



**Community-based Co-management in
Vietnamese fisheries. The case of the
Fisheries Associations in
Tam Giang-Cau Hai Lagoon**

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LIST OF ABBREVIATIONS

CBFM	Community based fisheries management
CBM	Community based management
CPR	The Common Pool Resource
DOFI	Department of Fishery
DARD	Department of Agriculture and Rural Development
FAO	Food and Agriculture Organization
FA	Fisheries Association
FSPS II	Fisheries Sector Programme Support, phase II
IMOLA	Integrated Management of Lagoon Activities project
MARD	Ministry of Agriculture and Rural Development
NGOs	Non-Government Organizations
PPC	Provincial People's Committee
PFA	Provincial Fisheries Association
SDCFARP	Sup-Department of Capture Fisheries and Aquatic Resource Protection
VACNE	Vietnam Association for Conservation of Nature and Environment
VINAFIS	Viet Nam Fisheries Society

ABSTRACT

The open access fisheries regime has led to the degradation of marine resources and to conflicts in sharing them and the fishing grounds in Tam Giang Cau Hai lagoon in Thua Thien Hue, Vietnam. In 2003, community-based fisheries management (CBFM), particularly through Fisheries Associations (FA), was introduced and established. As of 2011, there were 62 local FAs. It means that local FAs have played an important role in the implementation of CBFM and as a major partner of the Government in protection of aquatic resource and fisheries management.

This master thesis is based on primary data collected through a questionnaire survey and interviews of key informants. In addition, secondary data and literature on Co-management, fisheries management and transaction-costs were used to supplement missing parts. This study highlights the demands of implementation, level of awareness and participation, effectiveness and weakness and methods for measuring the transaction costs in Giang Xuan FA in particular and fisheries Co-management system in general.

This study presents the existing legal framework, which is quite clear and innovative for supporting CBFM development and implementation. However, some constraints still prevail, such as low education, lack of budget and a low rate of women participation in Giang Xuan FA. Most of Giang Xuan FA members are satisfied with implementation, fishing laws (regulation), responsibilities, and establishment of the FA. Awareness of FA members about fishing laws varies, while the awareness of regulation of FA is strong. Particularly, fishers' income has increased. However, FA members are still passive in developing action plans and providing ideas. Their roles are still limited in terms of providing suggestion and recommendation in monitoring and evaluating the management process.

Moreover, this study demonstrates the transaction cost concept and approach for assessing such costs in fisheries Co-management systems. Transaction costs in fisheries Co-management are total cost of three items that consist of information collection, collective fisheries decision-making, and collective operation. There are three Stages in incurring of transaction costs in fisheries Co-management. Stage I mainly focuses on meeting/discussion and recognition new management regime. Stage II mainly focuses on improved education and amendment of regulations, whereas Stage III concentrates on monitoring and patrolling. The transaction cost in Stage III is lower than Stage I and II in Giang Xuan FA. As a

conclusion some recommendations are given for improving local FAs systems and implementation of CBFM.

Key words: Giang Xuan FA, participation, implementation, Co-management, fisheries Co-management, transaction costs.

CHAPTER ONE: INTRODUCTION

Fisheries and aquaculture support the livelihoods about 8% of the world population or an estimated 540 million people (FAO, 2011). They provide a vital source of food, recreation, employment, trade and economic well-being for people throughout the world for present and future generations. However, the natural disasters such as floods, typhoons, drought or storms have severe effects on people, their livelihoods, agriculture land, livestock and infrastructure each year. Overfishing is also major factor causing marine ecosystems and fisheries resources livelihood resources to falter. For example, growth of tuna fisheries halted in 2008 as catches of this species group decreased by 2.6 percent compared with in 2007 global estimates. Fishers therefore have to turn to other activities for supplementary income, causing the amount of fish caught per trip to decline (FAO, 2010). The tuna fisheries are not alone in experiencing this trend.

Vietnam fisheries are mainly based on the small scale and artisanal fisheries. In traditional management, the fisheries sector in Vietnam experiences many problems such as the depletion of the resources, conflicts between the resource users and themselves, and between resource users and government. In addition, Vietnam fisheries resources have been heavily exploited. In some areas near the coast fishing exceeded the limited allowance (Luu, 2003).

Moreover, fisheries management has not been properly attended to in the past. There are many issues in need of better management such as pollution on rivers, lakes, lagoons; use of illegal of gears; lack of information; many areas of untapped reservoirs for aquaculture and exploitation of aquatic resources. Therefore, they fisheries should be conducted in the responsible manner according to the standards set by the United Nations Food and Agriculture Organization (FAO, 1995). With the reasons above, in the directive 02/2007/CT-BTS dated 15 June in 2007, the Fisheries Law assigned responsibility to the provincial People's Committee of fishing and aquaculture management in rivers, lakes, lagoons and other natural waters with community participation in fisheries management. It means that fisheries management needs the cooperation between Government and users group.

1.1. Overview of Viet Nam fisheries

The Socialist Republic of Vietnam is a one-party communist State. Geographically, the Socialist Republic of Vietnam is located on the Indochinese peninsula in South East Asia. Vietnam shares 950 km of border with Cambodia in the south west, 1650 km of border with Laos in the west and in the north of China with 1150 km of border (Brzeski and Newkirk, 2002). Vietnam has over 3,260 km of coastline (except the island coastline) with 112 estuaries, one million km² of Exclusive Economic Zone including many islands, bays and lagoons. Vietnam has 28 coastal provinces with 50% of major cities is in coastal areas with 50% total population (86 millions) in 2009.



Figure 1: The map of Viet Nam and Thua Thien Hue Province.

Source: Nguyen, 2010

The topography and geography of Vietnam make the country highly vulnerable to natural hazards (FAO, 2010). The coastal areas is very rich with natural resources such as coral reefs, coastal lagoons, mangroves, sea-grass beds, sand dunes, bays and estuaries, etc. There are recorded about 2,038 species of marine fish in Vietnam.

According to an official statistical report Vietnam had 87.84 million inhabitants in 2011 of which 43.47 million of men and 44.37 million of women, 69.4% of whom live in rural areas. The coastal waters provide 80% of the country's total fishery of catching, which contributes to about US\$4.5 billion worth of GDP (Gross Domestic Product) exports in 2010.

According to State of Environment in Viet Nam (2001) showed that the population grew at an average annual rate of 2.1% during the period 1979-1989 and 1.7% during 1989-1999. The average population density was 231 persons per km² in 1999. In 1999, the total estimated populations inhabiting the coastal area were 19 million and it will reach upwards of a 35 percent growth by 2020. The population density was approximately 253.48 persons per km² in 2005 (Nasuchon, 2009).

Table 1: Fisheries data trend line of Vietnam in period between 1990 and 2008

Years	Total Fisheries Products (tons)	Marine Fishing (tons)	Aquaculture (tons)	Export value (1,000USD)	Total Vessel (units)	Labors (1,000)
1990	1,019,000	709,000	310,000	205,000	72,723	1,860
1991	1,062,163	714,253	347,910	262,234	72,043	2,100
1992	1,097,830	746,570	351,260	305,630	83,972	2,350
1993	1,116,169	793,324	368,604	368,435	93,147	2,570
1994	1,211,496	878,474	333,022	458,200	93,672	2,810
1995	1,344,140	928,860	415,280	550,100	95,700	3,030
1996	1,373,500	962,500	411,000	670,000	97,700	3,120
1997	1,570,000	1,062,000	481,000	776,000	71,500	3,200
1998	1,668,530	1,130,660	537,870	858,600	71,799	3,350
1999	1,827,310	1,212,800	614,510	971,120	73,397	3,380
2000	2,003,000	1,280,590	723,110	1,478,609	79,768	3,400
2001	2,226,900	1,347,800	879,100	1,777,485	78,978	Unknown
2002	2,410,900	1,434,800	976,100	2,014,000	81,800	Unknown
2003	2,536,361	1,426,223	1,110,138	2,199,577	83,122	Unknown
2004	3,073,600	1,923,500	1,150,100	2,400,781	85,430	Unknown
2005	3,432,800	1,995,400	1,437,400	2,738,726	90,880	Unknown
2006	3,695,927	2,001,656	1,694,271	3,357,960	Unknown	Unknown
2007	4,160,000	2,060,000	2,100,000	3,702,000		
2008	4,580,000	2,130,000	2,450,000	4,500,000	>130,000	>5,000

(Source : Vietnames Ministry of Fisheries, 2006 and VASEP, 2010).

From the table 1, we can see that the volume and price in capture fisheries and aquaculture products are increasing lead to raise the fisheries exportation turnover. According to a teacher of Hue Collage of economics said that the increasing supply and need of fish products will result in soaring capture fisheries and aquaculture. It means that when the catch is increasing lead to over-fishing, overexploitation and destroying the biodiversity and habitat. According

to VASEP (Vietnam Association for Conservation of Nature and Environment), the increase of both price and volume in capture fisheries and aquaculture products has led to raise the fisheries exportation turnover, from 205 to 3357 millions USD between in 1990 and 2006 (see in Table 1), and 4500 millions USD in 2008. Generally, the fisheries exportation trend has increased.

The structure of the fisheries governance system in Vietnam as described in figure 2 is rather top-down.

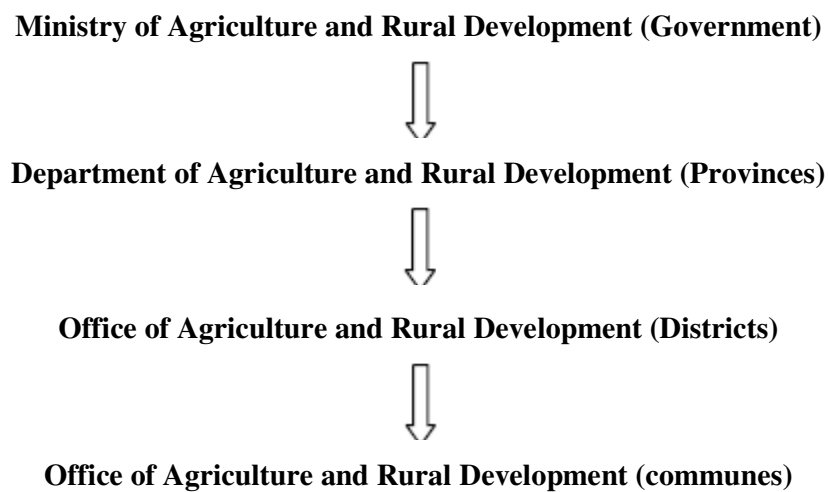


Figure 2: Set up of fisheries management system in Vietnam

(Source: MARD, 2011)

- Ministry of Agriculture and Rural Development is an agency of the Government. It is the highest level in the fishery sector. It performs management functions for sectors such as agriculture, forestry, salt production, aquaculture, irrigation and rural development in the country.

- Department of Agriculture and Rural Development is a specialized agency of the provincial People's Committee, It advises and assists the provincial People's Committees in performing the state management of local about fishing, aquaculture, agriculture, forestry, salt production and so on.

- Office of Agriculture and Rural Development (Districts) to do something which guide by department of Agriculture and Rural Development about fishing, aquaculture, agriculture, forestry, salt production

- Office of Agriculture and Rural Development (communes) is the lowest level in system and what it does is guided by office of Agriculture and Rural Development (Districts).

The Ministry of Fisheries that existed before or MARD (Ministry of Agriculture and Rural Development) has issued many standards for fisheries exploitation such as mesh size, fishing gear, minimum length of fish, allowable catch, etc. In the past, the Government had the full fisheries management responsibility. However, some agencies such as DOFI (Department of Fishery) have lacked the resources necessary in terms of staff and budget to provide the required management, monitoring, surveillance or enforcement of Vietnam's inshore and offshore waters. Recently, increasing population pressure and the development of more effective or destructive fishing gears in inshore resources has been used, leading to environmental degradation.

In many parts of Southeast Asia, including Vietnam, the change in the supply, demand, value, management and usage of fisheries resources in the global-scale could threaten progress towards sustainable food security and resource of development (Pomeroy, 1995). In order to decrease the continuous depletion fisheries resources, decision-makers such as Government and sector agencies have to find better ways to manage fisheries resources. Therefore, Viet Nam Fisheries Society (VINAFIS) was established on 5th of May 2000.

Viet Nam Fisheries Society (VINAFIS) is a professional and social organization established by Viet Nam's Ministry of Internal Affairs. VINAFIS must conform to the laws of the Socialist Republic of Viet Nam. The activities of VINAFIS must follow the laws of Viet Nam. VINAFIS is sponsored and managed under the Ministry of Agriculture and Rural Development. The objectives of VINAFIS are to mobilize individuals and organizations of all kinds of economic compositions operating in fishing, aquaculture, seafood processing, consumption and fisheries logistics services; to protect legitimate interests of its members and fishers; to share its experiences and exchange information; to promote dialogues and bring fisher's opinions to policy-makers in order to adjust and formulate policies of fisheries for sustainable fisheries development between members and other organizations and Government bodies. VINAFIS has good relation and cooperation with fisheries organizations from ASEAN (Association of Southeast Asian Nations) such as Republic of Korea, China, Thailand; and other countries such as Denmark, Spain, Norway, Netherland and international organizations with objective exchange of scientific technology, trading promotion, economic

cooperation, and improvement capability of member fisheries for development of sustainable fisheries.

There are 61 people in Executive Committee of VINAFIS. They are staff leaders, former leaders of the Ministry of Agriculture and Rural Development, Ministry of Fisheries, departments, institutes, universities, the departments of the provinces and businesses in the area of fisheries. They have all university degrees and over 15 years of experience from management. .

Overall, Vietnam lacks an action plan to solve the problems faced with rapid economic growth. Moreover, Vietnam seems to be heading in the right direction but hardly learns lessons from neighbors in the region about own mistakes and capitalizes on the proven successes.

1.2. Problem statements

Fisheries are dynamic social-ecological systems and are already experiencing rapid change in markets, exploitation and governance. Common pool resources as lagoon fisheries are often overexploited and in decline due factors such as local poverty and unclear property rights. Over exploitation has resulted from a traditionally open access system (Truong, et al, 2010). Moreover, the number of registered fishing vessels increased by 86 percent between 1990 and 2000 (Viet Nam environment monitor, 2003).

The increasing export of marine products, fast development of coastal areas and urbanization, human activities are threatening the coastal environment, marine resources, lagoon, etc. According to the Vietnam Association for Conservation of Nature and Environment-VACNE many activities lead to increased the migration and demand for using natural resources and the creation of export processing zones, seaport – shipping activities, big industrial parks, most of aquaculture areas and tourism. As a consequence, marine resources become depleted and degraded because of the huge pressure from the urban environment, human activities, over the capacity of urban planning.

Over the last 10 years, the model of Co-management or community based fisheries Co-management has been piloted in many areas in Viet Nam. However, practical applications of these participatory fisheries management systems have incurred lots of problems because empowerment, information on the level of local people's participation and the

implementation of local Fisheries Associations (FAs) in practice is still limited. Therefore, this thesis was conducted to investigate local people's perception and participation in fisheries management, weaknesses and strengths of local FAs' operation in practice. It will also explore some issues related to Co-management and transaction costs based on a case study of Giang Xuan FA. This research results can be used as important input for decision-makers and planners in fisheries community development units to improve the effectiveness of CBFM or local FAs in Thua Thien Hue Province. The study outcomes are expected to contribute to better management of fisheries resources for sustainable development and improving the living condition of poor people in this area.

1.3. Research objective

There are three main objectives in this master thesis:

Objective 1: Evaluating of the present practice of CBFM (community based fisheries management) and level of participation and perception of Giang Xuan FA in fisheries management.

- What is the legal framework in fisheries of nationally, locally and at community level for CBFM?
- What are the roles of Giang Xuan FA involved in fisheries management?

Objective 2: To identify the effectiveness and weakness in the implementation of CBFM/ Giang Xuan FA.

- What are the strength, weakness, threats and opportunities of the local association fisheries in practice?
- What are local people's perception on function and role of Giang Xuan FA?
- What is the degree of Giang Xuan FA member's participation in the implementation, monitoring and evaluation, and decision making in fisheries management?

Objective 3: Explore the issue of transaction costs in Co-management system

What are opportunities and obstacles for applying the transaction costs perspective in Co-management model/Giang Xuan FA?

1.4. Research methodology

The thesis is based on both primary and secondary data. A questionnaire was used to collect data from the interview at household level. The interviews were conducted with the member's Giang Xuan FA and the head of household or main household members. Several members from the fishing communities were also interviewed.

However, the thesis has some limitations. The research covered mainly Giang Xuan FA of Vinh Giang commune, Phu Loc district, Thua Thien Hue Province, Vietnam. The fisheries officers of Province, district and commune were interviewed. Lack of funding and time was a limiting factor though. Collecting field data requires time and funding because most of interviewee always expected money for answering the questionnaires.

Finally, the secondary data are books and reports which are related to the thesis topic; fisheries law from Vietnam; articles; other useful documents from the government, Department of Fisheries or Department of Agriculture and Rural Development, NGOs, Projects, provincial FA office, local FAs; and the fisher community will be analyzed.

Quantitative data were processed and analyzed by descriptive and statistical analysis to draw conclusion with the help of Excel software program.

1.5. Scope of thesis

Chapter one gives the introduction information in Vietnam fisheries. This chapter shows that Vietnam fishery sector is very important for socio-economic life of the people. It also points to the geographical location which is rich natural resources. Chapter two describes the Tam Giang – Cau Hai lagoon where the research for the thesis was carried out. Chapter three introduces the research hypotheses and the analytical framework, beginning with an explanation of the concept of Co-management or FA and transaction cost in fisheries Co-management. In chapter four, the thesis present the research methods that were used to generate the primary data and with the aim of formed part of the analytical basis of this paper. In chapter five, more of the specific field work data is presented and showed result. Chapter six will be analyzed and discussed from the result of chapter five. Finally chapter is for the conclusion and recommendation.

CHAPTER TWO: BACKGROUND

Thua Thien Hue Province is a coastal province in the central part of Vietnam. It has a coastline of 126 km and contains the Tam Giang – Cau Hai lagoon system (Tran et al., 2008). Tam Giang-Cau Hai lagoon is known as the largest lagoon system in Southeast Asia. Geographical, Tam Giang-Cau Hai lagoon has an area of 22.000 ha with over 60 km coastline. It is connected with the sea through 2 inlets as Thuan An and Tu Hien. Furthermore, this lagoon system is also linked with two basins with four main rivers flowing into the lagoon as O Lau, Bo, Huong, and Truoi Rivers (IMOLA project, 2006). Tam Giang is a partly closed lagoon. It is a singular form, and its physical characteristics have created a brackish water ecosystem with a diversity of resources supporting many villages and a large fishing community living on boats around the lagoon. Tam Giang – Cau Hai lagoon receives a mixture of freshwater and salt water which causes regular changes in salinity both spatially and seasonally. Shallowing and flattening in the bottom is an average depth of around 2m in most of the lagoon although in some channels the depth is 3 to 4m and more than 7m near the Thuan An estuary (Brzeski and Newkirk, 2002).

There are more than 300,000 people, or nearly 30% of the population in the province, living around the lagoon, and their livelihoods depend on the lagoon resources (Tran et al., 2008). The main income of people living here is from fishing and aquaculture. There are thirty-three communes and towns in five districts on the coast of the lagoon. Each commune has seven villages; 1,600 households; and a population of 7,650 on average. Typically, one to three villages in each commune is dependent on fishing. The others are dependent on farming activities (Tuyen et al, 2010). In addition, there is also an estimation of 1,500 households living on boats within the lagoon. Especially, these households are known to be poor; their main income and food source are heavily dependent on the lagoon (Department of Fisheries, 2005).

2.1. Fisheries Administration

According to Nguyen Quang Vinh Binh (1996), the fisheries management in Tam Giang lagoon can be divided into 4 periods: Pre-colonial administration (prior to 1884), French colonization (1884-1945), Government of Southern Vietnam (1945-1975) and Socialist Republic of Vietnam (1975 to date). In the first period, pre-colonial administration (prior to 1884), fisheries management is characterized by community self-management. The use rights

were given to the nearby villages and the villages were responsible for managing and collecting taxes for the central government. In the second and third periods, Tam Giang lagoon was under the South's government management because Vietnam was divided into two political regimes, the South and the North after independence in 1945. In the last period, the management of fishery in Tam Giang has been under the management system of a centrally planned economy by the central government and local government from 1975 to date. Consequently, the environment quality has degraded and there are clear indications that the aquatic resources in the lagoon are being depleted.

An important problem is the conflict between fishing and declining in aquatic resources. In addition, many causes of these problems are thought to be due to the increase in population, over-exploitation, illegal fishing, and unsuitable plan for aquaculture. Therefore, in 2004, Decision No. 3677/QD-UB is approved by Provincial Peoples Committee. This decision showed overall planning for exploitation and management of fisheries resources in Tam Giang – Cau Hai lagoon towards 2010 (Appendix 5). In addition, Thua Thien Hue province people committee issued decide numbered 4260/2005/QD-UBND dated December 19th, 2005 about “regulations on the management of lagoon fisheries in Thua Thien Hue”. The overall goal regulation is to establish provincial framework for the operation and management fisheries resources with democratic manner, to encourage sustainable uses of lagoon water space, and to enhance the expansion and protection of aquatic resources (Decision 4620, 2005, Appendix 4).

There are about 1000 species living in the Tam Giang - Cau Hai lagoon, among them 938 - 953 species have been named. Phytoplankton has the highest in number of species - 287 species, fish – 215 - 230 species, bird - 73 species, zooplankton 72 species, benthos 193 species, seaweed 46, higher plant 31, water grass 18 (of which 7 sea grass species) (Do, 2007).

Tam Giang – Cau Hai lagoon resource users are all small-scale catching and aquaculture households. With the diversified resources, Tam Giang – Cau Hai lagoon plays a significant role as main sources of food and income for local people. Tam Giang lagoon is also a potentially important economists resource of Thua Thien Hue Province (Department of Fisheries, 2003). There are about 7000 fishing gear units around the lagoon (Siriwardena, 2006). They can be grouped by many types of fishing gear such as the fixed gears (i.e. stake

trap and bottom nets), mobile gears (i.e. gill net and Chinese lu or Chinese trap) and aquaculture (i.e. pond, net close). According to annual reports of Department of Agriculture and Rural Development (or Department of fisheries in the past) in Thua Thien Hue, the total amount of fish caught from the lagoon, including aquaculture was estimated to be around 6374 tons in 2009, 54% increased and 9782 tons in 2011, 83% increased (Department of Agriculture and Rural development), in comparison to the year 2000.

2.2. Political and legal system

Table 2: Property rights regimes in Tam Giang Lagoon

Resource use activity	Main property rights regime in operation	Base for the rights formulation	Legitimacy or legal status of the rights
Fixed gear fishing (i.e. stake trap)	- Open access as available space - (limited) communal/ group property over specific fishing location	Customary practices, self-management groups supported by local authority	Low level of legitimacy as rights recognised by communities and local (commune) authorities through approval of zoning plan
Mobile gear fishing (i.e. gill nets and Chinese traps/lu)	Open access	Customary practices“lagoon is a common property”	Very low level of legitimacy as rights recognized by the community only
Navigation and waterways	Communal and public property	Planned by provincial and local authorities	High level of legitimacy as approved by respective local governments
Aquaculture in net enclosure areas	Private property	Customary practices on fixed gear fishing and farming	Illegal practice. Rights recognized by communities and orally approved by commune government but against provincial regulations
Aquaculture in earth pond area	Private property	Customary farming practice and zoning plan for aquaculture	Full legitimacy – with official land. Use certificate.

(Source: Common Pool Resource Management Project, 2008)

In the past, people in the Tam Giang Lagoon area said “điền tu’ ngu’ chung”, that means “farm land is private but water area is open”. Tam Giang – Cau Hai lagoon are shared spaces,

and issues of property rights have risen. Therefore, through traditional rights, resource users take opportunities to increase their access to and use of lagoon resources without taking adequate responsibility for protection, which has led to the lagoon's resource becoming overexploited and depleted. The lagoon resources are open access system that was overexploited and depleted as the resource users competed for access and to raise their use.

There are some main features related to CBFM or FA implementation in this regulation. Firstly, the government delegates fisheries resource management to local FAs in certain areas. Secondly, local FAs have responsibility for protecting resources from overexploitation and arranging fishing grounds as net close (No Sao, Figure 9) in their water areas. Nevertheless, these arrangements have to fit with the planning of the state and the community's benefit. Finally, local FAs are responsible for resolving conflict such as fishing ground, illegal fishing gears between individuals and households. Unless local FAs are not able to solve these conflicts, the authorities' commune or district will intervene.

It can be said that Thua Thien Hue Province government understands local FAs as a main partner in cooperation with the state to implement fisheries Co-management in Tam Giang-Cau Hai lagoon.

2.3. Community framework or Fisheries Association

There are 62 local FAs with more than 4000 members in Tam Giang - Cau Hai lagoon in 2011. These associations were established under officially supported programs or project as IMOLA (Integrated management of lagoon activities) project. Other Fisheries Associations have been established by local fishers and commune authorities when they became aware of the benefits that such associations were having on marine production and management.

Each local FA has its own regulation in order to use and manage fisheries resources for sustaining ways. Local FA' regulations have been built mainly based on the ideas and contributions of local FA's members. Moreover, FA' regulations have the guidance and support from DARD, provincial FA, and project's staffs (sometimes). The Commune People's Committee approves after local FA regulation is agreed to by all members. This regulation will be disseminated for FA's members to follow.

Tam Giang Lagoon is the host to an important ecological system. Many lagoon dwellers rely on the lagoon for their livelihoods. The Lagoon is now under the pressure of overfishing and resource user conflicts. The Provincial authorities of Thua Thien Hue Province recognized the need for an effective management strategy for the lagoon system. In addition, with the degradation of aquatic resource and over-exploitation in the lagoon, finding new kinds of fisheries management and community based natural resource management was considered important (Nguyen, 2008). Fisheries Associations were introduced to the local people in Tam Giang – Cau Hai lagoon since 2003. Besides, addressing the prevailing problems requires an appropriate and clear property right regime which supports a better resource management, improve control over the lagoon use and maintain livelihoods of the traditional fishing groups. In this kind of management, the government has taken an action to find new management measures by establishing these local Fisheries Associations (FAs). FA is a group people who live around the lagoon. An objective of the FA is to share experience, technological, information and interested in the protection and proper management of aquatic resource. The organization of the FA is depicted below in Figure 3.

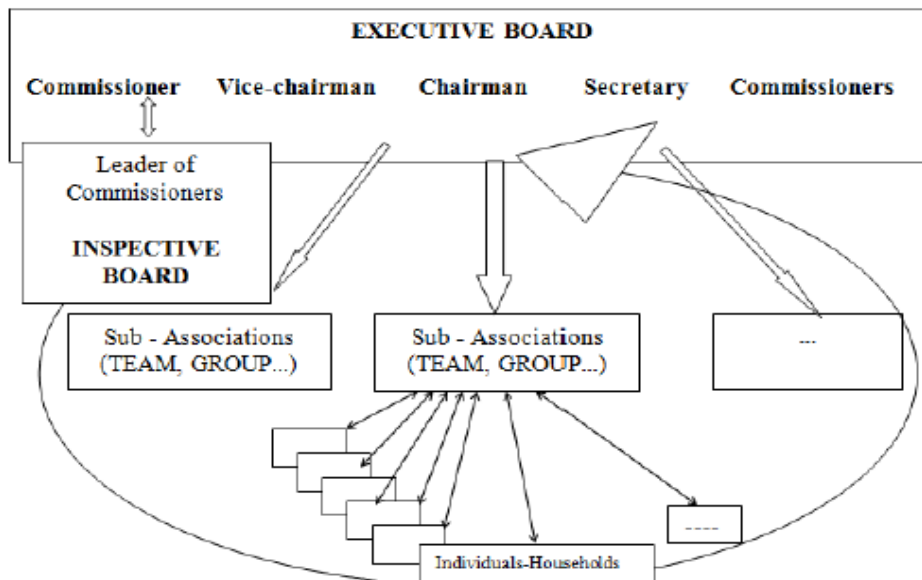


Figure 3: Organizational structure of local Fisheries Association in Thua Thien Hue
Source: Nguyen, 2008.

The Executive Board is made up of commissioners, a chairman, vice chairman, secretary and others members as nominated. As part of the organization structure an inspectorate was established with one of Executive Board members appointed as the chairperson. Representatives from different fisheries sub-societies (team, groups, etc.) constituted the

other members of the inspectorate. The inspectorate holds responsibility for controlling the observation of regulations and rules by local FA, and coordinating patrols to protect fishing grounds and marine resources in the marine production areas under the management of the fishing society.

The operation structure of local the FA or fishing sub-society simply includes a group of fishers in some areas. In general, there are from 30 to more than 100 fisher-members in each local FA. Local fishing communities are responsible for managing natural water resources together with State agencies at all levels.

BẢN ĐỒ CÁC CHI HỘI NGHỀ CÁ TỈNH THỪA THIÊN HUẾ

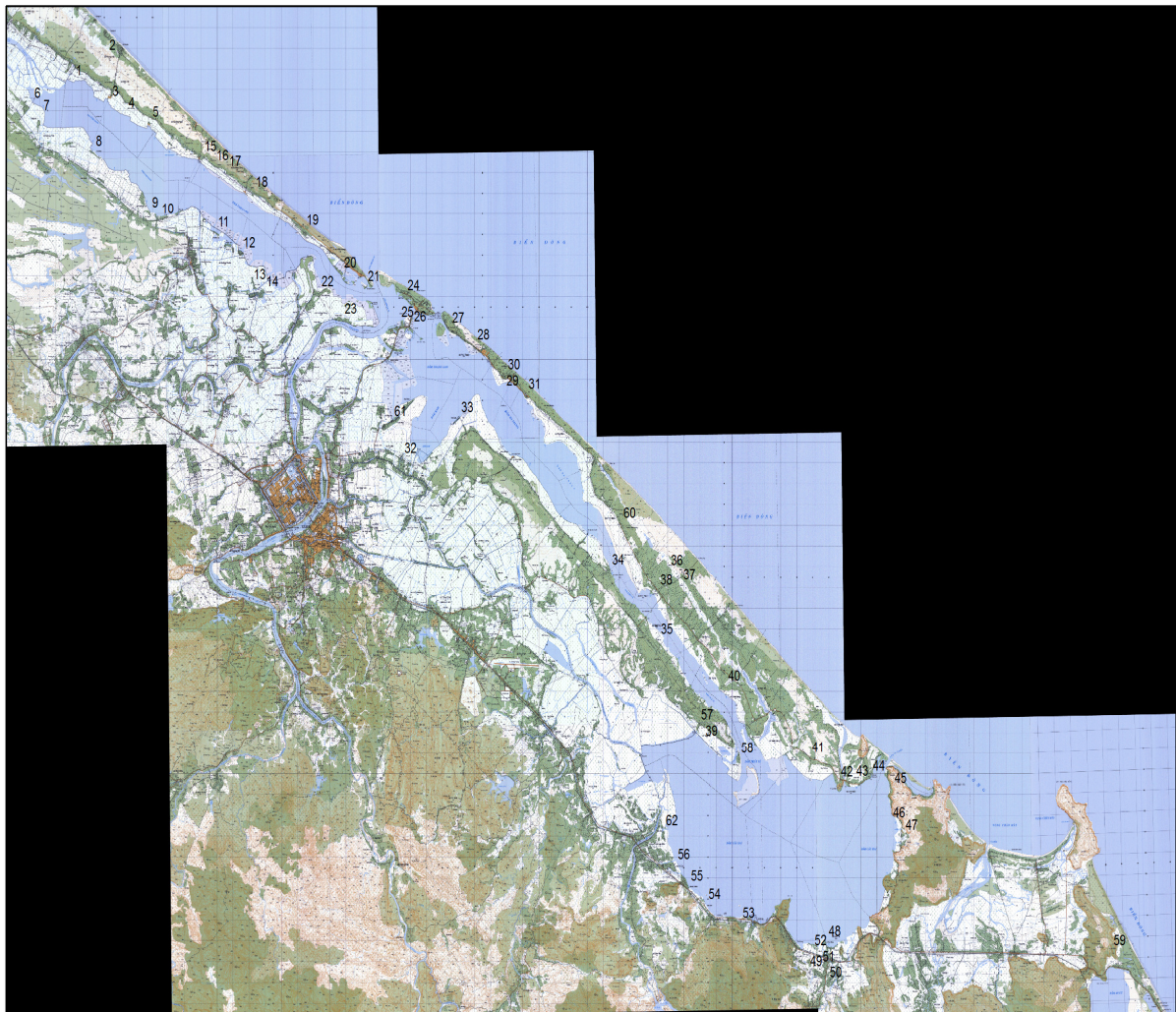


Figure 4: Map showing locations of local Fisheries Associations in Thua Thien Hue

Source: SDCFARP, 2011

From the figure 4, we can see that local FAs were spread in the Tam Giang lagoon, Thua Thien Hue province. The network of local FAs has been widely developed in the lagoon area.

Since the first local FA was established 9 years ago, nowadays, there are 62 local FAs with different forms, establishment period and organization scale. They are all unified and become a system of the provincial FA. The associations have been developed in 33 communes, 5 districts, in both lagoon-based fisheries and coastal fishing (Figure 4). The association scale is the whole village, inter-village, or a combination of fishermen in the same production area. The organizations are self-financed and are not funded by the Government.

The Provincial Fisheries Association (PFA) is operated under the administrative guidance, and management of Thua Thien Hue PPC (Provincial People's Committee) and DARD (Department of Agriculture and Rural Development) or former DOFI (Department of Fishery), and the technical guidance of the Vietnam Fisheries Association. The Provincial FA has some main duties and responsibilities to the implementation of CBFM (Community based fisheries management) or FA in Tam Giang Cau Hai lagoon such as building up a strong system of local FAs; helping to promote and enforce rules and regulations of local FAs; cooperating with unions, agencies, organizations, and individuals; and supporting local community or authorities in providing management and planning sustainable fisheries resource use.

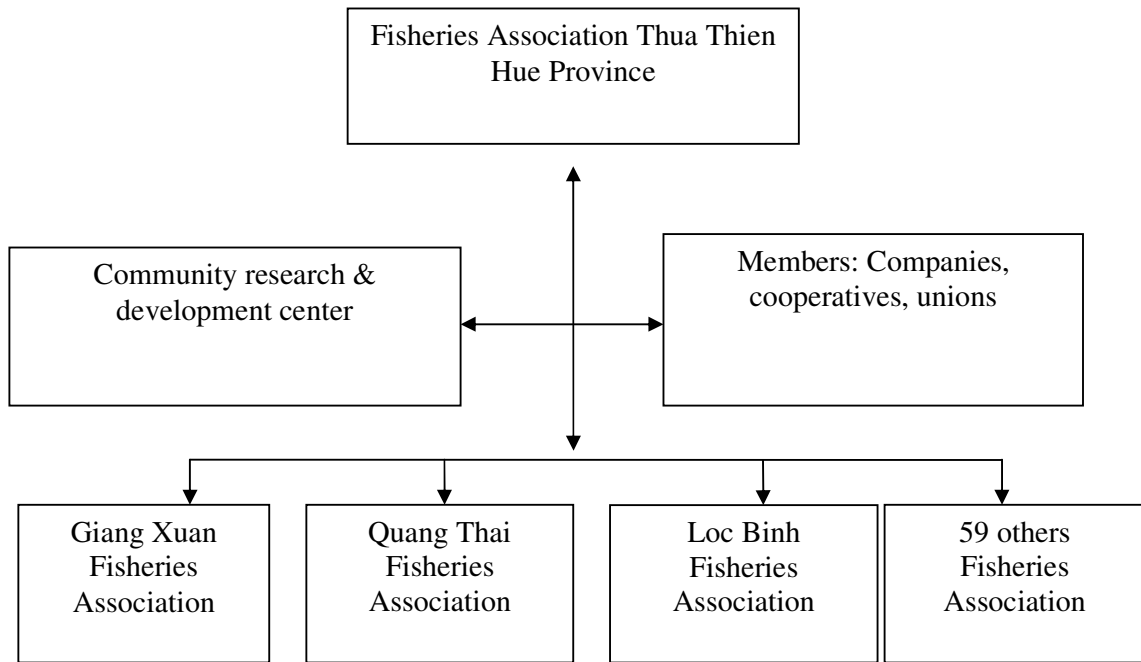


Figure 5: Organizational structure of the Provincial Fisheries Association.

- TTH Provincial Fisheries Association (PFA) is not only a simple professional association but also entrusted with public tasks. PFA builds strong organisation of fishers with the aim to cooperate with the State in order to develop more efficient fisheries management at the grassroots level in Tam Giang – Cau Hai lagoon.

- Community research and development center and affiliations under the PFA including companies, cooperatives, and unions are organizations which operate under the regulation of PFA. They support local Fisheries Association by money and training such as fishing technology, aquaculture technology, laws, etc.

- 62 FAs have been established in the lagoon. They operate under the regulation of PFA and laws of the office commune. Local FAs are fishers’ organizations authorized to manage, produce aquatic products, and exploit resources in a specific water area. They are obliged to follow the overall State plan.

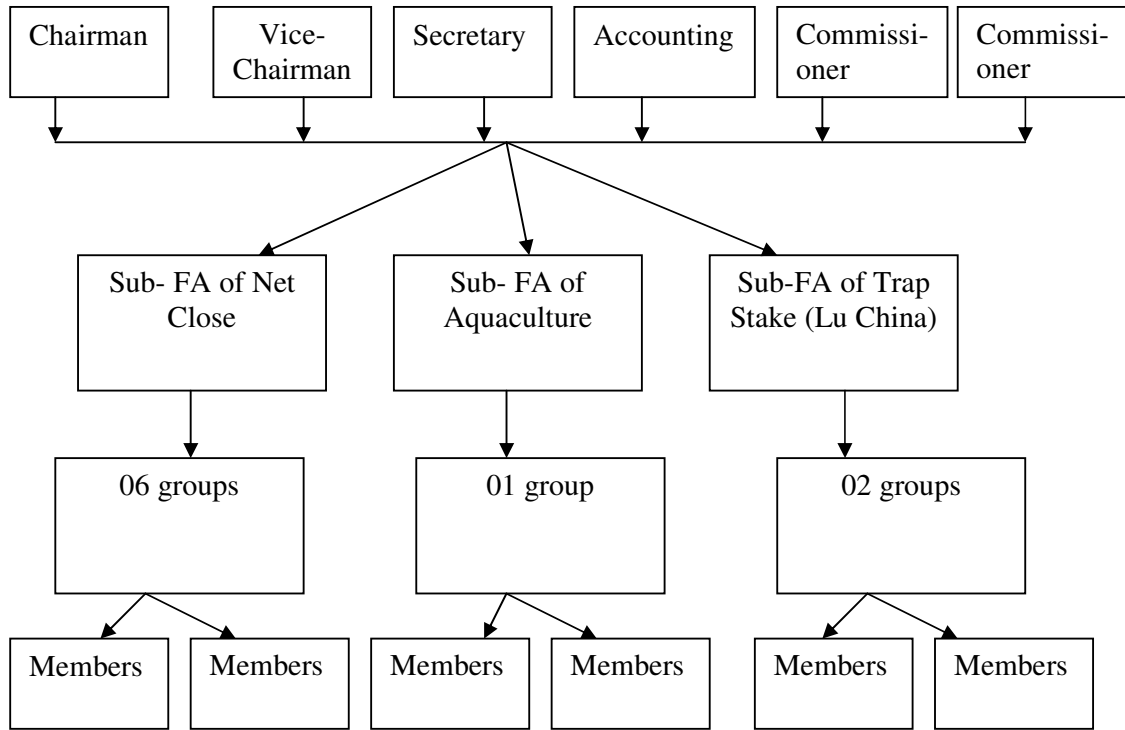


Figure 6: Organizational structure of Giang Xuan Fisheries Association in Thua Thien Hue

(Source: My own survey, 2012)



Figure 7: Aquaculture



Figure 8: Stake Trap (Lu China)



Figure 9: Net close

CHAPTER THREE: LITERATURE REVIEW

This section reviews the definition of Fisheries Association (FAs) and the role of FAs as a Co-management institution at the local level in Vietnamese fisheries. The chapter also summarizes the theory of community based coastal resources management and fishery Co-management based on a literature review. The purpose of is to use this theory to compare the Vietnamese Co-management system with experiences and lessons learned in order contexts and to apply them to Vietnam fisheries management in general and in particular, Tam Giang – Cau Hai lagoon for the establishment of a Co-management system there. Special emphasis is on the transaction costs of fishery Co-management, particularly as Giang Xuan FA. What are these costs and what role do they play in Co-management/CBFM design and process.

3.1. Co-management

3.1.1. *What is Co-management?*

Around the world, there are many authors writing about Co-management, leading to a lot of definitions of fisheries Co-management in the world. Co-management is talked about as a bargain between the State and user groups. Users are at times conceptualized as individuals who may or may not be organized into fishing associations. In addition, “users are sometimes spoken of as synonymous with civil society” (Pinkerton, 2003). According to Jentoft (2003), “Co-management is a collaborative and participatory process of regulatory decision-making between representatives of user-groups, government agencies, research institutions, and other stake-holders”. “Co-management is a process that evolves over time and through an interactive process that requires participation of stakeholder groups and organization and a proactive state”, (Jentoft and at el, 2009). Sen and Nielsen define Co-management as “an arrangement where responsibility for resource management is shared between the government and user-groups” . It means that there are institutionalized relationships between the government and user groups and user-groups managing a resource with the assistance of government, be it central and/or local.



Figure 10: Stakeholder categories and Co-management (The World Bank, 1999:11)

From the figure 10, we can see that Co-management is placed in middle between government-based management and user-group-based management. For self-regulation and active participation, the Co-management has to find to harmonize the government concerns in fisheries management for efficiency and equity, and local community concerns. Therefore, Co-management becomes an appropriate mechanism for the fisheries management; it also aims to empower and develop the economic viability of the community because the set of strategies so as to encourage participation of community member in actively solve problems and demand facing local fisheries.

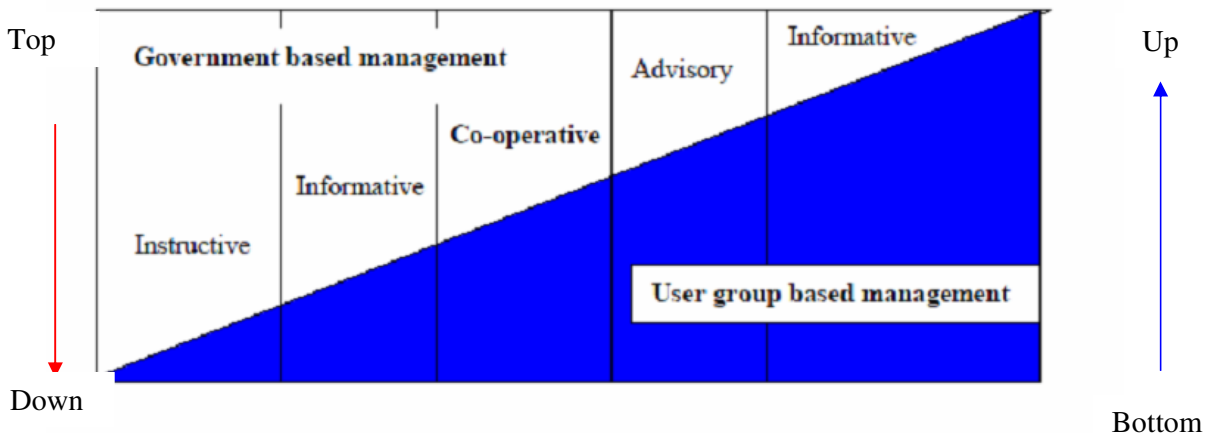


Figure 11: Spectrum of Co-management arrangements ranging from top-down management to bottom-up management counterpart (adapted from Berkes, 1994).

Sen & Nielsen (1996) recognized that there are five broad categories of Co-management on the basis of role of government and resource users consist of: 1) Instructive: Minima of information exchange between government and users; 2) Consultative: Consult with users but

the government give all decisions; 3) Co-operative: The equal between government and users co-operate partners in decision making; 4) Advisory: Users give an opinion and government endorses it into decisions; and 5) Informative: Making decisions to users by the Government delegated authority. Especially, we can see that only Co-operative in the middle.

3.1.2. Concept and definition about people's participation:

Participation means being actively involved and taking part in a process. Participation can occur in many types in natural resource management. It can happen at many different levels of inclusion. At a basic level, participation can be passive consultation where information is disseminated and those impacted are informed of future plans (Brown et al., 2001). Jentoft and McCay showed that “User participation is a means through which users are empowered, and there is always a possibility that some will win while others will lose or be left out entirely”

According to Jentoft (2004), empowerment is consisting of a goal and a condition of fisheries Co-management; Empowerment will mean greater involvement and responsibility in fisheries management. Empowerment as “a process through which people become strong enough to participate within, share in the control of and influence, events and institutions affecting their lives” (Torre cited by Jentoft, 2004). “Empowerment is a process, and grows over time and in different but mutually reinforcing dimensions; it needs to be fostered through holistic approach” (FAO, 2005).

3.1.3. Concept of community

The word 'community' may have different meanings. Community can be defined geographically by resource boundaries or politically or sociologically as a community of individuals with common interests. Community in the latter interpretation is a group of fishers using the same fishing gears. The geographical community is usually a village political unit. Notably, a community is not necessarily a village, and a village is not necessarily a community (Pomeroy, 2005). Communities may consist of small-scale fishing communities and large-scale industrial groups that are involved in Co-management and must be empowered so that they can have effective participation and ensure sustained involvement. There must be genuine sharing of power between resource users and governments in decision-making and policy development (Brown et al., 2005).

There are many Co-management definitions therefore fisheries Co-management can be defined in different ways. Fisheries Co-management is interactive, adaptive and participatory; it concludes a set of inter-related duties which should be conducted in order to attain the stated objectives (Pomeroy and Rivera-Guieb, 2006). According to Abdullah et al., Co-management is where government agencies and fishers share responsibility and authority for resource management. Therefore, the participation of fisher is important in the decision-making process and they have shared or delegated authority to develop and implement regulatory measures. In other words, Co-management can be perceived as the sharing of responsibility between government and resources users or local community to manage the fishery resources. Co-management has some how to divide responsibility between industry and government (Jentoft, 1989) in order to ensure that it is clear who has a mandate to do what.

However, the fishing industry is complex. It is characterized by many technological processes and social developments included different factors such as demands, needs, and interests. Therefore, it is difficult for the agreements of Co-management to solve all the harms of fisheries management (Jentoft, 1989).

To ensure success for Co-management of community fisheries, it requires cooperation, networking, and information sharing; suitable policy and legal framework; understanding the concept of community; transparency and enforcement; monitoring and reflective learning; conflict resolution mechanisms and long-term commitment and so on.

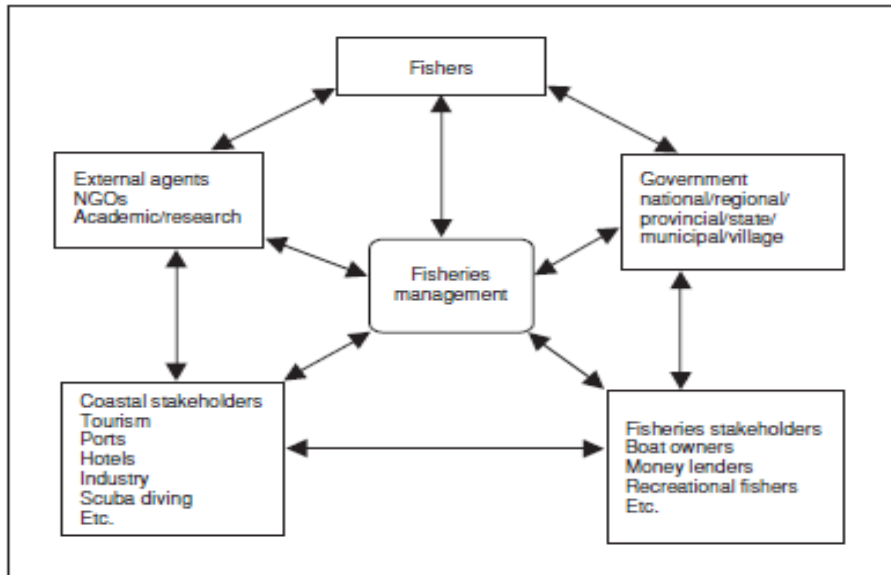


Figure 12: Key players in Co-management (Pomeroy and Berkes, 1997)

The above figure 12 shows that the typical major players have a stake in decision-making on matters that relate to fisheries resources. The roles and responsibilities of the major players, as identified above, are often, according to Pomeroy and Berkes, not clearly defined or understood by the players themselves. As part of the Co-management process, it is essential therefore that the major players sit down regularly and define their and other's roles and responsibilities.

- Government/national//regional/ Provincial/ municipal/ state/ local have their roles and responsibilities such as providing an enabling environment through the specification of policy and legislation; technical support/advice/human resource development; empowerment, incentive making, facilitating a participatory process/partnership; ensuring linkages; setting standard; controlling quality; and giving trade and market support at the national level. And at the local level, the roles and responsibilities are executing policy; implementing management plan and measures; issuing local administrative rules, regulations and ordinances; coordinating with other sectors; and planning local projects.

- External agents/ NGOs/ Academic/ Research' roles and responsibilities include capacity building; advocacy; linkages; extension and pilots; and standard setting.

- Fisheries institutions consist of communities, groups, organizations etc. that have roles and responsibilities including local planning and implementation; custodian/stewardship over resources; sustainable exploitation of resources; formulation/observance of local rules and regulations; conservation and resource enhancement; participation in objective-setting

and planning; facilitating participatory process/partnership; and involvement in national/regional processes

The role of individual fishers (not included in the role of fisher institutions), the private sector, facilitators and support groups, media and academic/research/training that they play the role of stakeholders in which they use the resources and are expected to follow management interventions, probably "outside" formal arrangements but still need to be considered/involved (Brown et al., 2005).

3.1.4. The successful Co-management conditions

According to Pinkerton (1989) and Ostrom (1990, 1992) some key conditions are essential for successful conditions for a Co-management regime.

1. Clearly defined boundary
2. Membership is clearly defined
3. Group cohesion
4. Existing organization
5. Benefits exceed costs
6. Participation by those affected.
7. Management rules enforced
8. Legal rights to organize
9. Co-operation and leadership at community level
10. Decentralization and delegation of authority
11. Co-ordination between government and community

Small groups with clearly defined members and leadership encourage collaboration and encourage the identification. Therefore, group cohesion is necessary condition to improving Co-management (Pomeroy and Williams, 1999). According to Pomeroy and McConney (2007), in their research on "Conditions for Successful Fisheries Co-management in the Wider Caribbean" the lack of government's support for Co-management, and lack of legal rights to organize and make management decisions are conditions that restrict Co-management from working successfully.

These conditions must be viewed in the discrete political, cultural, social, biological, technological, and economic context of the region and each of countries within the region. White et al. (1994) recognize lessons learned from experience with collaborative and CBM

(Community based management) of coral reefs in some country from Asia. Some of lessons are listed below for some conditions affecting successful Co-management such as include all stakeholders to ensure a politically unbiased process; core groups are important management role; monitoring by fitting technology; monitoring information can affect local and national policies; support from government or NGOs (non-government organizations); cooperative management systems need time to develop; CBM cannot solve problems that originate external the community; only training and education are not enough to change behavior patterns

3.2. Legal framework to implement Co-management in Viet Nam (Fishing law)

The Government issued Decree 29/1998-NĐ-CP on Democracy at the grass roots level in 1998. It supported democracy at grass-root level. This Decree provided general conditions for people to participate in the local planning process. Nevertheless, in Vietnam, under the political and administrative system, those comments are not easily heard by the authorities. In other words, the Decree did not really empower people to access a real democracy as defined by western counties.

In 2001, MOFI former that is now into MARD issued the Decision on formulation of VINAFIS with the network throughout the country. This organization is not fully independent but acts as an expanded hand of the government to govern fishers and fisheries. VINAFIS will act as connection between government and the local fishing community.

In 2003, the highest level in Vietnam regulated fisheries activities is the Fisheries Law which is No.17/2003/QH 11. It provides the legal framework to manage fisheries resources in a sustainable way which is compliant with national fisheries policy. This Law adopted by the National Congress in 26/11/2003 regulates all fisheries activities with both capture fisheries and aquaculture; it is implemented by organizations, households and individual.

In 2004, Decree 131/2004/QĐ-TTg that mean the Decree of the Prime Minister on the program of protection and development of aquatic resource until 2010 was instituted. It shows that the objectives are to promote the roles of fisheries communities in management activities regarding aquatic resources protection and improvement of living environment of aquatic species. Other objectives are to develop fisheries management models that focus on the participation of communities.

In 2006, Decree No 123/2006 which main objective is management of capture fisheries for organizations and individuals whose fisheries activities are in the coastal and the sea. This Decree also states that provincial people's committees have the right to decentralize coastal areas management to people's committee of district and commune to develop community-based management models for fisheries resource in coastal areas.

In 2009, letter No.1700/BNN-KTBNL which promotes activities implemented in the Co-management model in small-scale fisheries. "Guideline on Small Scale Fisheries Co-management in Vietnam" is a tool to help local communities to develop and implement fisheries Co-management.

With the laws of Vietnam country in the past, which are shown in the above analysis, it can be said that Vietnam of government is willing to provide fishing rights to fishing community or to the individual. The objective of State is to address the open access regime problems that are causing damage to the marine ecosystem and to the fisheries resources. The government decides in ways of promoting fisheries co- management. That is the legal framework to apply Co-management approach.

3.3. Transaction costs in fisheries Co-management

In this part, the concept of transaction costs in fisheries Co-management is defined and operationalized. Kuperan et al. (1999) showed that when many individuals are involved in environment conservation and fisheries management, complex activities need to be coordinated across space and over time. They may try to reduce the substantial uncertainties that they face through various forms of explicit or implicit institutional arrangements as Co-management.

Coase was the one who originally coined the transaction cost concept. He argues that: "Without the concept of transaction costs, which is largely absent from current economic theory, it is my contention that it is impossible to understand the working of the economic system, to analyze many of its problems in a useful way, or to have a basis for determining policy" (Coase, 1988). The costs involved in negotiating and securing agreements are called transaction costs (Meany, 1987). In figure 14, the various elements that a transaction cost analysis would entail are detailed.

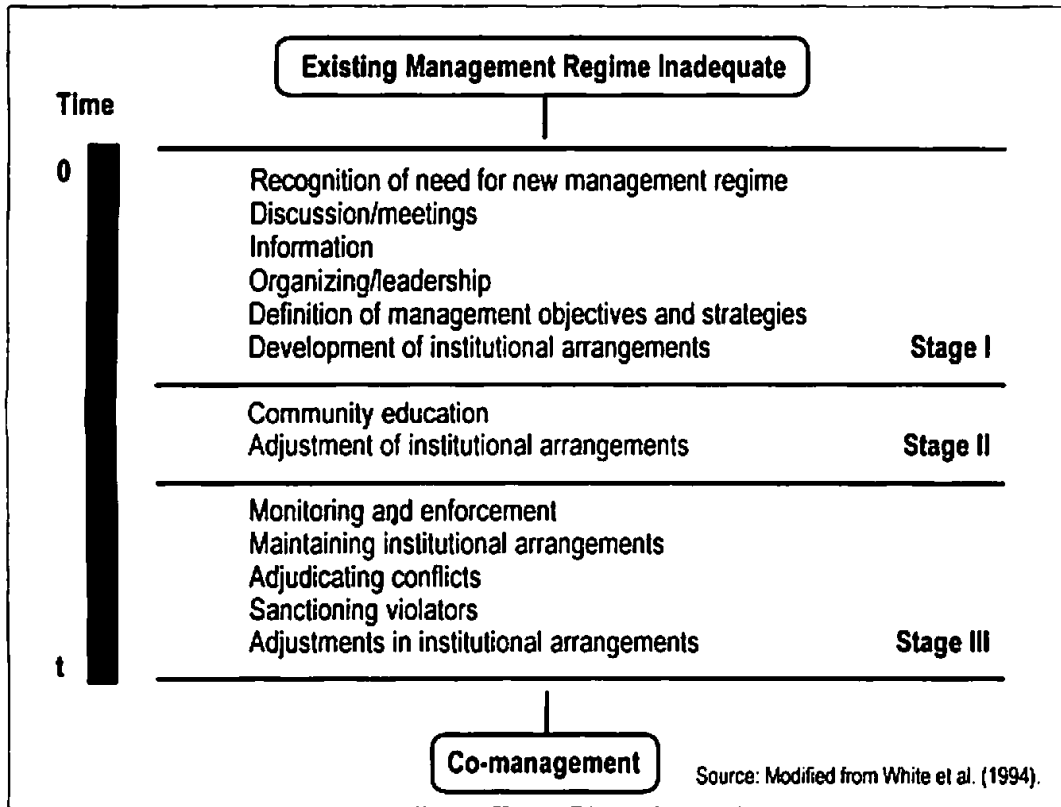


Figure 13: Process of moving toward Co-management

From the figure 13, we can see that there are three stages consist of stage I, II, and III in process of moving toward Co-management. The sum of each of these items will be total transaction cost of starting, implementing, and maintaining in Co-management system. Stage I is stage of creating, devising, obtaining information and decision making (Kuperan et al, 1998). Stage I involves the identification of the amount of resource or time used in each process activity (Feeny, 1995). Stage II could be the implementing stage that involves dissemination of information and clarification of operation of the community system (Kuperan et al, 1998). Stage II is includes the assessment of the time or resource (Feeny, 1995) Stage III is about the monitoring, enforcement, maintaining, adjudicating and sanctioning activities, as well as the costs of making decisions within the current set of rules and of making decisions to modify the rules themselves as condition in the fishery changes (Kuperan et al, 1998).

The transaction costs analysis can serve as comparative method to estimate the costs of adapting, planning, and monitoring under alternative government structures (Williamson,

1985). Figure 14 describes an alternative operationalization of transaction costs as compared to that in figure 13, although many of the elements are the same. In fisheries Co-management, the transaction costs are divided into three major cost items including information costs; collective fisheries decision-making costs; and collective operational costs (Williamson, 1985).

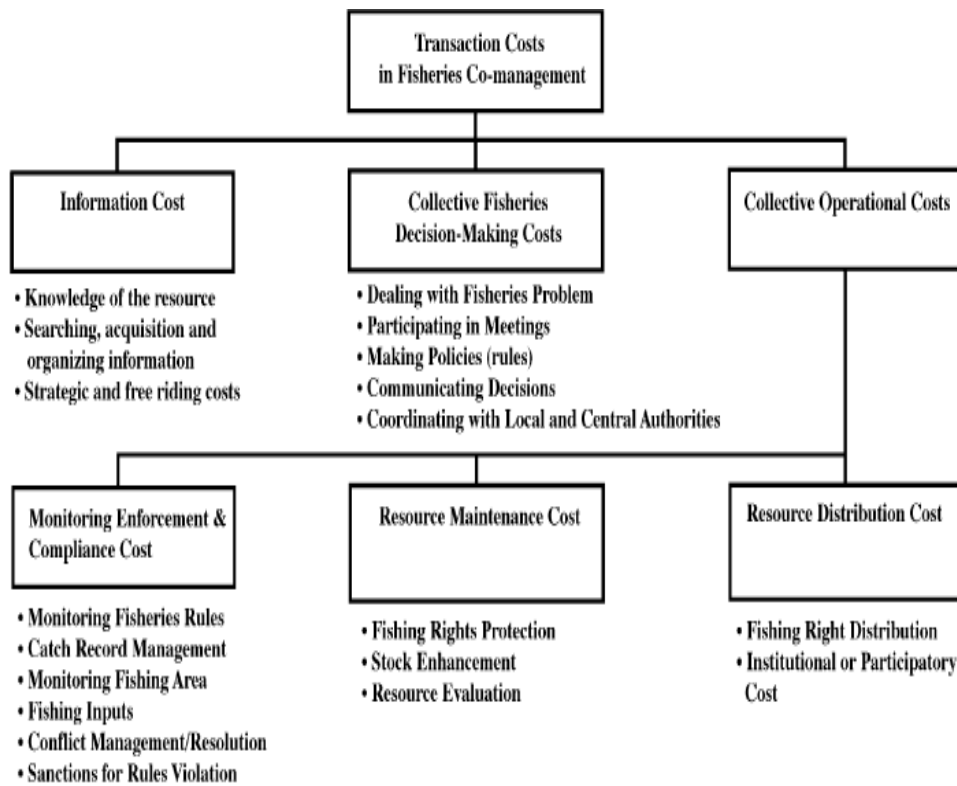


Figure 14: Schematic flow diagram transaction costs in fisheries Co-management
(Source: Kuperan et al, 2008 – adapted from Mustapha et al., 1998)

3.3.1. Information costs

Information is a key factor for the success of a community program in fisheries Co-management. It also depends on the amount and information types available to both resource users and decision-makers. There are many types of information available to those two groups that may vary and not be shared. For example, the information on size of fish stocks, number of stakeholders, and preferences about allocation of the resource among stakeholders is not easily accessible to everyone.

Transaction Costs in Centralized and Co-Managed Systems		
Resource Management Activities	Centralized Management	Co-management
Information seeking	low	high
Decision making and setting management objectives	low	high
Resource distribution among users	high	low
Resource distribution over time	high	low
Monitoring, enforcement and compliance	high	low
Resource maintenance	high	low

Figure 15: Transaction cost in centralized and co-managed systems

Source: Abdullah et al. (1998b)

The main difference between centralized management and Co-management, according to Abdullah et al. (1998b) is the user participation level in designing and implementing the management activities. The information search and acquisition costs are higher and the implementation costs are lower for a Co-management system (Abdullah, 1998). On the other hand, the cost of enforcement and monitoring is lower because community members are more likely to comply with regulations and rules. The expected different level of transaction costs involved for each activity management under centralized management system compared with Co-management system is related to a high level of user participation (Kuperan, 2008).

3.3.2. Decision-making costs

The decision-making costs consist of costs with local and central authorities, making policies, making rules and regulations, expenses in meetings, dealing with fisher's problems, and dissemination decisions to the community. One of challenges which the fisheries Co-management regime is facing is how to get fishers to access some level of consensus on certain contract or collective actions with regards to resource management. The decision making process has some the transaction costs, which, according to Abdullah et al. (1988 b) are expected to be higher under a Co-management system in the first stage.

3.3.3. Operations costs

There are three forms of operation costs. The first is monitoring, enforcement, and compliance costs which include the monitoring of fisheries rules, fishing areas, fishing inputs, catch record management, conflict management, and resolutions and sanctions for

rule violations. The second is resource maintenance costs which refer to the transaction cost results from stock enhancement activities, fishing rights protection, and resource evaluation work to ensure that the stocks in the area are not overexploited. The third is suitable resource distribution which includes the cost of distributing the fishing rights to stakeholders and costs of managing the participation of stakeholders and administering the rights to the fishery.

In this thesis, transaction costs are defined as the total costs involved in developing and running the Co-management associations or FAs. The objectives of this research are to identify the components of the transaction costs involved in the Co-management or Giang Xuan FA as well as obstacles in order to compare these costs with those in centralized management system and in Giang Xuan FA, Vinh Giang commune, Phu Loc district, Thua Thien Hue province, Vietnam.

CHAPTER FOUR: METHODOLOGY AND DATA COLLECTION

In the introduction, I gave a broad abstract of the type and method of data collection. I will use the data analysis of this research. This thesis is a qualitative study and it uses both primary and secondary data. In this chapter, I give the rationale for choosing the specific technique of data collection. Reasons are provided to explain why data is chosen this area.

4.1. Study area



Figure 16: The map of the study area: Vinh Giang commune, Thua Thien Hue Province, Viet Nam

Source: SDCFARP, 2011

Giang Xuan is the local fisheries association (FA) which is the target of this study. Vinh Giang commune has only one FA and belongs to Phu Loc district located in the south of the Tam Giang Cau Hai lagoon. Vinh Giang commune covers an area of 1,877 hectare and has 4,434 people (Statistic, 2010). There are 1,161 households with 2,232 people in working age. There are 699 households who are engaged in agriculture production, 153 households in fishing, 156 households in both agriculture and aquaculture, and 153 households in other activities (Nguyen, 2009). The main occupations of local people in Vinh Giang are agriculture, capture fisheries, and aquaculture.

According to Chairmen of Giang Xuan FA (2011), Vinh Giang has 4 villages including Nghi Xuan, Nghi Giang, Nam Truong and Don Che villages. Giang Xuan FA consists of 2 fisheries villages which are Nghi Xuan and Nghi Giang. The main livelihood of most households in Nghi Xuan village is capture fisheries. There are three groups (or teams) in Giang Xuan FA representing three main occupations consisting of captures fisheries using mobile gear, drift gill net, trawl, purse seine; captures fisheries using fixed gear fishing such as bottom net, fixed gill net; and aquaculture. Giang Xuan FA was established on July 1st, 2008 with 87 members. The number of members increased to 127 in 2011. Most of people in Nghi Xuan village are the Giang Xuan FA's members. There are 140 households in Nghi Xuan village of which 120 households become members of Giang Xuan FA.

The lagoon area in Vinh Giang Commune is divided into different sub-zones consisting of fixed gear fishing sub-zones, waterway combined with mobile gear fishing sub-zone, lagoon traffic way sub-zone, breeding ground sub-zone, and recovery of ecology system sub-zone.

Table 3: Using of area in Vinh Giang commune

No		Area (hectare)	Percent (%)
1	Lagoon water area for fishing	997	53.1
2	Aquaculture	262.8	14.0
3	Human settlement and infrastructure	96.5	5.2
4	Area for other purposes	278	14.8
5	Agriculture land	242.7	12.9
6	Total	1877	100

(Source: IMOLA, 2007)

The table 3 shows that lagoon water area for fishing is the biggest with 997 hectare (or 53.1%), whereas agriculture land is 242.7 hectare (or 12.9%). Lagoon water area is more than four times agriculture area.

4.2. Rationale for choosing the specific study area

There are three main reasons for choosing research Giang Xuan Fisheries Association in Vinh Giang commune. Firstly, Giang Xuan is the first local FA has been allocated fishing right in Thua Thien Hue province and in Viet Nam. Secondly, this is regarded as a sensitive

lagoon area. One of local FAs that covers a relatively large area with multi-gears and peoples livelihoods largely rely on fishing in this area. Finally, before the establishment of the FA, there are many problems such as conflicts often occurred among resource users; illegal and destructive gears. After establishment of the FA, ownership is enhanced and there is consistent institution in the area of Vinh Giang commune. It is explained clearly in chapter V and VI.

4.3. Sampling methods

4.3.1 Primary data collection

Table 4: Number of sample

Order		Numbers
1	Executive board of provincial FA (Chairman, Vice-chairman, and secretary general)	3
2	Officer of DARD responsible for fisheries	1
3	District officers responsible for fisheries	1
4	Sub-department of fishing and protection resource (Direct and head officer)	2
5	Commune's leader (Chairman and vice-chairman)	2
6	Villages leader	1
7	Projects (IMOLA and FSPS II)	2
8	Giang Xuan Fisheries Association	91
	Total	103

The questionnaires for Giang Xuan is showed in Appendix 1

The questionnaires for finding key information is showed in Appendix 3

The sample size is 91 households in Giang Xuan FA and 12 people for finding key information. This survey focuses on questions related to perceptions of FA's members in Giang Xuan about Co-management model and awareness of environment protection.

Primary data in my thesis is the result from my direct contact. The primary data collection methodologies include designed research questionnaires, focus discussions, face-to-face

interviews, and participatory observation. All these data collected have their various strengths and weaknesses and I only undertook direct interviews.

First of all, some strong points for the quality of this research are: I am working in Thua Thien Hue DARD and I have also been the secretary for Province Fisheries Association for more than 7 years. Therefore, it was convenient for me to contact, interview, and organize discussions. In addition, I received reports, information from in here that is not difficult.

Some weaker points are: most of people or local FA's members had limited education and they were shy when I interviewed them. Some were still worried and hesitant when I asked them to provide information about their income which is related to the fact that they have to pay tax/fee or not. I had to give them clear explanation for each question and my objectives of doing this research.

4.3.2. The secondary data

The main source of secondary data consisted of documents from the Province Fisheries Association, DARD (or Department of Fisheries before), FSPS II and IMOLA projects, and other materials, and reports that I retrieved from the web on activities of the fisheries management.

In order to identify and measure transaction costs and discover the obstacles for the application of measuring transaction costs, the secondary data was collected from Vinh Xuan FA, and SDCFARP. The general socio-economics data were gathered from Province, District, and Commune People's Committee.

Data analysis

To show the results of management efficiencies, the opportunities and obstacles in applying the transaction costs in Co-management in Vinh Giang FA, the questionnaires were used to collect information from two interviewees. The Excel software was used to present all data in the questionnaire, after that I used the filter, countif, count, sum, average, etc, functions in excel software to produce the appropriate results.

All these factors and my position of working with the Department of fisheries, District, Commune, and local people could have effects on the type of data, I was interested in. I believe my data is reliable enough to discuss the issues that are raised in this thesis.

Descriptive statistic

Descriptive statistic was used to describe the related information needed in the research. Statistical analyses used in this research thesis consist of frequency, percentages, median, minimum, maximum, graphs or charts and cross tabulation.

Weight Average Index (WAI)

WAI was used change the ordinal data into scale data to measure the level of perception of local people, the level of participation of local people in fisheries management system.

Weight Average Index (WAI) is calculated by formulation:

$$WAI = \frac{\sum SiFi}{N}$$

Where is:

WAI = Weighted Average Index ($0 \leq WAI \leq 1$)

Si = Scale value assigned at its priority

Fi = Frequency of households respondents

N = Total number of observation

Source: Miah, 1997

These indices were designed based on social scale and the value of each index was kept from 0 to 1. The kind of each index is mentioned as follow:

Participation index

Participation index was used to assess the level of participation of Giang Xuan FA in the processes of management of local FAs. There are five level of participation including always, often, occasionally, rarely and never. Five scales to present the participations level of Giang Xuan in fisheries management is showed in the following table.

Categories	Always	Often	Occasionally	Rarely	Never
Scale	1	0.75	0.5	0.25	0
Percent (%)	100	75	50	25	0

Perception index

This index is used to assess the level of perception of Giang Xuan about fisheries law related to CBFM, and local FA regulations. There are five level of participation that is very strong, strong, average, weak and very weak.

Categories	Very strong	Strong	Average	Weak	Very weak
Scale	1	0.75	0.5	0.25	0
Percent (%)	100	75	50	25	0

Satisfaction index

Calculating satisfaction index is used the formula as follow.

$$WAI = (1.00*f1 + 0.75*f2 + 0.5*f3 + 0.25*f4 + 0*f5)/N$$

Where is:

WAI: Weight Average Index, $0 \leq WAI \leq 1$

N = Total number of observation

f1: Frequency of responses of choices of first scale

f2: Frequency of responses of choices of second scale

f3: Frequency of responses of choices of third scale

f4: Frequency of responses of choices of fourth scale

f5: Frequency of responses of choices of fifth scale

CHAPTER FIVE: RESULTS

This chapter presents the results of the case study research of Giang Xuan Fisheries Association, Vinh Giang commune, Phu Loc district, Thua Thien Province, Viet Nam. The parts of overview consist of socio – economic aspects of group, local people’s perception of Fisheries Association, level of awareness and satisfaction Giang Xuan FA member about fisheries law, FA members’ participation in CBFM, socio-economic issues, and the management status in Giang Xuan FA. Next transaction costs are identified and measured, and obstacles out in applying transaction costs in Tam Giang lagoon, Viet Nam are pointed.

5.1. Socio – Economic aspects of group

The level of education plays an important role for understanding rules and regulations as well as the fishing law. Besides, all FA members are of Kinh ethnicity which makes them understand the language, culture, etc. Nowadays, women have an important role in fishing, as they help the man clean the boat, sell the fish, knit net, find the market, etc. In addition, most of Giang Xuan FA members had good age for the labor that it is better for capturing fish, and their income can increase.

5.1.1. Education

Education level is a very important indicator for evaluating level of understanding/awareness of rules and regulations. There are 6 categories of education levels in this study including illiteracy, primary school, secondary school, high school, and university.

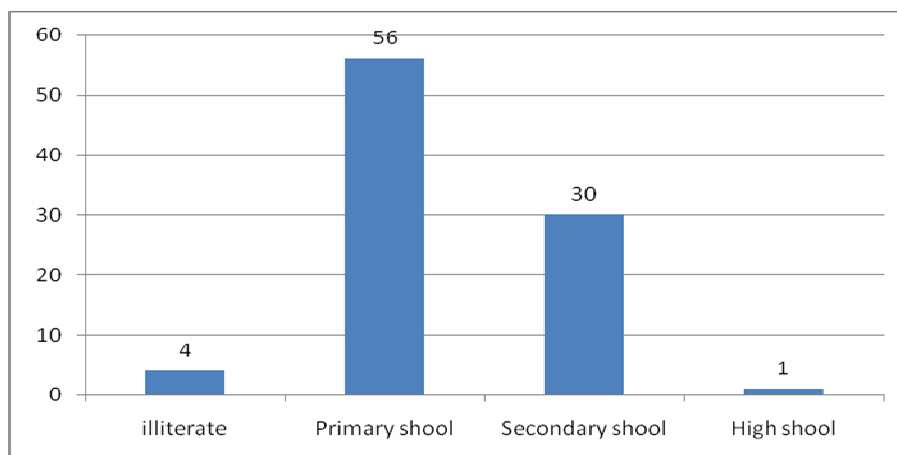


Figure 17 : Level of education

Source: My own survey, 2012

The results of questionnaire survey show that illiteracy (grade 0), primary school level (grade 1 to 5), secondary school (grade 6 to 9), and high school (grade 10 to 12) were the dominant education levels in these areas with 4.4%, 61.5%, 33.0%, and 1.1% respectively. It is obvious that the great majority of fishers have primary school education level with 61.5% (56 out of 91 interviewees).

5.1.2. Gender and ethnicity

Only four women participate in Giang Xuan FA and they are wives of Executive Board members. In my plan, 40% of women and 60% of men were expected to be interviewed. However, most women refused to provide information. Therefore, only five women were interviewed during my study. It was different from what is expected about gender balance before household interview survey was carried out. Moreover, most of the women thought that they could not answer or provide information, and that the husband is a representative for the family and has to answer interview’s questions as their responsibility. In such rural areas, women tend to be still shy, inactive and hesitant.

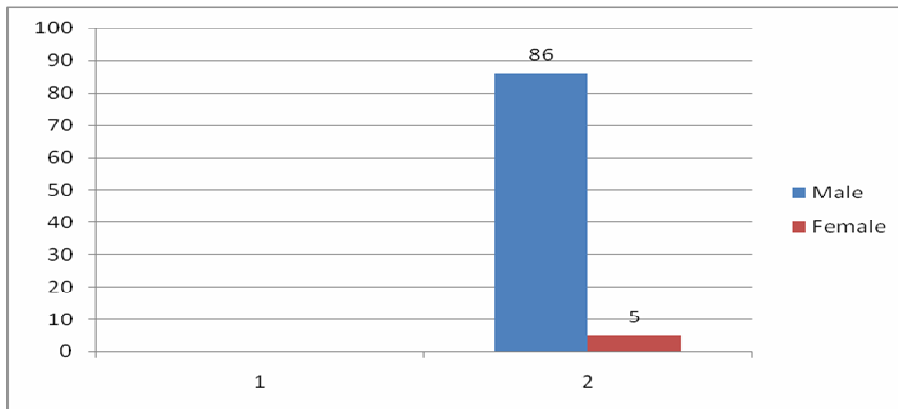


Figure 18 : Gender distribution of household
(Source: My own survey, 2012)

The research area is completely homogeneous in terms of ethnicity. 100% of respondents are Kinh ethnic which is considered as the major ethnic group in Viet Nam.

5.1.3. Sources of household income

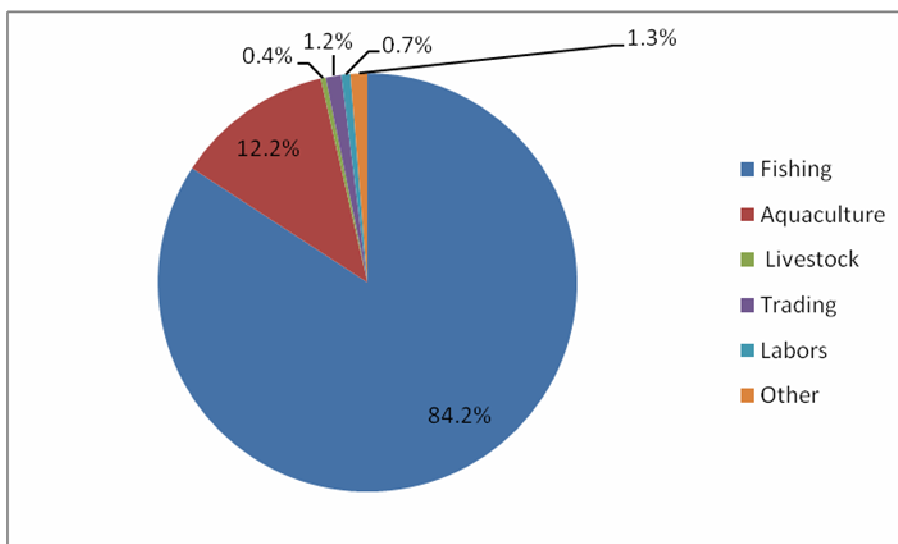


Figure 19: Sources of household income

Source: My own survey, 2012

This pie chart illustrates how Giang Xuan Fisheries Association's members get their income. There are six sources of household incomes in this study area. They consist of fishing, aquaculture, livestock (animal husbandry), trading, labors, and others (woodworker, bricklayer). Most of FA members are fishermen and main their work is fishing. Therefore, capture fisheries attracts the highest percentage of fishers (84.2%) and is therefore the most important income generating activity.

Table 5: The average annual sources of total household income in Giang Xuan FA in 2011

Source of income	Total income (million VND)	Average annual of household (million VND)	Percentage (%)
Fishing	4541	49.9	84.2
Aquaculture	660	7.3	12.2
Livestock	19	0.2	0.4
Trading	65	0.7	1.2
Labors	40	0.4	0.7
Others	70	0.8	1.3
Total	5395	59.3	100

Source: My own survey, 2012

From the table, we can see that the average annual income per household in study areas in 2011 is 59.3 million VND equivalent to 2,900 USD (exchange rate was 1USD = 20.500VND). General, there are two people earning main income in a family. Therefore, income per capita is 1,450 USD/ years. The typical family size in rural areas in Thua Thien Hue Province is 6 members on average. Income per capita per year is 9.88 million VND or 483 USD. Although revenue per capita per year is not high compared with that of city dwellers but the level of the commune fishers' income is increasing. In 2010, the average annual income per household was 44.3 million VND (Nguyen, 2010). That means the income of per capita has increased by 15 million VND from 2010 to 2011. According to reports of Giang Xuan and respondents in 2011, income of fishers increased because stock fish and size of fish was better than in last years.

5.1.4. Age of respondents

Table 6: The age of distribution

No	Age	Number of household	Percentage (%)
1	27-35	17	18.68
2	36-55	62	68.13
3	56-68	12	13.19

(Source: My own survey, 2012)

This table illustrates the age of fishing is from 27 to 68. The highest age is 68 years and lowest is 27 years. The highest group is from 36 to 55 ages with 68.13%. This is good age for earning income from fishing and aquaculture. The lowest group is from 56 to 68 ages with 13.19%.

5.2. Local people's perception of Fisheries Association

5.2.1. Understanding level of objectives about Giang Xuan FA establishment

Table 7: Understanding of objective of Giang Xuan FA establishment

Yes		No	
Number of interviewee	%	Number of interview	%
88	96.7	3	3.3

(Source: My own survey, 2012)

Almost all of people (96.7%) interviewed said that they understand the objectives of Giang Xuan FA establishment. These figures are amazing and as expect of local and province authorities but it is not surprising because of 93.3% of respondents understand the objectives of Giang Xuan FA establishment (Nguyen 2010). Besides, there were only 3.3% of interviewees who did not understand the objective of FA establishment. Details about the frequency and percentage can be seen in the table 8 below

Table 8: Level of perception about the objective and regulation

Level	Understanding about the objective of FA establishment		Know about regulations FA established	
	N	%	N	%
Very strong	7	7.7	8	8.8
Strong	46	50.5	51	56.0
Average, neutral	36	39.6	31	34.1
Weak	0	0.0	1	1.1
Very weak	2	2.2	0	0.0
WAI (%)	65.4		68.1	
Overall assessment	Strong		Strong	

(Source: My own survey, 2012)

Note: Very weak: 1 to 20%; Weak: 21 to 40%; Average: 41 to 60%; Strong: 61 to 80%; Very strong: 81 to 100 %.

As mentioned above, about 96.7% of interviewees understood the objectives of Giang Xuan FA establishment. In order to assess the level of understanding, there are five scales of understanding. Based on the results of WAI calculation, the understanding level of Giang Xuan FA establishment was the strong level. Besides, most of respondents know about regulations associated with FA founding. From table 7, we can see that the level of awareness of regulation of Giang Xuan FA establishment was the strong level. In conclusion, the results of statistical analysis indicated that there was significant perception of objectives of FA establishment and its regulation.

5.2.2. