out that power relations between supplier and retailers have been moving “away from suppliers and toward retailers” (1999, p. 403) and these relations have been a major interest in economic geography since the 1990s (Hughes, 2001). Reflecting the increased centrality of consumption, the international structure of trades has been re-configured; it is not producer-driven nor consumer-driven, but rather retailer-driven or transnational corporations-driven. However, global buyers who played central roles in the corporate-driven process of regulating commodity chain with their own standards, have increasingly delegated regulatory and verification functions by actively participating in third-party certification schemes⁶. The primary advantages for retailers in adopting eco-certification used to be to differentiate their products from those of their competitors and to meet diverse consumer demands (Fulponi, 2006) and its credibility..

As ecological attributes of food and its production phases have become mainstream concerns in supermarkets, third party certification offers retailers a number of advantages which cannot be achieved through, for example, their own food safety or quality standards. First, by supplying products through/within certifications schemes, retailers can reduce and shift the quality control cost to suppliers (Belton et al., 2011). Second, well institutionalized certification schemes complying to international and national governmental/private accreditation bodies are considered to be globally recognized as having the highest standards with expertise that cannot be established at the level of a retailer with affordable cost and effort. In addition, organizations that are part of the United Nations, such as FAO and WTO, also publish guidelines⁷ for certification schemes that give credibility to voluntary third-party certifications for food.

In terms of risk for retailers (such as, for example, fraud on food labeling), the voices of environmental NGOs on food production and sales policy have been stronger and heard and responded to by consumers. For example, retailers’ green sourcing ranking is published (e.g., by Greenpeace) to inform consumers how much effort the retailers have been making toward sustainability. Sourcing environmentally certified products can be a handy demonstration to enhance corporate social responsibility (CSR). Overall, global buyers identify certification schemes as a tool to establish strategic supply chains in order to “reduce risk by instituting greater surveillance and traceability” (Belton et al., 2011, p297) as well as providing ‘due diligence’ (Tanner, 2000) evidence for retailers at the time of food safety scandals. To support this, retailers have started integrating eco-certification schemes into their private brands⁸. For example Walmart requires their suppliers to

⁶ Some schemes such as EurepGAP (currently GLOBALGAP) and MSC have also been established in collaboration with retailer companies or a consumer product brands owner.

⁷ UN Food and Agriculture Organization (FAO) seafood ecolabeling guidelines.

⁸ AEON, one of the biggest retailer companies in Japan has integrated MSC certification into their

get certain eco-certifications within a set period of time (Walmart, 2011). This example shows how certification has increasingly become pervasive in retailers' supplying policies and in their business management. In the following section, the concept of regulatory networks for agrofood commodities is introduced in relation to retailers' new roles in networks.

2.3.4 Regulatory Network Concept

Third-party certification schemes “(are) not merely an objective or impartial technical tool” (Hatanaka, 2005). While global buyers use international third-party certifications as a tool to extend and secure their sourcing strategies, these schemes have diverse social and economic implications for other participants in the transnational alternative agrofood network. Global commodity chains (GCC) analysis can identify the role of global buyers in determining the structure of supply chains of global commodities (Islam, 2008) since conventional commodity chains have been structured largely by multinational buyers who decide what to produce under which conditions. GCC is quite useful in “non-state, market driven” commodity chain analysis. On the other hand, Vandergeest (2007) points out that in alternative agrofood production, especially production entailing environmental regulation, the actors would never only be “non-state, market driven” but would be various stakeholders, including states, shaping a network. Hatanaka (2010a) calls such trading structures “transnational alternative agrofood networks” and points out that such networks are the result of involvement by various stakeholders such as NGOs, private enterprises, and even states involved in every level of the supply chains. Researchers argue that this new form of “regulatory and verification mechanism” (Hatanaka, 2005, p. 355) calls for a new analytical concept which will allow researchers to capture the interrelatedness of participants in a regulatory network bound by an environmental certification for agrofood products.

To better grasp and analyze such networks, Vandergeest (2007) suggests the concept of “Environmental Regulatory Networks” (ERN); networks specifically developed around environmental third-party certification in agrofood production. Rationales for using a network concept in environmental third-party certification on agrofood production in general are alternative agrofood production, especially entailing environmental regulations, would never only be “non-state, market-driven”, but still the participation of global buyers in the third-party certification as a tool to extend and secure sourcing strategies adds diverse social and economical implications. In other words, actors in ERNs are driven by multiple motives (Vandergeest, 2007) and a linear (chain) analyzing concept would not capture the complicated web of stakeholders and their intentions. ERN, especially when applied to international networks constructed around environmental regulation and certification, gives a comprehensive explanation of stakeholders engaged in the network. In addition, the concept of commodity network in contrast to the concept of commodity chain allows researchers

private brand “TOPVALU” products.

to capture interwoven actors, including non-material actors, centered on a commodity with its social, political and economic context (Raynolds, 2004). It is important to note that governments, who were once seen as being excluded from conventional international food production-trading, have regained a presence in environmental regulatory networks, with other roles and intentions.

In this section, the review of commodity chain and network analysis in relation to dynamic global food configuration was presented. The review shows that alternative agrofood production-consumption is based on networks rather than linear chains controlled by global buyers. However, the review also highlights the continuous role of global buyers in agrofood networks as they found third-party certification as a verification tool more useful than constructing their own standards and verification mechanisms. The two approaches, namely the concept of agrarian transition and ERN, are the two core analytical tools used in this dissertation. By looking at international alternative agrofood certification with the network approach, the analysis can highlight the hybrid characteristics of a network with the aspect of alternative production and conventional global market control. It is also useful to fill the conceptual gap of such a network and its expected influence on overall rural development.

In the following section, a supplemental analytical concept is introduced.

2.4 The definition of organic farming and implications of third-party certification in development

The increasing demand for seafood certifications and ecolabelling programs, and their function as market-based solutions to specific problems including environmental degradation were introduced in the previous chapter. This section reviews the history of organic farming and how the organic concept is transferred into seafood aquaculture. In the final part, some case studies on international certification introduced in the global south on forest, wild-caught fish and coffee are reviewed in order to understand how international certification is translated into the global south.

2.4.1 The history, definition and role in development

Organic farming and its markets are growing rapidly. The global market for organic food and drink was 54.9 billion dollars and 1.8 million people engaged in 2009 on more than 700,000 farms worldwide (Willer & Kilcher, 2011). The world sale of organic food and drink expanded to 54.9 billion US dollars in 2009, up from 18 billion US dollars in 2000. The largest markets are in the US, Germany, and France but Denmark, Switzerland, and Austria are the largest organic food consuming countries per capita (Willer & Kilcher, 2011).

The origin of organic farming can be traced back to mainly German-speaking and English-speaking⁹ worlds, both independently, with the current organic farming idea a mixture of

⁹ Interestingly, according to Vogt (2007), the organic agriculture initiative developed in the

the two (Vogt, 2007). It was in the 1970s that organic farming began to gain popularity, reflecting increased concerns about land degradation from chemical fertilizer and pesticide use as well as those products' residues in food. Later, the organic concept went beyond soil conservation and gained more holistic ideas like agro-ecosystem or biodiversity and even locally adapted farming system management. With these new ideas, localism, including fair pricing to support the local food system and family farmers, was added to organic farming as an agent of underlying value (Sligh & Cierpka, 2007).

Organic food marketing channels have changed with time (Aschemann, Hamm, Naspetti & Zanoli, 2007). In the 1920s, organic food marketing was a closed system, working through direct individual relationships between producers and consumers. In the 1930s, specialized shops (e.g., health food stores) started selling organic food in countries like Germany and Switzerland. After World War II, the establishment of producer-consumer associations was observed and distribution improved. In the late 1950s and 1960s, farmers' associations with processor involvement appeared. It was the 1970s when the first specialized organic retail shops were built in central Europe and later in the US and Japan. The turn in organic marketing channels came in the mid-1980s when supermarkets entered into the business to absorb the increased demand and production. It was the late 1970s and mid-1980s when standards for organic products became common (Sligh & Cierpka, 2007), and this period overlapped with the organic food supply channel turning away from direct contact between producers and suppliers and becoming mediated by retailers. Organic food commodities have become important international trade items and have started to be produced in a large-scale industrialized manner. This conventionalization of organic farming has created a debate over whether the initial principles of organic farming are still followed in large-scale organic production.

Following are the first IFOAM Basic Standards published in 1980 (cited in Schmid, 2007, p. 165):

- To work as much as possible within a closed system, and draw upon local resources;
- To maintain the long-term fertility of soils;
- To avoid all forms of pollution that may result from agricultural techniques;
- To produce foodstuffs of high nutritional quality and sufficient quantity;
- To reduce the use of fossil energy in agricultural practice to a minimum;
- To give livestock conditions of life that conform to their physiological needs and to humanitarian principles;
- To make it possible for agricultural producers to earn a living through their work and develop their potentialities as human beings.

English-speaking world was influenced by work done by Sir Albert Howard in Pusa, New Delhi, India whose major interest was composting.

2.4.2 Organic farming and development

Organic farm land in developing countries is expanding rapidly and more and more of the organic food consumed world-wide is imported from developing countries. Recently, many articles in the literature suggest there are positive effects of organic farming for development, both in developed and developing countries (FAO, 2002; Mansfield, 2004; Krug & Karcher, 2005; IFAD, 2005; Bolwig, Gibbon & Jones, 2009). The main advantages cited are that it can; preserve rural family farms by providing niche markets; preserve local culture; provide less competition with large scale farm products (Mansfield, 2004, p. 217); preserve local culture, identity or scenery (e.g., land trust movement in UK) ; and preserve biodiversity¹⁰. In addition, in developing countries, the following are expected benefits of organic agriculture; less impacts on the environment (environmentally sustainable); suitable for small-scale farms (needs less inputs and uses locally available technology and knowledge); good international markets (niche markets with premium prices); fairer payment for products; and food security (higher productivity in regards to costs of inputs). Besides the economic and ecological benefits of organic farming, it can be expected to strengthen local level coordination with external institutions and human capital which gives capacity to solve problems (FAO, 2002).

Although FAO (2002) listed one of the advantages of organic agriculture as being: “provide fair payment to producers, particularly in developing countries” (p. 66), this is highly questionable when what fairness means in organic farming is not defined. When organic food standards became common, in the late 1970s and 1980s, imported organic food from the global south was not common and the definition of fairness was not a relevant question (Sligh & Cierpka, 2007). On this point, empirical studies looking at mechanisms of benefit distribution in organic food trading between the global north and south are required. In addition, organic farming for local food security and for exporting should not be considered on an equal footing. They are very different in terms of scale and complexity of the supply chains and have different outcomes.

Organic farming aiming at niche market development

A successful niche market can create jobs and bring economic diversification and wealth sharing between urban areas and rural areas (OECD, 1995). Especially in developing countries, establishing a niche market such as organic food production is often mentioned as a useful way to reduce poverty and encourage positive involvement of local populations in the global economy (OECD, 1995). A niche market established in a developing country can create wealth transfer from rich regions to poor regions. To do so however, a niche market requires effective governance and

¹⁰ Preserving biodiversity used to focus on natural ecosystems until recently. However, such preserved area covers less than 10% of the earth's surface. Thus, the effort has switched to taking care of agricultural land, which occupies 37% of the surface and therefore has many species interacting with that (Krug & Karcher, 2005).

good market strategies (OECD, 1995). Thus, producer networks (market arena), institutional networks (regulation arena) and consumer networks (Ilbery & Bowler, 1999) need to be well coordinated. Organic food production can be counted as one such niche market.

One of the other results of an established niche market in organic food production is the re-appreciation or re-evaluation of rural resources both physically and culturally since organic farming mobilises locally available resources (including knowledge) with fewer, or even no, external inputs. However, when it comes to certified organic food production in developing countries for exporting, international certification may require inputs not available locally¹¹. In this way, it is useful to examine how much the organic shrimp farming discussed in this dissertation relies on local resources and how effectively the local population can integrate into the global economy.

2.4.3 What makes seafood organic? – Defining organic seafood

Organic food (including beverages) is a rapidly growing industry, except in seafood. Unlike the rapid growth of the aquaculture sector in the world, with an annual growth rate of 9% since 1970, certified organic seafood only occupies 0.01% of the global market share (FAO, 2002). Several reasons for this lack of significant growth can be identified: (1) organic seafood does not have an agreed upon definition, so, (2) organic seafood certification systems have not yet become well established even in the US and the EU, (3) unlike agricultural products, over 90% of the world's farmed seafood is produced in developing countries.

The total amount of certified organic seafood globally in 2000 was estimated at 5,000 metric tons. It was 7,000 tons in 2007 (Franz, 2005) and then the figure jumped up to 50,000 tons in 2008. Although it sounds like a miscalculation of data, the market for labelled organic seafood in France alone grew 220% between 2007 and 2008 (European Commission, 2010). The fish products responding to this increasing market demand came mainly from European countries, and the output represented only 0.25% of the total farmed fish in Europe for the figure of 2000 (Scialabba & Hattam, 2002). The initiative for certified organic certification schemes was born in Europe, the current centre of certified organic seafood production and consumption. The movements occurred from two sides; consumers and producers. In Germany and Austria, organic farmers who raise carp as an extra income source sought a way to consolidate proper quality management and certification schemes. In the UK and Scandinavian countries, the increased concerns (mainly from environmental organizations) regarding the negative environmental impact of conventional salmon farming pushed the industry to consider sustainable operations (Bergleiter, 2008).

Private certification plays the main role in organic seafood certification unlike national organic certifications for land-based products. Many of the private organic certification agencies

¹¹ Organic Pangasius farming (catfish) certified by Naturland, the other case I observed in the Mekong Delta, requires certified organic fish meal imported from Israel.

build their standards based on the IFOAM Basic Standards (IBSs) but on a voluntary basis (Bergleiter, 2008). In the US, a federal advisory board approved the criteria for organic farmed fish at the end of 2008¹² (Eilperin & Black, 2008). One of the constraints to establishing organic seafood certification is the degree of controllability. Mansfield (2004) summarizes well the controversial issues in establishing organic seafood certification. The first debate is whether organic seafood and wild caught seafood are the same. Some of the opponents of organic seafood argue that farmed seafood cannot be more 'organic' than wild fish caught from pure water. On the other hand, advocates support that organic is a system of agriculture in which farmers are active agents (organic farming is space intentionally created between social and natural where organic food is produced).

The second debate is centered on soil as an essential aspect in organic food production in the first place (e.g., Reed, 2001). So the opponents argue that farmed aquatic animals cannot be organic as soil is not involved in the production sphere. This land-based organic notion leads to further discussion on the controllability or improvability of soil. In terms of this notion, to be organic, a product has to involve human control to create the hybrid space between society and the natural ecosystem. Open water cannot be controlled or improved by human efforts since it is a completely "external" (Mansfield, 2004, p. 224) environment and cannot be a hybrid space that exists between human society and the natural environment. Mansfield continues that water can be an "internal space" (p. 224), when it is contaminated by human activities but therefore not suitable for organic production.

2.4.4 Existing international certification for food in the global south

As the demand for organic food increases, the global north imports a greater portion from the global south. For example, the UK imports certified organic fresh fruits, vegetable, herbs and ingredients for drinks from developing countries (Barrett, Browne, Harris & Codoret, 2002). The question then is how certifications developed by the global north function in the global south. For example, in the EU, organic food certification is regulated by Regulation (EEC) 2092/91 and selling products as organic without proper certification is illegal. This thesis examines farmed organic shrimp certified through a German-based international organic certification scheme and its influence in local settings.

There are pros and cons for certification schemes being introduced into the seafood industry in developing countries. For example, developing countries seeking foreign investment or joint ventures may benefit from certification and eco-labelling programs (Deere, 1999). On the other hand, intensification of regulation is causing various difficulties for producers. However, compared

¹² According to it, among other basic standards, it allows organic fish farms to indicate organic label on their products when feed mix does not contain more than 25% wild fish and does not contain a forage species that's population has dramatically declined as the result of high demand for fish meal for aquaculture.

with agricultural products, the number of studies and reports on certified organic seafood products in the global south is limited. In this section, the potential constraints facing small-scale farmers in the global south in getting certified by international certifications is reviewed by introducing a certification scheme for capture fisheries, organic and fair-trade coffee schemes cases.

The case of capture fisheries

Out of several certification schemes established in capture fisheries (wild-caught) in the last decade, the most widely applied is the Marine Stewardship Council (MSC) which was initiated by WWF and Unilever in 1997. Besides commonly identified problems in capture fisheries (e.g., overfishing), WWF was also concerned with the inadequacy of governments' policies on the fisheries sector that have nothing to do with consumers (May et al., 2003).

Well-recognized international certification schemes for capture fisheries possibly bring following advantages in developing countries; increased market access, and upgraded and modernized fishery sectors as a consequence of standard compliance. Centered on internationally recognized certification schemes, capital investment or joint ventures with foreign companies are becoming common in the fisheries sector, as the demand for quality seafood grows and as importers want to ensure they can provide that quality (Thrane, Zieglerb & Sonessonb, 2009).

However, the MSC's standards put an emphasis on overexploitation in fishing while failing to evaluate the overall efficiency of fisheries in terms of energy consumption (Thrane et al., 2009). Fishing activities in developing countries, in many cases, are small-scale and employ low technology (indeed, they are energy efficient). The MSC scheme has been criticized for ignoring data insufficient fisheries -often small-scale fisheries in developing countries - since MSC's certification is accredited based on data obtained from ecological assessment or scientific estimation of impact (Deere, 1999). However, MSC has adopted the assessment scheme called "Risk Based Framework" for data insufficient fisheries including those in developing countries since 2009.

The case of agricultural certifications – coffee

So-called "specialty" coffees such as fair trade, organic, eco-friendly (with special care for birds, rain forest, biodiversity etc) and shade-grown coffee has become the most vigorously traded commodity among eco-labelled or socio-economic certification products (Bacon, 2008). At the same time, coffee is an export-led crop grown under specific climate conditions, mostly in developing countries and according to Oxfam (2001), 70% of the world's coffee is supplied by small-scale coffee farmers with less than 10 hectares in 80 countries in Africa, Asia and Latin America. Coffee prices on the international market are plagued with inconsistency. In the late 1990s to the early 2000s when the international coffee prices crashed, many small-scale coffee producers lost their lands or had to convert their coffee land to other crops. In this regard, socio-economic concerns have been

integrated into not only fair trade coffee certification but also other ecological certification schemes to mitigate the impact of fluctuating international coffee prices on producers. In some regions, fair trade and organic certification for coffee have been developed as interrelated (Dietsch & Philpott, 2008). In this sense, reviewing various certified coffee cases can offer insights into small-scale farmers' constraints, some of which are relevant to examining constraints in certification for seafood.

Fair trade coffee

Fair trade is a tool to alleviate poverty and enhance sustainable development for small-scale producers (FLO, 2009) through international market mechanisms. The unique feature of fair trade certification is, unlike most other food-related certifications which emphasise production processes (such as organic certification), its trade certifications for some special crops, including coffee, are only granted to small-scale producers (Bacon, 2008). The general definition of small-scale producers is that they are family-based operations, spend most of their production time on their own farms, cultivate the crop as a main income source and need collective marketing in order to access markets. To be qualified as small-scale producers in certain crop production areas¹³, using no structural hired labor is one qualification.

According to the Fairtrade Labelling Organizations, one of the requirements to participation in fair-trade programs is to form a producers' organization through which farmers can engage in market activities, and encourage community sustainable development socially, economically and environmentally (FLO, 2009). Therefore, the cost for fair trade certification is usually gathered in the form of a membership fee from each producer (Fox, 2007) and this collective certification will reduce the certification fee per household or per pound of coffee. Premium price is paid to the producers' organization rather than paid to individual farmers (Fox, 2007). The FLO standards also define the use of the premium money. It should be invested in social, economical and environmentally sustainable development of the organization for its members and their families as well as the surrounding communities (FLO, 2009). FLO does inspect the use of the premium during the annual inspection (Fox, 2007).

Organic coffee

More than 80% of fair trade coffee sold in the US is estimated to be also certified organic coffee. However, fair trade coffee is not necessarily grown organically and vice-versa. Indeed, producers are required to acquire two different certifications for these labels. While fair trade certification is especially focused on the trade process by securing the minimum price and long-term contracts for small-scale producers, organic certification focuses on inputs and production process

¹³ For crops including coffee, cocoa, herbs and spices, honey, nuts and oilseeds, quinoa, rice, seed cotton, soybeans and pulses

but puts no limits on farming scale and origin of inputs.

Conventionalization of organic food production has been called into question.

Conventionalization of organic food production is the process of organic food production gaining characteristics of conventional industrial agriculture while complying with organic food standards. “The institutionalization of organics via the creation of organic certification standards” (Constance et al., 2008, p. 209) has replaced the movement-oriented organics that were based on trust, ecological diversity and social justice, with market-oriented products centred on efficiency, competition and standards (Raynolds, 2004). The “transnational certification template”(p. 466), including the USDA’s National Organic Program (NOP) and EU 2092/91 organic standards, enables large-scale agri-business to enter the organic sector (Gomez Tovar et al., 2005).

According to Gomez Tovar et al. (2005), in Mexico, where the government has recognized certified organic agriculture as a short-term strategy to increase exporting and foreign currency earnings, large-scale farms invested in by US distributors are replacing indigenous peoples’ farms. The problematic aspects of industrial organic food production are around its energy consumption as well as its input intensive (and the use of off-farm inputs) and labour exploiting farming methods which partially conflict with IFOAM principles (De Wat & Verhoog, 2007). Large-scale organic food production profits from positive social and environmental image (built by small-scale low input farming using on-farm materials only) that attracts consumers (Gomez Tovar, 2005). The other contributing factor for this shift is the low conventional market prices that push large-scale producers to transfer to certified organic agriculture, especially in the North.

Impact of specialty coffee certification on small-scale producers

Coffee processing had been dominated by large multinational roasting companies and retailing is primarily limited to big supermarket chains. Oversupply in terms of volume and lack of coordination among producing countries encourage those large companies to set the market price (Oxfam, 2001). However, in the United States, fair traded coffee and organic coffee were originally introduced by small-scale roasting companies (Bacon, 2008). The direct trade between such roasters and cooperatives consisting of small-scale farmers pumps up the farm gate price and creates incentives for farmers’ cooperatives to increase coffee quality for higher prices. However, since farmers have to sell their coffee in multiple supply chains (as a small roaster cannot buy all their coffee), the average income is low (though, alternative markets chains reduce vulnerability to low conventional coffee prices) even if they sell a portion of their coffee to specialized coffee markets. Furthermore, payments from cooperatives come step by step, a bit at each point in the processing. The average time for full payment is 73 days for organic coffee (Bacon, 2008). Thus, to get immediate full payments, farmers sell their coffee to local middlemen who offer lower prices. Even though the demand for certified coffee has increased, the portion traded in the entire coffee market is

still small. Low demand and high quality assurance force certified fair trade cooperatives to sell 70% of their coffee in conventional marketing chains (Bacon, 2008). The same problem is identified in the case study introduced in Chapter 5.

This reviewing of international certification schemes, such as MSC and certifications for specialty coffee, identifies a number of relevant issues: 1) the involvement of states in setting conditions in which certain certification schemes can grow or be eliminated; 2) the new role of global buyers - the MSC case demonstrates the role of global buyers in establishing a certification scheme and the remaining control of global buyers in market; 3) constraints on certification schemes identified at pre-certification (due to cost and technical constraints) and post-certification (confusion in marketing chain and benefit sharing); 4) conventionalization of ethical certifications; 5) problems in application of conventional payment systems (unfair and late payment). While many of the issues listed above are relevant to the case study of this dissertation, not much of the available literature examines the influence of such international certification schemes in determining overall farm sector development trajectories of small-scale farmers and their communities.

2.5 Summary of this chapter

Centered on the transforming global agrofood market, this chapter provides, first, an overview of the transition of research focus in food studies, and second, a review of analytical concepts. The comparison between commodity chain and network concepts shows the relevance of using the latter in the modified global food commodity setting where non-physical attributes of food guaranteed by international certification have acquired more importance. This network approach is especially significant for the agrofood commodities that are largely responding to (Western country) consumer notions of socially and environmentally superior products (particular idea or practice throughout a network is an important analytical element in such commodities) (Raynolds, 2004). The concept of agrarian transition, especially the five trajectories, offers a useful analytical framework to identify the influences of international third-party certification on the rural South. The nature of third-party certification on food as one response to consumer demands for environmentally positive food implies that farm development trajectories can be modified by international private standards. More analysis on this point is made in later chapters. The history of organic farming also demonstrates the changing status of organic farming up to the present. This is then followed by the definition of organic farmed seafood. The literature review of some third-party certification schemes introduced in both the global north and south identified several analytical factors and issues to consider and incorporate into our analysis here.

Chapter 3 Research methodology

3.1 Case study approach and site selection

Standards and certification have become extremely important attributes for the global food industry. Yet the amount of the certified organic seafood traded at the international level is still limited despite the growing demand for certified seafood. The complicated nature of the certified organic shrimp production-supply network in Vietnam is a result of international market integration, the number of stakeholders and their different priorities, and local production settings. These conditions all point to a case study as an appropriate research approach. The case study, as a flexible approach rather than a research method (Hamel, Dufour & Fortin, 1993), allows researchers to include the contextual condition of a complex ongoing phenomenon into analysis such as organizational and managerial processes or international relations by using multiple information sources (i.e., triangulation) (Yin, 2003). The case study is used to investigate one or a few cases with the collection of large amounts of detailed information (Gomm, Hammersly & Foster, 2000). “A case” studied is expected to be unique, complex and particular (Stake, 1995). This can make the analysis of a case study particularly difficult as analytical strategies have not been pre-defined (Yin, 2003).

Several major limitations of relying on a single case study have been pointed out (Yin, 2003). First, it can provide little basis of scientific generalization since it does not follow systematic procedures. Second, the difficulty of replication and validation of the case study result. The direction of the findings and conclusion can be influenced by the researcher’s view if biased. Regardless of these limitations, case study approach is most suitable for this case since the case chosen in this dissertation is the first internationally certified organic shrimp program in Vietnam and the case is unique. In other words, the case study focused on in this dissertation is one of only a few cases and therefore the aim of this research was not generalization across many cases but a deep understanding of one specific case. Given the nature of alternative agrofood production which is based on diverse and unique characteristics, generalizations do not mean much but rather the narratives or pathways made to reach outcomes are important. The research site was chosen because it is the only ongoing household-operated certified organic shrimp farming area in Vietnam. The certified organic shrimp project is in Tam Giang commune, Nam Can district, Ca Mau Province (population 1.23 million), the southernmost Vietnamese province in the Lower Mekong Delta, 360 km from Ho Chi Minh City. Many provinces in the Lower Mekong Delta region are active in seafood farming, including An Giang Province, famous for farmed *Pangasius* (catfish) production¹⁴.

An inductive research approach, an research approach in which specific observation comes

¹⁴ In An Giang province, the first certified organic *Pangasius* farms have been launched in Vietnam. The researcher conducted some fieldwork on these sites as well.

first rather than starting with certain theories or hypothesis, was required for this research, due to the novelty of the organic shrimp project and lack of information available prior to field work. Some classic theories were examined and conceptual frameworks were explored in advance. For this reason, a “narrative approach” (Gomm et al., 2000, p. 3) was chosen as a primary research method. Narrative approaches offer an analytical lens for examining events or outcomes that can be reached by several paths, and investigation in the pathways is emphasized (Lewis-Beck, Bryman & Liao, 2004). As mentioned above, the aim of this research was not generalization but to investigate the pathways of the introduction and outcome of international certification of this particular case in rural Vietnam.

3.2 The secondary data collection

Literature review

A literature review of documents on organic shrimp project was the first approach employed. Availability of information was limited because the targeted organic shrimp project was still a pilot project and the market was small and exclusive to particular countries. The literature review in Chapter 4 addresses mainly two topics. One is Vietnamese institutional changes and farmers’ responses to such changes including, collectivization and post-collectivization, everyday politics of farmers in Vietnam, and the roles of cooperatives. The second is shrimp aquaculture including the Vietnamese shrimp industry and government policies, and environmental and social issues of shrimp farming.

In addition to this, several libraries and offices - including FAO Information Resource Center, Vietnam Development Information Center and the Ministry of Fisheries, all in Hanoi - were visited to collect region-specific publications in English. The fieldwork was supplemented by additional literature reviews to check accordance with legal statements and standards that appeared during the field work.

3.3 Primary data collection

Field work

The research was conducted in Vietnam from July 2007 to February 2008. The first two months were spent identifying the adequate research sites while based in Ho Chi Minh City. Some language courses were taken in this period, too, to assist in information gathering once in the field. Six months were then spent on the case study site in Ca Mau Province in the Lower Mekong Delta of Vietnam. A preliminary visit to the research site was made in September 2007, and the official authorization was arranged for conducting research as a foreigner. After research permission was

obtained, six months were spent at the research site. The research methods utilized during fieldwork are semi-structured, a survey and observations.

3.4 Sampling method

Stakeholders involved in the certified organic shrimp program were not pre-identified before the interviews began. For this reason, interviewees were identified using the snowball method in which the researcher starts with one or two contacts and asks them to introduce other relevant persons (Laws, Harper & Marcus, 2003). Interview and survey planning was designed to be holistic, in order to gather information from representatives from the household level, the central government level and up to the European private sector level, in order to draw a whole picture of the aquaculture industry, particularly the farmed shrimp industry in Vietnam.

Sampling for surveying shrimp farmers in the LNT 184 (administrative unit at the case study site: details in Chapter 5) required flexible methods due to the geographical conditions at the research site. Households were scattered in a mangrove forest which is divided by canals stretching in a meshed pattern (as shown in Figure 5.2). Candidate households were selected based on their certification status of the previous year (2006). Five to six households per day were the maximum number that could be surveyed, given the survey question length, the time required for transportation, and the challenges in making and confirming appointments with farmers who lack a fixed landline phone. Many households do not have electricity yet; cell phones are extremely popular but phone numbers were not obtainable. Back-up households were prepared in case nobody was home to complete a scheduled visit. If back-up households failed, I would then ask farmers to introduce other farmers in the neighbourhood. Seven hamlets and each farmer group were divided according to certification status (certified, inspected but not certified, not even inspected, and cancelled) based on the inspection result of the previous year (2006: IMO's 2006 inspection results), and were visited and interviewed. Due to geographical accessibility, the survey population for a day was first comprised of clustered households (but arranged to comprise different types of certification status) rather than ones randomly chosen.

Numbers of households interviewed for each category are 39 certified, 21 not proposed (farmers who were not nominated for certification assessment), and 10 suspended (once certified but due to minor non-conformity, the certificate has been withheld); in a total of 65 households owning 70 ponds out of 1,195 ponds at the study area (of which 632 ponds were in the certification program). However, when compared with the status that farmers believed they held (self-reporting), there is great confusion in the numbers for each category. Of note, then, is that many official certification statuses used for identifying households for surveying are different from what farmers think they are. This is why the number of households surveyed in each certification status was not as planned (see Chapter 5 for detailed description).

3.5 Interviews and survey

In addition to 65 shrimp farmers (70 ponds) who were surveyed, this research included semi-structured interviewing exploring a variety of subjects as follows.

Farmers:

- 4 high-stock density, conventional shrimp farmers in Ca Mau province
- 70 shrimp farmers operating in the LNT 184 (both certified and conventional)

Middlemen:

- 3 certified shrimp intermediaries operating in the LNT 184 (out of 26 certified intermediaries)

Shrimp processing company:

- 1 certified organic shrimp collect station head
- 1 vice-manager in the sales department

The LNT 184:

- 1 current director of the LNT 184
- 1 former director of the LNT 184
- 1 TK head (TK is one of administrative unit in the LNT 184)

DOFI (Ca Mau Provincial Fisheries Department):

- 1 vice-director of extension center

MOFI:

- 1 researcher at Research Institute of Aquaculture no.2 (RIA 2)

Inspection body (IMO):

- 1 projects coordinator in Vietnam (English speaker)
- 1 site inspection manager in the LNT 184 (moderate English speaker)
- 3 local inspectors on site (one semi-structured interview and several casual interviews)

Hatcheries:

- 2 local shrimp PL hatchery households

VASEP:

- 1 staff from economic department via e-mails and reports exclusively written for the researcher

Interpreters were used when interviewing respondents other than the two people indicated as English speakers above.

3.6 Specific research methodologies used in this case study

Survey interview with shrimp farmers

Interviewing, surveying and observation were carried out. A standard series of questions was asked of all the stakeholders in the certified organic shrimp production network to map out information and knowledge gap between stakeholders (triangulation). Shrimp farmer surveys were conducted in person for the following reasons: surveying by mail or on the phone does not work due to the geographical location and infrastructure conditions; difficulties in a filling-out style survey were expected due to the wide variety of respondents' education levels and, in relation to that, the intention of some of the questions seemed to be rather hard to understand when presented in writing only. With a questionnaire administered by an interviewer, a researcher can expect to have high response rates, have fewer "don't knows" and unanswered questions, be able to clarify the intention of each question, and be able to observe at the same time (Babbie, 1990). The survey questions can be found in Appendix B (a set of questions for certified organic farmers, a set for not-involved farmers and a set for cancelled farmers).

Survey questions sheets which I prepared were translated into Vietnamese in advance for the convenience of the interpreter and for submission to Vietnamese authorities for prior audit on contents. To ensure accuracy in translation, I and the interpreter went through all the answers at the end of each day.

Interviewing

Semi-structured interviews were used for individual subjects. To be able to concentrate on the conversation, the researcher used a digital recorder after being given permission from interviewees. Recording the interviews also increased the accuracy of the transcripts which were generated as soon as possible after the event. Observation (including taking photos and written explanation in accordance with what is recorded) can then increase the reliability of recorded interviews (Silverman, 2004).

Observations

While visiting shrimp farmers' households, the researcher would observe the field environment, transportation means and infrastructure such as materials used for housing and household appliances. Observation adds important information to interviews and surveys since it can check how what people say or think is reflected in their real behaviours (Laws et al., 2003). In this regard, information obtained from observation is another form of evidence in a case study (Yin, 2003). For example, the materials of interviewees' houses varied from small cabins with wood and palm leaves to concrete with nice tiles on walls, and gave indications of differences in economic

status.

3.7 Data analysis

Data from the surveys were coded in order to make frequency counts. Answers to open-ended questions were also coded according to the categories created by the researcher, while detailed information reported by respondents were saved as notes for further descriptions. Then those notes were categorized and coded. Microsoft Excel was used for statistical analysis and tabulations. Other data collected through interviews and document reviews were sorted into data files created for each research category (research questions) in order to understand the information and perceptions reported by various stakeholders on a given topic.

3.8 Research ethics

An informed consent statement translated into Vietnamese was presented and signed each time at the beginning of interviewing, except in the case of farmers. I did not ask farmers to sign informed consent statement documents since farmers may feel anxious about signing any documents. Instead, informed consent was explained orally at the beginning of the interviews and agreed to by the farmers.

3.9 Research limitations and logistics of official authorizations

The biggest research limitation was language. Since I do not speak adequate Vietnamese for conducting research, any interactions made with non-English-speaking people were handled through interpreters. Finding an interpreter in a rural area such as Ca Mau was very difficult. A few staff working for the provincial fisheries department gave the researcher language support and a researcher from Ho Chi Minh City administered the survey.

The legal arrangements for foreign researchers proved a second obstacle. My host institution in Vietnam was the University of Social Sciences and Humanities in Ho Chi Minh City, which helped me to acquire research permit (visa) as the first step. Conducting research as a foreign researcher in Vietnam requires a series of official arrangements from the top-down (Scott, Lloyd & Miller, 2006). Getting research permission in Ca Mau Province on the certified organic shrimp program was relatively easy though the processing time was long (about one and half months). There was no restriction or limitation on what to ask people or where to visit. In contrast, another case study done on *Pangasius* (catfish) production in An Giang Province in the Mekong Delta (this case is not discussed in this dissertation) required a longer and more complicated procedure to begin the research. Any visits intending to talk to people about *Pangasius* farming require official permission and needed to be accompanied by one or two people from the government, either Provincial Department of Fisheries or Provincial People's Committee. Furthermore, interview questions needed

to be checked by officials beforehand and questions judged as “sensitive” needed to be removed. For this reason, the research schedule had to be fixed a few weeks prior at the latest. This inflexibility made it difficult to deal with ideas that came up during interviewing or earlier stages in the research scheduled. These extra barriers were probably the result of a US-Vietnam catfish dumping dispute which had occurred not long before. Fortunately, I came to know a person working at the Ministry of Fisheries in Hanoi who was able to arrange an letter of authorization with the Ministry stamp on it. This letter worked as a “laissez-passer” throughout the research. Unlike the case in An Giang, in the Ca Mau shrimp case, officers checked questionnaire questions beforehand but aside from that, visiting and conducting interviews with shrimp farmers was not limited.

Chapter 4: Overview of political institutional changes and the shrimp industry in Vietnam

As has been discussed in chapter 2, the initial introduction and expansion of third-party certification partially relies on national policies. In addition, the potential roles of states in regulatory networks built around such certifications was discussed in the same chapter. Reflecting on this, this chapter offers an intensive literature review on Vietnam including the history and changes in institutional arrangements and policies on aquatic production. Furthermore, the review of the Vietnamese shrimp industry helps to identify the trajectories of agrarian transition within the Vietnamese shrimp industry.

4.1 Institutional changes and peasant studies in Vietnam

In order to understand the current fisheries management (including aquaculture) in Vietnam it is useful to examine institutional changes, especially as the case study area is managed by a state-owned enterprise. A collective production system was introduced in Vietnam in the late 1950s for at least two reasons: (1) intensification of food production and service provision under a well-managed system to mobilise troops for the war (Kleinen, 1999); and (2) consolidation of local militia through cooperatives (Kerkvliet, 2005). The spread of the policy was slow¹⁵ and the degree of infiltration differed from place to place. In the South, the policy wasn't truly implemented until the late 1970s, after North Vietnam took control of Saigon in 1975 (Kerkvliet, 2003). The production system shifted to household contracts within a cooperative framework in 1981 – collectivization was not completed due to this. Within those thirty years, until a series of economic “renovations” (doi moi) reforms began in 1986, thereby dismantling collectivization, the institution that governed food production in Vietnam was multi-faceted. The following section explains how peasants responded to each production scheme change.

4.1.1 Peasants' resistance and adaptation during the collectivization period

Vietnam is often called a top-down “Mono-Organizational Socialism” country (Thayer, 1995). It is true; Vietnam is managed by a single political party and the political system is bureaucratic. It makes sense, then, that the collectivized production system was supposed to be a top-down policy. In practice, however, peasants mobilized various resistance and adaptation strategies in their everyday practices. This is what Kerkvliet (2005) calls everyday politics in Vietnam. Collectivization improved farmers' lives at the beginning. Soon, however, the living conditions worsened, and farmers began to complain about unequal treatment in counting work points, assigning of works, and low price for products (Kerkvliet, 2003).

Table 4.1 shows the institutional changes and farmers' responses to each change.

¹⁵ Small labour exchange groups were upgraded to larger cooperatives gradually (Kleinen, 1999).

Table 4.1 Post-war institutional changes and farmers' everyday resistance in Vietnam

YEAR	HISTORICAL EVENTS AND INSTITUTIONAL CHANGE	FARMERS' EVERYDAY RESISTANCE
1945	The withdrawal of Japanese military The Declaration of Independence of the Democratic Republic of Vietnam in Hanoi	
1946 (~54)	The First Indochina War (also called the French Indochina War)	
1959 (~75)	The second Indochina War (Northern communist state vs South Vietnam's anti-communist allies)	
Late 1950s~	Collectivization in the North began	"Dragging their feet" attitude on the collective farms ¹⁶
1960	Collectivization accelerated in scale	
1975	Reunification of North and South Vietnam	Alternative production arrangement to collectivization were practiced widely ¹⁷ Land enclosure became significant ¹⁸
Late 1970s-	Reunification of the country Land reform in South began (collectivization) The government formed 1,286 cooperatives in the South→	Farmers in the South rejected collectivization and in result left at least 150,000 ha land fallow ¹⁹ Products were traded in black markets Only 137 cooperatives remained in the South
1981-	Contract production (Contract 100) system within collectivized agriculture frameworks began: Producers were given control over the surpluses exceeded certain production goal while the inputs such as seeds, fertilizer and insecticides, and irrigation system was provided collectively by cooperatives	Nearly all farming was done by individual through the 1980s to early 1990s Some operated illegal small businesses
1986-	Doi moi (economic renovation) began	
1988	Introduction of free market for inputs Land cultivation rights was given to households	
1989	Elimination of two-priced system	
1993	1993 Land Law- land became transferable	
1994	The end of US embargo	
1996	New cooperative law	New types of farmers' organization emerged including privatized and quasi-private company styles.

Sources: Kerkvliet, 1995, 2003 and 2005; Jerneck & Ha, 1995; Kolko, 1997; and Luong, 2003a, 2003b; Yanagisawa, 2000; Yanagisawa & Kono, 2001

¹⁶ Throughout collectivization and contract production period, people reported less production to avoid higher production quotas for next year (Kerkvliet, 2003).

¹⁷ Some collective officials were involved and profited from unofficial (i.e. out of collectivization scheme) households' contracts over pig raising and unofficial land loan to households for vegetable cultivation in low seasons. (Kerkvliet, 2003).

¹⁸ In one province, the data shows that such land was up to 13 percent of collective land (Kerkvliet, 2003).

¹⁹ This worsened food shortages in urban areas in the South in the late 1970s (Luong, 2003b).

Kerkvliet (2005) identified peasants' power sources in Vietnamese everyday politics as follows.

- Their labor: farmers were very important as the only production resource for the country's economy. Farmers had room to exercise their autonomy to some extent against collective officials;
- Other means of production: at the beginning of collectivization, the government knew that collectivization would not produce enough food, so they left some space for household farming;
- Indirect opposition: Many peasants all over the country opposed collectivization. Because the behavior was non-confrontational and leaderless, it was indirect and none were arrested.
- Loose governance: although local officials knew of the spread of resistance, they did not have resources to disable it. In addition, they were not so faithful to the central government. Some local officials enhanced family farming and supplied agricultural inputs from black markets (Kerkvliet, 2005).

Collective farming in Vietnam was undermined by peasants' everyday practices, and the loose management of the cooperative systems allowed it. Kerkvliet (2005) named the period between 1974 and 1981, "collapsing from within" (p. 143).

4.1.2 Post-decollectivization - peasants' new challenges

Social disparities

It is often said that during the pre-doi moi period, Vietnam was a relatively equal society. Income within a community was relatively equal in the North under collective farming (Luong, 2003). Kolko (1997) argued that whatever the productive efficiency was, cooperatives after 1959 provided social insurance to support soldiers and their families. Poorer households in central and northern regions supported cooperatives for this reason.

The land allocation process (decollectivization) in the late 1980s, in which the land was returned to the owners of pre-1978, subsequently gave rise to landlessness. At this time, the percentages of landless households in rural areas on the Mekong Delta increased from 16.9% in 1992-93 to 21.3% in 1998, and around Ho Chi Minh City from 21.3% to 28.7% (Vietnam and World Bank, 1997 cited in Luong, 2003) although the percentage of landless households in central coast areas declined due to egalitarian land distribution policies (Luong, 2003a). In the North, cadres in many villages distributed the fertile land to their families (Luong, 2003a) and this invited social turmoil where neighbours quarrelled. Scott (2000) points out that the privatization of land contradicted with traditional land use rights and led to conflicts between different groups.

Decollectivization degraded social safety nets by accelerating debt accumulation. For example, with respect to debts accumulated from family members' sickness, formal loans in 1990s, or from poor harvest, the 1993 Land Law created a land market and encouraged poor peasants to

dispose of their land to pay back debts (Akram-Lodhi, 2005). Some scholars claim that this has led to a small number of rich peasants with relatively large landholdings and a substantial wage-labour working class with little or no land (Luong, 2003). In other words, a polarized agrarian class structure evolved (bourgeoisie and proletariat) which is one of the significant features of the commoditization processes in agrarian transition (Atkins & Bowler, 2001). In addition, the end of the US embargo on Vietnam in 1994 hastened regional disparities²⁰ due to uneven distribution of direct foreign investment²¹.

Market integration

Vietnamese peasants' lives are affected by both domestic institutional changes and also connections to global market. For rural small-scale producers, integration into the world food market is perhaps the biggest challenge. In many places where farmers produce commodities for export, people are affected by unpredictable international market trends²² (Luong, 2003a). In addition, this export-led economy invited abuse into national food security. For example, the large amount of rice exported to China²³, where the price is up to 30% more than in the domestic market, caused a scarcity and higher domestic price in Vietnam. This is the typical way in which a state loses control of its staple food market.

Another issue in Southeast Asia is the emergence of modern marketing chains such as supermarkets. Cadilhon, Moustier, Poole, Tam and Fearn (2006) made a comparison between traditional and modern vegetable markets in Ho Chi Minh City. Although this study suggests both positive and negative impacts of supermarkets on small-scale farmers, it indicates the tendency to exclude small-scale producers, since modern markets demand higher quality regularly. Modernization of conventional wet markets is also a common phenomenon across Southeast Asian (Cadilhon et al., 2006).

Not only did more choice open up marketing channels, but choice in the type of produce to grow became an issue as well. For example, the emergence of a market for so called "clean vegetables": Son, Thai, and Moustier (2003) analysed the marketing channel for safe vegetables and concluded that even though the demand for safe vegetables is increasing, farmers have difficulties selling their products due to poorly managed distribution channels and lack of consumer confidence in distinguishing the products at markets. Farmers also face the challenge of integration into the

²⁰ Scott and Truong (2004) discusses how social capital (ethnicities) and political capital (The North over the South) worsened regional disparities in the process of the renovation in Vietnam.

²¹ Vietnam attracted investors for its expected growth heading towards a capitalist economy (Luong, 2003b).

²² Coffee widely cultivated in the Central Highlands is a typical export-led crop.

²³ The rice exporting began in 1988. Kolko (1997) reported that rice exports grew approximately 10% a year from 1989 to 1995, and exports were 12.4% of the entire production in 1995. Most of such rice is sent to China, and large rice production provinces simply ship rice to China, and this includes illegal shipments.

global market through export-led commodities such as shrimp and fruits that are supposed to bring higher benefits but that have higher standards attached as well.

4.1.3 New livelihood strategies

In Vietnam, most farmers operate on a small-scale. For these farmers, collective actions are often the option to overcoming various constraints. For example, by organizing producers' groups, small scale farmers can provide larger amounts of products to give them an advantage in negotiating with traders, they can get easier access to market information, and it is easier to arrange a smooth flow of inputs such as fertilizer (e.g., Le Thi Phi, Duong, Quang & Vang, 2004; Nguyen Minh Chau, Wei, Vo The Truyen, Rankin & Russel, 2003).

The estimated number of informal producer groups in agricultural and industrial sectors in Vietnam in 2002 was 26,000, an increase from 10,000 in 1998 (CIEM, 2006). Under the 1997 Law on Cooperatives, the possibility for the emergence of new cooperatives as autonomous economic organizations was enhanced (Yanagisawa & Kono, 2000). There were about 15,000 agricultural cooperatives legally registered as of 2006. That 15,000 comprises both cooperatives transformed from ones that were formed during the collectivization period, and new cooperatives, which were formed after the 1997 Cooperative Law. The collective organizations that survived took on some new roles that were not a part of their cooperatives before (Jerneck & Ha, 1995). Many of the new cooperatives emerging are specialized cooperatives that focus on particular commodities, including aquaculture, fruits, and 'fresh and safe' vegetables (CIEM, 2006). In addition, traditional, community-based natural resource management groups that were once abandoned, discarded, or had their authority reduced due to the collectivization policy were revived when the state weakened its control in the 1980s and 1990s (Adger, 2003b). The government began to recognize these groups as effective ways to manage local fisheries (Ruddle, 1998).

This section reviewed the institutional changes during the Vietnamese transformation from collectivization to decollectivization. It revealed that peasants had adapted to changes to some degree with some autonomous behavior. However, decollectivization has brought new challenges and opportunities, in particular with market integration through diversified crops. Plus, export-led crops such as coffee and shrimp provided ways for farmers to connect to the international markets and to compete with other countries. In the following section, institutional settings specific to fisheries and aquaculture and challenges for small-scale farmers are described.

4.2 Legal frameworks of the Vietnamese aquaculture sector

Given the capture fisheries situation illustrated above, aquaculture has become an alternative to satisfying the growing demand for seafood from inside and outside of Vietnam (Figure 4.1, Figure 4.2 and Figure 4.3). Since about 2001-2002, the output value of farmed products has

exceeded that of capture fisheries (Figure 4.3). Aquaculture is seen as more than an industry to produce food in response to market demands. Aquaculture in Vietnam is also expected to contribute to the country in the following ways: create improvements in diet, increase exports, create jobs and help with rural development (Vinh, 2006).

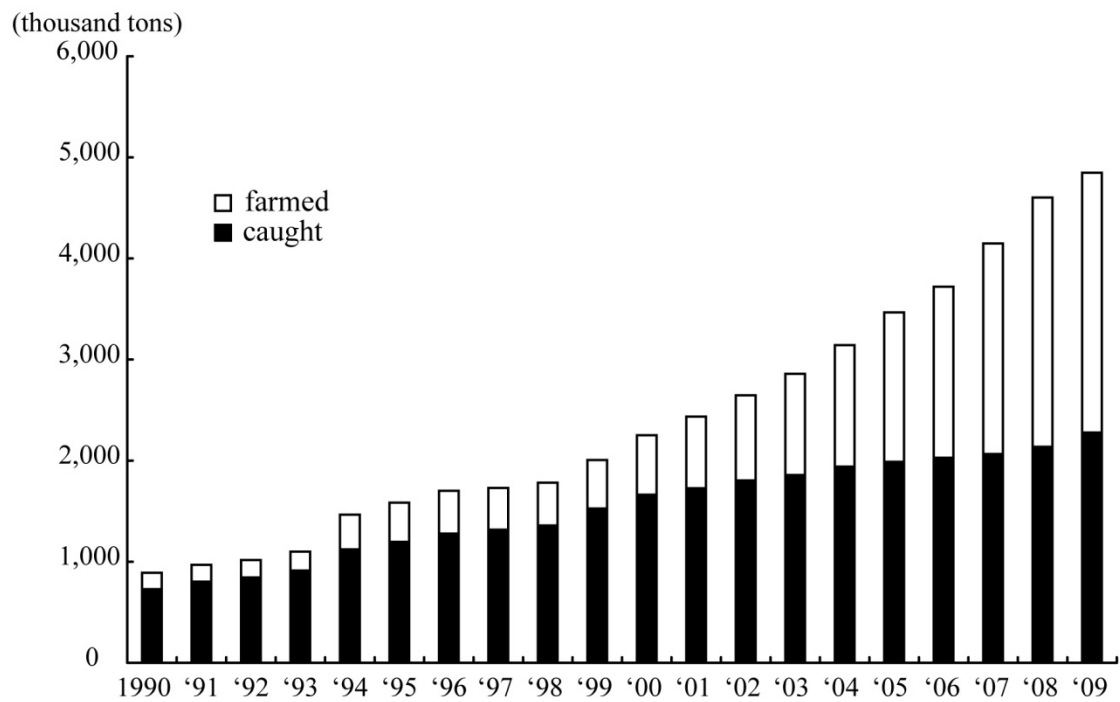


Figure 4.1 Production of aquatic products of Vietnam

source: GSO, 2009

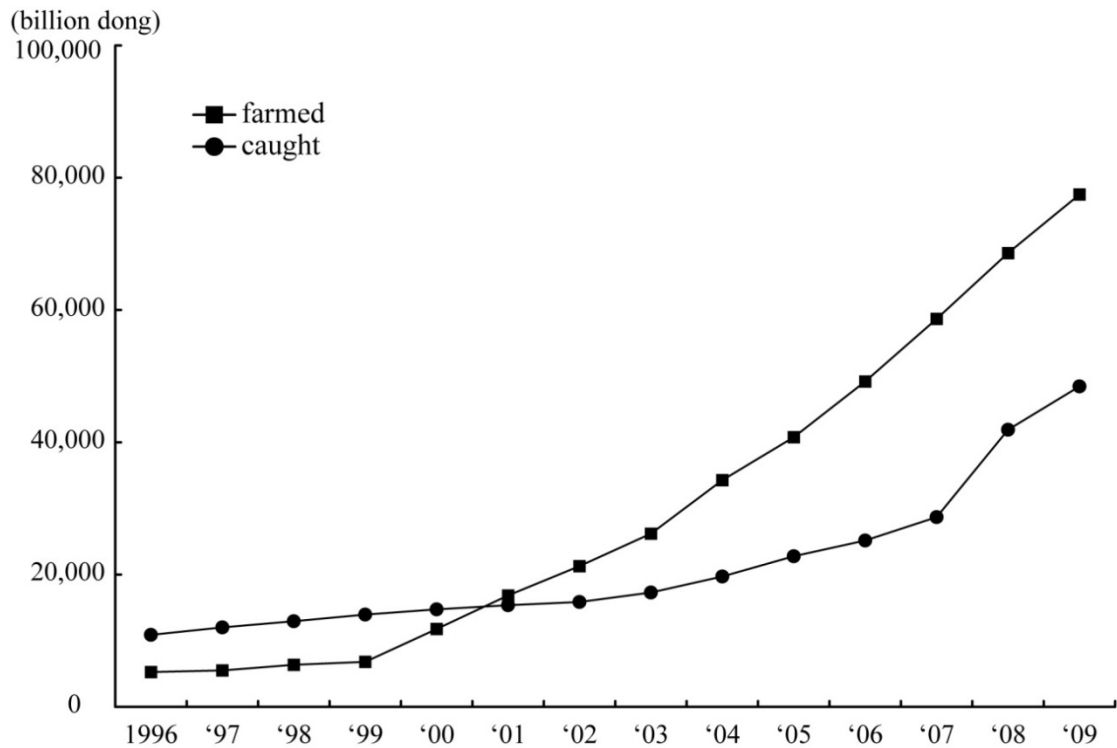


Figure 4.2 Output value of aquatic product of Vietnam

source: GSO, 2009

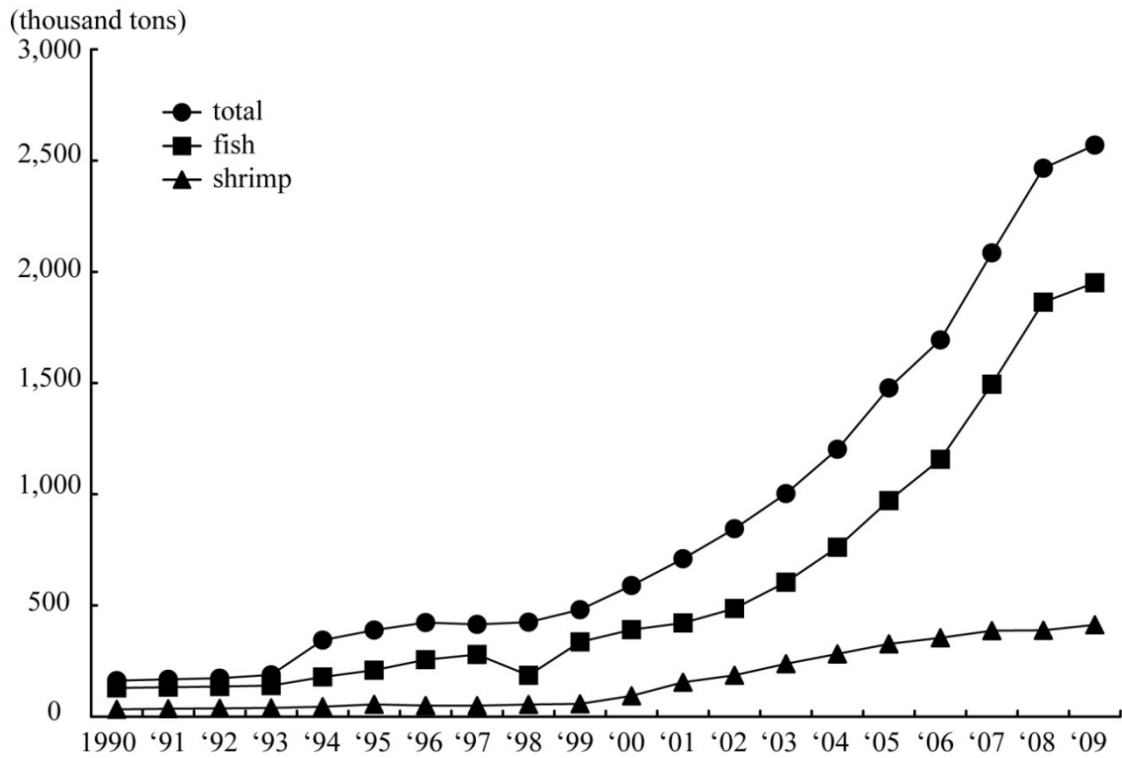


Figure 4.3 Production of farmed aquatic products of Vietnam

source: GSO, 2009

About 1.39% of the rural population is engaged in aquaculture activities (1.04% of the whole populations) and from 1998 to 2002, the number of people working in the industry rose by about 8.13% annually (Vinh, 2006).

Vietnamese administrative structure around fisheries underwent large reforms in 2008. The Ministry of Fisheries merged into the Ministry of Agriculture and Rural Development (MARD) which was established in 1995 as a conglomerate of the Ministry of Agriculture and Food Industry, the Ministry of Forestry, and the Ministry of Irrigation, the Ministry of Fisheries (MARD, <http://xttmnew.agroviet.gov.vn/TestE/AboutMARD/History.asp>). The division of aquaculture belongs to the Fisheries Extension Center under the Ministry of Fisheries (Figure 4.4) however the case study shrimp farms (indicated as “the case study farms” in Figure 4.4) are managed under the division of Forest Development and Forest Protection and Management, both of which belong to DARD. This is because the site where the shrimp farms are has been managed for the purpose of mangrove forest restoration and shrimp farming is a livelihood activity for farmers who are under contract with a state owned forestry enterprise. The details are explained in chapter 5.

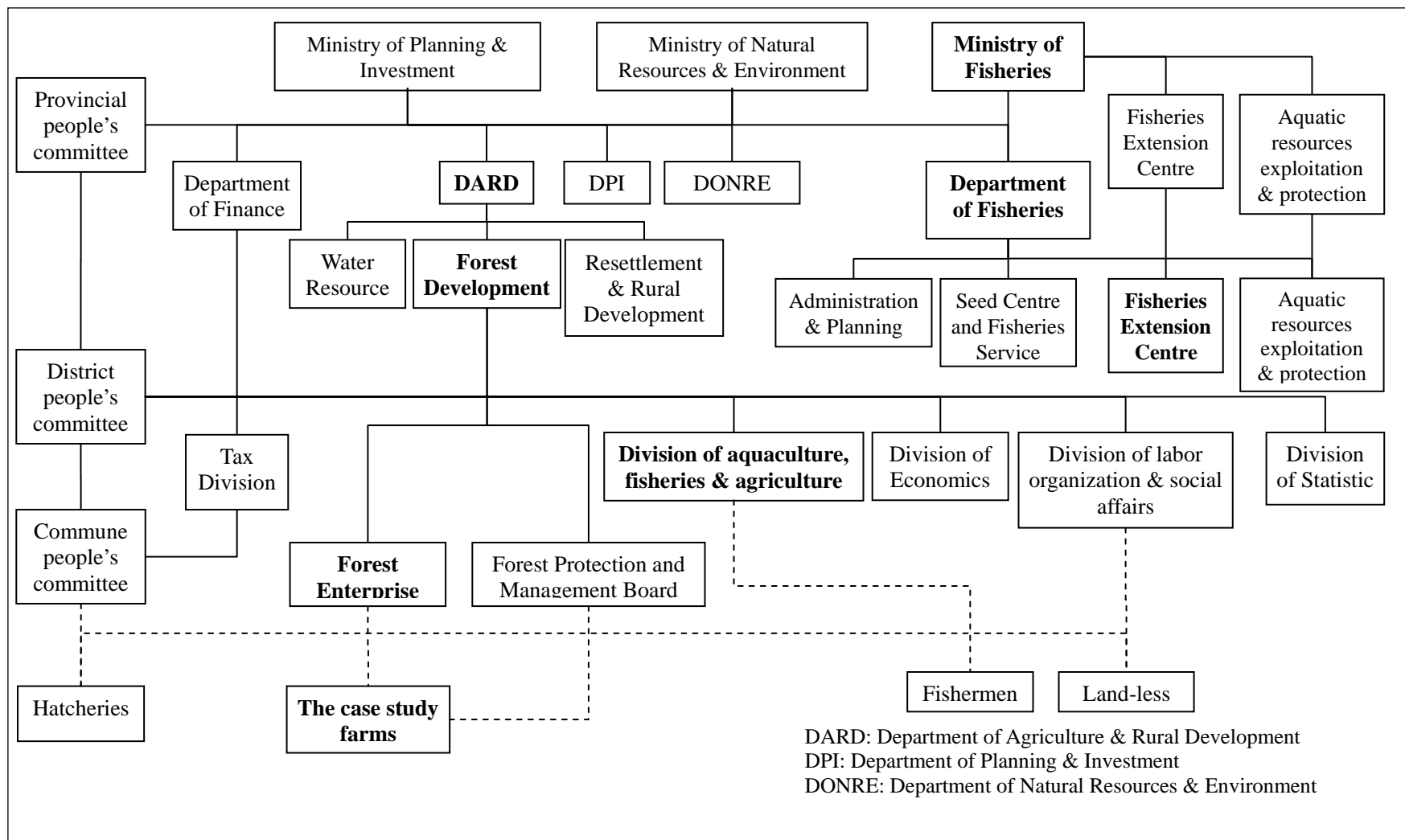


Figure 4.4 The institutional arrangement for coastal aquaculture/forestry planning

source: SUMA, 2004

The role and aim of the Ministry of Fisheries in aquaculture development

The Ministry of Fisheries—currently a part of Ministry of Agriculture and Rural Development since 2008 when the Ministry of Fisheries was merged—developed a regular master plan for all fisheries (including aquaculture) projects. The one published in 1997 describes fisheries development projects until the year 2010. The master plan emphasized following macro-level objectives for entire fisheries sector in Vietnam (Institute for Fisheries Economics and Planning, 1997, P.1, section 2). These objectives were:

- Maximizing the sustainable contribution of fisheries to national economic and social development, including social stability and national security.
- Maximizing employment and improving the incomes and living standards of rural communities dependent on fisheries for their livelihood and sustenance.
- Improving the nutritional standards of the population by increasing the supply of aquatic products to domestic markets and improving people's access to aquatic products.
- Ensuring that all fisheries and fishery related activities are sustainable for this and future generations to continue benefiting from fisheries.
- Increasing the export of aquatic products and the net foreign exchange earnings that may derive from such exports.
- Accelerating modernization and industrialization of the fisheries sector and its associated industries to improve the economic and financial efficiency of the sector and to establish and maintain comparative advantages.
- Adapting an outward-oriented industry environment to fully integrate Vietnam's fishing industries into the economic systems of the region and the world. This includes the adaptation to and compliance with regional and international fisheries -related agreements and provisions that are in existence and that might be approved from time to time.

The role of the People's Committees in aquaculture development

People's Committees at each level (province, district and commune) are the base administrative units in Vietnam. They have authority over demographic information, registration of land use, and taxation in general. The primary role of the Provincial People's Committee (PPC) in coastal aquaculture development is approval²⁴ of the aquaculture plan made mainly by Department of Fisheries at the provincial level (DOFI). However, the targets and goals are given by PPC and the Ministry of Fisheries (MOFI). The district People's Committee is involved in the planning processes.

The gross contribution of the fisheries sector to the national economy was estimated at US \$700 million in 1996, a 512% increase from 1990. The master plan anticipated the fisheries sector

²⁴ Department of Finance, DARD, Department of Planning & Investment and Department of Natural Resource & Environment are members of the approving board.

growth in 2005 as US \$ 1.6 billion and US \$ 2.5 billion in 2010. In order to achieve this growth, the government realized a need for legal and administrative reform in the fisheries sector, especially in the market-oriented economy. At the time this master plan was published, the Vietnamese fisheries sector had already been experiencing administrative structural changes over the previous decade. These reforms followed an open-market economy plan yet stayed within a socialism framework (Institute for Fisheries Economics and Planning, 1997). Since then, not only the structural changes but also the shift in strategies in aquaculture development have been observed everywhere in Vietnam.

