Land Allocation, Social Differentiation, and Mangrove Management in a Village of Northern Vietnam

by

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1. Introduction

Giao Lac village is a largely Catholic coastal community located in Giao Thuy district of Nam Dinh province, which lies at the mouth of the Red River. The village's land covers an area of about 481 hectares and it population during the period of this study, 2000-2001, was about 9000. It is an agricultural community, farming rice, but also engaged in animal husbandry and fisheries. It is bordered to the south by the central dike, an intertidal area and the South China Sea. The dike is almost 3 km long. The intertidal area is more than 600 ha, of which 345 ha has been planted with the mangroves, *Kandelia candel, Sonneratia* and *Rhizophora*. In addition, there are 5 shrimp ponds in this area. Four out of the 5 ponds and all of the intertidal area belong to the District, which, in turn, mandates the village to manage the ponds and the mudflats.

Giao Lac village is a community with a long and rich history. Elderly individuals in the village have experienced life under three regimes: the French colonial government, the Japanese occupation and independent Vietnam. They have experienced the great famine of 1945, the war of liberation, the post-independence land reforms, the struggle in the South to unify the country and the American bombing of the North, the post-1975 period of intensive collectivization and, more recently, the period of *Doi Moi* reform.

The next sections will explore the ways in which policy reforms and other factors have affected the villagers' management of mangrove forests in response to national policy reforms in the village. The analysis examines national policy reforms led to rapid changes in local land use systems and in both the ownership and management practices of these mangrove forests at the village level. It also pays explicit attention to the dynamics of social differentiation in the village, in terms of different access to and control over mangrove resources and different management practices by the rich and the poor as well as by men and women. Typhoon environments pose various kinds of natural uncertainties to communities living within them. The various coping strategies used by villagers are described in the paper.

The next section discusses the ways in which mangrove forests in Giao Lac have been managed through different periods of time. It highlights the role of different institutions and describes how rights of access to mangrove resources were shaped and have changed over time.

2. Histories of Mangrove Management in Giao Lac Village

From 1858 until 1945, the French colonial administration had authority over mangrove forests, but no one was assigned to guard the forests. In 1939, the colonial administration supervised the construction of the central dike in Nam Dinh province. There were mangrove forests along the dike. Giao Lac is thought to have had about 100 ha of mangrove during that period. There was a profusion of bees, fish, crabs, shrimp, snails, and bivalves in the mangrove forest. In order to survive everybody went to the forest to collect bird eggs, crabs, fish and shrimp, and honey to either eat or sell at the Dai Dong market. According to elderly people questioned during the field research, local people also went to the forests to collect firewood, but only the dry branches, to sell at the market. Although there was no law on forest exploitation and management and there was no guard to protect the forests, no one cut mangrove trees down for firewood and no one shot birds for food either. According to these accounts, local practice thus amounted to effective resource conservation.

After the August 1945 revolution, the majority of landlords "ran away" and new organizations, such as the Farmers' Association, were formed. In 1949, the French returned and supported a Catholic-led insurrection against the Vietnamese government. Houses of Buddhist families were burnt and many relied on timber from mangrove forests to rebuild their houses when they returned. The new French administration promoted the harvesting of mangrove trees for firewood. The heads of villages granted timber concessions to outsiders who then hired local people to cut the forests for firewood. In November 1953, the Viet Minh evicted the French from Giao Lac. In 1954, the entire area was liberated and many Catholics went to the South of Vietnam.

There was, however, no returning to the pre-revolution ethics of mangrove conservation. Mutual aid groups were established in 1955, but Giao Lac Cooperative was not formed until 1972-73. During this roughly twenty-year period, the village managed the forests on behalf of the district. The local people were not allowed to go to the forests as they had before. The People's Committee put guards along the dike to protect the forests, and as part of their job they would stop those who went illegally to the mangroves and even confiscate firewood. Thus, everybody tried his or her best to poach in the forests. They even cut big mangrove trees down for firewood, a situation that had never occurred before. Nevertheless, they did not dare bring the fresh trees home right away. Their survival strategy was to leave the trees in the forests for several days until they became dry or they waited until it got dark and then secretly brought the trees home. Sometimes, firewood collectors were caught by the guards and their firewood was confiscated and taken to the Village's People's Committee.

In the 1960s, in response to ocean encroachment and the reclamation policy of the district, Giao Lac opened up Bien Hoa pond, which now has an area of 54 ha. In order to do this, the village mobilized its entire people to clear the mangrove forest lying between the pond and ocean. Even at that time, however, there were relatively few mangroves outside the pond. Following the opening up of Bien Hoa pond, sea grasses were planted in former mangrove habitat and provided new material for the weaving of mats and

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carpets for export. However, by 1986-87, this estuary margin habitat had become more saline and the village more or less abandoned mat and carpet production for the more lucrative enterprise of shrimp farming.

3. Impacts of Economic Reform: new institutions for shrimp and clam management

In 1986, the Government of Vietnam started its "renovation reforms" (*Doi Moi* in Vietnamese), which encouraged privatization and market liberalization, and included a liberal foreign investment law. In the late 1980s a household-based economy increasingly displaced the cooperative-based economy (Le and Rambo, 1999). The Government of Vietnam shifted responsibility for management of natural resources away from village cooperatives and into the hands of individual farm households (Nguyen, 1995). During the *Doi Moi* period, China has become the biggest importer of Vietnam's marine products. In response a further four shrimp ponds have been constructed by the district. Households or entrepreneurs bid publicaly for a lease to manage a shrimp pond. Usually, 5 or 10 households cooperated to manage a shrimp pond. Typically, each pond's owners earned at least VND 140 million/year[2]. Although the bidding process was open to everybody, only the rich, who had sufficient capital, labour, and management skills, and access to political power were able to participate in the process. Only the older Bien Hoa pond was managed locally, by the Giao Lac Cooperative.

In 1990, people in Giao Xuan village, Giao Lac's neighbouring village, began farming clams by putting in place a system of nets on the inter-tidal area. They were the first people to start the business as they had connections with Chinese traders who sold to the bivalve markets in China. In the past, clams were so cheap that people substituted them for rice. Now clams have become a valuable commodity, about 5 times more valuable than in the past. One kilogram of clams presently fetches VND 5,000-6,000. Both central and local governments have encouraged clam farming. National Decree 773-TTg, for example, stipulates that open coastal areas and water fronts can be used for shrimp and crab farming. Local people have applied the same policy to clam farming.

Many people have become rich very quickly from farming bivalves and trading in coastal produce. The collectors, on the other hand, often suffer the impacts of price fluctuations. Before this time, the mudflats were common property that everyone had access to. However, people began to acquire the right to farm clams by setting up their own nets and claiming the mudflats as their own. The village officials measured the areas that the people claimed as their farming sites, and the farmers paid the rent to the Village's People's Committee based on the area the officials measured.

This process of claiming land excluded the poor and female-headed households. These people did not have any place to go and dig clams. Consequently, a number of people, especially poor women and girls, became marginalized. They had to work on resources owned by somebody already, while the rich worked on their own resources. Some poor people had to watch shrimp ponds for the rich for VND 150,000 (more than USD 10) a month. Some collectors were hired to collect clams, which used to be theirs, with

[2] In 2000, one USD was equivalent to VND 14,000.

somebody else's net, and earned VND 10,000/day. Conflict between those who had the nets and those who lost the resources increased to the extent that such conflict resulted in fighting. In mid-2000, the owner of a clam farming area in Giao Xuan beat a pregnant woman unconscious, when he encountered her collecting clams in an open area, which--he claimed--was owned by him. Through leasing of previously common resources, the rich have thus acquired the right to appropriate the common resources, disenfranchising the poor in the process. The poor did not even have the right to protect themselves when they were violently harassed. Charges were not filed against the man who beat the pregnant woman.

When asked why people from Giao Xuan could come and farm clams on Giao Lac's mudflats, District officials replied that whatever land is situated beyond the dike, including the mudflats, belongs to the district, so Giao Lac does not have the right to exclude outsiders. After a year or two, people in Giao Lac learned how to farm clams from the Giao Xuan people. The intertidal area of 350 ha, to which access had been open to everybody, then effectively became the property of those who had enough capital to invest in clam farming. The whole area was covered with nets and clam watch-houses.

Thus, the poor once again were excluded. To collect bivalves, they had to go further to coastal areas that were not within walking distance. So 10 or 15 people gathered together and hired a motorboat to get there. They got up earlier and stayed longer in the inter-tidal mudflats. They had to spend part of the money they earned by the end of the day to pay for the boat. Those who could not afford the boat had to stay at home, and therefore could only depend on the wet rice production, which typically provided only enough subsistence for only 7-8 months/year. This made the poor people's life more difficult.

4. Danish Red Cross Mangrove Plantation Project

In 1997, the Danish Red Cross assisted Giao Lac to plant mangroves for the protection of sea dikes as well as the lands and the village community behind them. The district cleared the clam farming site on Trong Island and enclosed an area of more than 300 ha for mangrove plantation. As planned, one main household and another 3 supplemental households were to be chosen to plant each 5 ha of new mangroves. To qualify, the District required that the main household had to be a poor household with sufficient labor. The other three households were to be selected by the Giao Lac Red Cross and other local leaders. For each hectare of mangroves planted, a group was to be paid VND 360,000. So much for project design. In reality, very few poor households were actually selected to participate. The majority selected were middle or upper middle households, and were typically the relatives and friends of the heads of hamlets.

After the mangroves were planted and grown, the quantity of the marine catch increased, especially that of baby shrimp and crabs. These creatures travel from the ocean to mangrove habitats in search of food, thus supplying larvae for shrimp and crab rearing households. Once there were plenty of shrimp, crabs, and clams in these new mangroves, local people tried to poach the mangroves to catch these creatures, although they knew that they were not allowed to. They were told by the guards that they might kill the mangroves while walking around looking for crabs, or digging bivalves. In 1999, when

the mangroves were two years old, the village guards who were paid more than VND 350,000/month decided to sell tickets to local people who wanted to collect marine creatures in the mangroves. For an entrance, each person had to pay VND 10,000. The guards kept the money for themselves. This created resentment between people in the village and the guards, as the enclosure of the protected mangrove forests had transferred control over the resources to the guards. Many of the poor simply could not afford to buy the daily entry ticket to the newly-established communal mangrove forests. Thus, it was that a project funded by an international NGO and intended to be both pro-environment and pro-poor did provide community-wide environmental benefits, but the income-generating benefits were largely captured by the middle and upper-middle households.

Mangrove forest plantation had affected the local people's access to and control over mangrove resources. The planting of mangroves had opened up opportunities for many people, but not to all the villagers in the commune. Those who were older than 45 or 46 years old, for example, could not go to the mangroves or the mudflats at night to look for baby crabs, as they would not be able to see the small crabs. The rich and the upper middle classes earned more from the mangroves or the mudflats than the middle and poor classes, as they had labor and management skills, and, more importantly, access to the capital needed to invest in shrimp ponds and clam farming.

One might take one step further and ask why mangrove forest plantation affected people in such unequal ways? The partial answer is that communities are not homogenous, autonomous isolates, adapting readily to given exogenous environments (Durham, 1995). On the contrary, communities are complex, conflict-ridden institutions composed self-interested households that fiercely prize their economic independence (Sheridan, 1988). Differential relationships of power within and among communities mediate the exploitation, distribution, and control of natural resources. In other words, gender, age, wealth and class influence the ways in which the local people use mangrove resources.

The *Doi Moi* reforms changed the whole make-up of the rural areas in Vietnam. Rural living conditions improved greatly (Ngo, 1993). It has been argued, however, that reforms, which have brought positive results, are not yet guaranteed, since private land ownership, which was thought to be the key to further development, may lead to land fragmentation and increased social differentiation in rural areas. The next section will be devoted to analysis of household cash income earned by the four different groups of households from the mangroves and mangrove-related resources. The analysis looks at the main factors that cause differentiation, such as capital, labor, management and entrepreneur skills, and access to market centers and towns, where the market economy has become more developed (White, 1989:25). The factors, in turn, affect access to and control over mangrove resources and the way in which different classes of people use the resources.

