

**DRAFT**  
**Shrimp Aquaculture and Changing Local Institutions**  
**Implications for Local Livelihoods**  
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*Abstract*

*The shift to shrimp aquaculture, in particular the recent boost for industrial shrimp farming, following Vietnam's adoption of a market based economy in 1986, have significantly altered the roles and functions of local institutions. This paper concerns the effects of institutional changes to facilitate the expansion of shrimp aquaculture since early 1990s have had on local livelihoods in Duyen Hai district of Tra Vinh province, Vietnam's Mekong Delta. It documents the changes in the use and access to land and water, and other services as industrial shrimp farming, supported by policy to encourage "the farm economy" (a euphemism for large farms) is embraced and the implications that this has for sustainable livelihoods in a coastal community in the Mekong Delta of Vietnam. The policy-level support for industrial shrimp farming and institutional changes thereof have happened after shrimp aquaculture has caused a high level of indebtedness among many farming households in the Mekong Delta over the past decade. The paper concludes that recent institutional changes designed to promote industrial shrimp farming, namely the privatization of land and favorable services, has significantly transformed local resource rights regimes, and limited household's access to such resources. The loss of common property resources, coupled with the lack of support from local social institutions, has increased the vulnerability of poorer farming households and intensified the process of social stratification.*

**Introduction**

In the early 1990s Duyen Hai the poorest District of Tra Vinh province was frequently mentioned in the news due to its unprecedented success in shrimp aquaculture. Duyen Hai's success set the example for other districts of Tra Vinh to follow. The last decade has seen rapid expansion of shrimp aquaculture to other coastal regions in Vietnam. In Duyen Hai, shrimp ponds have replaced most of its mangrove forests and taken over agricultural land. In the past five years, as more local households experience failures in shrimp farming, a new trend of investors immigrating to the region from other provinces to tap the potential of the shrimp boom is taking place. At the same time, the extensive model that used to dominate the industry has now largely replaced by industrial shrimp farming on larger areas. Shrimp farms are also being built over smaller ponds. To fine tune this trend, in 2003 the first Industrial Zone in Duyen Hai and also in Tra Vinh was established.

Although shrimp aquaculture in Vietnam lagged behind other shrimp-producing nations by a decade, its growth has been remarkable. The total area for shrimp aquaculture has increased from 250,000 hectares in 2000 to 478,000 hectares in 2001 and 530,000 hectares in 2003. Today Vietnam probably has the largest area for shrimp aquaculture in

the world (Tran et al 2003: 3). This growth is attributed to a number of factors: the development of technology for artificial shrimp feed, increasing demands in the international markets, and a strong commitment from the Vietnamese government as reflected in its policy to promote this high-value export crop, which has been identified as a potential for both economic growth (MOF 2001) and poverty reduction (MOF 2003) and one of Vietnam's comparative advantages as the country prepares for its accession to the WTO.

This paper concerns institutional changes resulted from the development of a high-value export crop. Specifically, it examines important institutional changes in access to resources and services as industrial shrimp farming is asserting its place, and their implications for local livelihoods. The first part of the paper provides an overview of changes in the policy environment that were critical for the development of commercial crops like shrimp following Doi Moi in 1986, namely the wholesale of collectivization and recognition of household as the main production unit and the introduction of the farm economy, which is believed a viable parallel of the household economy. Part two documents institutional rearrangements that have taken place to accommodate the shrimp industry, particularly as relevant to the emergence of the farm economy. It is illustrated by the case of the Long Thanh Industrial Zone in Duyen Hai District of Tra Vinh province. In the final conclusion I suggest that the development of industrial shrimp farming coupled with the promotion of the farm economy intensifies social differentiation by inducing changes in use of and access to resources, and changes in other institutions such as land tenure as well as access to credit and extension services. The Industrial Zone in Duyen Hai illustrates a trend of displacement of local communities whose interests are secondary to the development of a high value commercial crop. The development of the industrial shrimp farms has been made possible by the more and more households giving up their land. These households have failed and can no longer afford to invest in this highly risky venture.

### **Shrimp Aquaculture Development in the Context of Doi Moi**

In 1986, Vietnam embarked on an economic reform program called Doi Moi, which ended the centrally planned economy and takes the country on the direction of a market based economy. Notable changes in the rural sector include the 1988 Land Law that allocated land to the farming households from 10 to 19 years and Decree 10 that supplied credits and support a market system in order to encourage intensification by the most productive households effectively dismantled collectivization. The household became the main production unit while the cooperative was no longer the monopoly supplier of inputs (Kerkvliet and Seldon 1998: 37; Watts 1998).

Along with the 1992 Constitution, the 1993 Land Law, which provides the household with the five rights to their land: use, mortgage, lease, inheritance and sales, fully recognizes private agriculture. Reforms in land ownership were responsible for Vietnam to become the third world rice exporter by 1990, making a significant contribution to the annual growth rate of 7 percent during the 1992-1997. Foreign exchange earnings from exports of agricultural products such as rice confirmed the direction of a market economy. By 1997, the country had completed the first phase of transition from a

traditional socialist economy to a so-called market-based economy with socialist orientation (Beresford and Fraser 1992: 3).

Since 1997, the economy has seen a downturn due in part to the regional financial crisis and the effects of natural disasters (UNDP 1999) despite Vietnam being seen as less affected due to a significant part of its economy being subsistent and not well linked to the global economy. In 1998 growth fell to six percent and inflation shoot up to ten per cent, while exports slowed to zero (UNDP 1999). The fear of insufficient growth to attract foreign investors was one of the factors prompting the second wave of Doi Moi, which seeks to refine elements that are central to this system – the privatization of productive resources, intensification in agricultural production, in particular of high value crops for world markets.

The development of shrimp aquaculture has been facilitated by policy changes to facilitate Vietnam's march towards a market-based economy and increasing integration with the global economy. It was within this context that shrimp aquaculture was identified as a high development priority. The unprecedented success of shrimp farming activities in the late 1980s and early 1990s was the main factor accounting for the massive shift to shrimp aquaculture, restructuring farming systems in the entire Mekong Delta region (Tran et al 2003). The production of Black Tiger Shrimp for export as since been seen as a comparative advantage that will enable Vietnam's achievement of both social and economic targets.

Indeed, the aquaculture industry in Vietnam has grown rapidly in recent years both in total area and productivity. Aquaculture production has effectively doubled the period of 1990 and 1999, from 310,000 tons to 614,510 tons accordingly. Export earnings from the sector have increased rapidly from US\$551.2 million in 1994 to US\$ 2.5 billion in 2005 and are expected to reach US\$ 2.8 billion in 2006.<sup>1</sup> Shrimp accounts for a larger share of this growth. Shrimp productivity increased from 70,000 tons in 1991 to 155,000 tons in 2001 (Lebel et al 2002: 312; Wade et al). Within a decade, the total area devoted to shrimp aquaculture doubled, from 90,000 hectares in 1991 to 300,000 hectares in 2000.

The Mekong River Delta is by far the largest producer, particularly of brackish water shrimp, responsible for 67 percent of total production in 1995 (Ministry of Fisheries, cited in Martinelli 2000). Shrimp farming in the Mekong Delta alone has increased by 3500% in the first decade (Graff and T.T.Xuan 1998). Given its favorable natural conditions for aquaculture, the Mekong Delta region is expected to accelerate its share in the aquatic sector substantially. Decision 173/2001/QD-TTg on socio-economic development in the Mekong River Delta region states, "Before 2005, the aquaculture areas in the whole region shall reach over 700,000 ha; the fishing and aquaculture output shall be 1.7 million tons and the export value over USD 1,500 million."

Two major policies accountable for the swift conversion of agricultural land and mangrove forest to shrimp ponds in the Mekong Delta have been Resolution No.

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<sup>1</sup> Nhân Dân: <http://www.nhandan.com.vn/tinbai/?top=36C=47&article=58099>

09/2000/NQ-CP and Resolution No. 03/2000/NQ-CP. Resolution 09/2000/NQ-CP on restructuring of the economics of agriproduction allows for the conversion of low productive rice fields, uncultivated areas, salt pans into ponds for aquaculture. To take the farming sector further in the direction of industrialization and modernization, Resolution No. 03/2000/NQ-CP provides support for the development of larger farms with the concentration of land and capital. The resolution accommodates “the allocation lease, assignment and accumulation of land” over prescribed limits, particularly for “effective exploitation and use of waste land, bare hills and mountains in the midlands...” Resolution No. 03/2000/NQ-CP supplements the household with family farm economy, although no distinction is made between a household farm and a family farm in the direction of establishing large-scale husbandry. Such direction, it was argued, can attract labor and increase jobs; increase in investment in improving breeding animal herds and veterinary services, and ultimately will lead to increase in agricultural productivity and diversification of the rural economy. The resolution also includes tax and credit policy to encourage the development of these larger farms. It provides traders and exporters of aquatic products with access to preferential taxation and financial support, through credit while allowing for major restructuring in the agriculture sector - the transfer of saline fields, low-lying fields, land for salt making and water-logged land with unstable and ineffective rice production to aquaculture.