In aquaculture, the government has realized the importance of efficient and sustainable farming operations. According to a Prime Minister's decision (Decision 224/QD-TTg, 1999), directive principles for development in the period of 1999-2010 are:

- Develop aquaculture in a sustainable way in terms of environmental protection, stable production and people's livelihoods.
- Modernize aquaculture techniques based on a combination of industrial and local methods.
- Focus on brackish water and marine aquaculture at the same time as freshwater farming development.
- Reshape shrimp aquaculture for export and expand other aquaculture for domestic and export markets (Tran Van Nhung et al., 2006).

Shrimp aquaculture has been set as the prime objective in the Vietnamese aquaculture sector. Since the 1990s, by modifying the legal framework around shrimp aquaculture, the government has been encouraging shrimp aquaculture development (Tran Van Nhung, Trinh Quang Tu, Bui Thi Thu Ha, Tran Thi Anh Nguyet & Pham Thi Minh Tam, 2003). This encouragement has been especially strengthened by resolution 09/NQ-CP, issued in 2000, allowing farmers to convert coastal saline agricultural land (mainly rice paddy) into shrimp ponds (Tran Van Nhung et al., 2006). The statistics for the area of ocean and brackish water dedicated to shrimp aquaculture show the vast changes since 2000 (Figure 4.5). For the whole country, after 2000, the area of rice paddy declined and the area for aquaculture increased gradually (Figure 4.6).

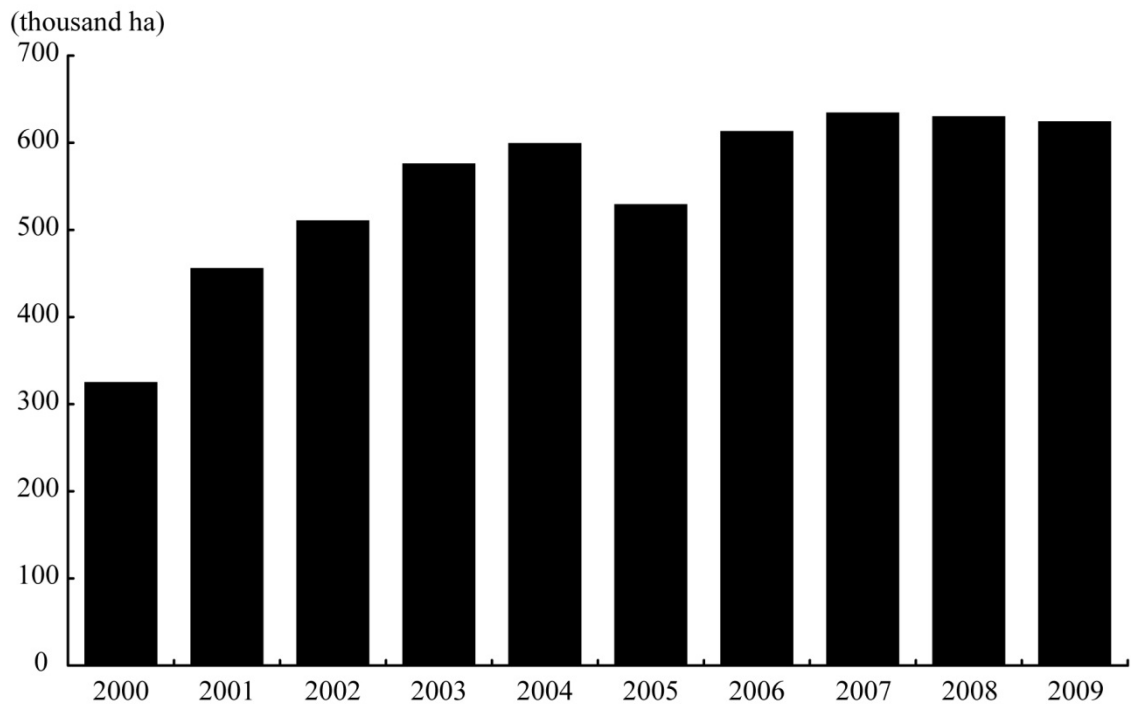


Figure 4.5 The area of shrimp aquaculture (ocean and blackish water) in Vietnam

source: GSO, 2009

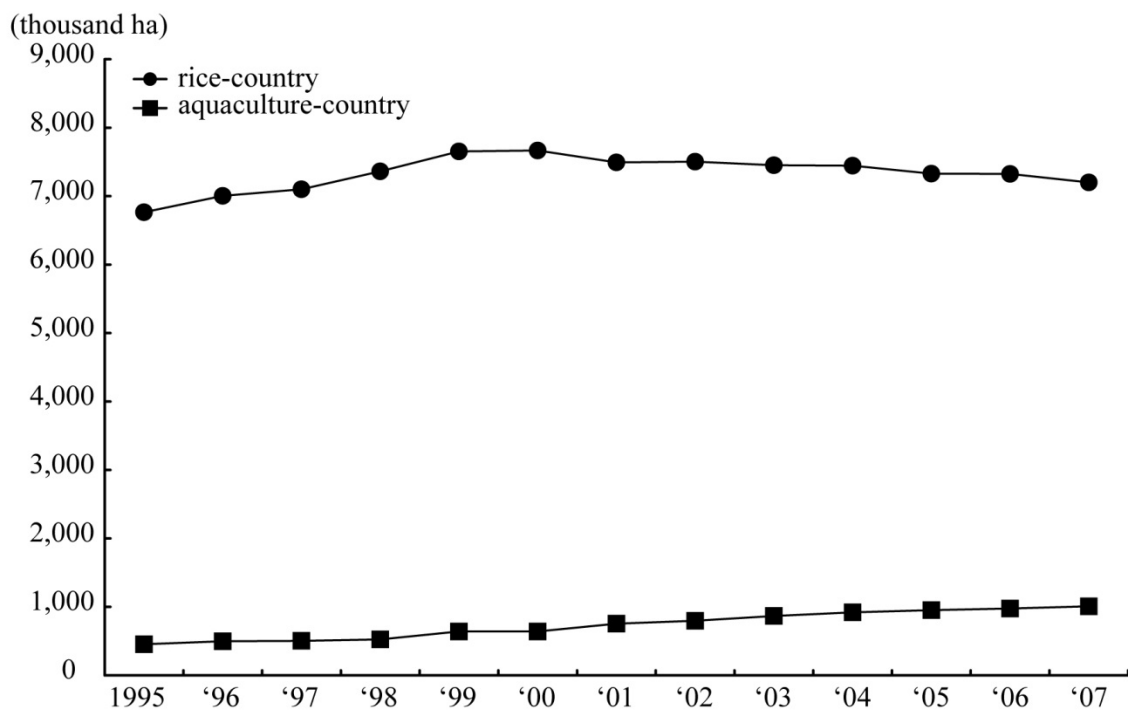


Figure 4.6 Country rice paddy and aquaculture area use changes

source: GSO, 2009

According to a Ministry of Fisheries report (2001, referred in Tran Van Nhuong et al., 2006), out of 235,000 ha of increase made between 2000 and 2001, 232,000 ha have been converted from rice paddies; 1,900 ha from saltpans, and 1,200 ha from mangrove forest. In addition, 26,000 ha of 136,000 ha of mangrove forest in Vietnam were being used for shrimp – forest farming in 2003 (Tran Van Nhuong et al., 2006) which is a method used in the case study discussed in the chapter 5. The following table (Table 4.2) summarizes the policies around aquaculture development in Vietnam (based on Tran Van Nhuong et al. (2006) with additional sources listed).

Table 4.2 The summary of policies around aquaculture development in Vietnam

Year	Policies
1999	<ul style="list-style-type: none"> • 85/ND-CP²⁵ - resolution that allows the allocation of land and various water surface including gulf, marshes, lagoons and lakes, to individuals and non-individual organizations for use in stable and long-term aquaculture development purpose. • 224/QD-TTg, - principles for aquaculture development for the period of 1999-2010.
2000	<ul style="list-style-type: none"> • 09/NQ-CP- a resolution that allows farmers with low productivity agricultural land, saline land and salt pans to convert their land into aquaculture.
2001	<ul style="list-style-type: none"> • Vietnam-US bilateral Trade Agreement- boost seafood exports to the US. • The Sustainable Aquaculture Development for Poverty Alleviation Strategy (SAPA) has been launched by Ministry of Fisheries.
2002	<ul style="list-style-type: none"> • The Comprehensive Poverty Reduction and Growth Strategy- sets aquaculture as one of principle measures to alleviate poverty by diversifying aquaculture which diversifies rural economy as a result²⁶.

Quality control in aquaculture

Fulfilling food safety standards set by importing countries, including the EU, the US, and Japan, is one of the biggest challenges for the Vietnamese fisheries industry (The Ministry of Fisheries of Vietnam & The World Bank, 2005). A key constraint for the Vietnamese seafood sector are products returned from importing countries due to failure to meet quality standards. In the aquaculture sector, the problem of contamination (e.g., antibiotics and hygiene) in seafood products encouraged the adoption of food safety management and standards, including HACCP. The latter is now becoming common across Vietnam, to help prevent contamination and if incidents do happen, the source of contamination can be identified.

²⁵ In the case of forestry management, with this Resolution, residential, agricultural land and garden area of households and forest area that is not able to be managed efficiently by State Forest Enterprise are allocated to individuals or organizations via local authorities in accordance with additional decrees such as Decree 64/CP of 27 September 1993, Decree 85/ND-CP of 28 August 1999 and Decree 163/ND-CP of 16 November 1999 by the Government (Ministry of Agriculture and Rural Development / Ministry of Finance, 2000).

²⁶ As for the whole country, aquaculture is important for high and stable economic growth which is believed to be necessary to reduce the rate of poverty. The government's policies will encourage the intensive aquaculture with advanced technologies. Diversifying aquaculture by expanding specialized shrimp and fish area, or integrating shrimp-rice and fish-rice areas will improve living standards (The Socialist Republic of Vietnam, 2003).

The Viet Nam National Fisheries Assurance and Veterinary Association (NAFIQUAVED) was established in August 2003 to replace the National Fisheries Inspection and Quality Assurance Centre (NAFIQUACEN). The NAFIQUAVED is the authorized agency responsible for seafood quality control for exporting and, in many cases, certifies domestic exporters for qualified quality control including facility hygiene and residues in the products. It also works as a contact with seafood quality agencies from foreign importing countries and negotiates on quality assurance. There were about 200 seafood processing companies in Vietnam (reported in FAO, 2005) and 61²⁷ exporters and processors have obtained the EU certification to export products to EU countries. In addition, 70 to 80 processing factories have obtained HACCP certification.

The Vietnam Association of Seafood Exporters and Producers (VASEP) was established in 1998 to promote seafood production and marketing. The association provides market information to members, acts as a bridge between business partners domestically and internationally, seeks new market opportunities, and consults on the implementation of international standards such as HACCP, ISO, HALAL and SQF. The VASEP works closely with the NAFIQUAVED to ensure the detailed standards for export seafood products are met.

Returned products are a big cost for processing and exporting companies. To reduce the risk, several seafood processing/exporting companies have formed their own production groups through which production methods and inputs can be controlled and monitored. The following is an example.

Agifish Pure Pangasius Union (APPU)

An Giang Province in the Lower Mekong Delta is the biggest farmed-Pangasius producing province. The An Giang Fisheries Import and Export Company (Agifish), one of biggest processing-exporting companies in the Mekong Delta, mainly processes Pangasius products. The Pangasius industry in Vietnam faces problems of uncontrolled use of fertilizers, pesticides (from neighbouring farms) and other chemicals which can remain in fish flesh.

Traditionally, fish trading between farmers and processing companies is arranged just before harvest and it requires a fish quality check and price negotiation each time. In this traditional system, processing companies face challenges determining quality and quantity beforehand, and mitigating the risk of chemical residues from given inputs, including feed that farmers use, are not within their reach of control. To reduce risks and increase efficiency, Agifish established a production union called APPU which currently has 32 official member farmers and 18 reserved members (Agifish, interview, January 11, 2008). The uniqueness of the union is that it also includes every input provider in the production chain such as feed companies, chemical companies, hatcheries and the processing company. Member farmers can benefit from a fixed price that is higher

²⁷ An increase from 27 in 1998 (FAO, 2005)

than conventional trading, quality feed supply and information supply about disease bursts and appropriate treatments. In return, the processing company is assured of fish quality and quantity delivered on time. This is one branding strategy to increase the value of products for processing companies. To be a member, farmers need to acquire SQF certification which costs up to one hundred \$US and pay an annual inspection fee. This means farmers who cannot afford to upgrade their production facilities to meet certification or to pay the certification fee cannot be integrated into this kind of production group. At the same time production scales need to be large to reduce the cost per portion of fish. Forming such private production groups is becoming popular in the An Giang Pangasius industry. As one interviewed farmer said, “I am trying to contact one of the processing companies to become a production member. If this is not successful, we need to quit fish farming since the conventional price is too low.” (field note)

The review above offers an insight into how important the aquaculture sector is for Vietnam in terms of revenue from exporting and number of people engaged. The master plan and policies around fisheries and aquaculture imply that the government puts emphasis on maximization of use of resources and benefit and expansion of farming area with some awareness on sustainability. These show that the mainstream of the sector is interpreted as intensification in agrarian transition concept. Furthermore, the example of the pangasius production union suggests consolidation of farm areas by powerful large-scale producers. The following section reviews the shrimp industry in Vietnam.

4.3 Vietnamese shrimp industry

Vietnam's 3,260 km of coastline and its vast inland water surface of 660,00ha is repeatedly emphasized in the literature on fisheries and aquaculture in Vietnam to show how perfect the land is for the fishing industry. With 714 villages in 28 coastal provinces and cities, the population living in tidal areas is estimated at more than four million with another one million around swamps and lagoons (Lem, Tietze, Ruckes & Anrooy, 2004). Overall, more than 12 million households are engaged in fisheries and aquaculture activities (Lem et al., 2004). The fisheries sector (including aquaculture) in Vietnam began to develop in the early 1980s with policies on market system improvements, export promotions and improvement of product values. The sector is expected to contribute to GDP, national export growth (indeed, improvement of product values is one of the targets) and job creation (Lem et al., 2004). In 2006, the fishery sector contributed 6.1% to the GDP and export revenue was \$3.4 billion. The production value in VN dong was about 16,145 billion (about US\$777million in 2011 value²⁸) in 1996 and increased to 125,936 billion (about US\$ 6,067 million in 2011 value in 2009 (Figure 4.7). The export value of aquatic products has also grown dramatically (Figure 4.8); the export value in US dollars in 1995 was 621 million and increased to

²⁸ 1US\$=20,754.99959 dong (2011/08/21)

4251 million in 2009. Agriculture, forestry and fishing in total account for 38.74% (making them the largest sector) of gross domestic products of the country. The output value of agriculture in 2009 was 410,138 billion dong and fishing accounted for 125,930 billion dong including 77,480 billion dong generated from aquaculture activities (GSO, 2009).

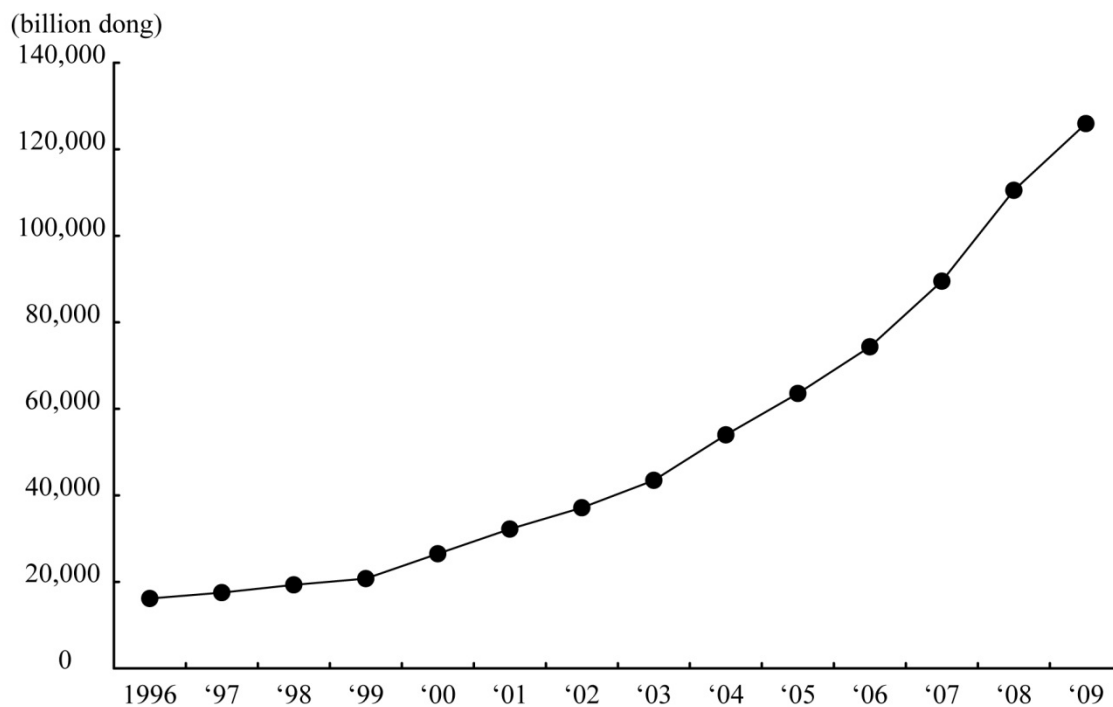


Figure 4.7 Vietnamese aquatic production (both capture fishery and aquaculture) value at current prices

source: GSO, 2009

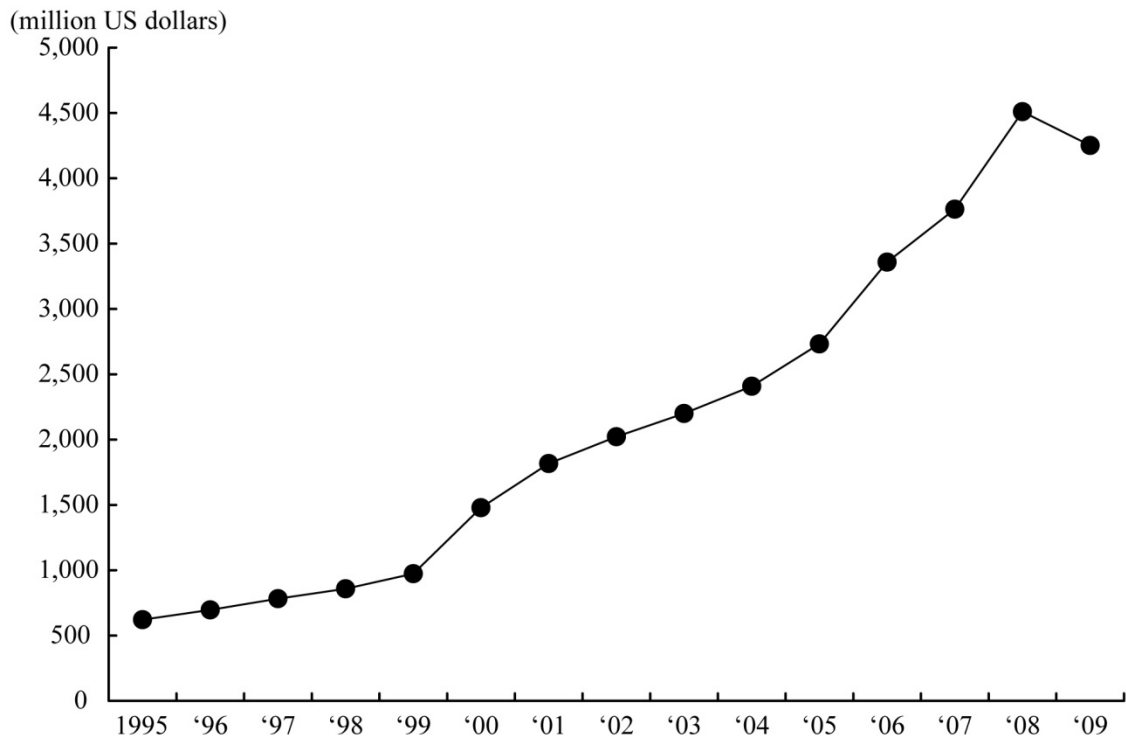


Figure 4.8 Vietnamese aquatic products export value

source: GSO, 2009

However, given the fact that resources closer to the shore were already over-exploited with small fleets, the government limited construction of vessels smaller than 20 hp in 1997. In the following year, construction of small vessels was completely banned. The government hoped to encourage the construction of larger vessels, which can utilize unexplored offshore seafood resources, by offering a subsidized interest scheme (The Ministry of Fisheries of Vietnam & The World Bank, 2005). Yet even though the number of large vessels has increased and the number of smaller vessels has decreased statistically, in practice, people fish inshore with large vessels or simply do not register their new small vessels (The Ministry of Fisheries of Vietnam & The World Bank, 2005). Offshore fishing accounts for 34-40% of total capture fisheries (USDA Foreign Agricultural Service, 2007). The Vietnamese government promotes aquaculture development as an alternative to capture fisheries. For example, in 2006, the total aquatic production increased about 7% while aquaculture production increased 14.8% (USDA Foreign Agricultural Service, 2007). Shrimp farming in particular is one of most emphasized industries in the country.

4.3.1 The History and the growth

Although the early days of shrimp farming in Vietnam can be traced back over 100 years and extensive shrimp farming was practiced before the 1970s (Tran Van Nhung et al., 2006), the

real expansion of shrimp farming for exporting began after 1987 with the *doi moi* policy (a series of economic renovations). In 2000, government resolution No. 09/2000/NQ-CP enhanced the expansion by allowing farmers to convert low-productivity coastal saline paddy field into shrimp ponds (Raux, Bailly & Nhuong, 2006) (Figure 4.9). Although technological innovation led many Asian coastal nations to a boom in industrialized (export-led) shrimp farming in the 1980s (Hall, 2004), Vietnam was one step behind, and upgrading in terms of production systems and technologies was been very slow to spread. Thus until the mid-1990s, much of the increase in production was due to total area expansion rather than intensification of farming (Lebel et al., 2002). The shrimp farming area in 2000 was 235,497 ha. It increased to 546,757 in 2003 (Tran Van Nhuong et al., 2006). In the past decade, the Vietnamese shrimp industry has entered into the intensive farming phase which was experienced in other shrimp producing countries such as Thailand in the 1980s. (Lebel et al., 2002). The share of Vietnamese shrimp export in the world market was 3.8% in 1990. However, it increased to 11.9% by 2002 while the share of Southeast Asia in the world market as a region stayed the same (45.4% in 1990 and 47.8% in 2002) (Cai & Leung, 2006).

In the shrimp industry one of the necessities to transfer from extensive to intensive farming methods is hatchery development. In Vietnam, artificial black tiger shrimp post larvae (PL) production (a hatchery technology) was introduced in the early 1980s in Nha Trang, Khanh Hoa Province. The number of hatcheries increased from five in 1984 to 5,017 in 2003 (Tran Van Nhuong et al., 2006). Furthermore, shrimp production for exporting became a national project when Decree 347-CT was proclaimed in 1987 (Raux et al., 2006). Farmed shrimp as an export commodity has become one of the most important products in Vietnam; in 2003, the total export earnings from seafood was 2.2 billion USD and 52% of it was generated from shrimp (The Ministry of Fisheries of Vietnam & The World Bank, 2005).

As shown in Figure 4.10, shrimp farming is well developed in the South, especially in the Mekong Delta region. Especially after 2001, the year resolution No. 9 was made, the Mekong Delta has shown steep growth. This is mostly because the region has a large salinity intrusion zone both seasonally and on a steady basis.

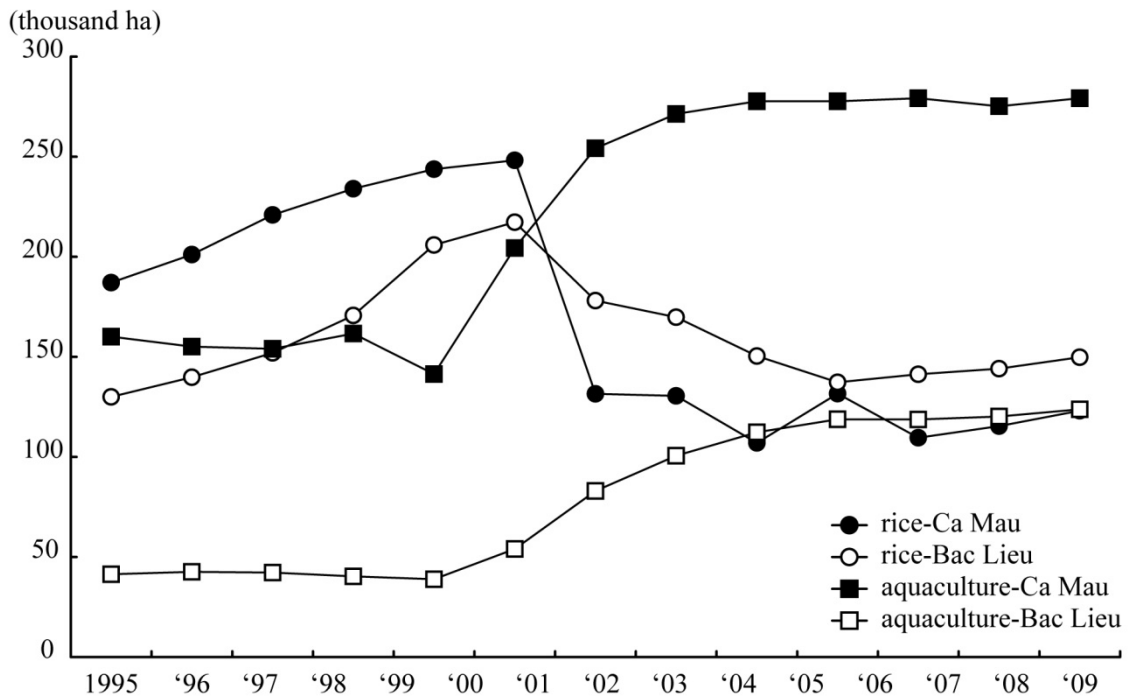


Figure 4.9 Cultivated area changes in Ca Mau and Bac Lieu province since resolution No.9

source: GSO, 2009

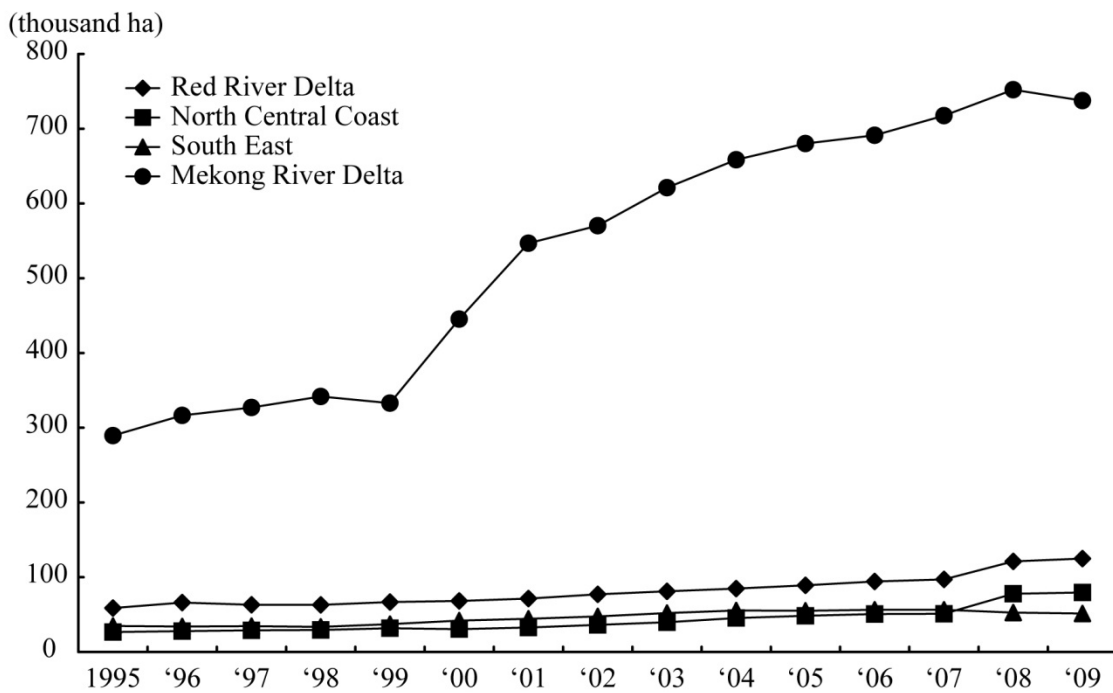


Figure 4.10 Area of water surface for aquaculture by region of Vietnam

source: GSO, 2009

Table 4.3 shows the chronological shrimp farming development in Vietnam together with corresponding or influential world events. It also provides a comparison between Vietnamese shrimp development and that of shrimp development in other Southeast Asian countries. The comparison clearly shows that Vietnam began to develop shrimp aquaculture much later than other countries. This partially explains why the Vietnamese government introduced organic shrimp production as an alternative to conventional shrimp production.

Table 4.3 A chronological chart of Vietnam's shrimp industry

Year	Events in VN shrimp industry		Events in other SEA countries and importing countries	World political issues and regimes
	VN in general	Mekong Delta		
1930s			Origins of industrial shrimp farming when artificial Kuruma shrimp spawning technique established in Japan and further developed in Taiwan	
1940s				
1950s			Extensive production system existed as early as 1957 in Thailand	
1960s				
1970s	Extensive shrimp farming exists as early as 1976 and becomes common following the Vietnamese war		<ul style="list-style-type: none"> ◆Promotion of hatcheries supported by the Thai government (1973) ◆Semi-intensive farming expands in Thailand (late 1970s-early 80s), promoted by ADB from 1981 on 	
1980s	<ul style="list-style-type: none"> ◆Shrimp farming is promoted by government in a series of <i>doi moi</i> policies ◆Hatcheries for tiger shrimp PL are developed in NhaTrang, Khanh Hoa Province. There were five hatcheries in Khanh Hoa in 1984²⁹ ◆Shrimp production for exporting begins to be supported by government with decree 347-CT (1987) 	Accelerated conversion of mangrove forest into shrimp farms since 1983 in Minh Hai province ³⁰	<ul style="list-style-type: none"> ◆Intensification of farming began in Thailand ◆CP group (Thailand) forms a joint venture with Japanese Mitsubishi company (1986) that introduced intensive farming technologies ◆State promotion begins in Indonesia after the ban on trawler fishing and decline in oil prices (early 1980s), some programs are funded by World Bank and ADB ◆Shrimp farming in Taiwan collapsed due to diseases and poor management 	<ul style="list-style-type: none"> ◆Government export-oriented agriculture policies of developing countries accelerate shrimp farming intensification ◆Consumers Growing concerns about farmed shrimp, e.g., the book "Shrimp and the Japanese"³¹

²⁹ The number of hatcheries and production capacity increased year by year. The number of hatcheries was 500 in 1995 and reached 2,936 by 2000. In 2003, there were 5,017 hatcheries: 2,702 in central Vietnam and 1,546 in the South (Tran Van Nhung et al., 2006)

³⁰ Minh Hai Province had been divided into Bac Lieu and Ca Mau Province in 1996

³¹ This book, *Ebi to Nihonjin (Shrimp and the Japanese)* (Murai, 1986), written in Japanese, triggered environmental concerns among Japanese, about shrimp farming including mangrove forest loss in developing countries. It shocked top world shrimp eaters by increasing public awareness about the shrimp served on people's dinner plates.

Year	Events in VN shrimp industry		Events in other SEA countries and importing countries	World political issues and regimes
	VN in general	Mekong Delta		
1990s	Until mid-90s, shrimp production grew by farming area expansion rather than intensification. The Central VN adopted an intensive method while the North and the South mainly apply a semi-intensive method	With introduction of tiger shrimp aquaculture (using PLs from hatcheries), simply Silvo-Fishey System transform into more sophisticated so-called Silvo-Aquaculture-Fishery Systems		<ul style="list-style-type: none"> ◆Normalization of US-Vietnam diplomatic relation (1995) ◆Shrimp production plays a role in recovering from Asian financial crisis (1997-1998)
2000s	<ul style="list-style-type: none"> ◆Shrimp hatcheries in the South become common ◆A resolution 09/NQ-CP allows farmers with low productivity agricultural land, saline land and salt pans to convert their land into aquaculture³² ◆10 year shrimp aquaculture development policy by the government (2001) that includes conversion of vast area into shrimp farming ◆Anti-dumping dispute over shrimp export with US 	<ul style="list-style-type: none"> ◆First 150 organic shrimp farms are certified (2001) ◆The number of certified organic shrimp farms reach 300 (2002-2003) ◆The certified farm number was 607 (2006) ◆The certified farm number reaches 831 (2010) 	<p>The organic shrimp farming standard was introduced in Thailand (2005)</p> <p>The national organic shrimp standards were developed in Thailand (2008)</p>	<ul style="list-style-type: none"> ◆Signature of bilateral commercial agreement between US and Vietnam (2000)³³ ◆Accession to WTO (2006)

Sources: Adopted from Christensen (2003), Lebel et al. (2002), Hall(2004), Kikuchi (1993) cited in Hall (2004), Tran Van Nhuong et al. (2006) and Raux et al. (2006).

³² Low demand for rice in the Mekong Delta encouraged farmers to diversify their livelihood from intensive rice farming, largely promoted by the government during the 90' (with dike constructed to prevent flooding, three crops in a year became possible), to integrated farming systems including fish and shrimp farming (Brennan, Preston, Clayton & Tran Thanh Be, 2002).

³³ In 1998, export to U.S. was 5,000 tons. It increased to 42,000 tons in 2005 (Lem, 2006).

The final section in this chapter has highlighted the rapid expansion of shrimp farming that was supported by the resolution that allowed land conversion to shrimp farms as well as technological innovation making semi-intensive and intensive shrimp farming possible. Comparison with other Southeast Asia shrimp producing countries describes the position of Vietnam in the international shrimp market. With the international shrimp price decline due to over-supply and the country's acceptance into the WTO in 2007, Vietnam has been urged to exploit new markets for its farmed seafood through added value products. The organic shrimp program introduced in the following chapter is one such attempt.

Chapter 5: To the village of organic shrimp-: The case study

This chapter examines the case of certified organic shrimp production in Vietnam. This case is the first attempt for the Vietnam's shrimp farming industry to introduce an international organic certification program. Therefore, I introduce a detailed description including the history of the project, stakeholders, marketing channels and information obtained through surveys. I focus especially on the survey on shrimp farmers that highlights the problems that lower farmers' incentives to positively join the program. For example, the premiums for organically grown shrimp for farmers arrive after 2.5 months on average according to farmers' perception. Furthermore, the majority of farmers surveyed who sold their shrimp within the organic shrimp marketing channel reported that they do not know the amount of premium they are supposed to receive.

5.1 Description of the study location

This chapter draws on field research to examine the case of certified organic shrimp production in Vietnam. The field research was conducted between July 2007 and February 2008. Ca Mau Province, population 1.23 million, is the southernmost province of Vietnam in the Lower Mekong Delta, 360 km from Ho Chi Minh City. The area of Ca Mau Province is 533,200 ha, with the area of water surface used for aquaculture 299,100 ha in 2010 (GSO, 2011). Thus, more than 52% of the province's land is used for aquaculture activities. Nationally, Vietnam produced 354,610 tons of farmed shrimp in 2006 (GSO, 2008); more than 25% of that was produced in Ca Mau Province, making it the largest shrimp producing area in Vietnam.

The certified organic shrimp farms are located in Tam Giang commune, Nam Can district. Tam Giang commune has two parts (Figure 5.1) managed by two state-owned enterprises. Both enterprises were established by provincial authorities as "State Fisheries-Forestry Enterprises" (SFFE) (Clough, Phillips & Tran Thanh Xuan, 1999) and have been named Forestry-Fishery Enterprise 184 (or Lam Ngu Truong 184, hereafter abbreviated to LNT184) and Tam Giang III. Most of the area of both enterprises is covered by mangrove forest (mainly cajuput), and canals run through the forest like a web.

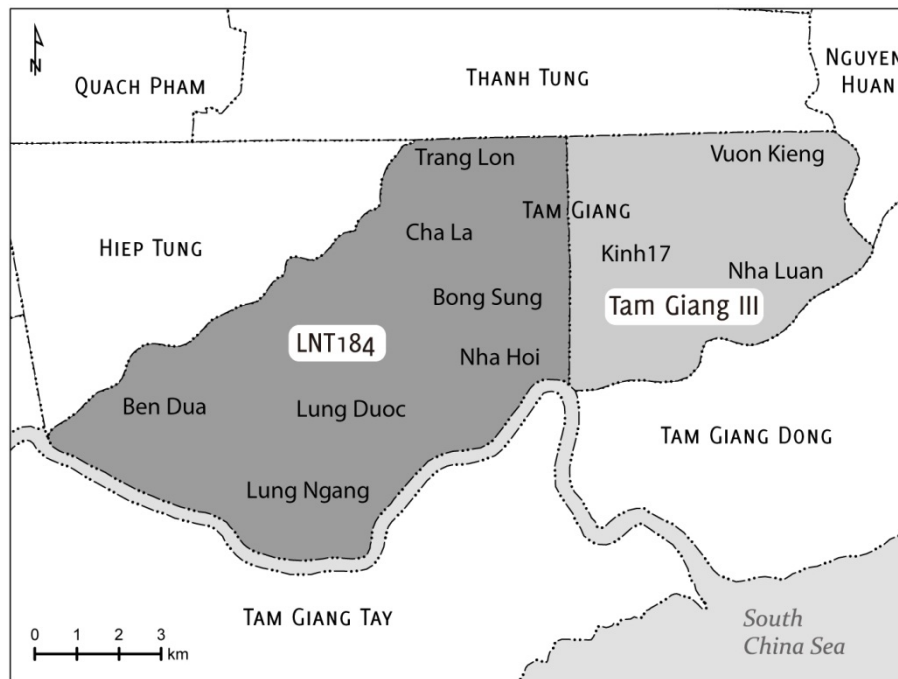


Figure 5.1 The study area, LNT184 in Tam Giang commune

The area under the management of LNT184 is the study area of this dissertation. Although the base administrative units in Vietnam are managed by People’s Committees at each level (provincial and commune branches), the study area is managed by LNT184, a state-owned enterprise engaged in forestry and forest-related activities. The history of this unique administrative arrangement is explained in the next section (5.2.1).

LNT184 manages 6,475 ha. Of this total, 3,190 ha are covered by forest³⁴ and 2,879 ha are used for aquaculture (Khai, 2007). The area for aquaculture had been divided into 1,197 ponds. The population in the area under the management of LNT184 in 2007 was 4,497 people in 2,076 households (Tam Giang Commune PPC, 2007). Approximately 150 households in the area are not engaged in shrimp aquaculture but instead run small businesses such as grocery shops, restaurants, agricultural activities and aquatic animal hatcheries (shrimp, mud crab and fish) (Interview with Ngo Dung Liem, former LNT184 Director, 23 November, 2007). For the rest of the households, shrimp aquaculture is their primary income source.

The certification standards that the case study farms have been certified against are the Naturland’s organic shrimp standards. “*International standards for organic aquaculture, part production of shrimp*” (Naturland et al., 2002) was written³⁵ specifically for the organic production

³⁴ According to other reports, the figure is slightly different. The total land is 6,340.5 ha and the forest land is 3,128.8 ha (WWF, 2006).

³⁵ Based on Naturland standards for organic aquaculture, Edition, XI/1999 (II/2000), and technical guidelines for the organic culture of black tiger shrimp (*Penaeus monodon*) and other shrimp species

in the LNT184 and consists of three parts. Part A covers general principles of farm management and animal husbandry in organic aquaculture production applicable not only for shrimp but also other species such as salmon. Part B specifies standards used exclusively for the organic shrimp program. Below are the extracted principles especially important for certification.

- Removal or degradation of mangrove forest in order to construct or expand shrimp farms is not allowed. Management of mangroves such as replanting and thinning can be done in accordance with current regulation.
- 70% of total farm area should be reforested with mangroves within 5 years.³⁶
- Only native species can be stocked. Non-native fish and shrimp species are prohibited.
- Farms need to be fully free from wild caught past-larvae or brood stock. However, stocking with wild larvae or fingerlings entering ponds naturally and passively with tidal flow is allowed.
- Stocks produced in a certified, organic way shall be used as soon as possible.³⁷
- Water must be exchanged, filled and drained by tidal flow.
- Maximum stock density at the time of harvest should be at 20 animals per m². In mangrove-shrimp systems however, the stock densities do not have to be set since they are regulated by the natural carrying capacity (depending on available feed in ponds). The use of antibiotics and chemo-therapeutics in grow-out ponds is prohibited.
- Application of any artificial (brought-in) feed is not allowed.

This chapter is divided into three parts. In the first part, the history and administrative arrangements of the study area since the US–Vietnam War is explained. The next part describes the process of introduction and operation of the certified organic shrimp program in the study area. The last part discusses the findings from a field survey with 70 shrimp producing households. The survey results contain demographic information of farmers, land ownership practice information, shrimp marketing arrangements and farmers’ satisfaction in the organic shrimp program. Special attention is paid to power relations among stakeholders.

5.2 History, administrative units and production scheme of the study area

5.2.1 History

During the US–Vietnam War (1964-1975), the forest, mainly mangrove forest, in the South was heavily damaged by the US military’s defoliation missions (by using herbicides such as the so called Agent Orange). These missions began in 1962 and ceased in 1971 (Ross, 1974). The peak herbicide spray mission in Ca Mau peninsula was in 1967 and 1968 (prior to that, the Peninsula was

cultured in the 'forest-shrimp-system' in the LNT184, Vietnam by SIPPO and edited by IMO.

³⁶ The ratio of mangroves on a farm has been a dispute. At the time of field work (2007), it was reduced to 50% of total pond area (rather than the total farm area).

³⁷ Certified organic PL was not available yet in the study area at the time of fieldwork.

entirely covered by mangroves). Photographs taken in 1973 show the area lost 52% of its mangroves (Ross, 1974). In 1987 the Vietnamese government established LNT184 as a reforestation station. At the time, the total area under LNT184's management was 4,150 ha with 1,500 ha of forest - primary and secondary mixed forest - remaining in the area. The targeted reforestation area was 3,100 ha. By Seventy nine percent of that was reforested by 2007. This area was first settled during the US war (WWF, 2006). In the early 1980s, 150 households lived in what came to be known as LNT184. Most were soldiers and their families. The estimated population of soldiers and police in South Vietnam at the time of unification was 1.3 million (together with their family, one of every four people were from soldiers' households). The Communist regime adopted the population resettlement policies to deal with not only overpopulation in urban area in the South and the Red River delta in the North but also as "re-education" for those who associated with the old regime. From May 1975 to December 1976, 700,000 to 1 million people left Saigon but the composition of the number are unknown (as to whether they were civilian people who simply went back to their hometown after the war or they were resettled people). The re-education programs often took place in rural areas and farming and land reclamation were required work for detainees (Jones, 1982). In addition, between 1976 and 1980, 100,000 people from Ha Nam Ninh Province resettled in Minh Hai Province, which was divided into Ca Mau Province and Bac Lieu in 1996. The settlers in Ca Mau Province began to exploit the mangrove forest through the use of shifting cultivation, either for agriculture or for Silvo-Fishery Systems, which use tidal water change (Christensen, 2003). In the early 1990s, when tiger shrimp (*P. monodon*) post-larvae³⁸ was introduced to the area, simple silvo-fishery systems were transformed into more sophisticated silvo-aquaculture-fishery systems (SAFS) (Christensen, 2003).

From 1985-1995, the population increased 20-30%, with about 10% coming from other provinces in Vietnam and about 90% from other places in Ca Mau province. After 1995, no prominent migration was observed in the area. In 1997, two neighbouring hamlets, (Trang Lon and Ben Dua) which were managed by People's Committee (commune level) were merged into LNT184 (total area of these two hamlets is about 2,250 ha).

Shrimp aquaculture was practiced in the study area prior to the establishment of LNT184. In 1987, 890 ha of the 4,150 ha managed by LNT184 were being used for shrimp aquaculture (traditional extensive method). However, in the two hamlets which were merged into LNT184 in 1997, 70% of the total area (2,250 ha) was used for intensive shrimp aquaculture, requiring the clearing of all trees in shrimp ponds (Interview with the Tieu Khu 3 head, 21, November, 2007).

³⁸ The artificial tiger shrimp spawning technique became available around 1985.

5.2.2 Administrative units in LNT184

Of the ten hamlets in Tam Giang commune, seven hamlets are under the administration of LNT184. All hamlets can be accessed by boats but not all are connected by land roads. The primary means of transportation is small boats with removable engines. Because the primary objective of LNT184 is forestry, the seven hamlets are managed to promote forestry-related activities instead of being administered by People's Committees at local levels. "Tieu Khu" (hereafter abbreviated to TK) or forestry centres refers to a special administrative unit found only in LNT184, belonging directly to LNT184 as part of the enterprise function. Each TK has one head, one vice-president and one representative. Originally, there were seven TKs when migration into the area was very active. However, the boundaries of the seven hamlets and seven TKs were not correlated since TK borders had been set according to geographical conditions rather than administrative units. Currently, the seven hamlets have amalgamated into three TKs, namely TK 3, TK 4 and TK6, and the borders of these hamlets and the TKs overlap. TK3 consists of Trang Lon, Bong Sung and Nha Hoi (has 701 ponds in total). TK4 consists of Cha La, Lung Ngan and Lung Duoc. TK 6 consists of Ben Dua.

Residents were allocated pond(s), land and forest as members of each TK. All activities related to these assets must be reported to the TK office, especially when people sell land or clean ponds (land use rights are explained in a later section). The main functions of the TKs are forest management, forest clear-cut control, re-plantation assignment, general tax collection (which is done by People's Committees in most other places in Vietnam), and temporary tax collection for public infrastructure within the TK. Another important function of TKs is to disseminate information from the main office of LNT184 to each hamlet. TK heads are nominated by LNT184. The work of the TK heads includes an annual visit to every household to measure and report the percentage of forest coverage on their land to the main LNT184 office, and to direct re-plantation according to the result of the annual inspection.

5.2.3 Production scheme

Shrimp farming methods in Vietnam

Shrimp farming in Vietnam is characterized by its systemic diversity. Together with other Asian countries such as Bangladesh, India and Indonesia, Vietnam widely uses traditional extensive farming methods. On the other hand, countries like Thailand and Malaysia adopted semi-intensive and intensive methods (Dey, 2006). In addition, polyculture of black tiger shrimp with other shrimp species in brackish water is also commonly observed in Vietnam.

According to Raux et al. (2006), there are six main types of shrimp farming systems in Vietnam, as outlined below.

- 1) Extensive farming method: This farming system is widely exercised in the Mekong Delta

region. Farm sizes vary from 1-3 ha for household farms to 5-50 ha for state farms. The source of PL is either through natural tidal flow or hatcheries with 1 PL/m² density. Average shrimp yield is between 100 to 150 kg/ha/year.

- 2) Improved extensive farming method: Its difference from extensive farming is that farmers stock PL from hatcheries instead of recruiting wild stock. Stock density goes up to 2-4 PL/m² with additional feeding management. Average productivity in this system ranges from 250-500 kg / ha / year.
- 3) Rice-shrimp farming method: This method was first developed by farmers in the 1960s (Tran, 1994 cited in Tran Thanh Be, Le & Brennan, 1999) in the coastal region of the Mekong Delta where rice paddies are affected by saline intrusion during the dry season for 5-6 months in a year (Tran Thanh Be et al., 1999). This method has been promoted by the Ministry of Fisheries since 1998 (Raux et al., 2006) and contributed greatly to boosting the incomes of poor rice farmers despite some environmental problems which have emerged (Tran Thanh Be et al., 1999). The stock density is 1-2 PL/m² and the average shrimp productivity is 200 kg/ha/crop.
- 4) Mangrove-shrimp farming method: This method has several variations determined by whether shrimp pond and mangrove forest are separated (Clough et al., 2002), and whether farmers use PLs (tiger shrimp) from hatcheries (Christensen, 2003). However, no matter the combination, farmers do not feed their shrimp, instead they rely on the natural mangrove ecology for that. The yield of this method is hard to estimate since production also includes species other than shrimp such as mud crabs and fish.
- 5) Semi-intensive farming method: farm size for this system is small ranging from 0.2 to 2 ha. The shrimp stock density is 5-15 PL/m² and the productivity is 1,500 kg/ha/year.
- 6) Intensive farming method: This method was introduced to central Vietnam in 1989. Pond size ranges from 0.2 to 1 ha and the stock density is from 15 to 30 PL/m². The average productivity is 2500 to 4000kg/crop/ha.

The area used for shrimp farming in Vietnam in 2003 (best available latest figure) breaks down as follows: 3% semi-intensive and intensive farming, 22% improved-extensive farming and 75% extensive and semi-extensive. The productivity share of intensive and extensive farming methods are 10% and 60% of total production respectively (MOFI, 2004 cited in FAO, 2005).

Another farming method developed in Vietnam is the Eco-shrimp farming method. This method is basically mangrove-shrimp farming but with specific emphasis on mitigating the ecological impacts of shrimp farming. This is the farming method employed at the research site (see chapter 6, the case study chapter).

Overview of Shrimp production unit and supply chain in Vietnam

Households remain the dominant production unit in both fisheries and aquaculture sectors,

with 77% of the households engaged in aquaculture having smaller than 0.1 ha ponds, and another 7% owning 0.1-0.2 ha ponds (The Ministry of Fisheries of Vietnam & The World Bank, 2005).

Market modernization or upgrading is a prioritized task being undertaken to increase seafood distribution efficiency and quality in developing countries. In Vietnam, consolidation of the wholesale shrimp market is underway. For example, the Can Gio seafood transaction centre (a shrimp trading station) opened in 2002 in the Can Gio district, Ho Chi Minh City. This shrimp wholesale market collects shrimp from surrounding provinces and sends out information on market conditions, feed, shrimp breeding and disease treatments (Lem et al., 2004).

According to Lem et al. (2004), over 90% of the product from capture fisheries goes to a wholesale market before being handed to processors (only 4.6% goes directly from fisheries to processors). However, the recent trend shows that the market supply chain for farmed seafood for exporting has been shortened by farmers who have gained direct access to processors; 32.6% of farmed seafood in general and 28.8% of farmed shrimp specifically moves directly from farmers to processors. Lem et al. (2004) considers this connection as a kind of contract farming. Knowing the processors' eagerness for quality raw material, direct contracts between farmers and processors are expected to increase.

Production unit in the study area

About 6,141 ha³⁹ under the jurisdiction of LNT184 are managed by individual farmers (WWF, 2006) who are under contract with LNT184 to take care of the forest in their plot. There are 1,197 plots and each plot can be identified by number (Figure 5.2). Unlike other places in Vietnam, due to the unique administrative and forest management system, the land allocation process that is accompanied by the distribution of "Red Books" (land ownership)⁴⁰ has not yet been introduced in this area. Instead, the contract between the LNT184 and farmers is based on a Blue Book⁴¹ that is usually valid for 20 years, allocated to farmers since 1995 (WWF, 2006). The land itself remains state-owned. By providing Blue Books, the LNT184 grants some land use rights including establishment of houses to live in and ponds for aquaculture. The land use rights exclude the right to utilize the forest. Nevertheless, maintenance of the existing forest and reforestation where the forest does not reach the expected area are duties attached to Blue Book land allocation. By customary practice, although not officially supported, farmers transfer Blue Books. A common statement made is, "I bought both the land and the contract made with the LNT184" (Interview with the director of the LNT184, and farmers, 19 October, 2007). Furthermore, Blue Books can be used as collateral

³⁹ Beside this area, LNT184 directly manages 142.96 ha of reserved area for eco-tourism and seedling bank, and 252.5 ha of forest area (WWF, 2006).

⁴⁰ According to the current LNT184 director, the Red Book for LNT184 area is owned by LNT184.

⁴¹ People who do not fall into the Blue Book scheme receive "agriculture Land Use and Tax Yellow Book" (WWF, 2006, p. 11)

when farmers borrow money (WWF, 2006) from various financial institutions, including the Vietnam Bank for Agriculture (Agribank)⁴².

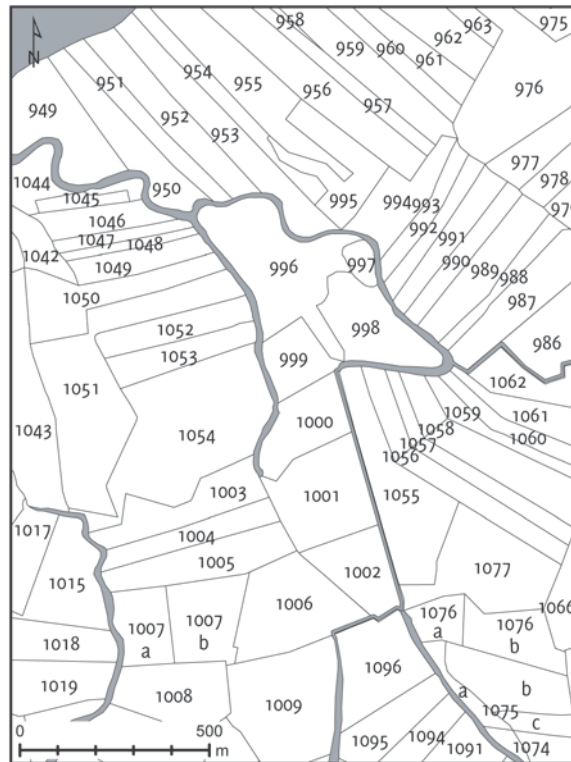


Figure 5.2 Production plots in the study area

Benefits from forestry:

Although the main purpose of this study is to examine shrimp production in the LNT184, the primary business of LNT184 is mangrove forest management and production (see Appendix C for the LNT184’s annual income source). The fact that the LNT184 does not benefit from shrimp produced by local farmers needs to be noted as a key factor in negotiations among stakeholders regarding priorities in the organic shrimp project. One result is conflict between forest production (the LNT184) and conservation (as a crucial standard for certified organic shrimp). This conflict is discussed in the following chapter.

As mentioned above, farmers who are on contract with LNT184 do not have rights to forest use. All rights to harvest trees remain with the LNT184. However, when a plot is allowed to be clear-cut⁴³, farmers receive some benefits from timber sales. The share rate between the LNT184 and

⁴² In the Mekong Delta, Agribank provides medium-term 3-year loans for shrimp pond construction and short-term 1-year loans up to 70% of total cost for inputs (Luttrell, 2006).

⁴³ Harvesting of all trees in a plot without selection of trees according to their sizes at tree age of ten to twelve years depending on the condition of forest growth rate

farmers before 2002 was fixed at 50/50 but, according to the former LNT184 director, Mr. Ngo Dung Liem, the current share rate varies depending on the degree of farmers' input in terms of duration of forest maintenance and labour. For example, with one year of forest management, a farmer gets 6% of profit and LNT184 gets 94%. If a farmer manages the forest for 10 years, the farmer gets 60% of the total profit and LNT184 gets 40%.

5.3 Shrimp farming method

Vietnam's mangrove forest is mostly concentrated in the Mekong Delta region. The farming method used in the study area and other areas in Ca Mau Province is called silvo-aquaculture-fishery systems (SAFS)⁴⁴ (see Figure 5.3 and details in Appendix C). This system consists of three farming features in a pond: aquatic animal farming (or fishery) naturally recruited (with tidal flow) from canals into diked ponds; shrimp aquaculture and mud crab with stocked seeds; and mangrove forestation inside ponds. In the study area, the gap between ebb tide and flow is very big at the full moon (Figure 5.4) ranging from one to three meters⁴⁵ (Binh & Lin, 1995). This tidal flow is used to bring aquatic animals including juvenile crabs, shrimps and fish into ponds through a net mesh bigger than them (Figure 5.5). The ebb tide is used to harvest them when the aquatic animals get big enough and are thus now bigger than the mesh size (Figure 5.6).

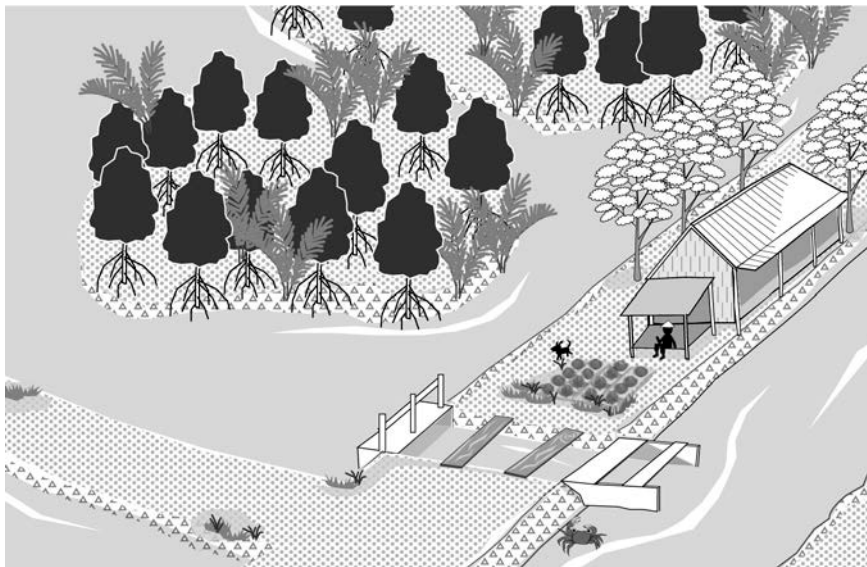


Figure 5.3 Illustration of a shrimp farm employing SAFS system

source: original

⁴⁴ With introduction of tiger shrimp aquaculture (using PLs from hatcheries), Silvo-Fishery System transformed into the more sophisticated so-called Silvo-Aquaculture-Fishery Systems (Christensen, 2003).

⁴⁵ The coast of South Vietnam is affected by two kinds of tides; one is semi-diurnal tides from the East sea with 3-4 m tidal change and the other is diurnal tides from the Gulf of Thailand with 0.50-0.80 m



Figure 5.4 Time of low tide

change (Hoang & Hoang, 1993).

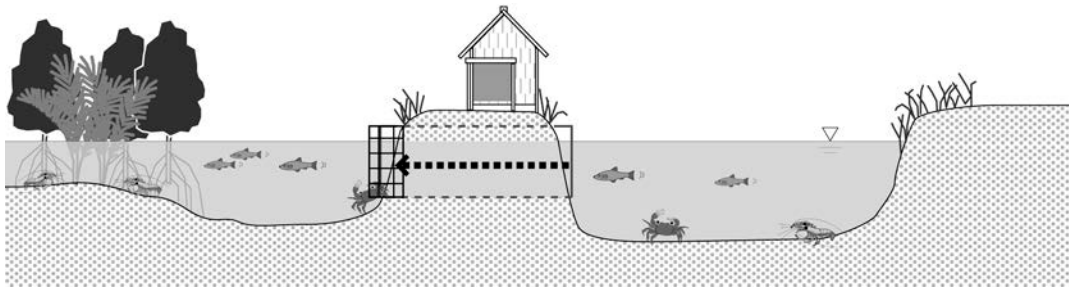


Figure 5.5 Tidal flow recruiting juvenile aquatic animals

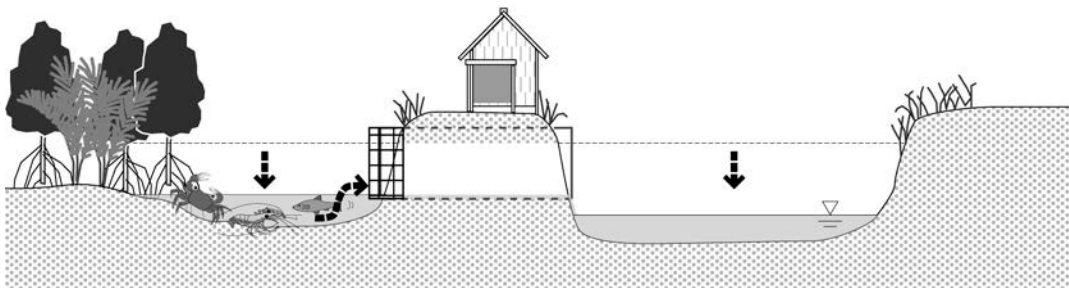


Figure 5.6 Ebb tide used to harvest aquatic animals

source: original

The total study area of 6,475 ha is divided into 1,254 ponds (excluding the protected area / eco-tourism area). Each pond is identified by a pond code (1 to 1,195). Each pond is managed by farmers who live on site under the contract with the LNT184. For black tiger shrimp, farmers use post larvae (PL) from hatcheries. This is mainly due to declined natural tiger shrimp stock which farmers used to recruit from the stream. However, in this study site as a certified organic shrimp producer, using PL from hatcheries is specified in standards (details in Appendix A). The grow-out duration varies depending on the season (rainy and dry seasons) and pond condition, but is approximately three months.

5.4 The history, stakeholders and structure of certified organic shrimp production

The organic shrimp production in the study area is the first certified organic seafood production in Vietnam, and was first certified in 2001. In Ca Mau, this organic shrimp program employs Naturland standards, which have been fully modified to specifically fit the fish-shrimp-crab aquaculture system practiced in Vietnam, called silvo fishery farming (Claugh et al., 2002), that is well integrated into the brackish water mangrove forests of the region. The project was first proposed by the Swiss Import Promotion Programme (SIPPO⁴⁶) in collaboration with the Vietnamese government. In 2000, SIPPO, Naturland (a German-based organic certification body), The Institute for Marketecology⁴⁷ (IMO, inspection agency), COOP Swiss (a supermarket chain) and VASEP joined in a pilot project to identify a candidate site and then conduct detailed investigations into its environmental conditions. (The chronology of events for development of the certified organic shrimp project is shown below. Table 5.1)

Table 5.1 The history of organic shrimp project in LNT184

Year	
1999	The LNT184 was contacted by Vietnamese central government regarding organic shrimp production for the first time
early 2000	Deputy Minister of Fisheries Nguyen Thi Hong Minh and Vietnam Association of Seafood Exporters and Processors (VASEP-a non-government organization) Secretary-general Nguyen Huu Dung coordinated a European organization experts' (Naturland, IMO,SIPPO and Coop Swiss) visit in the LNT184 area to see forestry-fishery-aquaculture model and the facility of a seafood processing company, to determine if the environment and facility of the plant were suitable to launch an organic shrimp program.
2001	Almost two years were spent sampling and testing to evaluate the environmental condition and ability of a processing company to comply with international organic standards. After the survey determined the condition, SIPPO decided to work with VASEP, Ca Mau Provincial Fisheries Department and Ca Mau Association of Seafood Exporters and Producers (CASEP) to launch a pilot certified organic project in the LNT184 with Ca Mau. Frozen Processing Import-Export Corporation (CAMIMEX- a state-private joint stock company) was the processor.
2001 (21, Dec.)	About 150 farms and the processing company were certified by Naturland after the inspection process by IMO with Naturland's standards.
2001	Four containers of the first certified organic shrimp were shipped (according to the former LNT184 director)

⁴⁶ SIPPO is an organization supported by the Swiss government, promoting imports to Switzerland and the EU from small and medium scale enterprises in developing and transitioning countries.

⁴⁷ IMO is an international agency for inspection, certification and quality assurance for ecological products. IMO has been accredited by the Swiss Accreditation Service (SAS) according to EN 45011 (ISO 65), which is the international standard for certification, USDA for organic certification according to the American National Organic Program (NOP) and by The Ministry of Agriculture, Forestry and Fisheries (MAFF) and offer certification according to the Japanese Agricultural Standard (JAS) for the Japanese market (http://www.imo.ch/imo_about_us_en,1202,998.html).

Year	
2002 - 2003	The number of certified organic shrimp farms reached 300 (same above)
2006	The certified farm number reached 607
2010	The number of certified organic shrimp farms was 831

Source: The former LNT184 Director (interview, November 23, 2007) and updates via e-mails with staff working for Ca Mau Provincial Fisheries Department

The volume and value of organic shrimp exported in 2006 (finished products) were 418,285 kg and 7,558,730 \$US (Table 5.2).

Table 5.2 Volume and value of organic shrimp exported from LNT184 organic farms

Year	Finished products (kg)	Value (\$US)
2002*	17,000	271,500
2003	24,000	460,570
2004	134,000	2,320,660
2005	146,303	3,012,748
2006	142,279	2,457,435
2007*	200,609	4,227,441
2008	264,681	5,042,433
2009	445,046	4,973,272
2010	370,211	8,729,166
Total	1,744,129	31,495,225

Source: CAMIMEX (interview 19 September, 2007)
*from February, 2002 and updated data after 2007 obtained in 2011

Stakeholders

Table 5.3 is the list of stakeholders involved in the organic shrimp program. Stakeholders 1 to 3 are Vietnamese government agencies that mainly provide the legal framework for the other stakeholders. Stakeholders 4 and 5 are an association established to encourage the Vietnamese seafood sector. This non-governmental organization works closely with the government in order to promote international exports, especially seafood. In the organic shrimp program, CASEP manages the finances. Stakeholders 7 to 10 are organizations from Europe. Due to the accreditation system for inspection and certification, Naturland and IMO often work together. Also, due to the EU regulation on organic imported food, Naturland from Germany and Coop Swiss work together in other cases. CAMIMEX is a joint state-private seafood processing company which used to be a state-owned enterprise. CAMIMEX has been certified by Naturland to process organic shrimp. The shrimp price offered to stakeholders is decided by this company and applied by the field staff working at 12. Stakeholders 13 and 14 are intermediaries who visit each farm to collect shrimp. Only certified intermediaries can handle the shrimp for it to be sold as organic. Stakeholders 15 and 16 are hatcheries providing shrimp PLs to farmers. When farmers buy PLs from other provinces,

intermediaries go between hatcheries and farmers. Stakeholders 17 and 18 are shrimp farmers. Each household is a production unit and many of them have long standing relationships with the intermediaries.

Table 5.3 List of stakeholders involved in the organic shrimp program

Stakeholders	Description, function and responsibilities
<i>Vietnamese government agencies</i>	
1. Ministry of Fisheries (MOFI)	A stakeholder at the very beginning of the project
2. Provincial People's Committee	PPC set legal framework for the LNT184 including administrative issues and natural resource use
3. Provincial Fisheries Department (DOFI) including extension division	Mainly assisting farmers technically by offering workshops
<i>Organizations established by Vietnamese seafood sector</i>	
4. Vietnam Association of Seafood Exporter and Producers (VASEP)	A non-governmental organization supporting members include seafood producers and exporters and other related companies providing service to the seafood sector. 80% of the seafood exporters in Vietnam belong to this organization. The main role of VASEP is to promote seafood production and marketing, including providing market information to members, being a bridge between business partners domestically and internationally, seeking new market opportunities, and consulting on implementing international standards such as HACCP, ISO, HALAL and SQF.
5. Ca Mau Association of Seafood Exporters and Producers (CASEP)	Ca Mau branch of VASEP
<i>State-owned enterprise</i>	
6. The LNT184	State-owned forestry enterprise play a role as administrative office as well
<i>European organizations</i>	
7. Naturland	German-based certification body
8. IMO- Switzerland	Swiss-based inspection body
9. IMO- Vietnam	Local staff who conduct actual inspection on farms
10. COOP Swiss	The main importer of organic shrimp
<i>The processing company</i>	
11. CAMIMEX	A state-private joint stock seafood processing company. The sole company that process certified organic shrimp
12. The collecting station of CAMIMEX	This is located at the production site as an outlying station to receive shrimp from intermediaries and record the volume of shrimp they brought in.
<i>Local stakeholders in the study area</i>	
13. Certified intermediaries	Intermediaries who buy shrimp from certified farms
14. Conventional intermediaries	Intermediaries who buy shrimp from non-certified farms and farms that do not sell shrimp to certified intermediates
15. Hatcheries- local	Local hatcheries produces tiger shrimp PL
16. Hatcheries- other provinces	Hatcheries locate in other provinces. Intermediaries bring PL to each household.
17. Shrimp farmers-certified	
18. Shrimp farmers-not certified	Including, households that have not been inspected, were inspected but didn't meet standards, and once certified but cancelled

Source: LNT184 cited in Khai (2007)

5.5 Findings from the survey

This section provides empirical findings from fieldwork including the result of a survey with 70 shrimp farmers. Data and graphs are from the fieldwork unless otherwise indicated.

5.5.1 Demographic information

Household information

Seven communes of the ten belonging to Tam Giang commune are managed by the LNT184. The population exclusively for the area under the jurisdiction of the LNT184 is not available. However, the total population for the whole commune (Tam Giang commune, area managed by LNT184 and Tam Giang III) was 4,497 people in 2,076 households (Ca Mau Provincial People’s Committee, 2007). Figure 5.7 shows the transitions in Tam Giang commune population in 2005-2007). The number of households in 2005 and 2006 was 1,893 and 1,944 respectively. There is no population data available prior to 2005 due to administrative changes, including mergers. The average family size in the 67 households interviewed is 4.15 people.

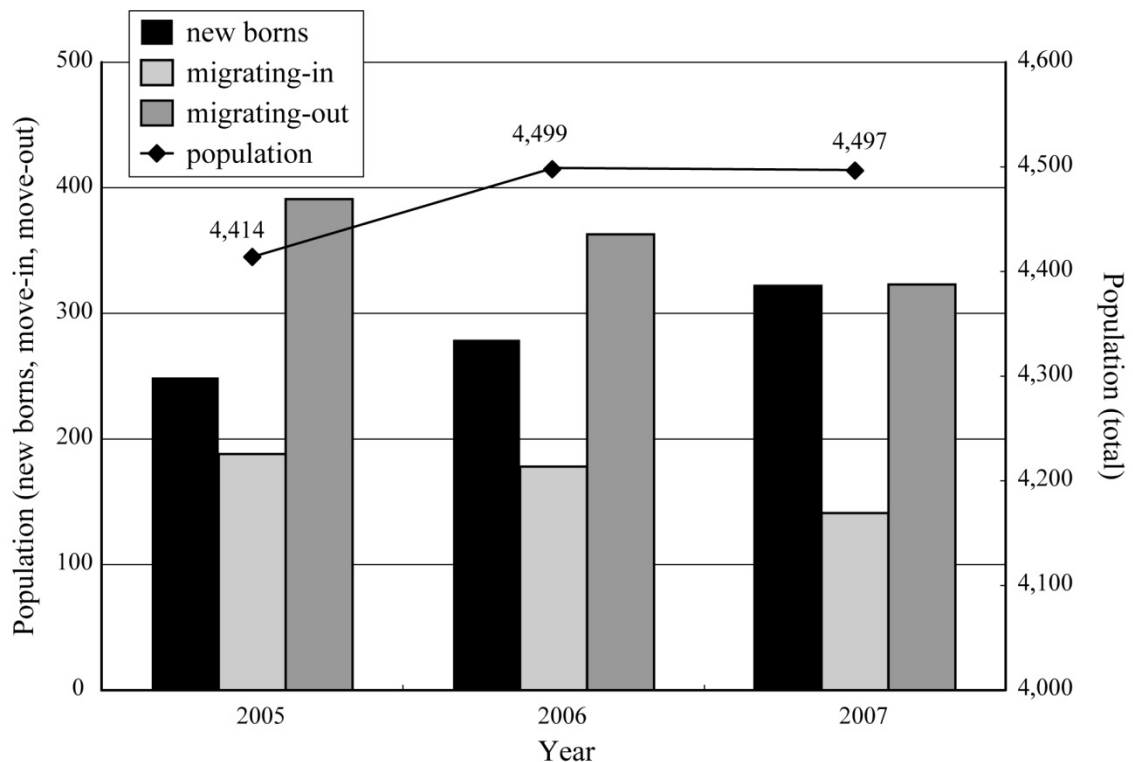


Figure 5.7 Population transition in Tam Giang Commune

Settlement in the LNT184 area began during the Vietnamese war (1959-1975). According to the former LNT184 Director, most people who first settled in the area have since moved out. The average settlement duration among interviewees is 13.5 years, with the longest household resident being in the area for 25 years and the shortest for 0.5 year. All but one of the sixty-six household representatives who gave valid answers for this question had moved into LNT184 from somewhere else. Sixty households moved to the LNT184 from other places in the same province. Fifteen of them had moved from other places in the LNT184. Five households were from other provinces such as Bac Lieu (Mekong Delta), Soc Trang (Mekong Delta), Vinh Long (South Vietnam, adjacent to Soc Trang) and Nam Dinh in the North.

The Reasons for moving to the LNT184 and former occupations

All households except seven interviewees came to the LNT184 to do shrimp aquaculture. Of those seven, some came back to their hometown to live with their parents and some were women marrying local people. Thirty-two households (47%) were rice⁴⁸ or vegetable farmers before they came to the LNT184. This is due to the widely-held perception among farmers that shrimp farming brings far more profit than rice farming. Sixteen households were previously conventional shrimp farmers (Figure 5.8).

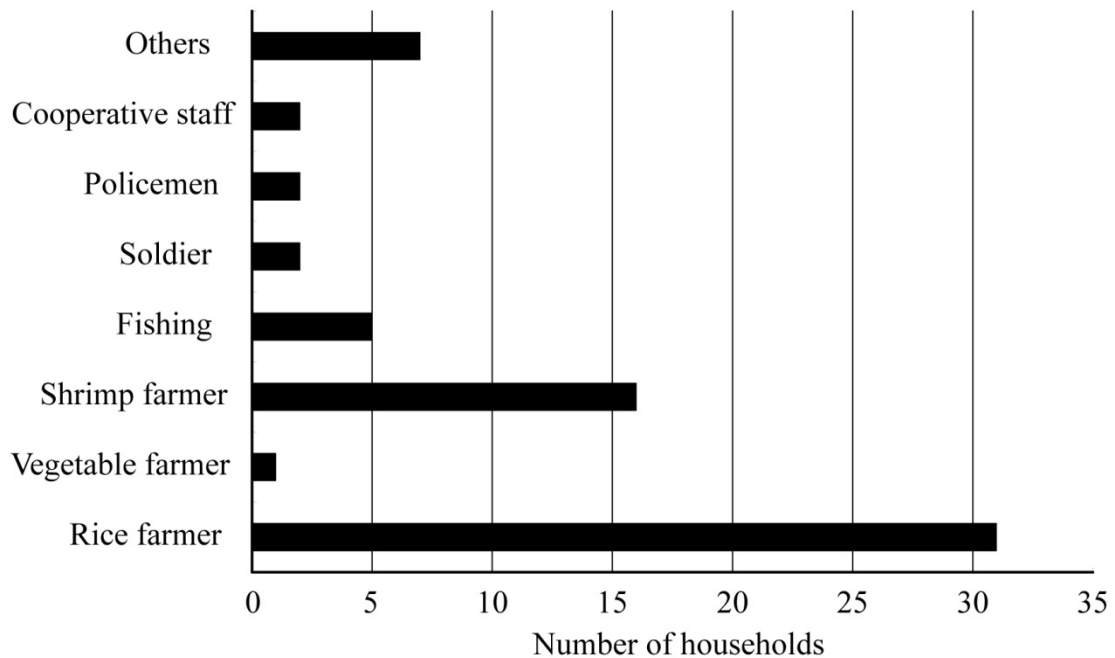


Figure 5.8 Shrimp farmers' former employment

⁴⁸ Survey conducted by Lebel et al. (2002) shows that among shrimp farm owners in the North, Central and South Vietnam, respectively, 57%, 23% and 39% of them were formerly rice farmers.

5.5.2 Land as physical assets

As mentioned in an earlier section, the land is owned by the LNT184 and farmers have twenty-year land use rights under contracts with the LNT184. Farmers are issued so called Blue Books as contracts. Since Blue Books are not equal to land use right (so called Red Books with rights to exchange and transfer the rights), trading lands in the LNT184 area is not officially supported. However, most farmers (forty-eight out of sixty-five) actually bought land from former owners (only one said he bought the land from the LNT184). This means that although transferring land use right is not legally supported in the LNT184, farmers do so. Figure 5.9 shows other routes for residents to obtain land in the LNT184. Figure 5.10 shows the reason why former owners sold their lands. It also shows that land works as collateral for borrowing money.



Figure 5.9 Method for obtaining land in the LNT184

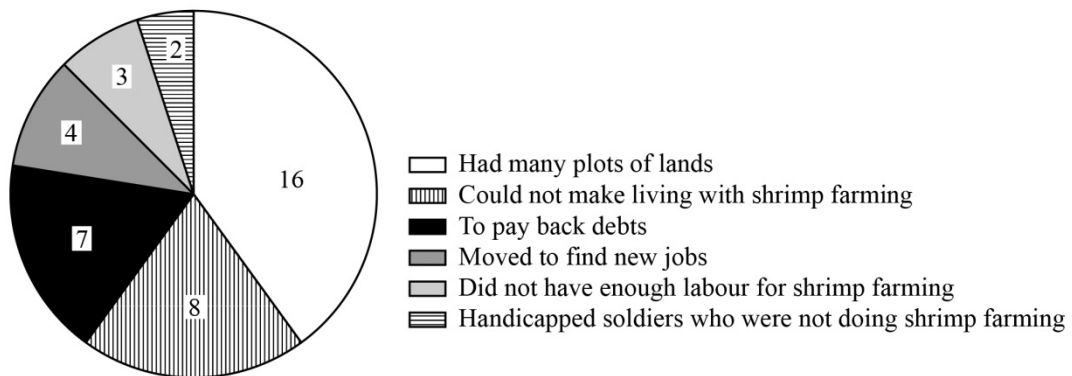


Figure 5.10 Reasons for former owners to sell lands

When people trade land within the LNT184 area, they pay in gold. Since the value of gold is constantly fluctuating over time there is little meaning in comparing prices paid in different times, as people calculate land prices there by ounces of gold.

The size of farming ponds

The number of plots (land divided by dikes of aquaculture ponds) allocated to households in the LNT184 area is 1,195. The average size of plots (including a pond, forest, house and agriculture area etc) is 5.08 ha. However, excluding three very large plots (of 86 ha, 100.23 ha and 134.5 ha,) the average is 4.83 ha. The range of pond sizes is shown in Figure 5.11. The largest pond is 134.5 ha and the smallest is 0.3 ha. The average pond size is 2.54 ha.⁴⁹ Certified organic shrimp ponds are more than 50% covered by mangrove forest. The average water surface used for shrimp farming by the households is less than 1.27 ha.

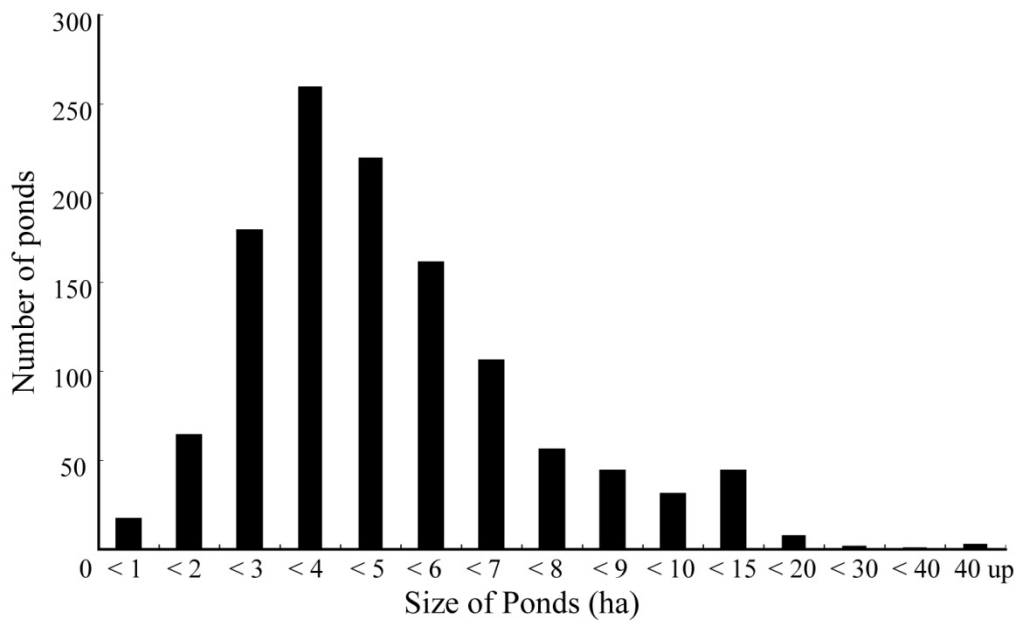


Figure 5.11 Farm plot size ranges
total: 1195

5.5.3 Certification status

The first finding from the survey is that farmers’ understanding of their certification status is often different from the official certification status (Table 5.4 and numbers by hamlet is in

⁴⁹ This is the number excluding the two largest plots’ ponds. Since the data for all ponds are not available, 632 plots of proposed farms were used to calculate. The average plot’s size for these 632 plots is 5.28 ha (4.93 ha excluding two larger plots, 100.23 ha and 134.5 ha).

Appendix C). Out of 25 cases in which official certification status and farmers' perception differed, eleven farmers had misunderstood their status as being "certified" in farmer's perception but they were officially "suspended", seven cases between "not proposed" (not nominated for as a candidate farm) and "certified", three cases between "not proposed" and "cancelled" (no longer certified), two case between "certified" and "cancelled", one case between "certified" and "don't know", and a case between "certified" and "not inspected". In addition, one household, which is not on the proposed list, was not sure about its status. Interviews were conducted before the 2007 inspection so the certification status had not yet changed from the 2006 inspection. One reason for this confusion is that intermediaries are responsible for letting farmers know if their certification status changes, but the intermediaries themselves are not always informed (Interview with the Tieu Khu 3 head, 21 November, 2007). Table 5.5 shows percentages of each certification categories covered by the survey against the total proposed households in the study area (632 households).

**Table 5.4 Official certification status versus farmer's perception
(household interviewed covering 70 ponds)**

Categories	2006 inspection official result	Farmers' self-reported status
Certified	39	52 ponds (49 households)
Not proposed / Not contacted	21	8
Suspended / Cancelled	10	5
Don't know / Not sure	N/A	2
Inspected but not yet certified	N/A	3
Total	70	70

**Table 5.5 Official certification status and farmers' perceptions
(number of ponds)**

Categories	Certified	Not proposed	Suspended/ Cancelled	Total
2006 inspection official result (among proposed ponds)	449 (71%)	N/A	158 / 25 (25% / 3.9%)	632
2006 inspection official result (for households interviewed)	39 (55.7%)	21 (30%)	10 (suspended, 14.2%)	70

5.5.4 Shrimp, money and information flow among stakeholders

Introducing certified organic shrimp program to farmers

The two biggest constraints for small-scale farmers wanting to begin certified organic food production (both agriculture and aquaculture) are the conversion and certification costs and conversion times. Despite the long conversion time required in most cases, in the study area, converting shrimp ponds from conventional to organic was not a big problem because the forest area already exceeded the standards. The introduction of the certified organic shrimp program to the LNT184 did not require vast and costly changes in terms of physical and environmental conversion. Conversion time was not required to purify land since no artificial fertilizer, feeds or chemical compounds had been used beforehand. The only thing that needed to be upgraded in many shrimp ponds to comply with Naturland's standards was the ratio of mangrove forest to the area of water surface.

Among fifty-four certified and cancelled farmers, twenty-eight farmers said that they had to change something on their farm to start certified organic shrimp production. Twenty-five said they did not change anything on their farm to meet the standards. Among the others, twenty-five farmers increased the area of mangrove forest; six modified physical construction of ponds (three cleaned ponds, one put more soil on the dike and one repaired water gate). For those who were required to increase forest area on their farms, the LNT184 provided mangrove seedlings. Twenty-four of the twenty-five people who worked on increasing forest areas to be certified said they were provided with tree seedlings. Twelve farmers were also provided with labour free of charge to plant seedlings while thirteen farmers did the work by themselves. Two farmers who did the work by themselves got paid by the LNT184 at a rate of 35,000d per 1000m² of tree planting. This labour division determined the benefit sharing rate between the LNT184 and farmers at the time of forest clear-cut. Thus, for most of the farmers (forty-four of them), farm conversion from conventional to organic did not cost anything in terms of money. The cost for the rest of farmers (five farmers) ranged from fifteen million to sixty million dong for pond construction maintenance.

Forty-nine interviewed farmers who were certified (including five cancelled farmers) came to know about the certified organic shrimp program either through the LNT184, intermediaries, IMO inspectors, or relatives/friends/neighbours (see Table 5.6).

Table 5.6 How farmers came to know of the organic shrimp programs

Information sources	Number of farmers
the LNT184	25
Intermediaries	15
IMO inspectors	4
Relative/friends/neighbours	3
Former pond owners	3
Provincial fisheries department staff	2
Others	2

At the very beginning of the project, the LNT184 organized a meeting with farmers. At first farmers did not show any interest in being certified organic shrimp farmers since they did not know how organic shrimp or certification would benefit them. However, after the meeting some motivated farmers applied to the program and then introduced the program to others through neighbourhood conversation. Shrimp intermediaries were also encouraged to apply to become certified intermediaries. Certified intermediaries have to compose a list of certified farmers who agree to sell their shrimp exclusively to them. If intermediaries knew households that were already certified in their area, they asked the household to commit to sell shrimp to them. In other cases, certified farmers who need to find a certified intermediary asked their familiar conventional intermediaries to become certified intermediaries. In conventional shrimp marketing chains, farmers try to sell their shrimp to the same intermediary to construct a long-lasting relationship rather than scouting around for an intermediary who will offer the highest price of the day. Losing these relationships, which are cultivated over a length of time, is a big loss and so the farmers want to maintain the relationship after they are certified if possible. As the number of certified farmers increased-362 of a total 1245 ponds have been involved, including those who have had their certification cancelled- and the organic shrimp program became widely known among farmers, the transfer of farmer-intermediary relationships from conventional shrimp to certified shrimp occurred spontaneously with little official arrangement involved.

Annual inspections are conducted by The Institute for Marketecology (IMO). IMO comes back to every certified farm to renew certifications. In addition to the inspection aimed at updating certification, IMO visits new farms that are likely to have more than fifty percent of forest coverage based on the census prepared by the LNT184. For some farmers this is when they first learn about the certified organic program.

Technical information and administrative procedures of certified organic production

Once farmers are certified, they are invited to seminars organized by the LNT184 and DOFI. Farmers receive a manual on organic shrimp production that explains the program, from the mechanisms of mangrove forest ecosystems to how to fill in a purchase record. Instructors from the Extension Office of DOFI and the LNT184 offer seminars as well. The seminars begin with

introducing advantages and concerns of organic shrimp production in general and in the LNT184 specifically. Advantages and concerns raised in the seminar are as follows (a seminar held at LNT184 on 20 November 2007):

- A good natural environment that is covered by the forest
- No factories operating that pollute the water
- Increased numbers of people are willing to buy organic products
- Other certified farmers are keen to join the project.

Concerns are:

- Current farmers are not fully satisfied with price set by the processing company.
- The processing company only buys tiger shrimp. Therefore, farmers have to find another place to sell pink and white shrimp.
- Low yields cannot meet the demand.
- Some farmers in the same area are thought to use chemical preservatives.

The instructor from the provincial extension office mainly explains technical issues in organic shrimp production, including demonstrating water quality tests and how to distinguish good shrimp PL. The instructor from the LNT184 explains about certification and standards, including the proper handling of shrimp. Unfortunately, nothing about the shrimp pricing system or the bonus calculation and payment distribution procedure is discussed in these courses, even though farmers' dissatisfaction about pricing was raised as a concern at the beginning of the seminar attended by the researcher.

During the lectures, farmers are offered drinks and when the lecture is over, the farmers each receive 75,000 VN dong (equivalent to about US\$5) for transportation and lunch. The seminar that the researcher attended lasted from nine in the morning till noon.

Among 49 certified farmers, 45 farmers report that they learnt the technical aspect of organic shrimp farming through seminars held by the LNT184 and DOFI (Table 5.7). On the other hand, only 18 farmers report that they learned administrative procedures of organic shrimp production, such as including record keeping and marketing (Table 5.8).

Table 5.7 How farmers learned the technical aspect of organic shrimp farming

(n=49, multiple answers allowed)

Source of information	Number of farmers
The LNT184	45
The guide book distributed by the LNT184 and DOFI	6
Own farming experiences	4

Table 5.8 How farmers learned the administrative aspect of organic shrimp farming

(n=49, multiple answers allowed)

Source of information	Number of farmers
The LNT184	18
The IMO	2
Intermediaries	3
CAMIMEX	1
I haven't learn anything	21

Stocking

Shrimp production in the study area starts from releasing tiger shrimp PL to ponds. Since wild stock is prohibited by standards (except wild PL recruited by the water flows into ponds), farmers buy tiger shrimp PL from hatcheries. For specific Naturland's standards regarding PL stocking see appendix A.

Arrangements between certified farmers and certified intermediaries

Marketing of shrimp in the study area is limited. The commune is far from the provincial capital city (Ca Mau City) and many households are isolated from the busiest areas where public transportation speed boats arrive from the capital city and elsewhere. Most farmers rely on intermediaries who collect shrimp from house to house and bring it either to the main port of the commune or directly to the capital city. For most farmers, intermediaries are the only source of market information besides neighbors. Intermediaries play important roles in the certified organic shrimp marketing chain as well.

Prior to the introduction of organic certification, farmers sold their shrimp to any intermediary they chose. Although many of them had an intermediary to whom they usually sold shrimp, the arrangements were voluntary, based on bilateral negotiation. Farmers could look for other intermediaries if the price offered by the first intermediary was too low. Farmers who are not certified continue to sell their shrimp in this way. In contrast, certified farmers need to register beforehand with a certified intermediary in order to sell their shrimp as certified. In 2007, twenty-six certified intermediaries were available. They were all conventional shrimp intermediaries before the organic shrimp program started. To be a certified intermediary, one needs to take seminars to learn shrimp handling procedures that comply with organic shrimp standards. Then, each intermediary makes a list of certified farmers who have agreed to sell their shrimp to him. The intermediary also has to agree not to sell shrimp from certified farms through conventional marketing chains. Many intermediaries become certified upon request from certified farmers who used to sell their shrimp to the intermediary and are looking for a certified intermediary. Others become certified in order to receive a bonus or extra commission for organic shrimp handling.

Marketing

In the early morning of harvest days, farmers pack harvested shrimp in a specially distributed Styrofoam box that is at least 50% filled with ice, in accordance with the standards, then wait for a certified intermediary to arrive at the farm. When a certified intermediary comes, he spreads all the shrimp out on a plastic sheet to make the classification work easier. After he classifies sizes of shrimp, he pays the farmers and transfers the shrimp into another Styrofoam box (Figure 5.12) (the shrimp is mixed with shrimp from other farms at this point). Certified intermediaries visit between 14 and 23 farms in a harvest day. A harvest term lasts for 3-4 consecutive days, and occurs twice in a lunar calendar month.



Figure 5.12 Styrofoam box for storing organic shrimps

Certified farmers do not always sell their tiger shrimp within certified marketing chains, according to the survey results. Thirty-two certified farmers out of 49 certified households (status according to farmers' perception) sell their tiger shrimp mainly to certified intermediaries, 13 certified farmers sell shrimp mainly to conventional intermediaries, and 4 sell to any intermediaries. The number of certified farmers who occasionally sold their tiger shrimp to non-certified intermediaries was 18, Farmers who never sold tiger shrimp to non-certified intermediaries was 31;

2 out of 31 farmers sell tiger shrimp to certified intermediaries but for conventional prices. Certified farmers' reasons for selling tiger shrimp to various intermediaries are shown in Table 5.9.

Table 5.9 Reasons for certified farmers' selection of their intermediaries

(Multiple answers allowed)

	Certified intermediaries	Non-certified intermediaries	Either
Have a long relationship with the intermediary or try to build on it		2	
To get bonus	11		
The intermediary is a friend or relative	10	3	
The intermediary offers higher price		5	4
Need to sell to the intermediary since the farmer is in debt to him	2		
The intermediary offers various forms of assistance (financial, technical and administrative)	2	2	
Because certified intermediaries are not Available		3	
Committed to the contract with the intermediary or the processing company	2		
Other reasons	2		

Certified intermediaries are not always available even for farmers who mainly sell their shrimp to certified intermediaries. For example, when a few farmers harvest their shrimp outside of major harvest times or when the season is low (and volume of shrimp to collect is small), certified intermediaries do not do the rounds to save time and cost (mainly to save fuel used for boat operation). The numbers of certified farmers who sell their tiger shrimp to non-certified intermediaries increases to 28 on non-major harvest days for this reason.

In addition, 19 farmers sell other varieties of shrimp (non-tiger shrimp) to non-certified intermediaries. The reasons for this division according to shrimp varieties is related to value at markets, relationships with intermediaries, and the organic shrimp project's system. Nine farmers out of 19 reported that conventional intermediaries offer higher prices for shrimp. For three farmers, certified intermediaries are not readily available. One farmer said that he sells shrimp to a conventional intermediary because he is a friend or relative. In addition, some intermediaries only buy tiger shrimp. However, certified intermediaries are supposed to buy all shrimp raised in certified farms.

Marketing system inconsistency

Certified intermediaries bring all the shrimp to the CAMIMEX collection station after they visit the farms in the morning. The station staff sorts the shrimp (Figure 5.13) and pays the

intermediaries according to the price list⁵⁰ distributed by the main factory (Figure 5.14). Intermediaries receive Form Bs at this moment as their record. Whether or not the collection station buys non-tiger shrimp is told to intermediaries when they bring shrimp to the station. If the station is not purchasing other shrimp, intermediaries have to find another marketing chain. Usually, since tiger shrimp is the most popular, it is difficult for intermediaries to find a market exclusively for non-tiger shrimp. As a result, most certified intermediaries only buy tiger shrimp from farmers in order to avoid the risk and to save time and fuel in delivery. Whether the processing company buys other kinds of shrimp mostly depends on whether there is demand for them from importing countries. According to one of the Vietnamese stakeholders, this issue has been discussed at meetings between the Vietnamese and European stakeholders, and the Europeans stakeholders have agreed to buy all shrimp that is raised in certified farms (personal communication with staff of CAMIMEX collect station, November, 2007).



Figure 5.13 Staff sorting shrimp at the CAMIMEX collect station

⁵⁰ The base price for tiger shrimp is 150,000d per kg. For the size 20 to 25 shrimp per kg, the price increase within a range of 5,000 d to 9,000d.



Figure 5.14 CAMIMEX collect station staff paying an intermediary

In terms of price, survey results show the following perceptions of farmers (Table 5.10)

**Table 5.10 Perceived shrimp prices by certified shrimp farmers
(49 certified farmers in total)**

For tiger shrimp, which offers the higher price: organic (<i>without</i> bonus) or conventional?
<ul style="list-style-type: none"> ■ Organic price without bonus—0 people ■ Conventional price—34 people ■ Do not know—1 person
For tiger shrimp, which offers the higher price: organic <i>with</i> bonus or conventional?
<ul style="list-style-type: none"> ■ Organic price with bonus—16 people (about 3100 dong higher per kg on average, ranged from 750 dong to 7,000 dong) ■ Conventional price—19 people (about 5,500 dong higher per kg on average, ranged from 2,000 d to 15,000 d) ■ Both are around the same—10 people ■ Do not know—4 people
For shrimps other than tiger shrimp, which offers the higher price; certified intermediaries or conventional intermediaries?
<ul style="list-style-type: none"> ■ Certified intermediaries—0 people ■ Conventional intermediaries—25 people (about 3,978 d higher on average per kg, ranged from 1,000 d to 6,000 d) ■ Prices are around the same—22 people ■ Do not know—1 person ■ Do not know since he/she has never sold other shrimps to certified intermediaries—1 person

The survey revealed that shrimp produced in the study area was sold in multiple marketing chains (Figure 5.15 showing shrimp marketing channels as a simple “chain”). Not all shrimp raised at certified farms was sold to certified intermediaries due to several reasons shown above. Regarding shrimp species other than tiger shrimp, most is sold through the conventional marketing chain.

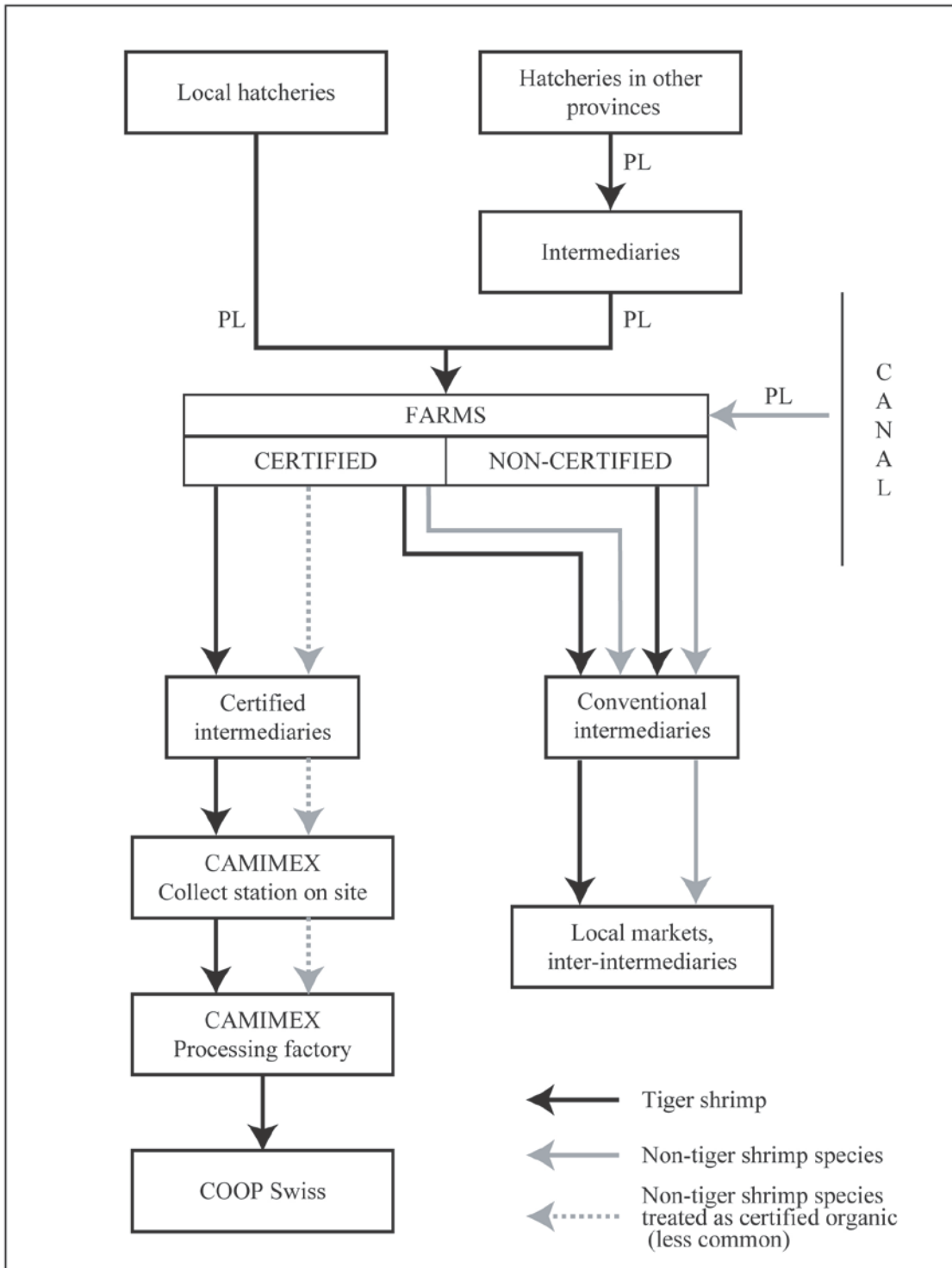


Figure 5.15 Shrimp commodity chain

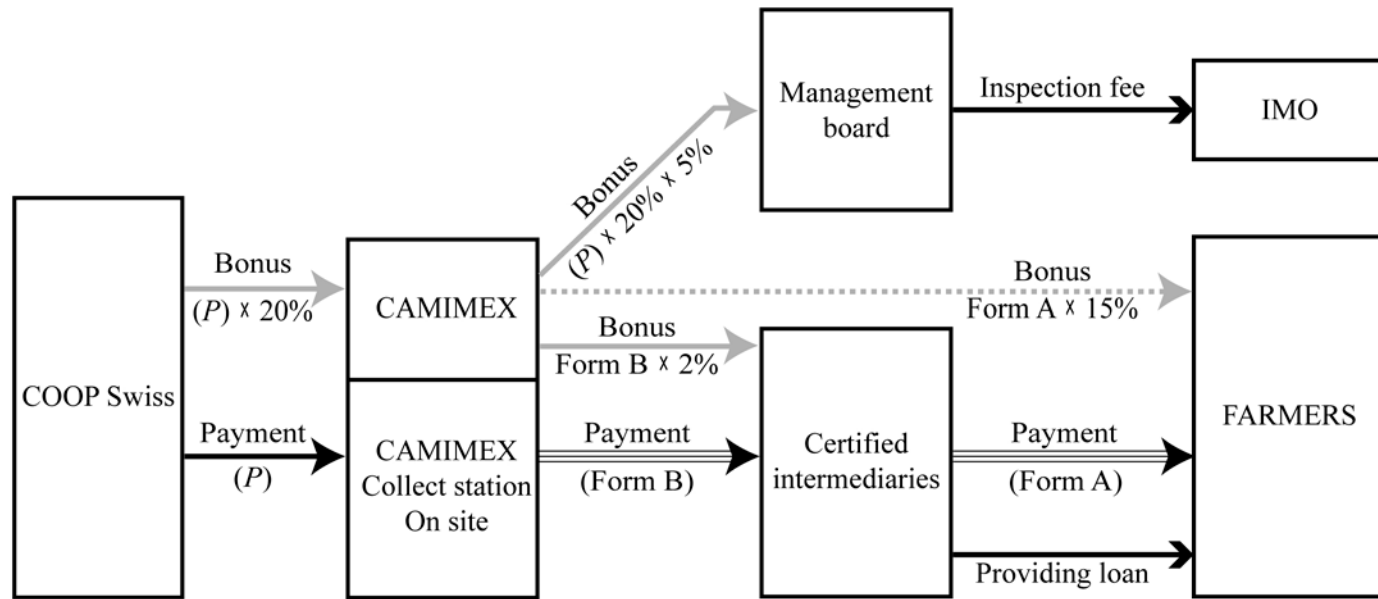


Figure 5.16 Money flow

The payment structure

Coop Swiss pays an extra 20% (of the shrimp payment) as bonus to CAMIMEX when containers arrive in good condition (including shrimp quality in terms of chemical residue). CAMIMEX distributes 5% of the bonus to the organic shrimp management board. This contains the payment to IMO for the inspection fee. Certified intermediaries receive 2% of Form B (a form of aggregation from each farm = the total volume/value of shrimp bought on the day with some margin) as bonus⁵¹ (Figure 5.16).

On site, farmers sell shrimp to certified intermediaries at the farm gate. In return, they are supposed to receive Form A (Figure 5.17) together with their payment from the intermediaries as sales records. On Form A intermediaries fill in the date, time of receiving shrimp, the total quantity and condition of shrimp, and the quantity of other raw materials received. Farmers sign at the bottom of Form A to declare that they have complied with the regulations and procedures of certified organic shrimp. Farmers receive a carbon copy from the intermediaries on site. Based on this Form A as a sales record, farmers receive a bonus later that is fifteen percent of the aggregated price written on Form As. The researcher asked farmers to show past forms that they had kept in order to know their sales amount. The result was that among farmers who said they sell shrimp to certified farmers (thirty-two farmers out of forty-nine certified farmers), thirteen of them seemed to be given the forms every time. However, twelve farmers said that their intermediaries kept them and they never received them. In addition, seven farmers have very incomplete sets of Form A even though they say they store every Form A received from intermediaries. The researcher also found Form As with different farmers' names on them. This implies that some certified intermediaries do not give the Form As on site as required. Some farmers report that they receive Form As later.

The bonuses for farmers arrive 2.5 months later according to farmers' perception - on average ranging from one month to four months. Farmers are supposed to receive a bonus of 15% of the shrimp price shown on Form A. However, 25 of 38 farmers who sold their shrimp to certified intermediaries at least partially reported that they do not know how to calculate the bonus amount and three expressed they are not sure (Table 5.11). In addition, even among farmers who answered that they know how to calculate the bonus, their answers are not consistent with each other. For this reason, the actual or average premium farmers receive is not clear.

⁵¹ The actual percentage or the total amount goes to farmers out of the 20% of bonus paid to CAMIMEX is not known since money paid to intermediaries from CAMIMEX or from COOP Swiss to CAMIMEX is not investigated.

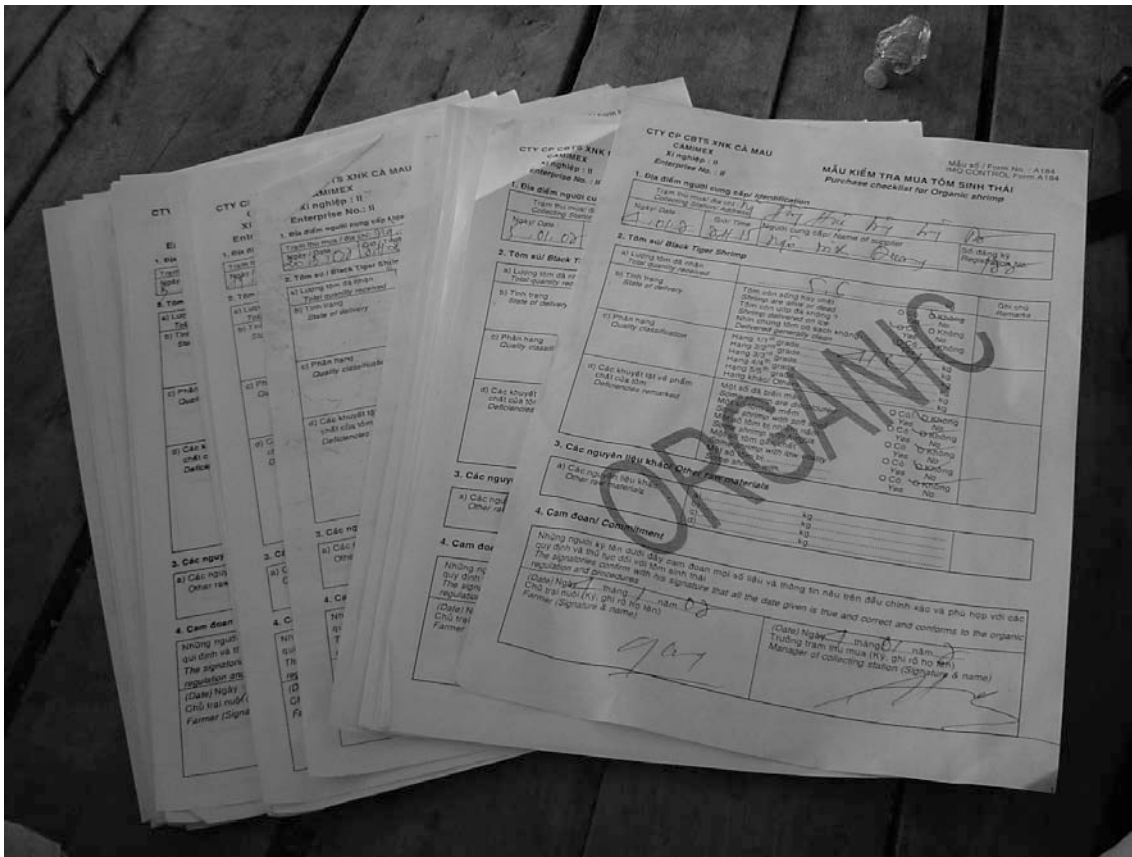


Figure 5.17 Form A

Table 5.11 Answers to the question, “Do you know how to calculate the bonus amount from your sale price?”

Answers	Number of farmers (total 38)
No	25
Yes	6
Not sure	3
Trust intermediaries and no need to calculate	3
The amount is small and not worth calculating	1

Finances

The main income of the 67 households interviewed is from farmed seafood, including shrimp, crab and fish. 46 households rely solely on income from aquaculture. Other households have secondary income sources (Figure 5.18). Figure 5.19 shows both income solely from ponds and total income with other income generating activities.

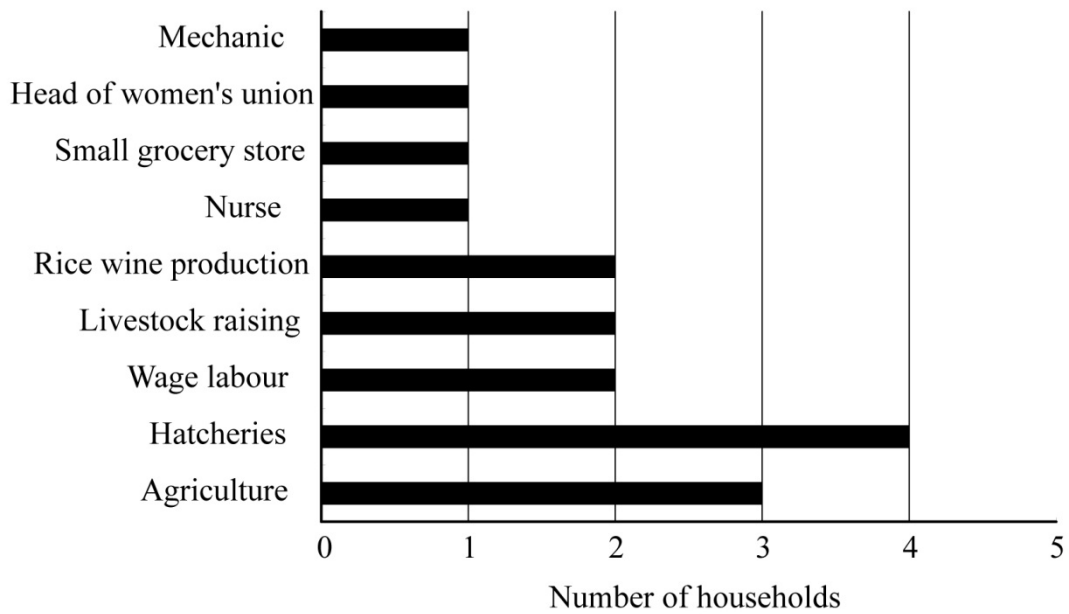


Figure 5.18 Households' secondary income sources (multiple answers allowed)

Except for the hatcheries business, income from secondary income generating activities is only supplemental income for farmers. Thus, many farmers are highly vulnerable to a bad harvest, for example due to disease outbreak, for example.

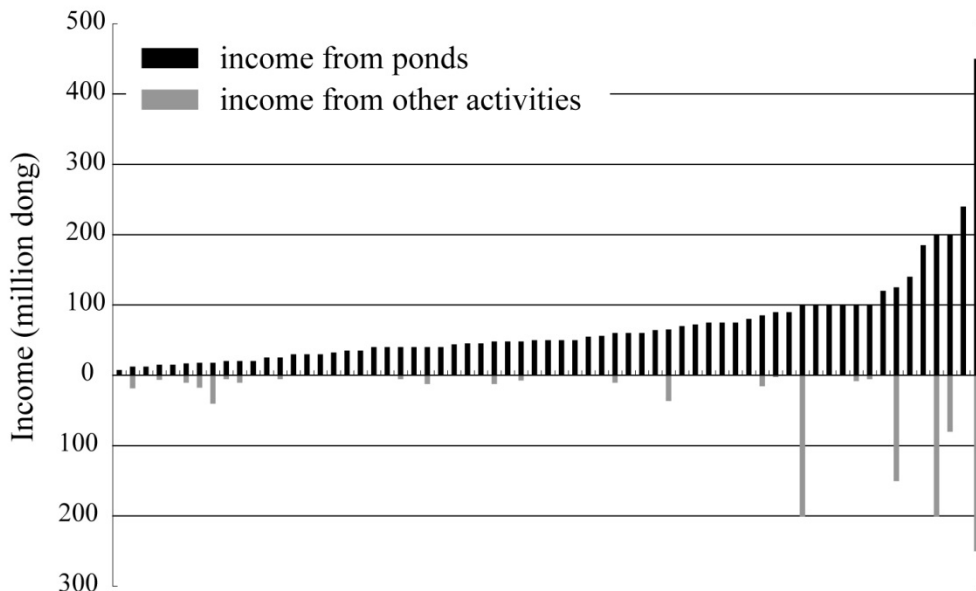


Figure 5.19 Income from ponds and total income with other activities

In many cases, farmers need to invest the gain from a harvest directly into the next crop. Furthermore, about 63 percent of interviewed households (41 of 65 households) have loans from various sources. Thirty-one borrowed money from banks, including Agri Bank and the Bank for the Poor, for eighteen million dong on average (\$1,058 US) with annual interest rates of approximately 1.888 percent (the annual interest rate of the Bank for the Poor is 0.65 percent). Nine of them borrowed money from their relatives for 10.5 million dong in average, (equal to \$617 US), with no interest in most of the cases (four of the nine also borrowed money from banks). One farmer borrowed money from his friend for 5 million dong, (equal to \$294 US), with an annual interest rate of five percent. The farmers' annual income is 87 million dong on average. In addition to the money flow shown in Figure 5.16, many farmers borrow money from intermediaries since they offer loans with low interest and no collateral. For farmers who have already borrowed money from official sources such as banks and various kinds of unions, often the only available financial source is intermediaries. Loans from intermediaries can affect the ability of farmers to negotiate with the intermediaries.

As another financial source, farmers belong to various organizations including farmers' associations, veterans' associations, women's unions and youth associations. Details are explained in the following section on social capital.

5.5.5 Farmers' perception of their quality of life with certified organic shrimp production

The objective of this section is to measure farmers' degree of satisfaction with the organic shrimp certification. This relates to the first research question asking what is the potential of eco-certification for high value food crops for export be a viable livelihood option for small-scale farmers in the global South.

Farmers' perception of life improvement through certification

Since most of the farmers came to the study area to do shrimp farming, which generates far more income for the farmers than their former occupations, the researcher asked certified farmers whether their life has improved with certified organic shrimp production and also asked non-certified farmers whether their life had improved compared to when they started shrimp farming. Among 11 farmers who have not yet participated in organic shrimp production, four farmers answered "Yes, it has improved", four farmers chose "No, it has not improved", and three responded "It is the same". Among five cancelled farmers, three farmers answered "Yes, it has been improved" and two farmers replied "It has been the same". The reasons are shown in Table 5.12 below.

Among certified farmers (farmers who were once certified but cancelled in 2007 were disaggregated from certified farmers), 23 farmers (about 45%) answered "Yes, it has improved", 11 (about 22%) chose "No, it has not improved" and 15 (about 30%) said "It has been the same". The

reasons are shown in Table 5.12 below. In addition, five ‘cancelled’ farmers were interviewed. Three of them expressed their lives were improved (though only one said the improvement is due to the certification). Two expressed their lives did not change so much with the certification.

Table 5.12 Farmers’ perception of life improvement through certification

Life improved with certified organic shrimp?	Reasons	# of farmers
Yes	The income is better	9 (compared to being agricultural farmers-5, or being office workers-4)
	Certification brought advantages including good technical support from the processing company, better pond condition, bonus allocation and using tiger shrimp PL from hatcheries (using wild stock except ones recruited naturally by water exchange is not allowed in the standards) is more profitable than using PL from wild (wild stock could not offer much tiger shrimp seeds and tiger shrimp is most marketable species).	7
	Through other income source or production means including other business such as hatcheries or additional production means such as larger land acquisition, these farmers income has improved.	4
	The income became stable	3
Total:		23
No	Certification brought disadvantages including no wild stock can be used and too much forest area that occupies space for more shrimp to grow and reduce the harvest ***	6
	(Though it is not related to certification) shrimp get sick more easily than before due to the degraded environment (such as water quality)	5
Total:		11
The same	No distinctive changes have been brought by the certification	4
	(Though it is not related to certification) shrimp get sick more easily than before due to the degraded environment. However, overall, no big changes	3
	(Though the life is the same), organic shrimp production require much labour to improve and maintain the pond condition	2
	(Though the life is the same), the certification brought disadvantages ***	2
	The income became stable	1
	The income has decreased a bit	1
No answer		2
Total:		15
Total:		49

Among those who answered that their lives have improved are farmers who actually appreciate the introduction of the certified organic program. Others, even though they answered “Yes”, indicated that they enjoy the benefits from shrimp farming when it is compared to their former income generating activities such as rice farming and officers (policemen and cooperative staff), but not the benefit brought by the certification. Opinions from farmers who answered that their lives have not improved show that half of them are clearly opposed to standards that define the use of PL, forest ratio in pond, and the number of shrimp which can grow in the area which is not covered by the forest. Half of the farmers who answered that the yield has declined due to disease caused by degraded natural environments such as water and soil quality, are residents who have lived in the LNT184 long enough to observe changes. (More than 20.6 years. The average of all interviewed households was 13.5 years.) Some expressed that the area has too many shrimp ponds in a concentrated area because of population growth and this has affected the water quality.

Among 11 farmers who are not certified, four of them stated shrimp farming generates more income than rice farming, two said disease epidemics have become frequent and the income has declined, and three answered that life is the same as before overall.

Figure 5.20 shows income changes before and after the introduction of organic shrimp certification. Income from aquaculture has increased for 13 households since they were certified. On the other hand, it has decreased for 25 households, and for six households it has been the same (plus, six households were excluded since they did not know the income before certification). In either case, it is hard to say that significant changes were brought by the introduction of organic shrimp certification. Low income households’ income can be influenced greatly by farming failure due to shrimp disease. Many of those whose income had more than doubled had different occupations prior to start organic shrimp farming such as rice farmers, police officers or a cooperative officer. Nobody referred to the certification program as a reason for their income increases and decreases.

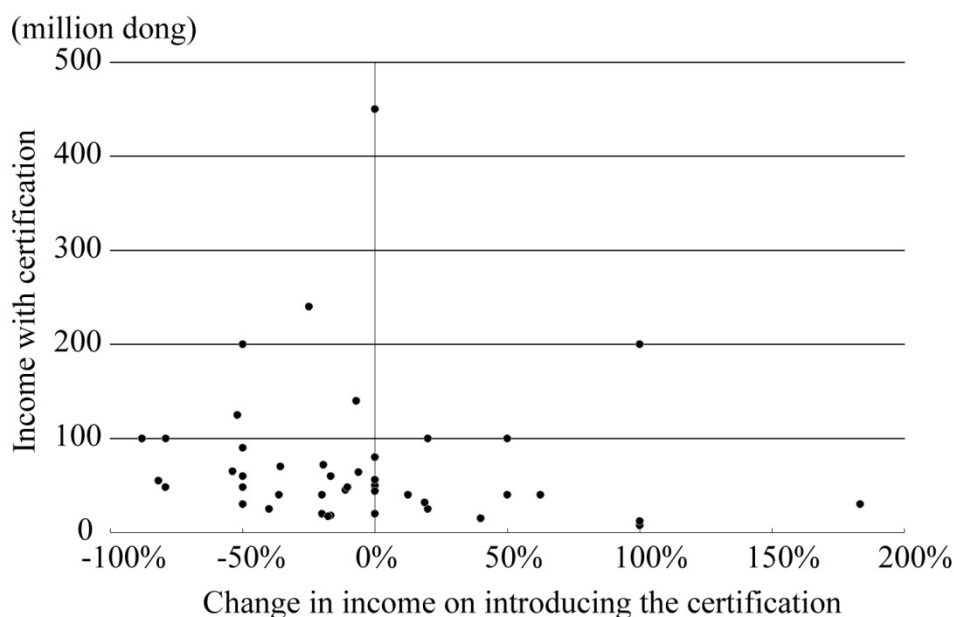


Figure 5.20 Change in income before and after the introduction of the certification

5.5.6 The livelihood determining relationship between shrimp farmers and intermediaries

Intermediaries play very important roles in the study area since they have the highest mobility and the most access to information. Thirty-four of 65 farmers answered that intermediaries are their primary marketing price information source (the rest responded that their neighbours are the primary market information source). Among certified farmers, only one farmer said his information source is his own certified intermediary. Other farmers get information from either non-certified intermediaries at markets, or neighbours or relatives who trade with non-certified intermediaries. This result shows that farmers cross-check market prices with several sources. Many non-certified farmers also receive market information from other non-certified intermediaries.

The other important role of intermediaries is as a financial source for farmers. Many farmers borrow money unofficially from their intermediaries. Three certified intermediaries interviewed said that they lend money to almost all farmers who sell shrimp to them. The amount is from one to five million dong and the loan is without interest. For farmers, loans from intermediaries are the most accessible financial source. However, during the interview, several farmers complained that because they borrow money from their intermediaries, they cannot negotiate on price and cannot change their intermediaries.

5.6 Principal findings and Summary

According to the certification scheme classification, the Naturland certification for organically grown shrimp introduced into this case study site is classified as third-party certification. Also, the average size and productivities of shrimp ponds in this case study can be classified as extensive small-scale shrimp farming in rural Southeast Asia. The field work result indicates technical and financial constraints are not the primary obstacles to getting certified for farmers in the focused case since the extensive farming method employed at the study site already complied with most of the organic standards by default. In spite of this, many farmers unofficially withdrew from the organic shrimp project by simply shifting their marketing channel back to conventional. However, this is not only because of insufficient economic improvement upon the introduction of international organic shrimp certification into household-level shrimp production but other factors as well.

There are a variety of stakeholders who have different incentives and priorities in this organic shrimp certification project. Farmers' responses especially highlighted their relationships with intermediaries. In the relationship among stakeholders in the network, inefficient flow of information and money, and restricted marketing options are revealed by the survey and interviews, as a major issue. These contribute to limiting farmers' capacity and lowering their willingness to participate in the network. Roles of intermediaries in relation to small-scale farmers are especially determining farmers' adaptations. In terms of power relations among stakeholders, the relationships between certified intermediaries and small-scale farmers are the most significant. First, the geographical conditions force farmers to build a good relationship with an intermediary (markets are far away and some borrowed money from them). Second, intermediaries are the only source for market information besides neighbours and third, are also the only source for organic shrimp price and premium payment information. This dependence on intermediaries probably occurs because the geographical difficulties for other stakeholders to distribute information to each farmer while intermediaries visit farmers to collect shrimp on a daily basis. As a result, over-concentration of power or capacity in one stakeholder was observed in this case study. In addition, although various organizations are in the study area, none is contributing to building social capital in pursuit of livelihood objectives particularly upon organic shrimp production. This point is analysed in detail in the following chapter.

The fieldwork also illuminates the unique administrative system applied exclusively to the case study site. State owned enterprises and joint enterprises between state and private capital have still strongly permeated economical activities in Vietnam, and the role of state-owned enterprise needs to be understood in this case as well. In addition, the influence of fishery policies at the government level which is creating institutional conditions on the organizational structure of farms needs to be taken into account as an important element in the regulatory network built around third-party certification for agrofoods.

Mangrove trees and other vegetation in shrimp ponds were mandatory for farmers to maintain under contracts with LNT184 in order to use a part of land but have nothing to do with shrimp farming which is the primary source of income for farmers. However, with the introduction of eco-certification, mangrove trees have become an important element of production necessary for certification. Also an extensive shrimp production method which is inefficient in terms of productivity has also been valued. This has great implication in agricultural development when the majority of shrimp farming is heading toward intensification. However, existence of the shrimp supply chains for both certified organic shrimp and conventional shrimp imply the influence of market logic where buyers purchase specific species as certified organic shrimp but the rest goes to the conventional market. In addition, the price for organic shrimp is not always higher than the price in the conventional market.

In the following chapter, the fieldwork results are analysed through the environmental regulatory network concept. This will reveal the factors limiting the farmers' degree of adaptation capacity to organizational structures of certification schemes. The final chapter then reviews how this case and analysis contribute to the agrarian transition discussion.

Chapter 6: Evolution of the regulatory network for certified organic shrimp

In this chapter, the case study (introduced in Chapter 5) is analyzed using Environmental Regulatory Network concept (ERN) concepts identified in Chapter 2. Environmental Regulatory Network concept, especially when applied to international networks constructed around environmental regulation and certification, gives a comprehensive explanation of stakeholders engaged in the organic shrimp production in Vietnam. ERN can explain actors' interactions and the evolving results from the interactions over time. In the final chapter, I discuss how the evolution of regulatory networks based on international organic shrimp certification influences the overall development trajectories of a rural society and its implications for other Southeast Asian countries.

6.1 Environmental regulatory network

As discussed in Chapter 2 (2.3.4), international third-party certification schemes for agro-food products have diverse social and economical implications for participants, including non-market oriented actors. Therefore, we need to use the analytical concept of “networks” rather than “chains”. In this case study, the following characteristics of networks were identified. First, certified shrimp or mangrove trees are important elements that connect other actors within a network since the ratio of mangrove tree to pond area is one of standards. Second, one of the key stakeholders, intermediaries, play an important role beyond their market oriented roles, in terms of the social and financial influence they have over shrimp farmers. A majority of farmers rely solely on income from shrimp farming (Figure 5.19) and the questionnaire showed that 34 out of 65 respondents obtained marketing information from intermediaries. Many of the farmers also borrow money from their intermediaries. The results of the questionnaire further revealed that among the 34 farmers who had obtained market information from the intermediaries, only one was a certified organic shrimp farmer. The others were all conventional farmers. This means that most certified farmers do not know the minimum price presented for certified organic shrimp that is also the base of price premium being paid later. The development social capital constructed between (certified) farmers and (certified) intermediaries is also analyzed as part of the environmental regulatory network. We also examine other interactions based on the regulatory network constructed around certified organic shrimp certification.

Shrimp farming is a very important source of foreign currency for governments in the global south and they need to control the quality to remain in international markets. However, many of the shrimp farms in Southeast Asia are small in scale but there are so many that states cannot sufficiently monitor all of them (Vandergeest, 2007). This means that not only retailers but also states of the global south need to verify the quality and are therefore involved in third-party certifications. For this reason, governments in shrimp producing countries are often deeply involved in shrimp industry in the South. Furthermore, in Vietnam more so than in other advanced shrimp farming countries, the

extensive farming methods are still in operation, resulting in smaller individual shrimp farms (discussed in chapter 4). The state's policy to increase and diversify shrimp production also increases Vietnam's desire to introduce third-party certifications. For this reason, the Vietnamese government had initiated the project in collaboration with European stakeholders in this case study and thus needs to be included in the analysis using Environmental Regulatory Network based on third-party organic shrimp certification.

Regulation and certification are non-material links connecting actors within an environmental regulatory network. In other words, relations created by certification do not necessarily involve material transfer (e.g., traceability pertaining to certification is equal to securing information flow). Yet, information flows are seen as critical in shaping a network, especially in certified alternative agrofood production for the following reasons. First, in alternative agrofood production, especially when material inputs into shrimp ponds are very limited as they are in this case study, how and under what conditions a food commodity is produced are subject to assessment. Second, intangible quality or characteristics are secured only by trustworthy information (traceability). Third, flows of both materials (e.g., shrimp) and information (e.g., attributes attached to the shrimp or invisible characteristics of shrimp) can be identified. For these reasons, the following section focuses on principal information flows within the organic shrimp regulatory network.

6.2 Information flow in the network

In food certification, the traceability from production site to consumption site is subject to assessment. However, the other way around (payment from consumption site to production site) has not yet been focused on within the certification scheme. In this section, I analyze how information on certification schemes and payments reaches the producers in Vietnam.

Voluntary withdrawal of farmers from organic shrimp certification (by simply shifting their marketing channel to conventional market; see Table 5.9) can be a result of insufficient information flow. Figure 6.1 captures how information on pricing, bonus allocation, certification status renewal and the fundamental meaning of organic aquaculture reaches or does not reach shrimp producers (based on Table 5.6, Table 5.7, Table 5.8). According to the representatives from European stakeholders, they are not allowed by the Vietnamese authority to hold seminars with farmers (Figure 6.1). Instead, indoor training sessions are held by provincial fisheries departments, but the sessions mostly deal with technical knowledge rather than providing information about what certified organic shrimp means and how the certification and benefit allocations work. Certification status (the middle flow in Figure 6.1) after the first time audit and then after each annual audit is supposed to be conveyed to each farmer through certified intermediaries. However some farmers do not find out about a status change until other sources (such as shrimp collecting station staff) confirm the changes.

Sales information (right flow in Figure 6.1), including a shrimp default price list published by the processing company (changable daily) and bonus allocation from the importer through the processing company in Vietnam, are both supposed to be distributed to farmers via certified intermediaries.

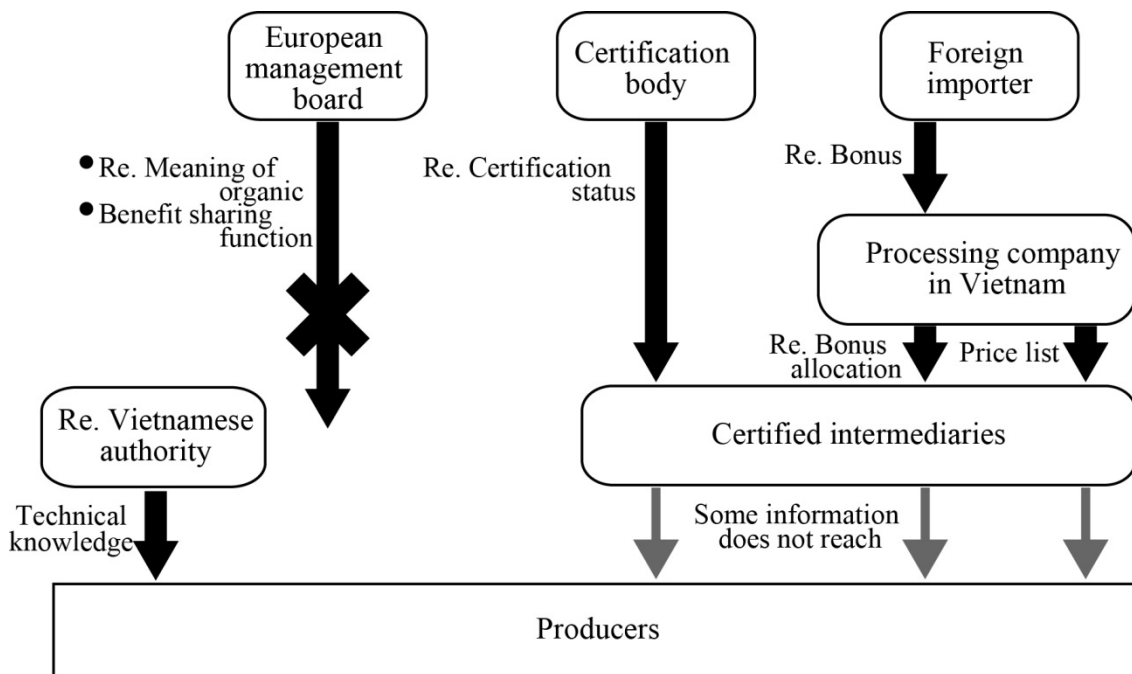


Figure 6.1 Information flow in certified organic shrimp network

The figure above clearly shows the concentration of information with the certified intermediaries and that some of the information is not passed on to producers. Entrusting price lists, which tell producers the legitimate price offered by the processing company, to intermediaries is not appropriate when the intermediaries' nature is to lower the price regardless of the price offered by the list. Most intermediaries do not show the price list to producers. In fact, not many producers know that a price list exists (only two out of 49 certified farmers know about the price list). The bonus allocation schedule is exclusively distributed by intermediaries and some producers do not receive the information. Changes in certification status are also distributed by intermediaries on behalf of the certification body. There is great confusion on producers' certification status, as shown in chapter 5 (Table 5.4). Too much dependency on intermediaries due to geographical difficulties is this project's weakness.

Explaining the meaning of organic aquaculture, including premium price and the individual standards, to the producers is very important if they are to bring the practice down to their sustainable livelihood. However, seminars organized by DOFI (shown as "Vietnamese authority" in the figure) put emphasis on technical issues such as water quality testing, disease prevention and documentation (see page 82). According to one of the European management board members, direct

presentation to producers by Europeans is not allowed. As a result, few farmers know how to calculate the bonus amounts based on their shrimp sales (Table 5.11) and how benefit sharing functions among stakeholders (Figure 5.16).

Evolution of organic shrimp regulatory network

Figure 6.2 shows the reasons for each stakeholder to access the organic shrimp certification. In other words, this is the initial networking built by their expectations toward the certification scheme and the texts on each arrow shows what each stakeholder expects to organic shrimp certification. Hereafter, the network built around the regulatory tool evolves and demonstrates if stakeholder expectations will be met within the regulatory network. Demand for shrimp produced in an ecological way as a result of increasing consumers' environmental awareness and retailers' advantages in adopting certain certification has resulted in the establishment of the first internationally certified organic shrimp case in the LNT184 area. Organic standards are specified through the negotiation between European stakeholders and Vietnamese stakeholders in consideration of specific environmental, legal and ecological conditions. Local exporters (the processing companies) and local buyers (certified intermediaries) access the certification scheme in consideration of diversifying their products for exporting.

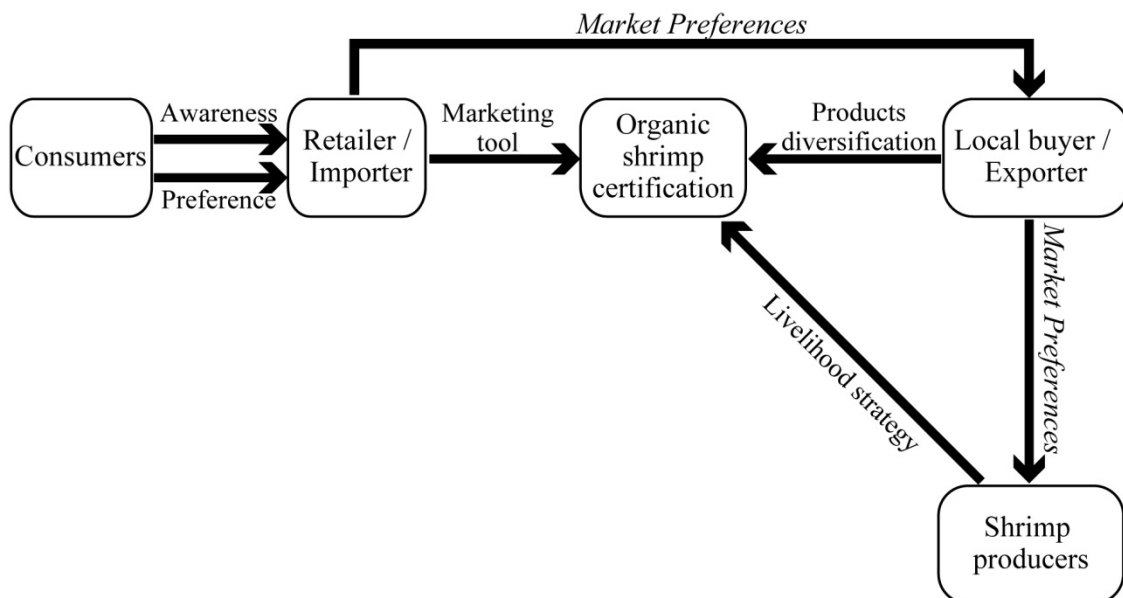


Figure 6.2 The initial organic shrimp networking linked by participants' expectations

Household-based producers who access the certification scheme expect the certification to improve their livelihood (livelihood strategies), and this expectation connects the certification and producers. These intentions are specified and expressed through the certification scheme. However

market preferences (italicised in the figure) such as shrimp sizes and species are not expressed as a part of the certification scheme but directly reach the local buyer as conventional market logic. In this way, together with (ethical) awareness, consumers' or retailers' preferences (taste and sizes, for example) are reflected in the environmental regulatory network centred on certified organic shrimp. Market preference is not taken into account during standard-making procedures, but emerges at the marketing stage in the discussions between the retailer (importer) and the exporter, i.e., disagreement between ecological justification (standards for certification) and market logic (real market demand). Based on the initial expectations in certification together with the posterior context that emerged, the regulatory network has evolved as shown in Figure 6.3.

In response to one of the research question raised in Chapter 1, Figure 6.3 shows all of the stakeholders involved in this international regulatory network and the incentives and intentions that connect each stakeholder into the network. A key feature of this organic shrimp regulatory network is the variety of stakeholders involved: governments at various levels (Vietnamese central government, LNT184 and people's committee), certification related European organizations (Naturland, IFOAM and IMO), the exporting company (in Vietnam) and importing companies (in Europe), local producers, local intermediaries, and consumers in the global north. Active involvement of government in a voluntary certification scheme is empirical evidence that differs from the literature reporting exclusion of governments from global commodity system. At the same time, the intentions and expectations that prompt actors to be involved in the regulatory network vary, as the figure shows. The analysis allows us to take into consideration how actors are interwoven into a network with their intentions and contextual structures such as social and economical backgrounds. For example, the history of LNT184 as a reforestation agency after the US war and its primary objective in forestry are two determining factors in organic shrimp projects and farmers' livelihoods; explaining the reason why LNT184 is not very keen on organic shrimp marketing and management. However, analysis based on a chain concept would fail to illustrate this factor when it has emphasis on linear relations such as business structure and profitability (discussed in section 2.3 in chapter 2). In addition, mapping is useful when illustrating alternative global food commodity settings where the entire network is based on a guarantee of intangible attributes of food. For example, one attribute attached to certified organic shrimp is the ratio of mangrove trees on farm land. In this sense, mangroves as a non-human actor in the network play a significant role as an articulation of environmental regulation. The concept of regulatory network can allow including these values and notions into analysis. It also visualizes and offers confirmation that environmental third-party certification is not only formed with solid technical assessment but also through various arrangements and negotiations among stakeholders.

As a practical tool, the network concept also identifies parts of the web which disrupt the smooth communication of the whole network and its potential amendment by making bypaths among

appropriate existing or new stakeholders. The interesting feature in the network as it evolves is the creation of conventional shrimp marketing channels between certified farmers, and either certified or conventional intermediaries (right bottom in the Figure 6.3). This shows the fluidity of the network and implies the farmers' adaptive action in response to the newly introduced regulatory network. This point is further discussed in the final chapter.

Much of the commodity chain literature demonstrates how commodity production and its supply are controlled by global buyers. In a lot of alternative agrofood production and distribution, global buyers are just one of many stakeholders, along with various actors including state agencies but they still hold a very influential position. The environmental regulatory network in the case study suggests a certain degree of fairness in terms of information access is needed in the organic certification network constructed between the North and South in order to maintain the network. At the same time, the flexible attitude of shrimp farmers in creating or regaining another network (conventional) is also revealed.

The recent movement of organic and fair trade certification into one scheme and label supports this need. For example, Naturland has announced that now organic and fair-trade certification are available in one package and an applicant can reduce the cost and time for dual certifications (Naturland, 2010). Especially when, like the coffee producers discussed in Chapter 2, shrimp farming is small-scale and subject to international price fluctuation, this one package certification scheme may be required in order to stabilize production and maintain farmers' incentives. In other words, traceability of information and benefit from consumption site to production site need to be secured.

In this chapter, aggregate factors contributing to the evolution of one environmental regulatory network and case specific issues were identified. The following chapter offers a broad explanation for transitioning rural areas in response to international environmental certification using the agrarian transition concepts.

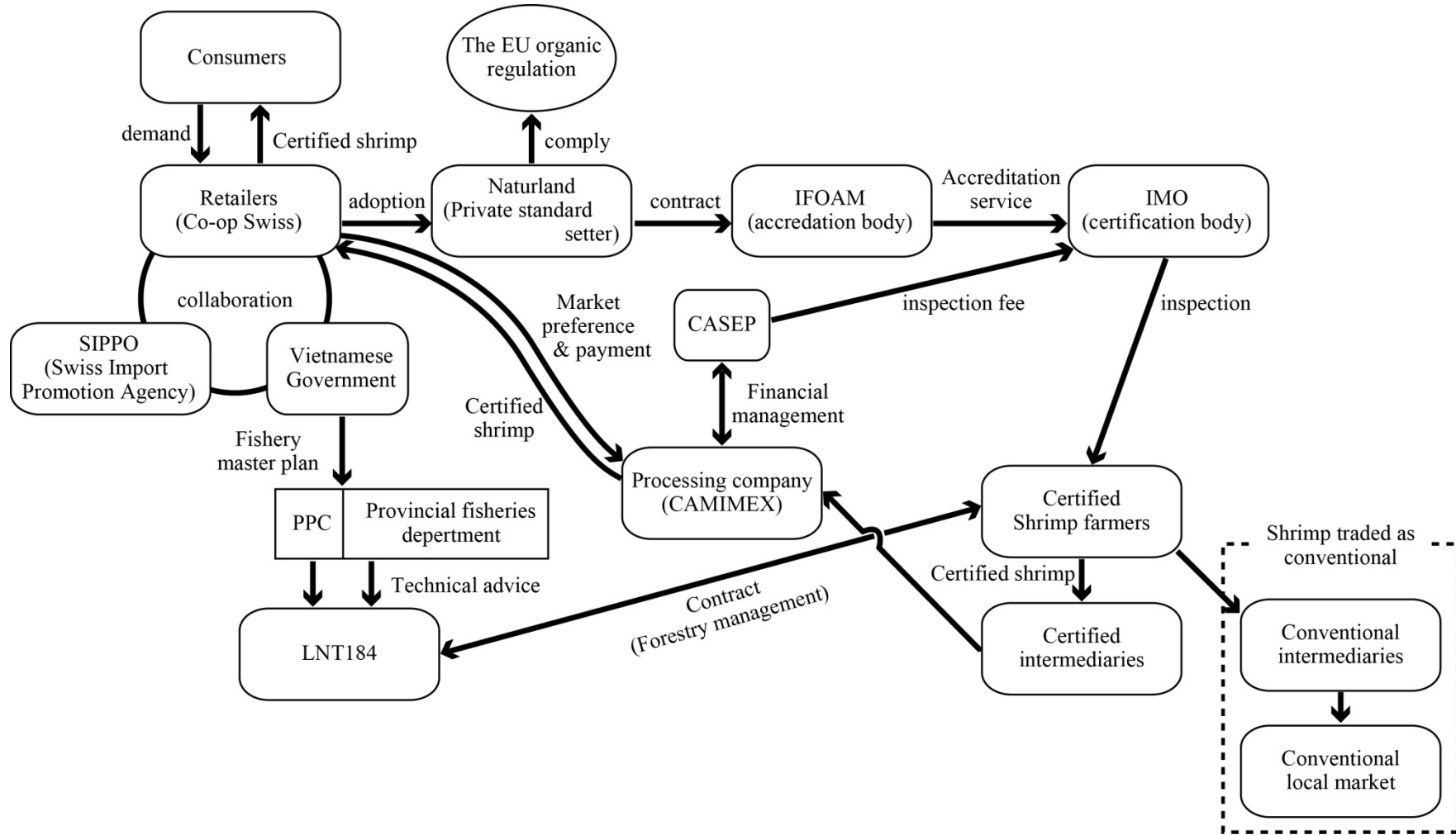


Figure 6.3 The environmental regulatory network of certified organic shrimp

Chapter 7: Agrarian transition and the “re-grounding” of farming in nature

The previous chapters discussed how the global agrofood system has been transformed into a network and how global actors and local actors fit into it. This chapter discusses the implications of the case study for overall development, drawing on the broad theoretical framework outlined in Chapter 2 (section 2.2). This framework examined how organic seafood certification has affected agrarian transition processes and livelihood opportunities for this particular case study in relation to global alternative agrofood trends. Based on the adapted network analysis shown in the previous chapter, I explore the implications of this case study for rural agricultural development in the South in relation to movements away from conventional agro-industry in the North, particularly in European countries. The analysis also includes the applicability of the concept of alternative agriculture developed in the western context. This discussion leads to the response to the third research question about the result of introducing the concept of alternative agriculture into the South, especially to areas where productivist agriculture has not yet become wide spread. In the following sections, I examine the concept of the re-emergence of peasantry in Europe and its implications in the agrarian transition processes in the South. This is then followed by the conclusions and discussion of further research opportunities in Chapter 8.

7.1 Agrarian transition and the re-emergence of the peasantry in the global south

Examination of networks for alternative agrofood reveals a wide range of stakeholders with diverse objectives and implies that new forms of global and local geographies of food have emerged (Figure 6.3). As discussed in Chapter 2, Friedman (1993) predicted that the food system controlled by global agrofood buyers will not be sustained in the face of a desire to change, coming from people experiencing poverty, unemployment, health threats, uniformity of food culture, and environmental degradation. Examples from European countries were introduced in Chapter 2, the results of food-related incidents, including Foot and Mouth disease and BSE, are some of these outcomes. Van der Ploeg's (2010) idea of a “reversal” or “re-emergence” of the peasantry representing the new global agrofood configuration and the new peasantry in alternative agrofood production is characterized by two processes: “re-grounding of farming in nature” and “multi-functionality” (introduced in chapter 2). This “reversal” is a form of resistance by farmers who once experienced food production which required high-inputs, and was controlled by large global buyers. Alternative agrofood networks involving international trading are also making efforts to increase connections with nature and create “approximated” (Guthman, 2004) trading in a non-geographical sense by making the system transparent and traceable with certification. The question here is, “What if this alternative notion of food production is brought into a place where peasantry has been preserved and has not yet been integrated (or has been less integrated) into the global agrofood system?” In this section I aim to interpret the case study site in the global south with

the concept of new peasantry, where peasantry encounter an alternative global agrofood scheme before experiencing paths toward industrialization or conventional global food commodity production.

Before getting into the discussion, the applicability of such Western-developed concepts in the context of the South needs to be examined. The interesting argument on the post-productivist concepts made by Wilson and Rigg (2003), picked up on in chapter 2, concludes that organic farming as an indicator of post-productivism needs to entail obvious changes from the original conditions such as use of chemical inputs and demand from consumers. On the other hand, farming in the South with no or few chemical inputs by default, which technically is defined as “organic”, is classified as pre-productivist. However, the case study for this dissertation demonstrates one example of organic farming that did not employ any changes in terms of inputs and technique/technologies but participated in the global market through organic certification based on demand from consumers in the post-productivist societies.

The participation of (environmental) NGOs in project development (or policy making) is another indicator of post-productivism. In the case study, the presence of a European organization from the beginning is observed. However, SIPPO is a governmental organization that has been working with developing countries to enhance trade with Switzerland,(see section 5.4 in chapter 5). This made this project rather unique in a sense that an alternative agrofood project is initiated without a strong independent NGO presence. In addition, the environmental regulatory network considered in the previous chapter suggests that participation in a global agrofood network does not necessarily exclude governments. In many cases governments play the central role in creating policies when introducing alternative agrofood production in the global south, especially for exporting purposes (thus the reappearance of governments in the food production sphere). Also, contrary to Wilson and Rigg’s (2003) concern about the rise of the global agrofood system, participation in a global agrofood network does not necessarily bring productivism into the South. In this case it instead rationalizes existing local farming practice within a post-productivist context with certification schemes. In this sense, the case study fulfills at least some of the conditions for post-productivism and interestingly, the international certification scheme, an expression of ideologies of the North, has helped them to occur.

The concept of agrarian transition offers an interpretation of the influences and results in rural areas of global market transitions over time. Agrarian transition is classically defined as a “range of processes linked to the increasing importance of the market economy, which are at work within the agricultural sector and affect the agricultural as well as the rest of the rural population” (Rigg, 2006). However, modified global agricultural settings have raised questions about assumptions regarding the linear paths of transition and have precipitated “rethinking in critical inquiry into the nature, scope and direction of agrarian transformation ...” (Borras, 2009, p.5)

Environmental food certification introduced in the global south offers an example of such a contradictory agrarian transition path. At the case study site, the peasantry (practicing a less-industrialized production style) is characterized by an extensive shrimp farming method with multiple species and less market integration. These characteristics of the persistence of a peasantry are the result of a unique administrative scheme focused on forest restoration after the US war in Vietnam. It can be expected that participation in the global agrofood production and trading via alternative food production networks should bring different changes compared to those brought by integration into the conventional global agrofood system. In other words, the analysis of AT processes and the concept of the re-emergence of the peasantry in the European context—where industrialization and globalization penetrated much earlier and further and has created resistance (expressed in various alternative food movements)—may have valuable implications for southern farmers, as demonstrated by the case study of this dissertation. The re-emergence of a new peasantry in Europe is linked to an alternative vision of agricultural development based on a re-valuing of characteristics such as smallholdings, individual-owned, multi-species production approaches, and geographically approximated agrofood trading. In the South, approximation occurs by shortening supply chains and making them transparent through schemes to ensure traceability (i.e., approximation of non-physical distance). On the other hand, in the South, and in Vietnam specifically, these characteristics do not have to be re-introduced since they still exist.

Agrofood trading needs to be secured by the traceability function of certification schemes instead of geographical approximation or face-to-face relationships. One of the ironies of the imposition of European standards on Southern organic seafood production may be that it allows Southern peasants to maintain some traditional characteristics of peasant farming (small holdings, individual ownership, multiple species) that actively contribute to longer term resilience and sustainability in the face of global market shifts. Thus, what this case study suggests is that Southern peasants may not have to go through losing and then reclaiming these characteristics by going through all AT processes. It is also different from a re-emergence of peasantry out of autonomous resistance based on “changing ideologies or attitudes” (Wilson and Rigg, 2003, p. 701). Figure 7.1 shows how each agrarian transition process has been blocked or enhanced by the introduction of organic shrimp certification at the case study site.

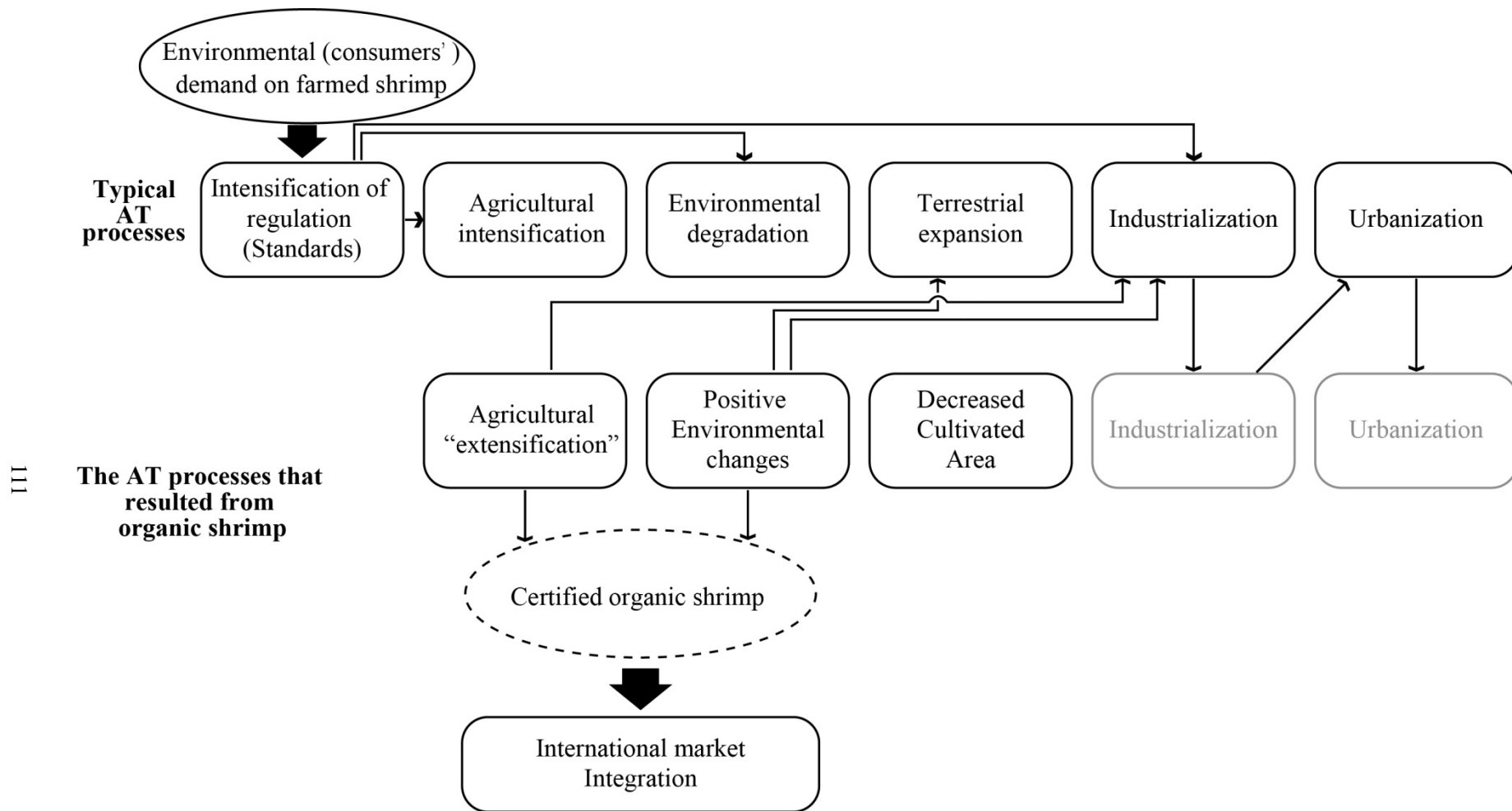


Figure 7.1 Blocked and enhanced AT processes at certified organic shrimp production

7.1.1 The influence of international eco-labelling on agrarian transition processes in Vietnam

Food standards based on perceived appropriateness in one society (value of the North), for example food standards for “green food” (alternative ways to produce food with less environmental degradation), may modify, reshape and/or hold back AT processes in agricultural sectors of developing countries by influencing AT processes both directly and indirectly. A process influenced by such international standards interconnects with other processes and continues passing the influence to other processes. The Figure 7.1 shows modified trajectories of agrarian transition in the case study site in Vietnam as a result of the introduction of an organic shrimp certification scheme. The following six points explain modifications in AT processes initiated by introduction of environmental food certification.

1: The concept of environmental demand on food of a society and intensification of regulation

Through the use of standards, the concept of environmental consumers’ demand on food⁵² from one society may be exported to another society where people may not share the same values. The former then imports products produced in accordance with the standards developed in its own interests. If complying with certain standards requires some upgrades for the producing society - for example new technology and new handling skills, the result is intensification of regulations. In the case of certified organic shrimp in Vietnam, standards set by Naturland (an international certification body based in Germany) are used, and Coop Swiss (the second largest retailer in Switzerland, accounting for one half of organic food sold in the country) is the exclusive importer. In the European Union, a minimum set of mandatory organic seafood standards has been developed for retailers operating in the EU countries⁵³. Thus European standards, expressing European consumers’ demand or value in the definition of organic seafood, are exported to Vietnam. Naturland standards cover a wide range of objectives including ecosystem harmony, human health, animal welfare and social welfare, all reflecting certain contemporary European values.

2: Intensified regulation (standards), agricultural intensification and territorial expansion

Intensified regulation in the form of organic shrimp standards dictates the yields (e.g., employing low shrimp stock density farming methods), industrial inputs (e.g., requiring no artificial feed and chemical compounds) and crop types (e.g., only native species). Intensified regulations based on Naturland standards encourage “extensification” of agriculture while the mainstream is increasing agricultural intensification. A low productive farming method is “justified” by the

⁵² Depending on the country, this could be initiated by global buyers or retailers even when the demand from consumers has not yet developed.

⁵³ In the United States, indicating “organic” on seafood products is not allowed, except in the state of California and on shrimp produced in certified farms in the US under the categories of livestock.

standards. In addition, the mangrove forest that is often seen as an obstacle to territorial expansion turns out to be an important means of production in this case study (see 3 below).

3: Intensified regulation, agricultural territorial expansion and environmental change

Hereafter, the processes 3 to 5 are expected outcomes that will follow 1 and 2 in the case study.

The core standard applied in certified organic shrimp production in Ca Mau is the ratio of mangrove forest area to pond water surface area. To be certified, most shrimp farms need to increase the forest area, while actual space used for shrimp farming is decreased. So, in terms of the territorial expansion process of AT, intensified regulation indirectly reshape the AT process of agricultural terrestrial expansion and the space created is filled by positive environmental changes. Positive environmental changes are also enhanced by regulating the source of post larvae (PL) (e.g., wild PL should not be used so as not to disturb the surrounding biodiversity), reducing energy consumption (e.g., no permanent aeration can be used) and prohibiting of antibiotics and chemical compounds, which also positively contributes to human health.

4: “Extensification” of agriculture and industrialization

The requirements of intensive shrimp farming for export often generate disturbances in conventional rural communities and sectors. In contrast, the extensive farming method (agricultural extensification) approved by the international certification process (intensified regulations) allows the area to retain small-scale farms operated by individual households. Therefore, in the study site, it does not create the industrial labour markets or changes in household livelihoods that are often attached to industrial shrimp farming. One could then argue that shrimp farming based on appreciation of intangible attribution, such as the healthier ecosystem and the extensive farming method, is protected by regulations from becoming fully industrialized.

5: Lack of industrialization and urbanization

Without industrialization in the study area, urbanization is also curbed. However, processes of industrialization and urbanization in the other parts of Vietnam or surrounding countries may still influence AT processes in the study area (e.g., through youth migration).

6: Intensified regulation and global market integration

This final point is derived from the case study analysis. Each process related to AT is influenced by international certification (understood as intensified regulation, both directly and indirectly) as well as by a series of linkages leading to international market integration (Figure 7.1). However, when it comes to international market integration, standards which are developed based on

European consumers' demands and values do not fully express market logics. In other words, ethical preferences are reflected in standards but dietary and shopping preferences (taste, presentation and price) are reflected in the purchasing behaviour of importers. In this particular case study, even though all shrimp species are certified, farmers can only sell black tiger shrimp, since importers and intermediaries do not buy other species. As a result, farmers who want to sell all species of shrimp at once shift their marketing channel back to conventional.

Commonly described agrarian transition processes and farm sector transformations will not likely occur in the study area. The capital accumulation process toward industrialization, which used to be (or still is) the driving force of social and economical changes in many cases, was replaced. Depending on what is emphasized or valued as appropriate (e.g., environmental conservation), agrarian transition processes and farm sector transformations have been enhanced, modified, reshaped or held back, as shown in several figures in the previous chapter.

“Proximity”, valued in “a democratic food policy” (Friedmann, 1993), which is contrasted to a food system, giving priority to durability of food, season-lessness, time-lessness and place-lessness, began to broaden in definition to include such things as transparent locality, or connectivity (contrast to physical proximity) (Alexander, 2006) as a means to unmask anonymity. This widened concept of “proximity” allows the perceived values of the global north to reach the production spheres in the South through certification schemes such as organic and fair-trade. This different dimension of proximity or locality is fundamental to differences in the origin and development of alternative food movements between the North and the South.

In contrast to the re-emergence of peasantry in Europe and elsewhere, this case study can be seen as an example of re-evaluation or re-discovery of rural food production in the global south by a global alternative agrofood network which introduces the turn against conventional agriculture in the North into the rural South. In other words, a preserved peasantry is evaluated as proper by the notion of societies where people experienced AT processes well before and are valuing agrofood based on attributes other than just productivity and economical efficiency. In this sense, the North experienced classic agrarian processes (a series of processes toward industrialization and intensive farming) that influenced the agrarian transition trajectories in the South. Alternative agrofood networks, including Environmental Regulatory Networks translate values of the North into the production in South through actors including those with non-economic incentives. However, without farmers' autonomous will to stay with the farming style (e.g., organic by default), the rural South could drop out of the alternative agrarian path, especially when the alternative agrofood production in the South is designed to fit to the global market to the advantage of global buyers (Belton et al., 2011; Hatanaka, 2005). To provide further evidence of this, the process of network evolution shown in diagrams in the previous chapters also implies farmers' adaptive action where some certified shrimp producers eventually re-connect to a conventional shrimp market chain as an articulation of

farmers' dissatisfaction with the organic shrimp program.

As an analytical contribution, analysis of this case study suggests a view in which ongoing agrarian transition in the South can be impeded or blocked by direct regulations introduced by international environmental certification. Such environmental certification is based on the values of global north consumers who have experienced agrarian processes and are now experiencing a reverse movement. In addition, the environmental regulatory network approach offers a tool to investigate how the values of the North are articulated in the South through the direct intervention of certification as well as through investigating who is involved in the process.

The following chapter gives short conclusion organized around the three research questions.

Chapter 8: Conclusion

In this dissertation, the case study and analysis focus on production sites and small-scale producers in the global South in relation to changes in the global agrofood network, since it is necessary to understand how global shifts have materialized at the local level and what the results are (Murray, 2002). In the first chapter, I raised three research questions: (1) Can eco-certification for high-value food crops for export be a viable livelihood option for small-scale farmers in the global South when there are no technical and financial constraints?: (2) How has organic seafood certification been an influence in determining agricultural transition paths and livelihood opportunities for one group of shrimp producers in Ca Mau province?: (3) What are the implications of alternative notions of food production in a place where the peasantry has been preserved but has not yet been integrated (or fully integrated) into the global agrofood system? In the following sections, I organize my concluding comments around these research questions.

8.1 Eco-certification: a viable livelihood option for small-scale farmers?

The case study analyzed for this dissertation shows that technical and financial constraints, which have often been reported as the main obstacles for small-scale producers in the South to be initially certified, are not the biggest obstacle to the shrimp farmers' initial involvement in international high-value agrofood trading. In regard to technical obstacles, the farming method employed in this case study is organic by default and in regard to financial constraints, it is not necessary for farmers to pay the certification cost. However, as shown in Chapter 5, a number of post-certification factors gradually lowered farmers' incentives, causing them to eventually withdraw from the organic shrimp certification network: (1) the farmers' confusion as to their certification status; (2) concentration of information sources in intermediaries (e.g., organic shrimp price lists and information regarding bonus allocation); and (3) unclear information and benefit sharing mechanisms due to the governance structure of the project.

Export-led aquaculture and development

As discussed in Chapter 2, aquaculture is often considered by development agencies to be a good option for diversifying local livelihoods and improving food availability (increasing protein intake) at the local level. At the national level, development of aquaculture can attract foreign investment and export-oriented aquaculture can obtain foreign currency to help pay back foreign loans and ultimately bring about economic growth. However, these ideal outcomes of aquaculture development have been questioned by some researchers (Rivera-Ferre, 2009; Macabuac, 2005). Farming scales, targeted markets and the labour force must be taken into account to evaluate the efficacy of aquaculture development in alleviating poverty. Murray (2002) warns that under more liberalized global trading, small-scale producers in the global South eventually compete with

large-scale competitors. Typically, aquaculture developments that attract foreign investment are large scale, and monocultural, and target high value species (high in the food chain) for export, which bring large profits for certain stakeholders such as owners and inputs suppliers. This is typical in industrial shrimp farming (Stonich & Bailey, 2000). In general, export-oriented farming requires infrastructure upgrades, expensive inputs, and must meet stringent quality standards. In contrast, the case examined in this dissertation demonstrate the creation of small-scale export-oriented systems without requiring much upgrading. However, the analysis in the previous chapter demonstrates that information and benefit sharing mechanisms were not clearly explained to the farmers, and this led some farmers to withdraw from the project. A governing structure that can coordinate information and payment flows is crucial.

As introduced in Chapter 2, what has changed in the global market is the growing demand for seafood raised in an ethical and environmentally friendly manner. Farming methods that are based on local knowledge and enable low input farming can help farmers to meet these standards. Small-scale producers tend to be more committed to production because of its economic importance to their livelihoods (Boselie et al., 2003). As shown in this case study, a specific certification scheme is a way to direct a special commodity to a specific market regardless of the distance between the production site and consumption site. However, there are still governance issues, especially regarding post-certification arrangements. The implication of this case study, the only case of organic shrimp farming in Vietnam, for other places in Vietnam and other Southeast Asian countries is that organic shrimp farming based on locally developed farming methods can potentially expand⁵⁴. However the key to a successful project is the good governance and maintenance of the network, in order to sustain incentives for all stakeholders.

The shifting state role in environmental governance

International certification for alternative agrofood production schemes relies on a market mechanism to internalize ecological and ethical costs in product prices. Thus, efforts to develop such an ecologically-based agriculture will only succeed if they are rationalized within a specific political economy. At the same time, third-party certification is not purely technical and object-based but has embedded power relations (Konefal & Hatanaka, 2011). Thus, the success of this kind of certification depends on finding a balance point where standards are ecologically (or ethically) credible (to a level that does not attract too much criticism for being greenwashing), but not too high so as to be a disincentive for farmers to modify their practices. Importantly, discrepancies between ecological justifications and market logic (as shown in the previous chapter) can be widened by factors, such as the political economy of a country (Thiers, 2005). For example, the Shrimp Seal of

⁵⁴ An article on a certified organic shrimp case in Bangladesh (Paul & Vogl, 2012) also supports this. However, governance mechanisms and networking are not explicitly mentioned in the article.

Quality (SSOQ) could not be expanded in Thailand since the Thai government perceived this certification as infringing on the government's jurisdiction. In this case study, the market was created by demand from overseas. For a certification scheme to become well established, it needs to find not only an ecological setting that meets the standards but importantly, it also needs to be in line with the Vietnamese government's policy regarding the development of environmentally friendly shrimp aquaculture. As shown in Chapter 4, one of the Vietnamese government's objectives in aquaculture development was "Ensuring that all fisheries and fishery-related activities are sustainable for this and future generations to continue to benefit from fisheries" and so a pilot project suggested by European stakeholders was welcomed. In this sense, state actors that used to play a direct role in regulating environmental issues are now playing the role of "facilitator" rather than a "regulator" (Tran Thi Thu Ha et al., 2010). However, in this particular case, in which local government's positive involvement or "facilitation" is not observed, I would rather claim that the government offers a "platform" for stakeholders to form an environmental regulatory network.

8.2 International organic certification justifying peasant production practices

The remaining two research questions are synthesized in this section. The case study in this dissertation is one of just a few cases in which producers have been able to continue to practice extensive farming methods up to the present due to the unique administrative status offered by reforestation efforts (as discussed in Chapter 5). Although this is a unique case, it offers important insights for development overall, and specifically in agricultural transition paths in rural areas of the global south.

The contribution of this dissertation is to demonstrate that the introduction of international organic shrimp certification can be valuable, not because it changes things by upgrading local food production to meet global commodity standards, but because it may help production practices to remain the same by justifying the peasant-like production methods within a framework of alternative commodity production through eco-certification. Therefore, I argue that an alternative agrofood certification has the potential to reshape the trajectory of agrarian transition in the global south. Although technological innovation led many Asian coastal nations to experience a boom in industrialized (export-led) shrimp farming in the 1980s (Hall, 2004), Vietnam was one step behind, and the upgrading of production systems and technologies spread more slowly. However, in Vietnam too, the main trend in the shrimp industry has been intensification. This project is, in this perspective, moving in the reverse direction from the more prevalent trajectory of shrimp farming in Southeast Asia.

8.3 Opportunities for further research

In this section, I discuss further research opportunities identified through this particular

case.

Examining organic farming schemes can reveal different political-economic structures in a country (Thiers, 2002) in relation to the global political economy of food, such as in the examples of China and Mexico introduced in Chapter 1. In the same way as these South-North initiatives, this can also be applied to rural-urban initiatives within a country, as many food-related certification schemes and networks also evolve within developing countries. The classic agrarian question assumes that the transition of societies is a one-way trajectory of industrialization in urban areas, supported by appropriation of surplus labour in rural areas by including large landholdings and low cost reproduction (high-yield with technological advancements) (Bernstein, 2004). However, countries experiencing agrarian transition today are doing so in a very different international context from countries that have undergone agrarian transition in the past (Rigg, 2001). One of the major differences is that current agrarian transition is not only driven by a series of exercises directed toward capital accumulation but also by alternative objectives. As this case study shows, it appears that agrarian transition can be modified through, for example, relationships with the North via environmental certification (Borras, 2009). Current agrarian transition trajectories in one country can certainly be influenced by political and economic phases in other countries via mechanisms such as certifications schemes that bring the values and ideologies of one society into another, irrespective of which phase the latter is in. Similarly, how domestic development, along with changes in institutional settings and agricultural policy, within a country influence agrarian transition in its rural areas needs to be re-visited, as alternative agrofood consumption is becoming common in urban areas in the South as well. One valuable avenue for further research would be to seek cases of alternative or reshaped agrarian transition initiated not only within the framework of certification for exporting but also within domestic markets in the global south.

The other further research opportunity is comparative studies with other internationally certified organic shrimp projects observed in other Southeast Asian countries such as Indonesia (e.g., Hatanaka, 2010a, 2010b), Thailand (e.g., Vandergeest, 2007; Vandergeest & Unno, 2012) and Bangladesh (e.g., Islam, 2008; Paul & Vogl, 2011, 2012) in regard to the governments' platform settings (discussed in 8.1), the structure of their environmental regulatory networks, and ways to maintain incentives for stakeholders. Based on interviews with Thai government officials, shrimp industry stakeholders, and coastal communities who were influenced by shrimp farming, Vandergeest and Unno (2012) contest the assumption shared among international certification agencies that the global south requires "trustees" who can protect their environments on behalf of incapable governments agencies. They also note that the Thai government is acting as a pioneer among other Asian shrimp producing countries by establishing a national organic shrimp certification scheme as a countermeasure. They suggest the need for more effective communication by transnational eco-certification with relevant state agencies and even social movements in

Thailand. Konefal and Hatanaka (2011) states that this communication needs to be a continuous practice if a transnational third-party certification is to be supported in the global south. This theme is also an issue for further research, as the Vietnamese case examined in this dissertation did not allow European partners (including donor agencies) to contact the farmers.

As discussed in 7.1, the absence of NGO presence made this particular case an anomaly among other alternative farming initiatives. Therefore, another possible research theme within the post-productivism framework could be to examine the role of NGOs in the global south in supporting the production of internationally certified agrofood commodities .

Conclusion: Where ecology meets the market

Food system re-localization is typically understood as a movement to reduce the distance that a food commodity travels between producer and consumer. As shown in this study, however, re-localization in the current global context can also mean the projection of place onto a food commodity to highlight its origin or attributes secured by transparent verification mechanisms. This case study reveals that international food certification that defines how and under what conditions a food is produced also influences the agrarian development discourse at the production site by translating certain values of a distant population who have reached a post-productionist phase into production for those sites. This translation involves the coordination of various interests. Drawing also on the expansion of voluntary shrimp certifications in Vietnam, Anh, Bush, Mol and Kroeze (2011) analyze the “multi-level environmental governance” (p. 373) that includes state-led policies and international, national and local initiatives. They argue that the challenge in certification is in creating networks across difference levels of governance in Vietnam. This dissertation has demonstrated that the concept of environmental regulatory network is useful for mapping out such multi-level approaches in order to regulate the environment around agrofood production. It has also contributed to explaining the narrative of how post-productionism may change future development discourse in the rural South within the framework of an environmental regulatory network. The findings of this dissertation emphasize that certification schemes for alternative food production, and the (environmental) regulatory network created around such certification schemes, need to have institutions in place to secure the farmers’ share of benefits and their access to information. As demonstrated in other cases of alternative agrofood networks for commodities in Southeast Asia (Hatanaka (2010a) in Indonesia; Islam (2008) in Bangladesh; Vandergeest (2007) in Thailand), this is a foundational requirement for certification to take root as a locally-adapted sustainable program. Hatanaka (2010a) claims that international alternative agrifood networks may offer opportunities for farmers in the South but that they cannot be sustained over the long term. In the case particular case dealt with in this dissertation, the engagement of consumers (or the retailer who is supposed to be the information source in response to consumers’ inquiries) is limited due to an over-reliance on

third-party certification and limited direct engagement by the Vietnamese local authorities on site. In this sense, I suggest that re-localization in the current global context still needs to create face-to-face relationships, in which both sides can make certain that the premium price paid is delivered to producers.

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Appendix A: The summary of Naturland organic shrimp standards

Part A: the general principles

Categories	Principles
1. Site selection and influence to surrounding eco-systems	Surrounding natural ecosystem should not be disturbed (by effluent, escaped farmed animal, new or existed farm construction and physically harming predator animals)
	Natural water system and function in the ecosystem should not be prevented by farm activities. In order to achieve this, area with adequate size of natural vegetation shall be chosen, conserved and re-planted.
2. Species and stock origin	Native species is preferable.
	Polyculture is preferable.
	Organically produces stock is preferable. Transgenic organism should not be stocked.
	To be labelled as organic, animal should be kept and fed at least 2/3 of their lifetime.
3. Breeding	Natural breeding and no use of hormones are asked. When natural breeding cannot be expected under the extreme condition, conventional methods can be used in accordance with procedure prescribed by certification body. However, stock produced by such methods cannot be labelled as organic
4. design of farming system, water quality and stock density	The farming environment (including stock density) should be laid to make sure not to disturb species inherent behavioural patterns regarding moving, resting, feeding, reproducing and water quality
5. Health and hygiene	Natural remedy is preferable to use in case of disease. Use of conventional medicine is only permitted in vertebrates with examination by a veterinarian but not permitted in invertebrates (e.g. molluscs, crustaceans).
	Using chemico-synthesis drug and hormone on a regular basis and as preventive measure are not allowed. Following treatments can be used as preventive way as well as on regular basis. <ul style="list-style-type: none"> • Natural physical methods (drying out, freezing out) • Non-toxic, inorganic compounds (e.g. hydrogen peroxide, common salt, lime, quicklime, sodium hypo chloride) • Naturally produced non-toxic compounds (peracetic acid, citric acid, formic acid, alcohol) • Naturally produced vegetable substances • Homeopathic products • Stone meals
6. Oxygen supply	Constant artificial aeration is not allowed
7. Fertilizer	Organic materials can be used as fertilizer to increase the production capacity. The fertilizer must be produced from certified organic farm operation if possible. In case certified it is not available, conventionally produced organic fertilize can be used but it must be approved by the certification body.
	Combinations with other forms of animal husbandry (e.g. poultry, pig) or crop production (e.g. rice, water hyacinths) are suggested.

Categories	Principles
8. Feeding	An upper limit for feeding amount is determined regarding each production environment. Type, quantity and ingredients of feed need to be determined according to each species' ecologies.
	All the feed must be produced according to the Naturland' standards or at least IFOAM-Basic Standards. When certified organic feed cannot be obtained, conventionally produced feed will be allowed to be used for up to 20% of total feed quantity.
	Feed produced from genetically modified materials is forbidden.
	For raising carnivorous species, animal components in their feed should be reduced as much as possible or replaced by vegetable origins (specific values applied to each species)
	Feed should not be made from conventionally raised terrestrial animals (mammals, birds)
	Special standards are applied to fish meal and fish oil to make sure the responsible resource use
	Synthetic feed additives including antibiotics, growth promoting substances are not allowed
9. Transporting, slaughtering and processing	Transporting and slaughtering must be done without any unnecessary suffering of animals
	'The cold chain' (p. 7) from the point of slaughtering to the point to retail sale should be kept strictly to maintain the product quality
	For processed products, only materials that follows organic standards may be used
	Cleaning in production room must make sure a complete hygiene as well as a possible environmental protection. Chemical cleaning agents is not preferred. However, when they are used, daily use must be recorded. Wastewater from slaughtering must be purified before it is released to the environment
10. Smoking procedure	N/A

The second section of the standards, 'Supplementary regulations for specific farming systems and animal species' consists of two part. 'Part A- Production of shrimp in ponds' is a set of standards for shrimp farming in pond

Part B- Shrimp production in a mangrove-shrimp system

This final part of the standards shows the case-specific standards for a mangrove –shrimp farming system specifically in the study area. A single set of standards for shrimp farming is always applicable or suitable for every place since farming methods and the environmental conditions are so different from place to place. In addition, organic aquaculture standards made by international agencies must be correlated with legal statement of local government. In any cases of conflict, negotiation between two parties is required until they achieve compromises. The followings are some of case-specific additional and exceptional standards.

	Part A	Part B
1. Site selection- mangrove protection	Removal or degradation of mangrove forest in order to construct or expand shrimp farms are not allowed	'Management of mangroves' (p. 15) such as replanting and thinning can be done in accordance with current regulation
		70% of total farm area should be reforested with mangroves within 5 years
	Certain distance is needed between organic farms and conventional farms or other activities that possibly discharge pollution	
2. Protection of ecosystem in and around farms	Quality of water from farms have to be monitored and recorded monthly (ammonia, biological oxygen demand, dissolved oxygen etc) and sufficient measure should be taken to diminish the spillage nutrients and solids from farms. Sediments need to be removed from channels and used in appropriate way	
	Neighbouring agricultural activities must not be influenced in negative way. Sufficient preventive methods should be taken if any indication is observed	
	To make sure that farms have better ecological system, slope and top of dykes must be covered by vegetation as much as technically possible and at least 50% of total dyke surface within 3 years after conversion with some recommended species	
	Records of foraging predators and estimation of loss must be kept in order to find ecologically and economically sufficient predator management measure. Unwelcome fish in ponds can be only removed by mechanical means or by applying natural ichtyocides. Any synthetic herbicides and pesticides on farm are is not permitted	
3. Species and stock origin	In marine and brackish water farms, only native species must be stocked. For freshwater culture, non-native species must be approved by the certification body	Only native species must be stocked. Non-native fish and shrimp species are prohibited.
	Either polyculture system and different species are recommended	
	As a ultimate objective, farms need to be fully free from wild caught post-larvae (PL) or brood stock in accordance with schedule set as follows: <ul style="list-style-type: none"> • Stocking with wild caught PL allowed for 1 year • Stocking with PL from wild caught egg-bearing female shrimp allowed for 2 years • Stocking with PL from wild caught brood stock allowed for 3 years 	Stocking wild larvae or fingerlings entering ponds naturally and passively with tidal flow are allowed
	Stocks produced in certified organic way shall be used as soon as possible	

	Part A	Part B
4. Breeding	Reproduction process is preferred without carrying out physical harms to brood stock. Alternative methods must be tried with at least 10% of the brood stock kept for reproduction purpose	
	Use of conventional medicine to larvae kept under laboratory condition is allowed for a limited time period (provisional time limit, two years after conversion)	
5. Grow-out ponds' design and stock density	Efforts to produce natural feed for shrimp (such as benthic algae and diatom) by designing ponds appropriately	
	Ponds should not be heated, aerated and oxygenate permanently. Emergency use of them under extreme condition is allowed.	
	Water exchange rate should be limited as low as possible. Pumping period should be limited to high tide and it should be used in energy sufficient way. Records on energy consumption per area should be recorded to be presented at annual inspection.	Water must be exchanged, filled and drained by tidal flow
	Maximum stock density (provisional) at the time of harvest should be at 20 animals per m ²	In mangrove-shrimp systems, the stock density do not have to be set since it is regulated by the natural carrying capacity (available feed in a pond). However, the productivity of this system is estimated to be about 100-500kg/ha/year and the actual stock density is ~2 PL/m ³
6. Health and hygiene management in grow-out ponds	Preventive methods prior to disease outbreak should be taken including choosing healthier PL and monitoring water quality. Using probiotic micro organisms in the ponds is allowed. Condition of animals should be observed and recorded in order to detect correlation between treatment and phenomena.	
	Use of antibiotics and chemo-therapeutics in grow-out ponds are prohibited	
	Bottom of ponds need to be give enough time to dry. Waterfowls may be allowed to feed on the drying bottom for remaining creatures and fertilize the bottom with their dung	
	Other measures such as harrowing, ploughing and intermediate culture must be considered after several production cycle	
7. Fertilising of grow-out ponds	Application of raw phosphate from natural source is allowed	Organic wastes (e.g. from garden) or compost developed in the farm can be used
8. Feeding practice	Application of less external feed is preferred. Efforts shall be made to encourage natural feed production in ponds. Detailed documentation on feed quantity makes it possible to calculate feed conversion ratio (FCR). In addition, maximum ratio of fishmeal and fish oil contained in feed are 20% and 25% respectively.	Application of any artificial feed (bought-in feed) is not allowed.
	All ingredients in feed must come from certified organic sources. In case certified organic materials are not available, non-certified ingredients, without pesticide and other chemical residues, and genetically modified materials, can be used but should be approved by certification body.	
	Animal feeding pattern should be monitored carefully to avoid over supply and accumulation of organic sediments	

	Part A	Part B
9. Harvest and processing	Feeding and fertilising should be cut off for enough time period before harvesting (at least 3 days is provisionally required)	
	Drainage of ponds should be done in a cautious manner to prevent unnecessary organic sediments flowing into stream. A barrier at drainage gate should be used to hold the sludge. The condition of pond sediments need to be analysed in order to improve farming practice	
	Trimmed shrimp shell should be re-used adequately and untreated remaining from processing should not be feed to same species	
10. Social aspects	Staff has to be trained well and at least one person who has been trained regarding organic shrimp farming principles has to be around a farm	
	Housing and living condition of farm employee has to be made sure by the operator of the farm. The IFOAM Social Standards are applied	
	Farm operators should ensure the free access of fishermen and other people to open water in accordance with local regulations	

Appendix B: The survey question sheet for shrimp farmers and their family members

Date _____

Name of interviewee _____

No of the pond in 184: _____

The size of the pond: _____ ha

Gender _____, age _____

Section 1- basic information

1. The number of family member and their gender and occupation

	Status in family (Father, mother, son, daughter)	Age	Gender (M/F)	Main occupation	Sub occupation	Final education	Contribution to income (Yes/No)
e.g.,	father	50	M	Organic shrimp farmer			Yes
1-int ervie wee							
2							
3							
4							
5							
6							
7							
8							
9							
10							

2. How long have you lived here?
3. Where did you live before?
4. What was your (or your parents') job there?
5. Why did you move to this place?
6. Did you buy the land?
7. How much was it?
8. How long have you been an organic shrimp farmer? (When were you certified?)
9. How do you come to know about organic shrimp program?
10. What did you do before becoming an organic shrimp farmer?
11. Why did you decide to produce organic shrimp? Did someone recommended?

12. (If it was conventional shrimp farming in 8) did you have to change anything in your pond to start producing organic shrimp?
13. Did it cost you? How much?
14. Did you feed shrimp (including food, antibiotic, chemicals etc) before you became an organic shrimp farmer?
15. How long did you wait before you were certified?
16. When did you clear-cut your forest?
17. How much did you earn from that?
18. Tell me the share rate with 184 for the clear-cut.
19. Do you know your neighbours well?
20. Do you belong to some groups (e.g., Production group)?
21. Do you sometime ask to help pond to other farmers?
22. Who are they?
23. What kind of job do you do with them?
24. Does your wife belong to some groups (e.g., women's union)?
25. Have you ever had serious disease in your pond?
26. Did you do anything for that?
27. Where do you buy PL?
28. How much does it for a PL?
29. How many PL do you buy in a year?
30. Do you always buy PL from same hatchery?
31. Why do you choose the hatchery?
32. Tell me all the expense (cost for pond preparation (oil for boat, tree replacement), power for the house and food etc)
33. Do you pay tax for your land? How much?
34. Do you pay tax for anything else?
35. Do you dry the pond? When?
36. How often do you exchange water?
37. Do you spend more time for organic shrimp than conventional? (in the field and to fill documents)
38. How many times in a year do you harvest shrimp?

Section 2- Seasonality of household activities by members (describe all the member who is identified to contribute to HH income in Q1)

11. Describe activities in a year

ex. (number from Q1) status in the family * indicate if lunar calendar is used

Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Organic shrimp production									Construction work		

() _____

Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec

12. Describe detailed organic shrimp production and marketing activities

e.g., Jan / 15 – Jan / 30 -Pond preparation

July / 15 – First harvesting

39. How do you take contact with middlemen when you have shrimp to sell?
40. Do you always sell shrimp to same middlemen? Why and why not?
41. Do you also sell other products to the same middlemen?
42. Do you sometime sell shrimp to non-certified middlemen? Why?
43. Do you think the price for conventional shrimp is higher than the price for organic shrimp without bonus?
44. How do you get the bonus? (where and from who)
45. Usually, how long do you have to wait to get bonus?
46. How can you make sure that the amount of the bonus is correct?
47. What was the annual income before you started organic shrimp aquaculture?
48. What is the annual income from organic shrimp production? (Including other products from the pond)
49. Has your life improved after you started organic shrimp?
How or how not?
50. Do you have any opinion or questions to CAMIMEX.
51. Do you have any opinion or questions to IMO (inspector)?
52. Do you have any opinion or questions to 184?
53. Do you have any opinion or questions to middlemen?
54. Do you have any other things that you want to tell about organic shrimp productions?

Tell me the price and amount of each harvest in your green book.

date	Kind of shrimp	Amount (kg)	Size of shrimp	price	bonus

* Tom su-Tiger, Tom Bac-White, Tom The-Ping

Other products from your pond

date	Kind of product	amount		price	bonus

* Cua, Ca

Appendix C: The supplemental information to Chapter 5

The description of shrimp farms in the study site and the farming method

Ponds in the study area are arranged along the canals that provide the main transportation routes. Canal water passes through sluice-gates to supply the ponds. Neighbouring ponds are separated by dikes planted with fruit trees. Houses are built on farm spaces between the ponds and the main canal in most cases. Most households grow some vegetables and fruits for subsistence purposes. Some households also raise livestock such as chickens and ducks. The most distinctive feature of SAFS is the mangrove trees in the ponds which frequently flood during the tides, thereby offering aquatic animals' concealment similar to their natural habitats.

Some bigger plots are divided into smaller ponds (that is why number of plots and number of ponds differ), for example, 46 A and 46 B and some farmers own more than one pond.

Farmers re-stock on a regular basis, again depending on the season and condition of their ponds (usually three times in a year). The second to eighth months in the lunar calendar are the high season. Harvest in the low season decreases to 50-70% of the high season (Interview with Mr. Ngo Dung Liem, former LNT184 Director; 23 November 2007). The productivity of this system is estimated to be about 100-500 kg/ha/year and the actual stock density is ~2 PL/m³ which is controlled by the carrying capacity of the eco-system (e.g., amount of food available without providing additional feed).

Harvesting in the study area is done by taking advantage of high tidal changes at the full moon and new moon for 3-4 days each. Matured shrimp habitually swim out to the streams for mating. At shrimp pond sluice gates, which always face the main canal for water intake and drainage, farmers set a net to catch the shrimp. Because only matured shrimp swim into the stream, farmers do not have to sort small shrimp back to the ponds. Although farmers harvest shrimp throughout the year, except during pond cleaning, the climate influences the yield greatly. In general, the yield is less in the rainy season due to the lower temperature and a large amount of rainfall being added to the ponds, lowering water salinity. Also, because disease outbreak is more prevalent in the rainy season, farmers will sometimes intentionally lower stock density.

Mud crab production has become very important as a safety net for farmers employing the SAFS method in the Lower Mekong Delta region as there were frequent disease epidemics among tiger shrimp (*P. monodon*) around the 1990s (Christensen, 2003). My survey results show that every household in the case study area farms mud crabs together with shrimp in the same ponds, although volumes differ depending on their extra budget. The table below shows the farmed species in the study area). Mud crab farming in Ca Mau relies on juveniles caught in the wild (Christensen, 2003).

Species farmed in SAFS in the study area*

Commonly used names	Scientific name	Vietnamese name
Giant tiger prawn	<i>Penaeus monodon</i>	Tom su
Indian white prawn	<i>Penaeus indicus</i> ⁵⁵ <i>Penaeus merguensis</i> ⁵⁶	Tom the / White shrimp
Offshore greasyback prawn Bird shrimp	<i>Metapenaeus ensis</i> ⁵⁷ <i>Metapenaeus lysianassa</i>	Tom bac
Mud crab	<i>Scylla serrata</i> ⁵⁸	Con cua lua

*Names in Vietnamese are based on how they are called in the study area. The same species may be called differently in other parts of the country.

Shrimp seed stocking

Farmers buy PL either from local hatcheries or hatcheries in other provinces depending on their budget. Farmers interviewed reported that PL from local hatcheries was of low or uneven quality⁵⁹. However, the price of PL from other provinces is about 35% higher (32 dong per a PL versus 21 dong for a local PL) on average. Many farmers (42 of 67) substitute some portion of local PL with PL from hatcheries in other provinces to avoid losing everything at once during times of disease epidemic. Twenty-four farmers out of 61 use local PL only; nine farmers use exclusively PL from hatcheries in other provinces and the rest use both local and non-local. The average amount of PL from other provinces as compared to the total number of PL is 53.1%.

At the time of fieldwork, the farmers interviewed were not using wild PL, except ones that come in to their ponds with tidal flow from the canals. When several hatcheries operating in the LNT184 area were visited, the researcher was told that they use wild-caught brood stock, brought from the ocean. When fishermen catch mature female shrimp, they sell them to intermediaries who specialize in brood stock trading. A female shrimp produces one to two million PLs with four

⁵⁵ *Penaeus indicus* and *Penaeus merguensis* (FAO name: Banana prawn) are often confused. The species called Tom the in Vietnam could be one another or both.

⁵⁶ According to Davidson (2003), *Penaeus merguensis* is called tom bac gan in Vietnam.

⁵⁷ According to Davidson (2003), *Metapenaeus ensis* is called Tom bac can in Vietnam.

⁵⁸ According to Christensen (2003), mud crab farmed in the study area are *S. paramamosain* and *S. olivacea*, both native in the Lower Mekong Delta and *S. paramamosain* is the preferred species for fisheries and aquaculture. *Scylla serrata* is also economically most important edible crab in Southeast Asia (Davidson, 2003).

⁵⁹ *P. Monodon* PL hatcheries were first developed in Nha Trang in Khanh Hoa Province in 1980s and hatcheries in Nha Trang still dominate the industry. Hatcheries in the South became relatively common in the last decade but low quality PL is still one the of obstacles in the South Vietnam to intensify shrimp farming method (Lebel et al., 2002). A study published in 1999 refers that few shrimp farmers operating in the LNT184 area had accessed to hatchery-reared *P. monodon* PL and most farmers relied on naturally recruited *Metapenaeus ensis* which represents over 80% of shrimp harvested and have lower market value than *P. Monodon* (Clough, Phillips & Tran Thanh Xuan, 1999).

spawnings. A mature female shrimp costs four million dong and a male costs 0.1 million dong⁶⁰.

Certified organic PL was not available in the study area at the time of fieldwork.

The income sources of the LNT 184

The LNT184's annual forest income/expenditure report in 2005

	Value in VND	Value in US\$
Expenditure without staffing and planting	1,177,817,000	73,613
Gross income	2,440,451,800*	152,528
Breakdown of gross income		
• LNT184 (32%)	780,944,576	48,809
• Farmers in contract (68%)	1,659,507,224 (from forestry activities)	103,719

Source: the LNT184 Annual Plan of Operation 2005 in WWF, 2006.

*LNT184 has an additional income from maximum 50 ha of shrimp pond raised in plots not allocated to local farmers (cultivated by the LNT184 staff) and other activities up to 600,000,000 VND or 37,500 US\$. This income was based on a harvest of 16,740 m³ which includes 11,718 m³ of timber and 5,022 m³ of fuelwood. The total area under clear-cut in this year was 279 ha. The fuelwood is used for charcoal production and more than 3000t per year are exported to Japanese and Korean companies (WWF, 2006).

Certification status of interviewed households certification status by hamlet; official record for 2006 (n = 65 households)

Hamlets	Lung Ngan	Trang Lon	Cha La	Nha Hoi	Lung Duoc	Bon Sung	Ben Dua	Total
Certified	8 (8)	1 (8)	4 (6)	7 (5)	4 (8)	5 (5)	6 (9)	35 (49)
Cancelled	(1)			(4)				(5)
Inspected but not certified		(2)		(2)				(4)
Suspended	1	2	2	0	3	0	2	10
Not proposed for inspection		11 (4)	2 (2)	4	1	0	2 (1)	20 (7)
Total	9 (9)	14 (14)	8 (8)	11 (11)	8 (8)	5 (5)	10 (10)	65

Parenthetical numbers are the certification status by hamlets based on the farmers' declaration

⁶⁰ After the four spawnings, the hatchery releases the parent shrimp. People believe that eating mother shrimp brings bad luck. They also believe that women should not enter hatcheries when baby shrimp are growing (interview with a hatchery owner in November, 2007).