5. Social Differentiation and Its Impacts on Harvesting of Coastal Products

Hamlet 7, one of 22 hamlets in Giao Lac commune, seemed representative being of average size, average income status, and close to the central dike. This hamlet had 70

households with a total population of 270 people. Viewed from the perspective of annual income, the 70 households stratified into 4 groups, consisting of 5 rich, 17 upper middle, 40 middle, and 8 poor households. A sample of 32 households was selected, which included five rich, ten upper middle, ten middle and seven poor households. One out of the eight poor households was not included in the sample because the head of the household had a mental disease and could not communicate effectively, and his wife was working in China.

5.1. Distribution of Households by Shrimp Pond Area

Figure. 1 Distribution of Sample Households by Access to Shrimp Pond Area (Number of Households and Percentage)

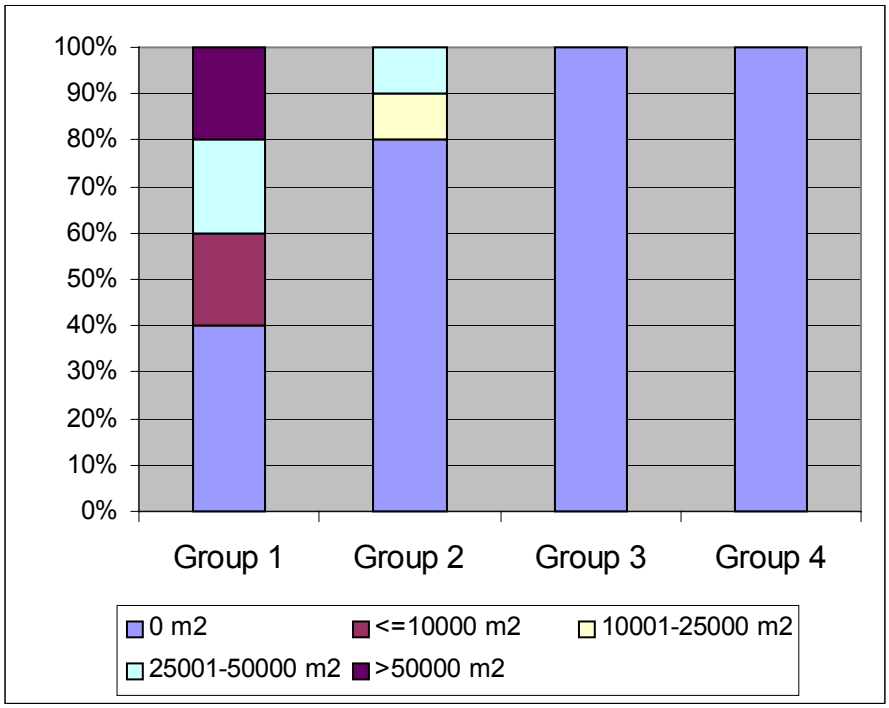


Figure 1 displays the distribution of households according to the area of shrimp pond different groups of households had for shrimp farming. As the figure shows, 20 % of the households in the rich group had an area of less than 10,000 m^2 of shrimp pond while 10 % of the households in the upper middle group had an area of shrimp pond of between 10,000 m^2 and 25,000 m^2. The figure also demonstrates that 20 % of the households in the rich group and 10 % of the households in the upper middle group had an area of between 25,000 m^2 and 50,000 m^2. In addition, 20 % of the rich group's households had an area of more than 50,000 m^2 of shrimp pond for shrimp farming. One should note that the middle and the poor groups of households did not have any shrimp ponds at all. This can be explained by the fact that they could not muster the required combination of access to capital , labour and management skill needed to become shrimp farmers.

5.2 Distribution of Households by Area of Clam Farming

Figure 2. Distribution of Sample Households by Access to Clam Farming Area

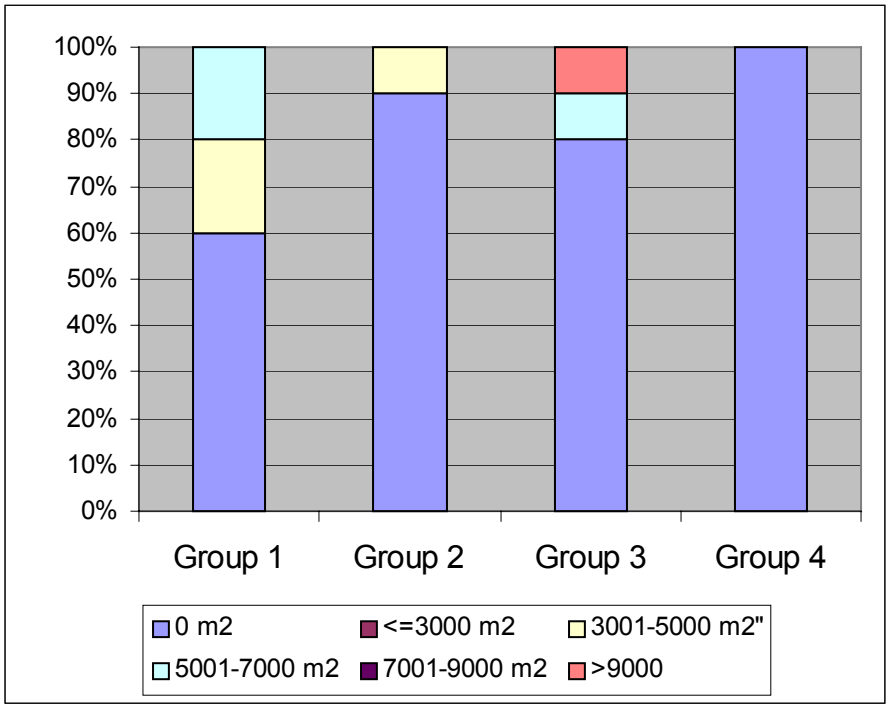


Figure 2 shows that twenty % of the rich group's households and ten % of the upper middle group's households had an area of clam farming sites of between 3000 m^2 and 5000 m^2. The figure also displays that twenty % of the rich group's households and ten % of the middle group's households had an area of clam farming sites of between 5000 m^2 and 7000 m^2 while ten % of the middle group's households had an area of more than 9,000 m^2. It should be noted that the poor group of households did not have any bivalve farming site, because they did not have capital sources to start with.

5.3 Household Cash Income from Mangroves and Mangrove-Related Resources

The results of the analysis of household cash income gained by four groups of households from the mangroves and the mudflats are illustrated in Figures 3 - 5.

Figure 3. Distribution of Classes of Households

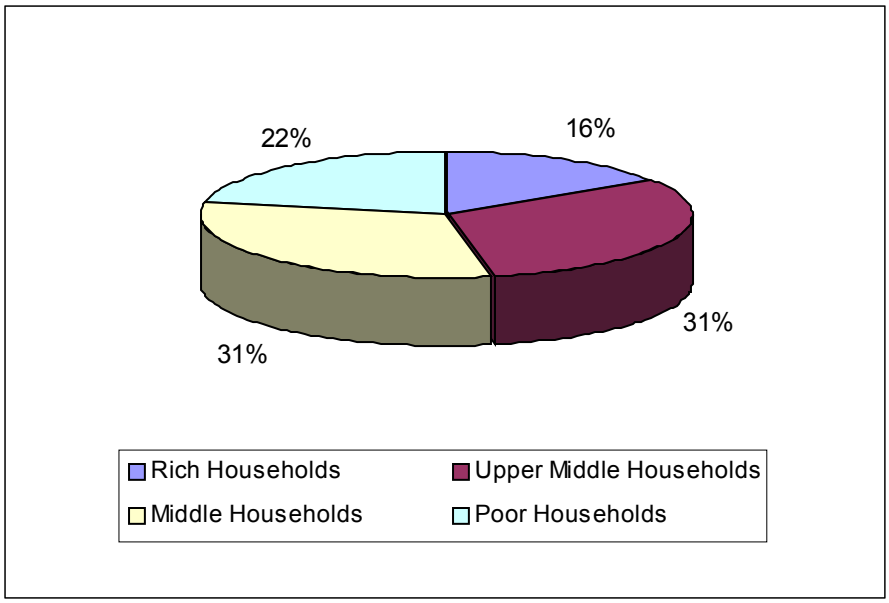
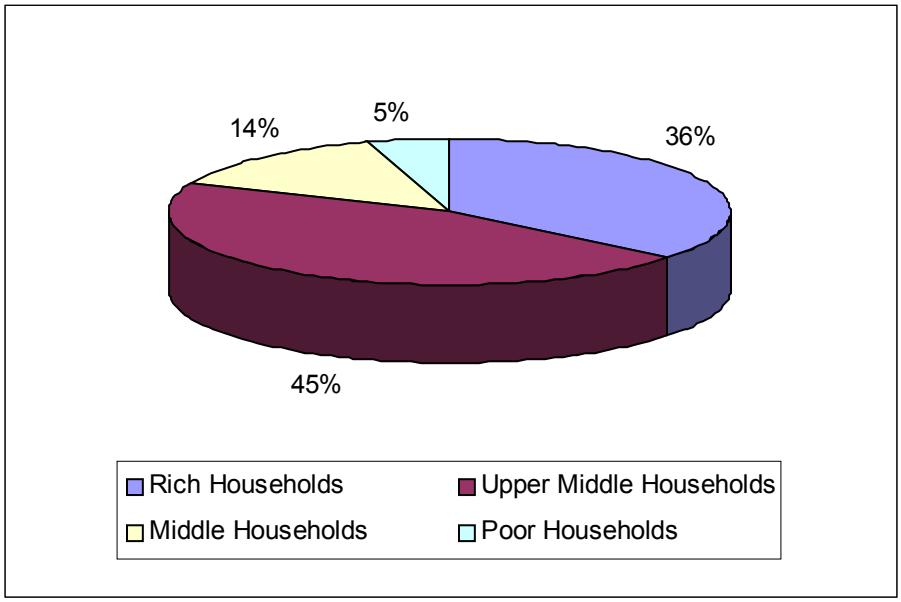


Figure 4. Household Total Cash-Income from Mangroves and Mangrove-Related Resources



Figures 3 and 4 show that the rich households in the sample earned VND 43.3 million from the mangroves or mangrove-related resources accounting for 36% of the total household income, while the upper-middle earned VND 54.8 million constituting 45% of the total household income. The middle households, on the other hand, earned only VND16.6 million or 14% of the total household income from mangrove-related resources. The poor households in the sample obtained only VND 5.8 million accounting

for 5% of the total household income. Rich sample households made up 16 % of the sample households, the upper middle 31 %, the middle 31 % and the poor 22 % of the total sample population.

Figure 5. Household Average Cash-Income from the Mangroves or the Mangrove-Related Resources

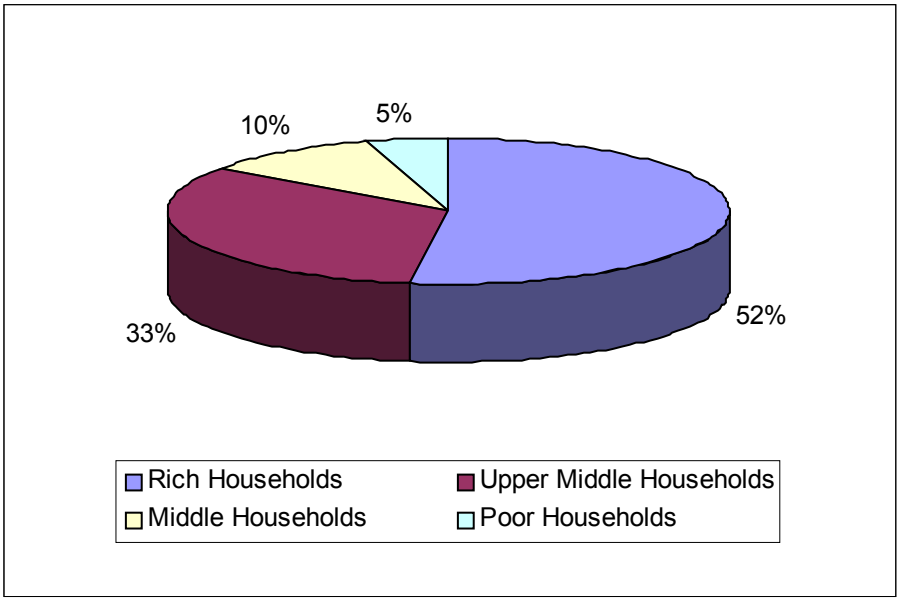


Figure 5 illustrates the household average cash income from the mangroves or the mudflats. The average income earned by the rich constituted 52 %, while the upper middle 33 %, the middle 10 % and the poor only 5 %.

5.4 Sources of Income

For the purpose of the analysis, income gained from trading of coastal products is also included. In this way one can see how much each group of households earned from what sources.

Distribution of Household Income

Figure 6. Sources of Household Income from Mangroves and Mudflats

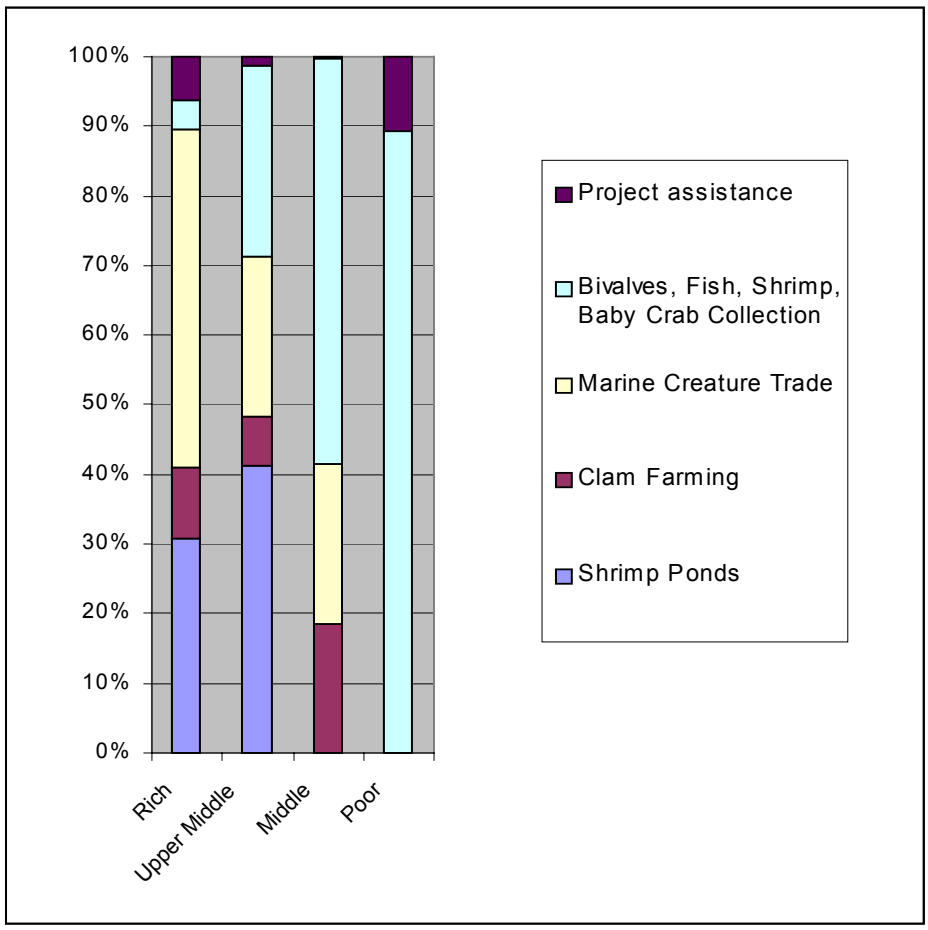


Figure 5 shows the sources of the household income and the distribution of that income from the mangroves and the mudflats. The rich earned VND 29.5 million from shrimp ponds accounting for more than 31 % of the household income, while the upper middle VND 30 million accounting for 41 % of the household income from the mangroves. The middle and the poor didn't own any ponds, as they did not have capital sources, labor or management skills to invest in shrimp ponds. The rich gained VND 9.7 million from clam farming constituting almost 10 % of the household income, while the upper middle VND 5 million accounting for 7 % of the household income and the middle VND 4 million taking up more than 18 % of the household income. The figure also shows that the rich earned more from marine creature trading.

Overall, rich households in the sample earned VND 46.4 million taking up almost 49% of the household income, whereas the upper middle's VND 16.8 million constituted about 23% and the middle households earned 5 million VND, also accounting for 23% of the total household income from the mangroves or the mudflats.

The poor, on the other hand, simply were not engaged in this activity. Lack of access to capital and lack of management experience were formidable barriers to entry that the assisting NGO had simply not anticipated in their planning process. Regarding bivalve, fish, shrimp, and baby crab collection, the upper middle was the group which earned the most at VND 19.8 million and accounting for 27 % of the overall household income earned from mangrove-related resources. The middle households in the sample earned VND 12.6 million or almost 58 %. The rich households earned VND 4.1 million accounted for 4% and the poor 2.85 million accounting for 89 % of the total household income.

The reason is that this activity doesn't require capital sources or management skills, but does require labor, which is available among the upper middle and middle households. The four groups benefited from the mangrove plantation project. The rich earned VND 6 million taking up 6% of the household income, the upper middle earned VND 970,000 accounting for a very small amount of the household income (more than one %), while the middle gained VND 50,000 constituting 0.2 % of the household income and the poor VND 700,000 accounting for 11 % of the household income from the mangroves. One should note that one of the rich households that had planted the mangroves in the early 1990s to protect their shrimp pond's dikes. When the Danish Red Cross Project started the household was willing to give their mangroves to the project. The household was then considered as one of households planting mangroves like any other poor households in the village and therefore earned VND 6 million.

By contrast, a middle household was typically hired by the upper middle to plant mangrove trees for two days and was paid VND 50,000. In principle the project was designed in order to provide the poor an opportunity to improve their living standards. In reality, very few poor households were actually selected to participate. As the analysis presents itself, the majority were the upper middle or middle households, who were the hamlet head's relatives and friends (cf. Khan, 1988: 98 & 99), although these households did not have sufficient labor and they had to hire poor households that had labor to do the job. One was paid between VND 16,000 and 25000/day instead of VND 30,000 as set by the project. Nevertheless, the poor had to do it, because they did not have any alternative forms of income.

In summary, the rich earned more from the mangroves or the mangrove-related resources. The poor earned least of all. However, the poor depend more on the mangroves, as they don’t have access to alternatives (Agarwal, 1992: 128 & 129). The rich earned the most from the mangroves and the mudflats, because they had capital sources, labor, and management and entrepreneur skills. It is important to note that education was also considered among the factors differentiating households within the community. All of these factors will be analyzed in turn.

Based on the information provided by the interviewed household heads, capital was considered the most important factor differentiating households. According to all shrimp farmers in the village, no one could borrow money from the Vietnam Bank for Agriculture. The reason is that shrimp farming is considered a risky occupation by the

government. Therefore, in addition to the amount of money that they mobilized among the family members, they had to borrow money from local moneylenders. Those who wanted to borrow money from the Bank for Agriculture would have report to the bank cadres that they would like to invest the loan in animal husbandry. For this category one could borrow at most VND 5 million. Many shrimp farmers said that they were not willing to borrow money from the Bank for Agriculture despite low interest of 1%/month. The reasons are two-fold. First, an amount of VND 5 million was too little to invest in shrimp farming. In order to improve a pond for tiger shrimp culture, it cost one between VND 150 - 200 million. Second, the procedure was too complex and it would take a lot of time to get the signature from the village cadres in order to be eligible for the loan.

The family backgrounds and labor capacity played a very important role in successful shrimp and clam farming (cf., Luong and Unger, 1999: 144, Sikor, 2001). The reasons are three-fold. First, the family bonds helped mobilize capital sources, which are considered the primary determinant in this business. Second, family labor played a very important role in construction of shrimp ponds, especially at the early stages where the majority of shrimp farmers did not have sufficient money to hire laborers to work for them. In this way, they could save money and invest it in the business. It should be noted that all shrimp farmers hired dredges and farmers to improve the ponds for them in 1999 and 2000. Third, it would be better if the pond's share-holders could be bothers so that one was not afraid of being cheated and more importantly they stayed together when problems arose and fought for the business to the end. Importance as well is that acquiescence was more easily achieved among brothers.

Analysis of the educational level of the household heads also reveals that the mean number of years of school attendance of heads of the rich group was the highest at 8 years, while the upper middle 7.5 years, the poor almost 8 years, while the middle was the lowest at 5.5 years. Based on the information provided by the interviewed household heads, education played a very important role in the household economy, and thus should be considered as a significant factor differentiating households. According to informants, education helped one to quickly take advantage of the new opportunities associated with market liberalization. This was and is of great importance in a market driven economy like Vietnam. In addition, education helped one gain a good base of knowledge of aquaculture technology and identify the best soil for clam and shrimp farming. Education also helped one learn from the past experiences. More importantly, it encouraged him to learn from his friends and those who were experienced in aquaculture so that he could draw lessons for himself. In other words, education helped one become "how to calculate" and grasp the opportunity when it came.

Despite the importance attributed to education, it is striking to see that the mean number of years of school attendance in the poor group was almost as high as that of the rich group, and yet the difference in household cash income from mangrove resources was immense. The reasons for this are three-fold. First, the majority members of households in the poor group suffered from chronic health problems. Thus, they were not able to fully participate in productive work. Second, they also spent a large proportion of their

disposal income on their medical bills, which in turn limited the amount of capital available for investment in clam and shrimp farming. Thirdly, there appeared to be a higher incidence of gambling in poor households and this, too, was a significant drain on household finances. Two out of the seven poor households sampled were headed by men in the thirties who worked very hard, but who unfortunately so spent most of their earnings on gambling. This left their households among the poorest in the hamlet.

Somewhat surprisingly, the middle group of households had the lowest mean number of years of school attendance, but their economic situation was better than that of the poor. The reason is that the majority (seven out of 10 households) were old couples who lived by the themselves and their "consumer/producer ratios" changed over the family cycle (Chayanov, 1986: 87). Unlike younger households, their number of consumers did not exceed the number of producers. In addition, in old age their consumption demands, including food requirements were less than those of younger households, but their contributions to agricultural production more or less the same. They retained the agricultural land allocated to them by the village and continued to do some of the work themselves. Most of the time their children helped them with the heavy work of transplanting and harvesting their rice. As a result, they could save money. It is important to note that old people who were in their late sixties and seventies and whose children were all married were not supposed to contribute anything when they were invited to a wedding party or a house warming party in the village. According to key informants, this was partly because old people could not earn as much money as the young people and principally because villagers would not have to contribute to their children's wedding parties or their house-warming parties anymore. In this manner, old people could both save their money, and continue to attend all ceremonies in the village. This seems to be an adequate explanation for why the middle group was better off than the poor group despite their lower level of formal education.

One might ask whether the age should be considered a factor differentiating household income? Analysis of the age of household heads who made and implemented decisions in the household and therefore played a very important role in household economic development reveals that the younger a household was in the family cycle the larger areas of shrimp ponds and bivalve farming site it cultured. This might be explained by their possibly having a greater ability to quickly grasp market opportunities.

The upper middle and the rich were younger when compared with poor and middle income households in the sample. As a result, they were able to quickly take up the chance. In addition, the poor group had less household labor available and less ability to hire in additional labor. Labor capacity is considered a primary determinant of success in shrimp and clam farming and the ability to produce, save, and store wealth (cf. Sikor, 2001: 943). As mentioned above, the poor group suffered from chronic health problems and consequently, medical expenses absorbed a large part of their savings and drove many households into debt.

In summary, Doi Moi has resulted in a “tragic outcome” in so far as the poor, the social group who traditionally have been most dependent on mangrove resources as a source of

supplementary income, has now become the social group that has the least access to these resources. And this has occurred within a development context in which (modest amounts of) International NGO funding was applied with the intent of securing pro-poor outcomes from the rehabilitation of mangrove resources. Perhaps predictably, the rich and the upper middle households had superior abilities to take advantage of new opportunities associated with the liberalization period. More importantly, they were able to capture nearly exclusive access to the newly privatized coastal aquaculture resources. This, in turn, further differentiated them from the other two groups, the middle and the poor households that were simply unprepared to grasp the emerging market opportunities due to less access to both capital and labor. Once they secured near exclusive access, they were then able to consolidate their advantages and more firmly establish their superior standing within the commune economy. These households were ones that worked hard and were willing to take risks, but they also had management and entrepreneurial skills already in place.

Analysis of sources of income from the mangroves and the mudflats confirms inequality in the distribution of household income. It also demonstrates that these sources of income have on-going effects of widening existing levels of inequality within the hamlets and the commune. The next section will be devoted to analysis of inequality between income earned by men and women. The investigation will provide insights into how class and gender exerts influence on the distribution of household income.

5.5 Class-Gender and Distribution of income earned from the Mangroves and the Inter-tidal Mudflats

The largest source of income in the village, trading of marine products will be analyzed in order to discover if there are significant gender-related inequalities affecting women's and men's income and in turn the distribution of household incomes and household quality of life.

There were only five households involved in trading of coastal products among the sample households. Of these five households, in three, both husband and wife engaged in trading activities. For the remaining two households, only the wives were engaged in the activity, because the husbands suffered from their health problems. One was a veteran and he was injured during the Vietnam - U.S. war. He was deaf and therefore could not communicate effectively. The other one had a mental disease and he had been on medication for a long time. It was evident that the disability of two of the five husbands served as an incentive for the spouses of these men to be more involved in using natural resources in caring for their children, in "survival tasks," and to generate money as well, such as through trade involving coastal products (cf. Leach, 1994).

On the surface, this occupation seemed to generate large profits, while it did not require one to work hard at all. Based on the household records, on average, a trader had to work between 8 and 10 hours a day. The trader's working hours depended very much on the tide. Most of the time, shrimp were caught between 10:00 p.m. and 3:00 a.m. By the time the trader transported the shrimp to the purchasing agent it was between 3:00 and 4:00 in

the morning. By the time s/he came home, it was 5:00 or 6:00 in the morning. Based on the information provided by the interviewed heads of household, the amounts of cash earned from trading of coastal products varied between men and women (See Table 1 below).

Table 1. Income Earned by Different Groups of Men and Women

Gender	Activity	Total hour	Amount of cash
Man	Trading of shrimp	8-10	VND 90,000
Man	Trading of all coastal products	8-10	VND 40,000
Man	Trading of crabs	8	VND 33,000
Women	Trading of coastal products	8-10 hours	VND 13,000

Source: Field research by Hue Le Thi Van in 2000.

Table 1 demonstrates that the women earned much less compared with men engaged in the same activities. According to one trader interviewed, there were around 100 local traders in Giao Thien, Giao An and Giao Lac villages. Each trader signed a contract with the owners of a shrimp pond. It is important to note that all of these traders were men. Women were excluded from this work, principally because it was more stable and it generated more profits (Agarwal, 1992: 137; cf. Agarwal, 1997 & 1998). The persistence of patriarchal values within a patriarchal rural society is one explanation for this inequitable situation. As shown in Table 1, women earned much less than men when compared with men, although they worked as hard and as long as men (8-10 hours/day). A man who traded shrimp could earn up to VND 90,000/day, VND 33,000 for trading crabs, and VND 40,000 for trading other coastal products, whereas a woman could earn only VND 13,000/day. As she could not sign a contract with a shrimp pond's owners, her business was very unstable and it depended very much on the catches of her clients, the majority of whom were collectors of lower margin coastal products rather than shrimp and crabs.

In addition, all owners of shrimp ponds and clam farmers were men and they had better opportunities to earn much more than women who—due to the persistence of certain patriarchal norms at the village level--had been virtually excluded from the newly privatized coastal aquaculture resources (Ibid., 1994: 36; cf. Adger, 1999). This explains why the poor group in which the majority of household heads were women and which did not have capital sources and labor to gain access to high return occupations received such lower levels of income from the mangroves and the mudflats (White, 1975: 155). These disparities contributed to inequality in the distribution of household income among groups due to increasing inequality in access to the newly privatized coastal aquaculture resources.

Perhaps central to understanding the growth in income inequality in Giao Lac is the distinction between risk and uncertainty. According to Mehta (2000:3), uncertainty is not the same as risk. Risk can be seen as a situation where probabilities or alternative outcomes can be calculated. Uncertainty is defined as a situation characterized by indeterminacies, which cannot be calculated. Such uncertainties can refer to ecological

and environmental hazards, to political or policy changes, to market behavior, to social problems or to inadequacy of knowledge. One may ask how Giao Lac's people could cope with such an uncertain environment, in which there have been fundamental, sudden and unpredictable changes in government policies, fundamental changes in resource ownership, control over and access to the mangrove resources due to the enclosure of protected mangrove forests, and a sudden integration into the world market after the reforms started? In order to answer this question, I now move on to present the village's informal institutions and how these institutions, particularly social and rotating credit associations, help local people cope with on-going change and uncertainty at various levels. (Mehta et al, 1999). At the same time, it appears that gender inequality within the organization and norms of these associations is ironically part of the problem.

7.1 Social Associations

In each hamlet six national associations are often represented. These are the Women's Association, the Veterans' Association, the Elderly People's Association, the Pioneers' Association, the Farmers' Association and the Youth Union. These associations were created during the cooperative period. As the role of the cooperative has been downgraded over time and replaced by the household economy, the budgets of these associations have dropped significantly. Association membership is voluntary and each association is now self-financing rather than relying on funding from cooperatives.

Different associations have different contribution policies. For the Pioneers' Association, as all the members are children (7-13 years old), each child contributes 3 kg of paddy per year. For the Women's Association, each member contributes 10 kg of paddy. The association lends the rice to poor families at 4% annual interest. The profit is spent on the association's activities. For the Women's Association, for instance, all the members get together once a year on the International Women's Day, March 8. They either have a party together so that they can talk to each other, and more importantly they have a chance to sing songs together; or they organize a tour to visit famous temples or places of scenic beauty. Everyone is free to choose an association of his or her own. Thus, the poor are not excluded from these social associations.

7.2 Rotating Credit Associations

Rotating credit associations include the gold association, the soldiers' association, which consisted of those who joined the army on the same day, the cement association, the brick association, the rice association, and the funeral association, among others. Each association has its own head and its own regulations. The main principle of all these association is that they are based on mutual trust. Those who know each other and trust each other form their own association. Like the other associations, both Catholics and Buddhists can participate in the credit associations. A person can be a member of many associations.

Credit associations are more spontaneous than social associations; they can include people from different villages. Like the social associations, the regulations of credit associations vary from one to another. On average, each association has 12-15 people. The cement and funeral associations are non-profit associations. In the cement association, for example, each member contributes a sack of cement when one member of the association builds his or her own house. This association is based on mutual aid. In that way, they could save their money to construct a house, which would cost them a fortune and they could not afford if they were not members of the cement association.

The gold association, for instance, is a profitable association that requires regular contributions from its members, the equivalent of about VND 500,000 twice a year. Everyone has an equal voice in the planning process. People have different strategies to raise money to put into these associations. Some have the village salaries, some raise pigs and others keep ducks. The most common strategy is to raise pigs, and go to the mudflats to collect clams and crabs, which are sold to the traders, and save the money raised to put into their association. In this way, they could save money and therefore do not have to borrow money from local lenders at high interest or from the bank, to which they have to pay monthly interest, and whose procedures are very long and complicated, when they construct a house, organize a wedding ceremony for their children, or when their crop is damaged by natural disasters.

8. Community-based Mangrove Forest Management

The mangroves are presently three years old and the Danish Red Cross project will finish in 2005. However, no one knows who is going to manage the forests when the project ends. According to the village officials, the mangrove forests will be under the district's management, a system of management that disenfranchises Giao Lac's poor inhabitants, when the project comes to an end. They are afraid that the district will then move to privatize the forests by granting concessions to individuals who have access to the large amounts of capital needed to build shrimp ponds, once again, converting the forests into shrimp farming areas. No one wants to lose the forests again. As everybody still remembers, in 1983 and in 1986 Giao Lac was hit by big hurricanes. The central dike was not broken, but it was severely damaged. Many houses were either blown away or collapsed and most shrimp ponds were destroyed in 1983. All of this happened because there was no forest beyond the dike.

According to the head of the Giao Lac Red Cross, the village would draft its own rules of access to mangrove resources. According to these rules, those who want to go to the forests to collect marine creatures and other visitors would have to buy tickets. The money collected from ticket selling would be used to pay salaries for the guards, who would be nominated and then publicly selected by each hamlet. This idea was rejected by all residents, on the grounds that the needs of the community are highly heterogeneous. Moreover, collectors are not engaged in the same activities on the mudflats as they are in the forests. Thus, they would not end up earning the same amount of money, and, thus, it would be unfair to sell a single kind of ticket at one fixed price.

All inhabitants of the village want to manage their mangroves. According to the heads of the 32 households interviewed, the village's people would like to draft their own rules. They would like to keep 3 guards. The Danish Red Cross presently hires 5 guards to protect the forests. The salaries for the new guards would be lower than what the present guards earn at the moment. At the People's Committee's standard of only VND 150,000/month, the annual salaries of the three guards would total VND 5.4 [if 3 x 150k x 12] million annually. They all said that the forest itself could generate a much greater amount of money. When the project is over they would let 20 people put grape and gill nets at the edge of the forest. Each owner would have to pay from VND 500,000 to one million VND per year for the rent. VND 5.4 million would be spent to pay the guards' salaries and the rest would belong to the People's Committee so that the money could be spent on roads or schools for the village. The guards would be nominated and then publicly selected by each hamlet. The term would rotate every year. Also, according to the rules, if somebody doesn't do a good job, s/he would be replaced right away. In order to make the rules become effective, a committee of mangrove protection should be created and the Giao Lac People's Committee and the Giao Lac's Red Cross should be members of the committee. They should be included in the drafting process and would play a very important role in implementing the rules later on.

In this way, the forests will be protected, while bringing benefits to the local people, which in turn will help manage the resources in a sustainable manner. The poor, female-headed households and marginalized groups of people would be included in the process and would have a voice in the decision-making as well. In other words, the proposed mechanism would ensure social equity, productivity and sustainability. Nevertheless, local people still face a long process of negotiations before such an approach is accepted by provincial and national governments.

9. Conclusions

The *Doi Moi* economic reforms, while opening up economic opportunities for many, have not benefited the whole community. Rapid changes in the allocation of private leaseholds in the coastal area and the legalization of private businesses have deprived many poor households of livelihoods dependent on access to mangrove resources. Female-headed households, women and girls have been the most adversely-affected.

Changes in macro-structure of state and economy have not resulted in changes in all aspects of life in a coastal village like Giao Lac. Consequently, it leads to different processes of differentiation between different classes, groups of men and women or groups of people of different age in the same village. The social structure in Giao Lac remains highly complex. Neither state control nor private sector control alone can provide a viable solution to mangrove resource degradation. Likewise, it does not make sense to propose only "community-based resource management," as the local community itself is highly heterogeneous and outsiders also use the resources. A combination of national control, private ownership, and community-based management therefore appears to be the most suitable strategy to promote in the context of Giao Lac and other coastal communities with mangrove resources.

The ideal division of labor would go something like this. A Central Government agency would continue to manage the dike system, as a breach in the dike system can cause far-reaching damage to many communities. Households would manage individual shrimp ponds according to private sector principles. And the whole community (probably a cluster of villages nominating some sort of oversight committee) would oversee the management of the mangrove forests and be granted the right to require shrimp pond farmers to post "environmental bonds" or otherwise pay money into a local fund that would be used to both offset loss of income to other villagers as a result of mangrove habitat destruction and subsequently to cover the cost of reclaiming abandoned shrimp ponds. The community's households might be obliged to contribute to this fund based on a sliding scale adjusted according to each household's income bracket (or net worth), as it is likely that the reclamation process would be a longer term process that would require local input and direction long after outside shrimp entrepreneurs had left the scene.

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