Resolutions No. 03/2000/NQ-CP and No. 09/NQ-CP have been welcome at the provincial level by the introduction of a number of decisions to promote the farm economy, in particular shrimp farms. At the district level, support has been provided in the form of preferential taxation, supply of credit, investment in related infrastructure, and acceptance of large land ownership to encourage shrimp farming and aquatic production (Tra Vinh People’s Committee Decision 13/2001/QD-UBT).

## **Research Method**

This paper presents preliminary findings based on qualitative methods, including interviews with households, key informants, and officials at various levels. Data on livelihoods and institutional change were collected during a period of six months of fieldwork, from December 2005 to May 2006. The paper is also based on analysis of policy documents.

## **Case Study Site**

Duyen Hai is the coastal district of Tra Vinh province, which is located in between Song Hau and Co Chien Rivers, a branch of the Bassac River before it meets the South China Sea. The district is about 250 kilometers from Ho Chi Minh City and 50 kilometers from the Tra Vinh town. It has 55km of coast line and 12km of river mouth. In 2000, it had a total area of 38,405.75 ha and a population of 80,376, 16 per cent of which is Khmer ethnic. Agriculture land is 27,707.63 hectares, in which 19,263.89 hectares are aquaculture, accounting for 50 per cent of the total natural area and 69,53 per cent of agricultural land (KHCDCCSX Duyen Hai District 2002).

Until early in the 1990s, agriculture was the main economic activity in the province. However, given a high level of salinity and acidity in its soil, and the emergence of shrimp aquaculture as a high value crop, in 2000 total area for agriculture production reduced to only 30 per cent of the total agricultural land. Since early 1990s large areas of land in the District have been transformed into shrimp ponds. Shrimp aquaculture with high earning potentials and high risks, however, presents both an opportunity and a challenge to local livelihoods. It has enabled some households to become better off while others to become indebted and impoverished.

### **Shrimp Aquaculture in Duyen Hai**

From the poorest district, in 2000 Duyen Hai was able to contribute 48, 64 per cent to provincial GDP. This figure is expected to increase to 61, 59 per cent in 2005 and 63, 11 per cent in 2010 (CITATION). Two factors responsible for this growth: the increase in total area for shrimp aquaculture and increasingly intensification of the industry, both of which were initiated by the spontaneous shift to shrimp aquaculture in the District in the early 1990s.

Late in the 1980s, farming households in Duyen Hai, on clearing the two hectares of land allocated from the State Farm, discovered abundant wild fish and shrimp from the irrigation canals. Following Vietnam's reunification in 1975, in an attempt to develop and improve agriculture production, hundreds of State Farms were set up in mangrove forests areas in the province of Tra Vinh. Due to their poor performance in the already depressing economy, towards the end of the 1980s, these State Farms were disbanded. In 1988, a plan enabled the allocation of two hectares of forest lands to be managed by households for five years (Group interview Jan 2006). Two categories of land were disbursed to households by the People's Committee: cooperative held forest and forestry enterprise forest. According to this plan, local farming households received two hectares of farm land each for a period of five years and received a 15-20% of the harvest value (Luttrell 2001). The period following the whole sales of State Farms witnessed mass clearance of mangrove forests as farming households were given the rights to exploit the land. The wild catch discovered in the former State Farms became a valuable source of food and nutrients when food shortage was rampant during the 1980s. In 1993, the new Land Law permitted these households with two hectares of state forest land for a term of 20 years for annual crops and 50 years for long term crops.

As an experiment, in its early years, shrimp aquaculture was done extensively. Initial success in shrimp aquaculture resulted in the industry to be quickly replicated to other areas in the province. The high profit promised by shrimp on the salinity and acidity affected land that is too poor for agricultural production served as the pressure for many farming households to turn their land into shrimp ponds. Within a period of a decade, vast areas of mangrove forests gave way to shrimp aquaculture. By the end of 1990s, the initial *ad hoc* and spontaneous approach to shrimp aquaculture became formally recognized with various government policies allowing for the transfer of agricultural and rice land into shrimp ponds, and well as providing other incentives for the development of the industry. As a result, the total area for shrimp aquaculture in Tra Vinh increased

from 21,250 hectares in 2000, to 23,258 hectares in 2002, and 30,976 hectares in 2005 and is expected to reach 40,000 hectares in 2010. Outputs have also increased from 4,928 tons in 2002 and 21,182 tons in 2005 and the target for 2010 is 33,158 tons (QHCDCCSXNLN 2003-2010, Tra Vinh DARD 2004: 45). Duyen Hai is accountable for the larger share of this achievement, both in terms of total areas for and outputs of shrimp aquaculture. In 2002, the total area for shrimp aquaculture was 7,510 hectares accounting for 78,95 per cent of the provincial total area. The aquaculture sector output in 2002 was 2,074 tons accounting for 89,78 per cent of the provincial total shrimp outputs (Quy Hoach Tong The Phat Trien Nuoi Trong Thuy San Tinh Tra Vinh den nam 2010). The output for 2005 is expected to increase to 13,290 tons, and 24,750 tons in 2010 (Chuyen Doi Co Cau San Xuat Ngu-Nong-Lam-Diem Nghiep va Phat Trien Nong Thon in Duyen Hai to 2010. UBND Duyen Hai 2004: 5).

To further exploit the sector, in 2003 the first Industrial Zone (IZ) on 200 hectares of land in Long Thanh commune was established in Duyen Hai. The Zone is designed to experiment the farm economy model promulgated by Resolution No . 03 / 2000 / NQ - CP.<sup>2</sup> Bounded by a dyke, the Zone is a landscape for interaction of a diverse group, including villagers of Long Thanh, landed and landless, illegal immigrants whose names are not on the local residential records, local officials, and outside investors.

### **Restructuring Resource Regime**

#### *Changes in use of and access to resources*

Initial spontaneous conversion from agricultural production to shrimp aquaculture fine tuned by national and provincial policies to support the shift from extensive shrimp farming at smaller scale to more intensive model in industrial farms has resulted in major shifts in the patterns of resource use in the area. Both agricultural and forest lands are being converted into shrimp ponds. As part of the agroforestry restructuring, 1,002 hectares of rice land were converted to other crops, including fruit trees, grass for raising cows, and shrimp aquaculture in Duyen Hai during the 2001-2005 period. Another 444 hectares will be converted to shrimp and other crops during 2006-2010 (AgroForestry Restructuring Duyen Hai 2002: 23). A local official said that only 7,500 hectares of forest remains and there is no more land to convert to shrimp farming (Interview with DARD). The IZ occupies an area that used to be covered with forests. A woman who migrated to the area in 1991 with her family recalls:

At that time, the entire area was covered by forests. The trees were so tall that people walking the land could not be seen. There were no roads. People would be fined if they touch the trees in the forest (Interview in the IZ).

An issue that has yet received much attention in the Mekong Delta is the effect shrimp aquaculture has had on access to water for small producers, especially for those whose main source of income is from growing water melon, vegetables and other crops for the

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<sup>2</sup> By early 2001, there were 2 922 farms in Tra Vinh having 2 hectares of land, in which 1 505 households exceed the land ceiling (The Communist Journal 2003).

markets. Policies calling for the shift to shrimp farming automatically accept the conversion of water ways that used to serve agricultural purposes to take salt water in for shrimp aquaculture. Though both the government bodies responsible for agriculture and aquaculture - the Department of Agriculture and Rural Development (DARD) and the Department of Fisheries (DOF) - are concerned with economic development of the province, they have not been able to find a solution for the two crops competing for water. The local government seems to have become paralyzed in the face of the united determination from central, to local and household levels in taking the direction of industrial shrimp aquaculture.

Due to the high risk and high investment of shrimp aquaculture, the 1990s saw a trend of increasing landlessness when households that lost from shrimp had to give up land in order to pay back debt (Mauny and Hong 1998; OGB 2000; WB). In the meanwhile, only a smaller number of farming households are able to accumulate land creating great wealth disparity. In recent years, there has been an increase in the number of investors from other provinces who come and invest in areas where local people could not persist with shrimp after continuous failures. Outsiders either rent or buy land from local people and invest heavily in industrial shrimp farming. Most of these outside investors hire engineers and skilled workers to supervise the operation of their shrimp farms. As more and more land fall in the hands of the few outside investors, whose main interests are to generate “big money” in return to their substantial investment, resource depletion is not a concern for them as long as they can recoup their investment.

#### *Loss of Common Property Resources*

The Industrial Zone is located on an area that was once covered with mangrove forests. Local people recall that even immediately prior to the construction of the IZ, the area was covered with trees and there was no road. Wild fish and shrimp were plentiful and constitute an important source of sustenance for local people, especially landless households.

