

Diversity of resource use and property rights in Tam Giang Lagoon, Vietnam

Ta Thi Thanh Huong

Natural Resources Institute, University of Manitoba, Winnipeg, Manitoba, Canada
tahuong@gmail.com

Fikret Berkes

Natural Resources Institute, University of Manitoba, Winnipeg, Manitoba, Canada
berkes@cc.umanitoba.ca

Abstract: Since the early 1990s, aquaculture has become the most important livelihood activity in Tam Giang Lagoon, Vietnam. The aquaculture boom has reduced the available water area for mobile gear fishers, polarized different user-groups, created resource conflicts, and increased pressures on the lagoon systems. Aquaculture in the lagoon is governed by both customary and legal rights. The objective of this paper is to explore the diversity of resource use and the complexity of property rights in one of the villages located in the lagoon. The paper emphasizes the linkages between changes in commons institutions and changes in resource use and property rights. First, the political and socio-economic changes in Vietnam are examined as well as how they have influenced traditional commons institutions and lagoon resource management in the village. Second, the linkages between common institutions and the diversity of property rights are analyzed. Particular attention is given to the analysis of different types of resource use associated with “bundle of rights” and the diversity of property rights regimes in the village.

Keywords: Coastal commons; lagoon; property rights; privatization; institutions; aquaculture; Vietnam

Acknowledgements: We would like to thank Dr. Tuyen and his research team for their support in conducting the research. We thank the family in Thuy Dien village that has hosted Huong and shared its stories for two years. We thank three anonymous referees for their comments and suggestions. Huong’s research was funded by the Canada Research Chair in Community-Based Resource

Management and by an International Development Research Centre (IDRC) Doctoral Fellowship. Berkes' work has been supported by the Social Sciences and Humanities Research Council (SSHRC) and the Canada Research Chairs Program (www.chairs.gc.ca).

I. Introduction

People in the Tam Giang Lagoon area say, “*điền tư ngư chung*” – “farm land is private and water area is open”. Lagoon commons are shared spaces, and issues of property rights have arisen since the feudal times. Traditionally, there have been two fisher groups based on the type of fishing gear they own: fixed fishing gear groups with larger capital investments and mobile fishing gear groups with poorer fishers (Phap 2002; Tuyen 2002a; Tuyen et al. 2010). Since 1975, coastal commons have been nationalized. However, the policy reform in 1986 toward a market economy and the development of aquaculture in the early 1990s have, in fact, resulted in *de facto* privatization, excluding poorer fishers from most of the fishing area, creating resource conflicts, and increasing pressures on lagoon systems. The objective of this paper is to explore the diversity of resource use and the complexity of property rights in the lagoon. The emphasis is on the linkages between changes in commons institutions and changes in resource use and property rights.

The case of lagoon commons privatization in Vietnam is a curious one: officially, lagoon resources, as with all natural resources in Vietnam, are government property. Here we show how lagoon resources in a socialist system, just like resources elsewhere (Ambec and Hotte 2006; Hossain et al. 2006; Nayak and Berkes 2010) can be privatized. The argument regarding privatization is based on the notion of a “bundle of rights” that comprises the authority to undertake particular actions related to a specific domain (Schlager and Ostrom 1992, 250). Property rights may be found at two levels: an operational level and a collective-choice level (Schlager and Ostrom 1992, 251). For present purposes, the most relevant operational-level rights are the rights of access and withdrawal. Collective-choice rights, including management rights, exclusion rights and alienation rights, are especially important in defining future operational-level rights. Accordingly, individuals holding operational-level rights may be called resource users, and individuals holding alienation rights (rights to sell or lease other collective choice rights) may be defined as owners (Schlager and Ostrom 1992; Ostrom and Schlager 1996). In Vietnam, individuals do not own the property (e.g. a piece of land or aquaculture pond) itself, but they may have all the operational level and collective-choice level rights, including alienation rights. They are in effect the “owners” of that property.

Coastal commons are often complex commons, and we do not wish to oversimplify the situation in Vietnam. Many coastal resources are held in overlapping and conflicting combinations of state property, common property and

private property regimes, and may also periodically become open-access (Seixas and Berkes 2003). Vietnam's coastal commons also show some of these dynamics (Adger et al. 2001; Luttrell 2001; Anh 2006), and the coastal resource systems are among the most intensely used, most crowded ones in the world (Adger et al. 2001). The resources in question show the two important characteristics of commons: (i) *excludability or the control of access of potential users is costly and may be impossible; and (ii) subtractability or each user is capable of subtracting from the welfare of other users* (Ostrom et al. 1999; Ostrom 2003). In the context of Tam Giang Lagoon management, excludability and subtractability are at the heart of the issue.

Commons institutions are critical to these two basic characteristics of commons. Institutions include formal constraints, such as rules, laws and constitutions; informal constraints, such as conventions, norms and customs; and their enforcement characteristics – the rules-in-use (Ostrom 1990). Others interpret institutions as structures of power and relationships. North (1990, 3) defines institutions as “the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction”. Three important features of institutions are apparent in this definition: (1) that they are humanly devised; (2) that they are the rules of the game setting constraints on human behavior; (3) that their major effect will be through incentives (North 1981).

Tam Giang Lagoon in Vietnam provides a suitable setting to study the relationship between institutional change and resource use. Few studies deal with resource management in Vietnam from a commons point of view (exceptions include Adger et al. 2001; Hue 2002, 2004; Anh 2006). This research shows how commons institutions have changed following the political and socio-economic changes of post-1975 collectivization and post-1986 market-oriented policy reforms. It investigates how institutions have influenced, and have been influenced by, the diversity of property rights in the context of Tam Giang Lagoon. Following some background, first, we examine these political and socio-economic changes in Vietnam, and how they have influenced traditional commons institutions and lagoon resource management in the village. Second, we analyze the linkages between commons institutions and the diversity of property rights. In particular, we discuss different types of resource use associated with a “bundle of rights”, and the diversity of property rights regimes in the village.

2. Study area and research methods

Tam Giang at 220 km² is the largest lagoon in Southeast Asia. It is comprised of a series of lagoons, including the Tam Giang area, Sam Chuon area, Ha Trung-Thuy Tu area, and the Cau Hai area. Its length is almost 70 km and it has a width varying from 0.6 to 1.4 km. The lagoon system forms a unique brackish water ecosystem with a diversity of aquatic species (Thung 2007). Traditionally, fishers in the lagoon were categorized into two groups based on the type of fishing gear they owned: fixed gear and mobile gear (Phap 2002). Aquaculture has developed

in the Tam Giang Lagoon since the late 1970s, and has become the most important livelihood activity since the early 1990s. Aquaculture expansion is diverse in many respects, including aquaculture systems (e.g. earth ponds, net-enclosures or pen culture), aquaculture patterns (e.g. intensive, semi-intensive, improved extensive, or poly-culture), and aquaculture species (e.g. shrimp, fish, crab, seaweed) (Tuyen 2002b).

Tam Giang Lagoon provides livelihoods for more than 300,000 inhabitants, including approximately 1500 sampan households (Tuyen 2006). A sampan is a type of flat-bottomed boat used in Southeast Asia (Phap 2000; DaCosta and Turner 2007). A sampan in Tam Giang Lagoon is about 6–8 m long and 1.6 m wide. On average, eight people live together in a sampan, sharing an area of 8–10 m². Sampan households who spend the majority of their lives living on small boats have been characterized as marginalized communities disconnected with the land-based society (DaCosta and Turner 2007).

The research was conducted in Thuy Dien village, which was once a sampan community and has been associated with Phu Xuan Commune, Phu Vang District, Thua Thien-Hue Province since 1975. A commune, *xã*, is an administrative unit that consists of some five to 10 villages. The village has gradually settled on land since 1985; however, as of 2008, there were eight households still living on boats. The village has approximately 800 inhabitants in 143 households. More than 90% of the households are dependent on lagoon resources for their livelihoods. The majority of households are involved in aquaculture. Mobile gear fishers are a minority group; they are not involved in aquaculture; they suffer from a lack of fishing grounds and have difficulties in making a living.

Thuy Dien village is located at the southern part of the Sam Chuon area (Figure 1). The Sam Chuon area is shaped as a bay with the area of 18.55 km² and is located in the middle of Tam Giang Lagoon. The bay provides livelihoods for more than 9000 surrounding households (about 45,000 people) in 20 villages surrounding Sam Chuon (Tuyen 2006). The social-ecological context in Sam Chuon is very complex. Capture fishing and aquaculture activities are diverse and resource use is intensive (Figure 2). Approximately 87% of Sam Chuon area is used for aquaculture activities.

The field work was conducted in 2006–2008. Participatory research methodology included the use of both qualitative (key informants; participant observation; focus groups, storytelling, Venn diagrams) and quantitative techniques (questionnaires). Key informants were sought from the villages, government organizations at various levels, and other non-government agencies concerned with resource management and development. A total of 15 formal focus groups were conducted at different stages of the research. In addition, a number of group discussions, with four or five people, were organized informally. Of the 15 formal focus groups, seven were organized with the participation of households from four specific user-groups with similar types of resource access: (1) earth pond, (2) net-enclosure, (3) mobile fishing, and (4) non-fishing. A total of 65 questionnaires, covering almost half of the households in the village (143 households), were



Figure 1: The study area: Thuy Dien village in Tam Giang Lagoon.



Figure 2: The density of resource use, Tam Giang Lagoon, mostly showing net-enclosures and fish corrals (Tuyen 2006).

completed by all user groups, including female- and male-headed households. All information was checked back with villagers for their feedback and cross-checked with members of the community-based resource management research team in Hue University of Agriculture and Forestry. More details of the methods used may be found in Huong (2010).

3. Historical and socio-economic changes in Tam Giang Lagoon

3.1. Historical changes in property rights and resource access

In Vietnam, resource use and access has changed throughout the various historic periods. The major cause of change is related to the complex political history of Vietnam. The fundamental changes in terms of property rights and resource access in Tam Giang Lagoon can be summarized as three periods: (1) village-based resource management (prior to 1975), (2) the collectivization and centrally planned economy (1975–1986), and (3) the market economy (post-1986) (Table 1).

Before 1975, natural resources including lagoon areas belonged to the feudal government and later, the French colonial government, and were under control of village authorities who set taxes on various fishing activities within its political boundaries. Although it was said that “*điền tư ngư chung*”, the lagoon was, in fact, not open-access. The village authority auctioned off fishing ground rights for fixed gear fishing. The auction winners acquired long-term rights of use and in turn, were required to pay tax to the village authorities (Phap 2000; Tuyen 2002a). The rights which were taxed did not include alienation rights (Ruddle 1998). However, fish corrals could be transferred intergenerationally and gradually became *de facto* private property. Mobile gear fishers could only access open areas of the lagoon (Ruddle 1998; Phap 2000) which can be seen as a form of common property. Although open areas were open to all, village authorities regulated the use of mobile fishing gear. After 1954, there was a difference in the two systems of economic production in the North and the South of Vietnam. While the village-based resource management systems remained unchanged in the South, including

Table 1: Major changes in property rights and resource access.

Changes in Property Rights in Vietnam	
Prior to 1975	Before the re-unification of Vietnam Lagoon areas: government property managed by village authorities Some fishing grounds had become <i>de facto</i> private
1975–1986	Collectivization and centrally planned economy Government ownership of all natural resources Fishers were integrated in fishing units “ <i>Production collectives</i> ”
Post-1986	Policy reform: market-oriented economy Land use rights have been granted to households and individuals and made transferable Lagoon resources: government property under the management of lower levels of administration (province, district, commune)

in Tam Giang Lagoon, the fisheries production was collectivized in the North (Tien 1995; Ruddle 1998).

After 1975, all natural resources became government property, following the North. Land was assigned to the agricultural co-operatives; a farmer who wanted access to land had to join a co-operative. The collective systems were also applied to fishing households in the lagoon. The fishing ground allotted to households in the past was allowed to continue (Tuyen 2002), but fishers had to integrate into agriculture-fishing units as “*production collectives*”, a form of agricultural co-operative (Ruddle 1998; Phap 2000). Officially, fishing grounds were issued to fixed gear production collectives. These co-operatives provided subsidies for fishing gear and boats, and were intended to control production. However, there was a lack of economic incentive for fisheries development in these co-operatives. Fishers retained their produce and sold it on the open market. As a consequence, fishing industry developed quickly because of low input costs and high market demand. Eventually, production collectives proved to be inefficient (Ruddle 1998) in Tam Giang Lagoon, as well as in other parts of Vietnam. Moreover, during collectivization, the traditional resource management institutions were in decline (Ruddle 1998). Although some unwritten rules have remained, many of the traditional institutions were no longer effective.

In 1986, the Vietnamese government introduced “*Đổi mới*”, a policy reform which resulted in a transition to a market economy. Subsequently, the land tenure system was significantly changed, and each household became a basic production unit (Kerkvliet and Selden 1998). Land use rights were leased and granted to households and individuals according to the Land Law 1987 and its revisions. The Land Law 1993 allowed land use rights holders to transfer and mortgage their land use rights for a specific period. The Land Law 1998 provided long-term and stable use for 20 years, and the Land Law 2001 granted “*Sổ đỏ*” or land use right titles to households and individuals. According to the Land Law 2003, land use rights are considered a commodity openly traded in market.

3.2. Aquaculture development in the context of the policy reform

Since the early 1960s, small-scale aquaculture has been developing for domestic use in Vietnam. Within the context of a market economy, shrimp farming is a high development priority of both the central and local governments. The unprecedented success of shrimp farming in the late 1980s and the early 1990s was the main impetus behind the restructuring of farming systems in Vietnam, especially the massive shift to shrimp aquaculture (Nhuong et al. 2003). Aquaculture has been ranked as the third-most prominent economic sector after oil and the garment industry (GSO 2006).

The giant tiger shrimp (*Penaeus monodon*) was the first species commercially farmed for export, and was seen as a way to enable Vietnam to achieve its economic targets (Anh 2006). The total area used for shrimp farming in Vietnam has steadily increased: 250,000 ha in 2000 to 478,000 ha in 2001, reaching 530,000 ha in 2003.

Vietnam's export shrimp market was identified for its potential for both economic growth and poverty reduction (MOF 2001). Fisheries and aquaculture exports have increased significantly; from US\$1.2 million in 1980 to US\$3 billion in 2006 (MOF and WB 2005; Pomeroy et al. 2009). As well, the area for aquaculture has nearly doubled; from 491,000 ha in 1990 to 984,400 ha in 2006 (Pomeroy et al. 2009).

Initially, aquaculture developed with a focus on seaweed culture in Tam Giang Lagoon. However, prior to 1995, only state enterprises were assigned space in the lagoon for aquaculture. In 1994, the Prime Minister issued National Decision No 773/TTg which launched a program promoting shrimp and crab farming. Following this national policy, shrimp culture in the lagoon quickly increased almost 50-fold in the five years from 1990 to 1995 (Mien et al. 2000). In the Sam Chuon area, local households claimed their fishing grounds from the collectives and occupied other fishing ground areas to make new fish corrals. Consequently, a large amount of the available fishing ground was privatized in the process of economic transition.

In 1995, several fish corral users applied for a license to convert their fish corral areas into aquaculture (Phap et al. 2002). According to local regulations, only fish corrals located at the edge of the lagoon could be converted into earth ponds, and the maximum area size was up to one hectare. They were granted such licenses, and the area under aquaculture grew. According to Department of Fisheries Statistics, the total area of aquaculture in the whole lagoon reached 1000 ha in 1999, 1700 ha by mid-2000, 1850 ha by the end of 2000, 2700 ha by the end of 2001 and 4000 ha in 2005 (Nam 2005; Xuan and Hoa 2005).

Fixed gear fishers started to set up small net pens within their fish corrals to store small shrimp and fish to reach marketable sizes (Mien 2006). Gradually, fishers began to use bamboo and multiple layers of nets to convert their fish corrals into net-enclosures. Within the net-enclosures, a small area was surrounded by finer mesh net for aquaculture. Fish corrals and gillnets were used in the area outside of the aquaculture plot for capture fisheries. This combination of fishing and aquaculture was initiated by fixed gear fishers with their net-enclosures located in the Phu Tan Commune in the Sam Chuon area (Phap et al. 2002). More and more fishers in Sam Chuon set up net-enclosures around their fishing grounds without official approval. As an outcome, fishing grounds for mobile gear fishers were significantly reduced and mobile gear fishing groups excluded.

4. Diversity of resource use and property rights

There are several types of lagoon use in the Sam Chuon area. Resource use can be interpreted and understood in the context of socioeconomic changes, especially the development of aquaculture. Since the “*Đổi mới*” policy and rapid aquaculture development, the use of the lagoon has become more complex and diversified, in parallel with the process of privatization. We have identified seven main categories of resource use in Sam Chuon: (i) upper earth pond; (ii) lower earth pond; (iii)

fish corral; (iv) net-enclosure; (v) secondary waterway; (vi) primary waterway; and (vii) open water areas. Table 2 presents the general description of each type of lagoon use; whereas Figure 3 shows the overview of lagoon use and specific location of each type of lagoon use in the Sam Chuon area.

The operational and collective-choice rights comprise different bundles of rights for different types of lagoon use. The sources of these rights are varied. They may originate among resource users without government recognition (*de facto* rights) or may be legally recognized and enforced by the government (*de jure* rights) (Schlager and Ostrom 1992; Ostrom and Schlager 1996). In the context of Tam Giang Lagoon, *de facto* rights may or may not comply with government regulations, but they are accepted in the local society, and respected or tolerated by local government officials. In contrast, *de jure* rights are specified in the law and/or in user permits. There are different types of user permits from different government levels: the “*Số đò*” land title from the Provincial People’s Committee, the district permit from the District People’s Committee, and the commune permit

Table 2: Type of lagoon use in the Sam Chuon area.

Type of lagoon use	Description
1. Upper earth pond	Since the late 1990s, unproductive rice fields have been converted into aquaculture ponds, referred to as upper earth ponds. These earth ponds are not very common in Thuy Dien village; a few households got these ponds from buying or exchanging with aquaculturists in neighboring villages.
2. Lower earth pond	Lower earth ponds were lagoon fishing grounds, which had been enclosed for aquaculture with a dike system. Dikes have been set up to separate the ponds from water flowing into the lagoon. Only wealthy households could afford the initial investment for building dikes. Approximately 16% households in the village are engaged in lower earth-pond aquaculture.
3. Fish corral	Fish corrals are the most common and most important fixed fishing gear in Tam Giang Lagoon, particularly in the Sam Chuon area. It has a V-shape, made from bamboo and fishing net. There could be a number of traps within a fish corral.
4. Net-enclosure	Since the 1990s, owners of fish corrals used bamboo and nets to enclose some parts of their corrals for aquaculture, called net-enclosures, a combination of aquaculture and capture fishing. Inside the net-enclosures, a number of fixed gear (mostly fish corrals) are set up, and a plot is surrounded with double net layers for aquaculture (Brzeski and Newkirk 2000; Mien 2006).
5. Secondary waterway	To increase the water flowing into the Sam Chuon area, secondary waterways have been opened through participatory planning events held in late 2005 with the support of the International Development Research Centre of Canada. In the pilot project, net-enclosure owners contributed a 1.5 m width area along their fishing ground to set up these secondary waterways.
6. Primary waterway	Primary waterways were traditionally used as navigation lanes for transportation, not for fishing. Currently, primary waterways are free for all local fishers with fishing gear (e.g. gillnet).
7. Open water area	Open lagoon water areas are far from the edge of the lagoon and from settled villages, except the open water areas in Phu An Commune. Only mobile fishing gear is allowed in the open water areas.

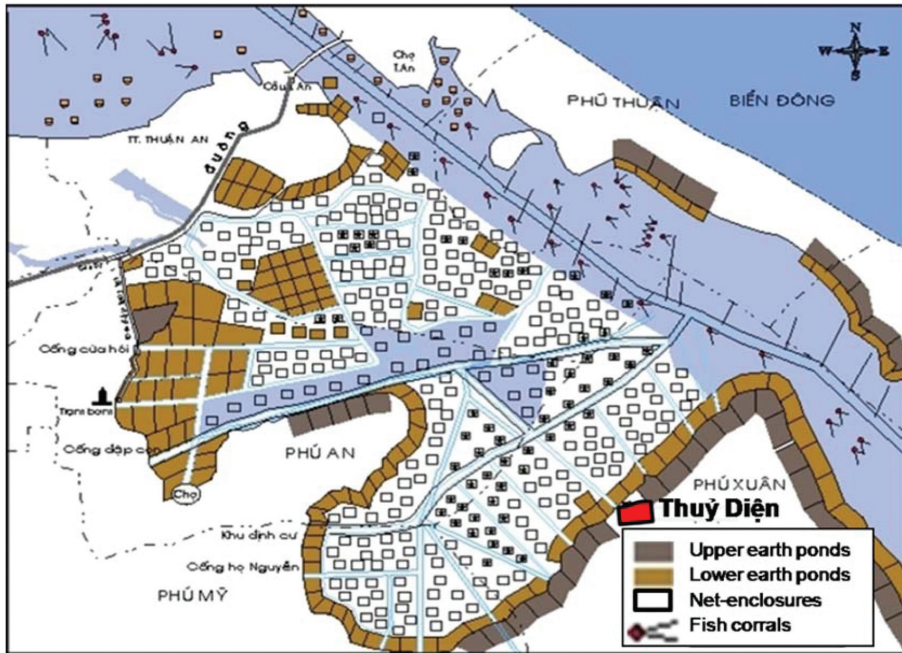


Figure 3: Resource use in the Sam Chuon area in 2005 (CBRM Project 2006).

from the Commune People's Committee. Each type of permission provides a different bundle of rights in a specific time period.

According to the 1993 Land Law, the “*Sổ đỏ*” land title is issued to owners of residential and production areas to recognize the full *de jure* private property rights for 20 years. The land title is also applicable to most upper earth ponds (which were once agriculture land) and some lower earth ponds which were established in the 1990s under government endorsement (Figure 4). However, the procedure of the land title application not only takes a long time to process but also requires a significant amount of investment for fees, taxes, and other payments.

In contrast to the land title, other permits from district or commune governments grant only *de jure* operational rights. However, customary collective-choice rights are respected at village level, and are somewhat acceptable at commune level. Most users of lower earth ponds obtain five-year permits from the district, while some newly established ponds get one-year permits from the commune. District permits are no longer available for fish corrals and net-enclosures since the government is planning the removal of net-enclosures in the Sam Chuon area. Most fish corrals and net-enclosures are registered with the local government for taxes and granted a one-year permit. However, the *de facto* fishing ground in net-enclosures is generally larger than what is registered. Whether or not

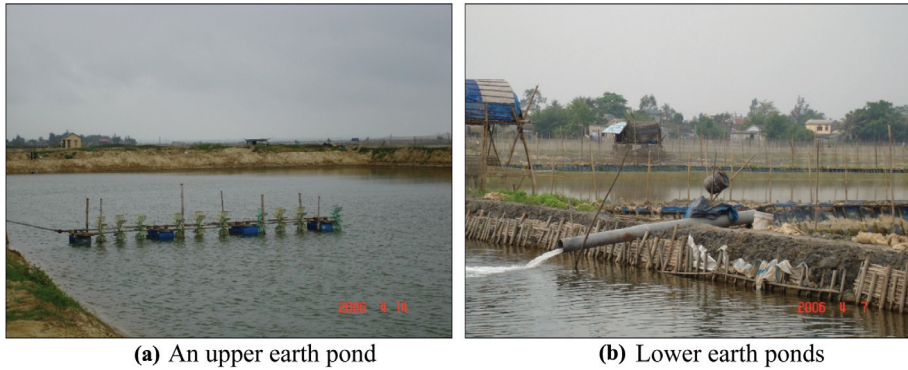


Figure 4: Aquaculture earth ponds (Photo by Huong 2006).

net-enclosure users apply for a commune permit, fish corrals and net-enclosures are considered *de facto* private property with all customary collective-choice rights (Figure 5). These rights allow net-enclosure owners to decide whether to set up aquaculture or use other fixed fishing gear in their fishing grounds, and to exclude other fishers by adding layers of nets surrounding their net-enclosures. These owners also have *de facto* rights to transfer their property rights between generations and to different resource users. However, customary exclusion rights are not secure if net-enclosure owners do not guard their fishing grounds. “There is no difference whether I get the commune permit or not,” a net-enclosure owner said. He indicated that no one can exclude his household from his current net-enclosure. Other interviewees implied that a permit was helpful when it was used as collateral for a loan from government banks. However, these banks no longer accept commune permits.

Government permits are not applicable in waterway systems and open water areas; however, each type of resource use is managed differently. Secondary waterways are common property but managed by net-enclosure holders who

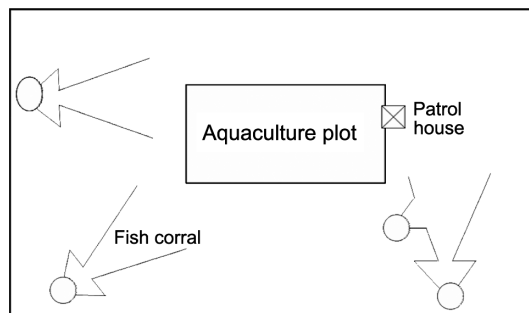


Figure 5: A model of net-enclosure combining an aquaculture plot and fish corrals.

contributed their fishing grounds. According to the agreement among the above stakeholders, net-enclosure contributors are allowed only mobile gear fishing in the secondary waterway systems, but mobile gear fishers are excluded. Primary waterways were enlarged in the participatory planning processes to increase water flowing into the Sam Chuon area. Commune government and the Fisheries' Association try to exclude outsiders from the primary waterways and open water areas; however, exclusion is very difficult and seems to be impractical in these areas. They may control the extension of fixed gear (e.g. fish corrals), but they are unable to control the use of destructive fishing gear (e.g. electric fishing, motorized push-net, and gillnets with fine mesh size). Thus, primary waterways and open water areas have open-access characteristics.

In Thuy Dien village, approximately 92% of households are involved in fishing. Both aquaculture households and non-aquaculture households practise mobile fishing gear in primary waterways and open water areas, which are less than 20% of the Sam Chuon area. A fishing household may engage in different types of fishing and aquaculture. For example, 13.3% of households are involved in earth-pond and net-enclosure aquaculture, as well as mobile gear fishing, whereas mobile fishing households are left out and have to share primary waterways and open water areas with other aquaculture households. Figure 6 presents the use of lagoon resources in fishing households in Thuy Dien village.

In summary, both *de jure* and *de facto* rights have continually changed over time. Table 3 summarizes the various categories of lagoon use in three periods in the Sam Chuon area. Using the framework of Schlager and Ostrom (1992), the table also reflects the ways in which villagers conceptualize access, withdrawal, management, exclusion, and alienation of different types of lagoon use.

The classification of property-rights regimes focuses mostly on the two characteristics of commons: excludability and subtractability. These two

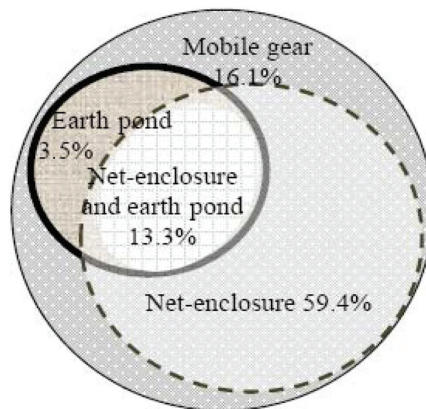


Figure 6: Lagoon user groups among fishing households in Thuy Dien village.

Table 3: Type of lagoon use associated with individual rights by periods.

a) Prior to 1975				
Lagoon use	Withdrawal	Management	Exclusion	Alienation
Fish corrals and other fixed gear	√	√	√	<i>De facto</i>
Navigation lanes	–	–	–	–
Open water areas	<i>De facto</i>	–	–	–
b) 1975–1986				
Lagoon use	Withdrawal	Management	Exclusion	Alienation
Fish corrals and other fixed gear	√	<i>De facto</i>	–	–
Navigation lanes	–	–	–	–
Open water areas	<i>De facto</i>	–	–	–
c) Post-1986				
Lagoon use	Withdrawal	Management	Exclusion	Alienation
Upper earth ponds with land title	√	√	√	√
Upper earth ponds w/ district permit	√	<i>De facto</i>	<i>De facto</i>	<i>De facto</i>
Lower earth ponds with land title	√	√	√	√
Lower earth ponds with permit	√	<i>De facto</i>	<i>De facto</i>	<i>De facto</i>
Registered fish corrals	√	<i>De facto</i>	<i>De facto</i>	<i>De facto</i>
Unregistered fish corrals	<i>De facto</i>	<i>De facto</i>	<i>De facto</i>	<i>De facto</i>
Net-enclosures with permit	√	<i>De facto</i>	<i>De facto</i>	<i>De facto</i>
Net-enclosures without permit	<i>De facto</i>	<i>De facto</i>	<i>De facto</i>	<i>De facto</i>
Secondary waterways	<i>De facto</i>	–	–	–
Primary waterways	<i>De facto</i>	–	–	–
Open water areas	<i>De facto</i>	–	–	–

Notes: Classification of rights according to Schlager and Ostrom (1992). The symbol (√) refers to *de jure* rights of individual lagoon users with permit from government. *De facto* rights are rights that are exercised by individual users and recognized by other resource users.

characteristics are associated with the exclusion rights and management rights in the bundle of rights, and are used to define the property-rights regimes in the study village. Alienation rights may not be essential for one to be considered an “owner”. However, holding alienation rights indicates full private property ownership. At the local level, alienation rights are not available in common property and government property.

Accordingly, property regimes found in the Sam Chuon area include five examples of private property (earth ponds with land title or with permits, fish corrals prior to 1975 and post-1986, and net-enclosures), two examples of government property (navigating lanes in the period of 1975–1986 and open water areas post-1975), and three examples of common property (navigation lanes prior to 1975, open water areas prior to 1975, and secondary waterways) (Table 4). Moreover, three other types of lagoon use are also held in combination of property-rights regimes (Feeny et al. 1990): open water areas, primary waterways, and fish corrals. For example, as described by villagers and government officials, the primary waterway systems and open water areas are interpreted as a combination

Table 4: Diversity of property rights regimes.

Property-rights regimes	Subtractability (management rights)	Excludability (exclusion rights)	Examples in Sam Chuon area
Private property	<i>De jure</i> individual rights	<i>De jure</i> individual rights	Earth ponds with land title
	<i>De facto</i> individual rights	<i>De facto</i> individual rights	Fish corrals (prior to 1975) Earth ponds with permits Net-enclosures Fish corrals (post-1986)
Government property	Government authority	Government authority	Navigation lanes (1975–1986) Open water areas (post-1975)
Common property	Village authority	Village authority	Navigation lanes (prior to 1975) Open water areas (prior to 1975)
	Net-enclosure group	Net-enclosure group	Secondary waterways
Combination of property-right regimes	Government and Local Fisheries' Association	Local Fisheries' Association	Open water areas (nursery area for fingerlings in Phu An) Primary waterways
	<i>De facto</i> individual rights	Government (production co-operatives)	Fish corrals (1975–1986)

of government property and common property regimes. In this combination, exclusion rights are granted to the Fisheries' Association, and management rights are held by government and the association. Although none of the resource use is interpreted as open-access, the failure of other property-rights regimes may result in the creation of *de facto* open-access (Feeny et al. 1990). For example, the navigation lanes and open water areas might be exploited as open-access in the transition from collectivization to “*Đổi mới*” policy.

5. Discussion

We identify three areas for discussion: the usefulness of the bundle of rights analysis; difficulties of distinguishing between *de jure* and *de facto* rights; and bundles of property rights as related to empowerment/disempowerment and the marginalization of disadvantaged groups.

The analysis of property rights in Tam Giang Lagoon applies the bundle of rights framework of Schlager and Ostrom (1992). In the present case, this is the framework that recognizes the rights held by villagers both in law and in custom. The framework does provide a flexible and comprehensive understanding of the nature and distribution of property rights in Tam Giang Lagoon. It defines who can do what and how they can use lagoon resources (Wiebe and Meinzen-Dick 1998). The framework is also useful to define different types of property-rights regimes in the village. However, the bundle of rights analysis necessitates the division of lagoon use into categories, including some artificial ones. The framework does not fully account for the actual complexity of lagoon use in the study area, nor does

it account for the dynamics of lagoon use. The shortcoming of the framework in dealing with the dynamics of land use has been noted previously (Berkes et al. 1998). This is, in fact, a limitation of most frameworks in dealing with dynamic resource use systems.

Similarly, common property theory draws attention to the diversity of property-rights regimes, but the complexity of such regimes, including that in the study village, is a challenge to common property theory. The problem stems from the fact that customary rights in the lagoon are constantly evolving, without an apparent fixed ending point. For example, individual rights have become more dominant and communal rights in the village are undermined (Ruddle 1998). Thus, it is difficult to fit the actual system into the framework of property-rights regimes. This complexity is part of the reason that, at any one point in time, different property rights regimes coexist, overlap, and combine in describing different types of use in Tam Giang Lagoon.

The difficulty of distinguishing between *de jure* and *de facto* rights creates additional challenges. The fundamental changes in political and economic institutions combined, with social-political powers, have significantly and continually altered *de jure* and *de facto* rights over time. In the village, these rights co-exist and overlap in many different types of resource use. Property rights systems are complex, with different types of government permits at different levels of the institutional hierarchy. In the management of resources in Vietnam, all *de jure* rights in fact originate from government permits; Vietnamese resource users do not own resources. These permits, short-term and long-term for up to 20 years, temporarily transform state property to individual or communal property.

What emerged from the accounts of villagers and local officials was that government regulation and local tradition has provided a framework and guiding principles for lagoon use. However, local fishers perceived the need for continual negotiation to obtain official withdrawal rights in traditionally owned fishing grounds, in an attempt to convert *de facto* rights into *de jure* rights. Generally speaking, including the present case, it may be necessary to accommodate the traditional rights of user groups into the formally defined property rights systems (Wiebe and Meinzen-Dick 1998; Unruh 2002). This will clarify and secure, in particular, the customary rights of disadvantaged groups.

Different bundles of property rights, whether they are *de facto* or *de jure*, affect the types of action individuals may take and the sustainability of these actions. Alienation rights combined with exclusion may produce incentives for owners to undertake long-term investment to capture long-term benefits. However, disregarding the interest of the larger society with respect to sustainability, tenure systems may give owners no inducement to consider the off-site consequences of their use of resources (Wiebe and Meinzen-Dick 1998). In Tam Giang Lagoon, the push to privatize resources has masked the problems of overcrowding and aquatic diseases. For example, a large number of upper earth ponds have become *de jure* private property with the argument that private owners would take better care of resources. However, because of overcrowding, the size of individual shrimp

produced is smaller than those elsewhere in Vietnam, and because of wide-spread diseases, fishers' livelihoods are at risk (Huong 2010). Without considering the sustainability of aquaculture development as a whole, private ownership does not guarantee the sustainable use of lagoon resources.

Can the disadvantaged groups be empowered? A number of social-political organizations focus on livelihood and development, and they may be expected to play a role in defending commons rights of disadvantaged groups. In Thuy Dien village, some of these organizations supported the process of settlement of sampan dwellers (DaCosta and Turner 2007). For example, the Fisheries' Association represents fisher groups, from the village to the national level, and can serve to build co-management at the level of the village, inter-village or commune (Phuoc 2006; Tuyen et al. 2010). The Thuy Dien village local Fisheries' Association played an important role in opening and maintaining waterway systems in the area. Mobile fishers were encouraged to participate, but since many of the fixed gear fishers were initially mobile gear fishers at the same time, this attempt to include the participation of disadvantaged fishers simply failed.

The local institution sought to empower local villagers, but the degree of empowerment of the user-groups is clearly not equal, influenced by economic institutions, social-political power, and political institutions (Acemoglu and Robinson 2008). Commons institutions have changed in Tam Giang Lagoon, as elsewhere Vietnam, following the political and socio-economic changes of post-1975 collectivization and post-1986 market-oriented policy reforms. Local institutions have influenced, and have been influenced by, the diversity of property rights regimes in place. In Tam Giang Lagoon, as elsewhere, these changes have not been value-neutral; they have created winners and losers.

6. Conclusions

In examining the diversity of resource use and the complexity of property rights in Tam Giang Lagoon, we find dramatic changes from the period prior to 1975 (feudal and colonial governments) to the collectivization period (1975–1986), and then to the post-1986 “*Đổi mới*” policy toward a market economy. Since the post-1986 policy reform, government institutions have gradually changed the land tenure system in favor of the household production unit. This change, supplemented by policies for the rapid development of aquaculture, has promoted the privatization of resources in Tam Giang Lagoon. This is a situation that has parallels elsewhere in the world under capitalist regimes (Ambec and Hotte 2006; Hossain et al. 2006; Nayak and Berkes 2010) but it has not been documented from counties with socialist regimes. As encouraged by both economic and political institutions, more than 80% of the Sam Chuon area has been privatized and converted into aquaculture areas, including earth ponds and net-enclosures. Mobile gear fishers have been excluded from their previous grounds and become increasingly disadvantaged and poorer.

Villagers in Thuy Dien were originally sampan dwellers who lived on boats and fished around the lagoons. Traditionally, these sampan households belonged

to fishing communities of about 30 boats called “*Vạn*”, composed of relatives or people using the same gear type (Ruddle 1998; Hong and Thong 2000). “*Vạn*” was considered a self-management unit that controlled its fishing ground and managed activities within a specific area. Sampan households were basically in two groups, based on their fishing gear: fixed fishing gear groups and mobile fishing gear groups. With the post-1986 policy reform, both economic institutions and political institutions helped transfer social political power to fixed fishing gear groups with *de jure* and *de facto* private property rights. Their social-political power may be seen in some of the rules-in-use, which remain effective in the current society. For example, mobile gear fishers are not allowed to fish at the mouth of fish corrals, the main fishing gear of the fixed gear groups.

Formal government institutions have not been successful in protecting commons rights, and privatization has been somewhat out of government control. One problem has been the lack of a clear definition of “lagoon” and thus its management. Each legal document defines the term lagoon in a different way. Thus, weaknesses in legal regulation, along with the loss of traditional institutions, have resulted in problems in commons use. Taking advantage of the rapid change in both political and economic institutions, fixed gear fishers who used to have social-political power in prior to 1975, enlarged their fishing ground and enclosed a major part of the commons for their purposes, similar to commons enclosures elsewhere (Goldman 1998; Berg 2008). Holding social-political power is helpful for fixed gear fishers to strengthen their *de facto* property rights; at the same time, holding property rights reinforces their social-political power and enables this group to push for economic and political institutions favourable to its own interests (Acemoglu and Robinson 2008). Many of those people who were solely mobile gear fishers have not been able to work their way up to fixed-gear fishing. Even though it is true that all institutions create winners and losers, in the Tam Giang Lagoon case, the new arrangements have acted to deepen the existing inequities.

Literature cited

- Acemoglu, D. and J. Robinson. 2008. *The role of institutions in growth and development. Working paper No. 10*. Washington, DC, USA: Commission on Growth and Development.
- Adger, W. N., P. M. Kelly, and N. H. Ninh, eds. 2001. *Living with Environmental Change: Social Vulnerability, Adaptation and Resilience in Vietnam*. Routledge, London, UK.
- Ambec, S. and L. Hotte. 2006. On the redistributive impact of privatizing a resource under imperfect enforcement. *Environment and Development Economics* 11:677–696.
- Anh, V. H. 2006. *Shrimp aquaculture and changing local institutions: Implications for local livelihoods*. The Conference of the International Association for the Study of Commons, Bali, Indonesia.

- Berg, T. R. 2008. *Irrigation Management in Nepal's Dhaulagiri Zone: Institutional Responses to Social, Political and Economic Change*. PhD Thesis. Denmark: International and Social Studies, Aalborg University.
- Berkes, F., I. Davidson-Hunt, and K. Davidson-Hunt. 1998. Diversity of common property resource use and diversity of social interests in Western Indian Himalaya. *Mountain Research Development* 18(1):19–33.
- Brzeski, V. and G. F. Newkirk, eds. 2000. *Lessons from the Lagoon: Research towards Community Based Coastal Resources Management in Tam Giang Lagoon, Viet Nam*. Halifax, Canada: Coastal Resources Research Network, Dalhousie University.
- DaCosta, E. and S. Turner. 2007. Negotiating changing livelihoods: The sampan dwellers of Tam Giang Lagoon, Vietnam. *Geoforum* 38:190–206.
- Feeny, D., F. Berkes, B. J. McCay, and J. M. Acheson. 1990. The tragedy of the commons twenty-two years later. *Human Ecology* 18:1–19.
- General Statistics Office (GSO). 2006. *Statistical Data of Agriculture, Forestry and Fisheries*. Hanoi, Vietnam.
- Goldman, M. 1998. *Privatizing Nature: Political Struggles for the Global Commons*. London, UK: Pluto Press.
- Hong, V. T. and N. H. Thong. 2000. Settlement of sampan people. In *Lessons from the Lagoon: Research towards Community Based Coastal Resources Management in Tam Giang Lagoon Viet Nam*, eds. V. J. Brzeski, and G. F. Newkirk, 55–67. Halifax, Canada: Coastal Resources Research Network, Dalhousie University.
- Hossain, Md. M., Md. A. Islam, S. Ridgway, and T. Matsuiishi. 2006. Management of inland open water fisheries resources of Bangladesh: issues and options. *Fisheries Research* 77:275–284.
- Hue, L. T. V. 2002. *Land allocation, social differentiation, and mangrove management in a village of northern Vietnam*. The Conference of the International Association for the Study of Commons, Victoria Falls, Zimbabwe.
- Hue, L. T. V. 2004. *Economic reforms and institutional arrangements for community-based mangrove forest management in a village of Central Vietnam*. The Conference of the International Association for the Study of Commons, Oaxaca, Mexico.
- Huong, T. T. T. 2010. *Resource Access and Livelihood Resilience in Tam Giang Lagoon, Vietnam*. PhD Thesis. Winnipeg, Manitoba, Canada: Natural Resources Institute, University of Manitoba.
- Kerkvliet, B. J. and M. Selden. 1998. Agrarian transformations in China and Vietnam. *The China Journal* 40:37–58.
- Luttrell, C. 2001. Institutional change and natural resource use in coastal Vietnam. *GeoJournal* 54:529–540.
- Mien, L. V. 2006. *Activities in Thua Thien Hue Lagoon*. Integrated Management of Lagoon Activities (IMOLA) project report. People's Committee of Thua Thien Hue Province, FAO and Cooperazione Italiana. Hue, Vietnam.

- Mien, L. V., T. T. Phap, and H. Duyet. 2000. Aquaculture – its introduction and development. In *Lessons from the Lagoon: Research towards Community Based Coastal Resources Management in Tam Giang Lagoon, Viet Nam*, eds. V. J. Brzeski, and G. F. Newkirk, 115–133. Halifax, Canada: Coastal Resources Research Network, Dalhousie University.
- MOF (Ministry of Fisheries). 2001. *Sustainable Aquaculture for Poverty Alleviation (SAPA) Strategy and Implementation*. Ministry of Fisheries: Hanoi, Vietnam.
- MOF (Ministry of Fisheries) and the World Bank. 2005. *Fisheries and Aquaculture Sector Studies*. Final report, Hanoi, Vietnam.
- Nam, D. 2005. *Lessons learnt from 10 years toward sustainable future*. National Conference on Thua Thien Hue Lagoon, Department of Science and Technology, Thua Thien Hue Province, Vietnam.
- Nayak, P. and F. Berkes. 2010. Whose marginalisation? Politics around environmental injustices in India's Chilika lagoon. *Local Environment* 15(6):553–567
- Nhuong, T. V., D. V. Thanh, B. T. T. Ha, T. Q. Tu, and L. V. Duc. 2003. *The farm economy in Vietnam*. Hanoi, Vietnam: The Gioi Pub.
- North, D. 1981. *Structure and Change in Economic History*. New York, NY: W. W. Norton & Company.
- Ostrom, E. 1990. *Governing the Commons: the Evolution of Institutions for Collective Action*. Cambridge, UK: Cambridge University Press.
- Ostrom, E. 2003. How types of goods and property rights jointly affect collective action. *Journal of Theoretical Politics* 15(3):239–270.
- Ostrom, E. and E. Schlager. 1996. The formation of property rights. In *Rights to Nature: Ecological, economic, cultural, and political principles of institutions for the environment*, eds. S. Hanna, C. Folke, and K. Maler. 127–156. Washington, DC: Island Press.
- Ostrom, E., J. Burger, C. B. Field, R. B. Norgaard, and D. Policansky. 1999. Revisiting the commons: local lesions, global challenges. *Science* 284:278–282.
- Phap, T. T. 2000. Management of biological resources in Tam Giang Lagoon from a socio-economic cultural viewpoint. In *International Symposium on Protection and Management of Coastal Marine Ecosystem*. <http://www.emecs.or.jp/2000thai-sympo/pdf/reton.pdf> (access January 2009).
- Phap, T. T. 2002. Working toward community-based water management in Phu Tan. IDRC project report. <https://idl-bnc.idrc.ca/dspace/handle/123456789/33971> (accessed January 2009).
- Phap, T. T., L. V. Mien, and L. T. N. Thuan. 2002. Sustainable development of aquaculture in Tam Giang Lagoon. In *Lessons in Resource Management from Tam Giang Lagoon*, eds. V. J. Brzeski, and G. F. Newkirk, 27–38. Coastal Resources Research Network. Halifax, Canada: Dalhousie University.
- Phuoc, N. N. 2006. Participatory planning in Sam Chuon area: A case in Phu Xuan commune. Community-based resource management project report. Hue, Vietnam.

- Pomeroy, R. S., N. T. K. Anh, and H. X. Thong. 2009. Small-scale marine fisheries policy in Vietnam. *Marine Policy* 33:419–428.
- Ruddle, K. 1998. Traditional community-based coastal marine fisheries management in Vietnam. *Ocean and Coastal Management* 40(1):1–22.
- Schlager, E. and E. Ostrom. 1992. Property-rights regimes and natural resources: a conceptual analysis. *Land Economics* 68:249–262.
- Seixas, C. S. and F. Berkes. 2003. Dynamics of social-ecological changes in a lagoon fishery in southern Brazil. In *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change*, eds. F. Berkes, J. Colding, and C. Folke, 271–290. Cambridge University, UK: Cambridge Press.
- Thung, D. 2007. *Environment and Resources in the Tam Giang – Cau Hai Lagoon*. Integrated Management of Lagoon Activities – IMOLA project report. People’s Committee of Thua Thien Hue Province, FAO and Cooperazione Italiana. Hue, Vietnam.
- Tien, N. Q. T. 1995. *Vietnamese Fisheries in the First Half of the 20th century*. Hue, Vietnam: Thuan Hoa Pub.
- Tuyen, T. V. 2002a. Dynamics of property rights in the Tam Giang Lagoon. In *Lessons in Resource Management from the Tam Giang Lagoon*, eds. V. J. Brzeski, and G. F. Newkirk, 39–52. Coastal Resources Research Network (CoRR). Halifax, Canada: Dalhousie University.
- Tuyen, T. V. 2002b. The aquaculture expansion in Tam Giang Lagoon, Vietnam and its management challenges. In *Communities in Southeast Asia: Challenges and Responses*, eds. H. Lansdowne, P. Dearden, and W. Neilson, 12–18. Canada: University of Victoria.
- Tuyen, T. V. 2006. *Scale up of participatory planning for resource governance: a case in Sam Chuon area, Vietnam*. The Conference of the International Association for the Study of the Commons, Bali, Indonesia.
- Tuyen, T.V., D. Armitage, and M. Marschke. 2010. Livelihoods and co-management in the Tam Giang lagoon, Vietnam. *Ocean and Coastal Management* 53:327–335.
- Wiebe, K. D. and R. Meinzen-Dick. 1998. Property rights as policy tools for sustainable development. *Land Use Policy* 15(3):203–215.
- Xuan, M. V. and P. V. Hoa. 2005. *Economic effects of tiger shrimp farming in Phu Vang District, Thua Thien Hue Province*. National Conference on Thua Thien Hue Lagoon, Department of Science and Technology, Thua Thien Hue Province, Vietnam.