The development of the industrial zone, its occupation of a large area of land and administrative measures to run the zone together have drastically reduced the area available to the local community for the collection of wild catch and mangrove products. Although the IZ with road and infrastructure put in place for the development of the IZ are considered an advantage to the local community, many interviewed expressed regrets at the loss of livelihoods incurred following the IZ. Many households, either immigrants from other areas or young households without land, who reside in the buffer zone beyond the dike, complain about the loss of this source of livelihoods. Being landless means that they are not recognized to be a household in the local residential record and thus not eligible for any support. Having no other source of income, the wild catch, however small, becomes particularly important for the survival of these households.

The clearance of forest coverage coupled with strict administrative measures to facilitate industrial shrimp farming left local people with barely any opportunity to access the resources that used to be accessible for them. Since the establishment of the Zone, this source of wild catch has become a legitimate property of the IZ and thus no longer

accessible to local people. This water surface is now either leased out on an annual basis or harvested by the IZ operating board itself. Local people even those within the zone are no longer allowed access to the wild fish. Instead, the common water surface is rented out to individuals on an annual basis to catch the wild fish and shrimp.

#### *Access to Credit and Extension Services*

Government policy has explicitly encouraged shrimp aquaculture in the Mekong Delta. Official support for aquaculture at the local level take the forms of preferential taxation, investment in infrastructure designed to encourage shrimp farming, and favourable loans for investment in shrimp aquaculture and support for land accumulation.

Loans available in Tra Vinh and Duyen Hai are from formal and informal sources. In the 1990s, formal funds were made available through a number of government programs to encourage development and alleviate poverty across the country. Thus far the Vietnam Bank for Agriculture (VBA) is the main credit institution in the Mekong Delta that releases millions of VND worth of loans annually accounting for 80 to 90 per cent of all loans in rural areas (Piraudeau 1999). Since 2000, although more funding sources seem to be available and loans have also increased in size, it is often wealthy and better-off households that benefit the most from these sources. For instance, in 2000 the VBA provided three year loans for shrimp pond building and one-year loans for inputs. In 2003, loans were increased to 100 millions VND to promote industrial shrimp farming. In Duyen Hai, a part from VBA, the Mekong Delta Housing and Development Bank (MDHDB) has also started to provide funds for infrastructure development and inputs in shrimp aquaculture. The VBA has provided loans for over 1000 shrimp farms in Duyen Hai District. Besides, the MDHDB has also given out hundreds of loans for shrimp farms. In recent years, loans have increased in size. For example, in 2003, local banks provided hundreds of loans worth up to 100 million VND to shrimp farms. Accordingly to this loan scheme, farming households that meet the requirements of a shrimp farm could borrow up to 106 million VND, which had to be settled in three instalments in three years.<sup>3</sup> Interest free repayment has to be made in three years. A 10 million VND of bonus was provided as part of the package for investment in motors and fans, used for changing water and oxizenize (create oxyzen for the shrimp because of the high density in the pond) shrimp ponds. The provincial government used its budget to pay for the interests. Unfortunately, many households could not pay back the loan due to continuous crop failures in 2003 and 2004. In some villages, the loans were frozen, meaning no interest has to be paid until the household settles its loans (interview with manager of MDHDB).

This incident has led to loans becoming more commercialized in recent years. Since the local government can no longer afford the interests, which was actually a subsidy for both households and banks, commercial banks have become more cautious in providing loans. Now, banks are free to follow their regulations to make sure that loans provided are secured and will be paid back. It is increasingly more difficult for small and poor households to access these loans because of limited or no land for collateral and a

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<sup>3</sup> Households qualified for this loan should have at least 2 hectares of land for shrimp aquaculture, of which 1.3 hectare is water surface, a water processing pond....(get the specific criteria).

powerful social network. Loan funds for shrimp farming have become more commercialized to facilitate the development of industrial shrimp farms which are not easily accessible to smaller farming households either due to their lack of land for collateral, or their lack of information and inability to get through the complicated process (Pairaudeau 1999). Smaller loans are also made available by the Women's Union and Farmer's Union, which are used for investing in other crops other than shrimp.

Informal sources are also increasing in its significance and constitute the most important source of credit for the poor. Farming households can borrow small amounts from family and friends, local rice retailers (who extend credit to buy rice) and private money-lenders. The most common informal source is through *hui*, rotating lending groups and money lenders, who are usually better-off locals. It is estimated that loans from money-lenders represent up to 40 percent of all rural borrowing although interest rates are commonly high – up to 100-200 percent per annum. Despite the high rates, it should be noted that informal sources are increasing in their importance when formal sources are harder to reach by the poor (Martinelli 2000).

#### *Extension Services*

Extension services seem to be an overlapping responsibility between the Ministry of Fisheries (MOF) and the Ministry of Agriculture and Rural Development (MARD). Extension officers housed by these institutions are responsible for: (1) Dissemination of technical information about various aquaculture models suitable for different situations; (2) Training courses for farmers including study tours to other areas; and (3) Demonstration farms to provide practical information to farmers to assist them implement new technology (Martinelli 2000). The widespread of diseases in recent years presents no small challenge to extension officers who are few in numbers as well as limited in experience when required to cover all aspects of aquaculture (fresh, brackish and marine).

Access to extension services is another issue. Because extension meetings are often geared towards commercial or larger-scale shrimp farming, and thus not suitable for farmers with limited education, limited landholdings and a lack of resources. Therefore, only better-off households are invited, whereas the latter is automatically excluded (OGB 1999). This also leads to an attitude of indifference among the latter.

Shrimp aquaculture is a highly gendered profession and is often considered a male domain. Even though women are involved in certain tasks such as feeding and selling the product, and in some exceptional cases, women take active roles in the whole production cycle of shrimp, from pond preparation, selecting fry, feeding, to marketing, their contribution to the development of the industry is often discounted. Such attitude has meant that women are rarely invited to extension meetings and consulted on issues relating to production at the household level.

#### **Changes in the Structures of Livelihoods**

Over the past decade, as land is converted to shrimp ponds and extensive models gradually replaced by intensive ones, uses of and access to resources at household and

community levels have been transformed dramatically having had differential effects on households of different social strata.

The shrimp farming systems differ significantly in the ways they utilize different resources (capital, labor, skills, land, water, seed, feed, fuel, and equipment), which determine different levels of productivity and have different implications for the environment and local livelihood. While more intensive systems is considered less environmentally destructive because of significantly smaller rearing area,<sup>4</sup> it requires sophisticated technology and investment, while entails high risks and thus are many times more costly as compared with extensive systems in terms of resource use (water and labor) and inputs (chemicals and feed) (Ronnback 2001: 7-8; WB 2001: 17).

How has the establishment of the IZ and such swift shift to industrial shrimp farming impacted upon local livelihoods? Since households residing inside the IZ are not homogeneous, it is critical to examine this question with each group of household, which can be placed in three main groups: landless households (immigrant or young hh), landed local households with land inside the zone, and outside investors who rent land from local people or the local government.

*Landless households:* These households are either immigrants who have long settled in the area or young people separated from their parents after getting married. Both of these groups occupy some land in the buffer zone, which is considered illegal. Because of this, those occupying the buffer zone are not registered in the commune resident record and thus excluded from every opportunity available and especially for the poor in the area. The lack of land prevents them from accessing credit loans, which require collaterals. Therefore, most of these households rely on informal sources of credit to invest in their ponds. Because of their low status and thus poor quality of social capital in the community, they make do with little resources they can afford instead of following the “protocol” closely.<sup>5</sup> For example, when it is time for a new season, many of these households just cast a few shrimp fries they could buy with small loans or savings and hope that the shrimp will grow without much investment. In reality, failure rates among these household is higher. In the past season, the shrimp died only within 2 weeks. The main source of livelihood for these households is wild catch. Holding a two year old daughter in her laps, a young woman remarked on the effects the IZ has had on households sharing her conditions, “*ever since Mr. Muoi arrived, we can hardly find any fish or shrimp. They block all the gates and they catch everything. Here we call him “Mr. Muoi Ac” – Mr. Cruel Muoi*” (Interview in Long Thanh IZ).

Another activity common among landless household is selling labor *man muon*. Not long ago, digging ponds was considered one of the main off-farm activities for people in Duyen Hai (OGB 1999). That is no longer the case. Increasing use of machines for

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<sup>4</sup> This claim is disproved by the experience of many countries that have applied intensive shrimp farming such as Thailand, Taiwan, Honduras, etc.

<sup>5</sup> There are numerous ways of farming shrimp. Depending on the option one chooses, the investment of capital, time and labor can vary enormously. The basic steps, however, involve cleaning of the pond, casting the fry, feeding, and water change. One can alter the steps taken depending on available resources.

industrial ponds means that fewer manual jobs are available to local people. Most households and investors that can afford to hire labour see machines as a worthy investment in comparison with manual labour, because although the cost of hiring machines a day is much higher than manual labour, they do the work faster and more carefully. Besides, machines do not require to be fed, which is usually the case with manual labor. A man hired to work the pond will be provided three meals a day apart from a daily wage of about 35,000 VND. Manual labour is now only used for smaller ponds by households that cannot afford to hire machines or to fill in activities that cannot be accomplished by machines.

It is common for industrial shrimp farms to have people working on a seasonal basis. Usually, those who can afford to invest in industrial shrimp farms hire people to watch their ponds and conduct all the daily activities at the farm such as feeding, filtering and changing water. In some cases, investors even hire engineers to ensure that the right protocol is followed. These jobs are better paid than the typical *man muon* jobs. However, such opportunities are usually inaccessible to local people, who generally have a lower level of education with little or no formal training in shrimp farming. Furthermore, laborers who are hired locally tend to be the relatives and friends of the pond owners. Landless people thus have to look elsewhere for jobs. Those interviewed often say, “ai muon gi thi man nay” – “I would do any job that people hire me for”. But clearly, the tendency of increasing mechanization and standardization of farming activities in the Long Thanh IZ, and other areas in the province where industrial shrimp farms are taking over the land, has resulted in shrinking opportunities for *man muon*. Local people have to go further away from home to find them.

Although no ethnic Khmer have moved to the Industrial Zone, there is likelihood that the loss of off-farm employment has indirectly affected their livelihoods. Although the Khmer traditionally reside in fresh water areas, *man muon* in shrimp farming areas is one of their dominant sources of income.

*Landed households:* These households have land within the industrial zone and cleared extra land in the buffer zone. Most of the households interviewed in this category have an advantage. They may not have strong connection with local carders, but have family members who bring in income from other sources. They are generally better-off because of a relatively high level of diversification within the household. Those without other sources of income invest their labor into the shrimp pond and do not participate in other income generating activities. However, due to their dependence on this main source of income with few opportunities for diversification, their risk is higher.

Two families I interviewed actually have members from elsewhere to come in and help out with the shrimp pond because they have no labor to work the land and it would be considered a waste if nothing is done on the land.

This group also expressed disappointment with the IZ. Mr. Hai Hien said, “since the IZ, there’s hardly any fish... and it is not at all desirable to be within the zone because one

has to depend so much on the Operating Board for conducting activities on their land” (Interview in Long Thanh).

*Outside Investors:* The majority of this group consists of people working for the District. As employees of the District Party’s Committee, most of them have been allocated land some time ago as an incentive for extra income. The main source of income for this group is salaries which is a great buffer. Having a government job, however, is a great advantage in developing their shrimp farm. Their broad social network provides them with access to credit and extension services as well as information about available options. A few who belong to this category are not government employees, but rather wealthy investors immigrating from other provinces. These households not only possess more land than others, but are also willing to invest the best “ingredients” for their shrimp ponds. While they have very high expectation for returns on their investment, shrimp aquaculture is by no means the only source of income for them. In fact, these households have enough capital to tap into other shrimp related businesses at the host community, such as such as selling shrimp feed and oil that is used to run the pumps.

### **Implications for sustainable livelihoods**

That shrimp aquaculture, in particular industrial shrimp farming is a highly risky venture is shared by all people interviewed. Local people often label shrimp aquaculture as the “3 supers” business – *sieu dau tu*, *sieu loi nhuan*, and *sieu rui ro*, translated to mean super investment, super profit, and super risk. Most people understood the “super risk” to mean a high possibility of crop failures, in which case it can take an average, even a better-off, farming household, years to pay back unless a miracle arises, such as winning a lottery ticket. In reality, factors that contribute to their risk are more numerous and complex. The seemingly short-term risks have hidden implications for livelihood vulnerability that are detrimental to households in the long run.

The most frequently mentioned risks of shrimp aquaculture are indebtedness and land loss (OGB 1999). Households engaging in shrimp farming seem to accept the bitter truth that engaging in shrimp farming is like gambling and the likelihood of crop failure that can result in indebtedness is very high. In the worse scenario, the option open to these household is *man muon*, which is increasingly shrinking.

A “risky business”, shrimp aquaculture has been responsible for both increases in level of wealth among a small number of households as well as a rise in poverty, landlessness and indebtedness (EJF 2003: 17). In Tra Vinh, it is estimated that 80% of rich people are shrimp farmers, but 80% of poor shrimp farmers lost their investment, resulting in socio-economic differentiation (Oxfam 1999). This suggests high levels of risks and vulnerability that farming households are subjected to in areas dominated by shrimp aquaculture. In fact, vulnerability increases along with the shift to more intensive systems.

While many complain openly about the loss of wild catch and indebtedness, it is often implied in their conversations that excessive use of chemicals and increasing salinity are putting more pressure on the land and may lead to abandon land in a foreseeable future.

Given the importance of land in local livelihoods, and the diverse background of stakeholders involved in and around the Industrial Zone, the emergence of the IZ has created “conflicts” among stakeholders whose access to land, water and other services necessary for the development of an industrial shrimp farm have changed with the emergence of the Industrial Zone. Elsewhere, conflicts between rice and shrimp farmers have been documented (Luttrell 2001). Increasing social differentiation is leading to the schism between stakeholders: shrimp farmers and those who do not farm shrimp, successful people and those who have lost continuously. There are clearly divide between the haves and have-nots. Limited conversation takes place between the two while the former try to guard the latter from stealing fish from their pond, and the later seeks opportunities to demonstrate their power over access to what was once open-access resource. Poor and landless households, however, express disappointment at not being included in meetings within the zone simply because the local cadre had “forgotten” (interview). Meanwhile, a group of outside investors seems to be joining the former group within the zone. They may not possess any administrative power, but are well-connected and can often get things done their way by means of their wealth. This group is clearly in more advantageous position than most locals.

A risk that has not been well-documented is changing household structure and organization. Now that the Industrial Zone is put in place, poor and indebted households are having fewer livelihood options and less hope in buying back land. The forced emigration of household members to other regions in search of livelihoods has no doubt placed greater pressure on people staying at home.

Households operating within the Zone face a different issue. As the main goal of the Industrial Zone is to ensure the process of industrial shrimp farming, those with ponds inside the zone are restricted by rules set by the managing board in terms of timing for casting fry, for taking water in as well as releasing water. There have been resistance between farming hh and the operating board.

*Losing sight of local knowledge:*

Is access to credit and extension services all that is required for guaranteed success in shrimp farming? It seems common knowledge that failures in shrimp aquaculture is caused by the lack of official training and technical knowledge among shrimp farmers to help them determine the appropriate season for stocking or appropriately manage the pond environment or shrimp health, which is determined by access to and quality of extension services (Martinelli 2000). Surprisingly, however, these are rarely mentioned by local farmers as the main cause of crop failures. Instead, local farmers appear very knowledgeable in explaining the causes of shrimp failures despite it to be a relatively new livelihood activity. Some of the points raised by local farmers are worth exploring. For instance, local people are concerned about the lack of understanding of the nature of soil in the region in order to introduce a relevant strategy.

**Conclusion**

The organization of farming and rural economy in Vietnam has undergone radical reform within the last fifty years. In the first stage, land reform was conducted to transform the character of rural society, and collectivization was enforced to tighten state control over production and markets. In the second transformation, the household became the basic unit of production and markets expanded while state control is loosen but not entirely eliminated (Kerkvliet and Selden 1998). The introduction and experiment of the farm economy starting in 2000 represents the third wave of agrarian transformation in Vietnam. It demonstrates Vietnam's commitment to further liberalization in the production relation. In promoting intensification of commercial farming, the Farm Economy allows for greater flexibility in accumulation of productive resources. While the policy is seen as indispensable in enabling Vietnam to further its integration in the global economy, the effects it has had on the rural population resembles those that led to a Land Reform led by the Communist Government 30 years ago. The farm economy has so far clearly lent support to greater disparity. Industrial shrimp farming that is supported by the farm economy policy has induced major shifts in local institutions, from uses to access productive resources and other services. As is the case of the Long Thanh Industrial Zone in Duyen Hai, extension services are generally under-resourced, and often inadequate and inaccessible to small farmers. While most local households are being pushed to the edge of the land and other services, the majority that is benefiting from the shift to industrial shrimp farming are those migrating from other region. These people often hire people to work the farms instead of staying in the area itself. In the process of large farms emerging, an increasing number of farming households are losing land and becoming landless. The difference seems to be that, instead of working as tenants like in the past, the livelihoods of these households are being threatened in the face of land loss, shrinking employment opportunities, and the disappearing common property resources. While people are trying to seek new livelihoods elsewhere, their opportunities are constrained by a generally low education level.

What alternatives are available for an indebted population with few opportunities to make up for the losses accumulated due to repeated failures? “Dap gai thi lay gai ma le” – a local saying that “if a thorn gets into your foot in the jungle, the only remedy is by the measure of another thorn” is encouraging people to put their best bet with what is now agreed as highly risky. Despite a high rate of failures throughout the province, approximately 75 per cent of shrimp ponds (interview with LaVon Feb 9, 2006 DARD), moving on with the high stakes of shrimp aquaculture seems to be the only way out when both national and local policy makers have yet to come up with an answer for a population dependent on rapidly degrading resources.

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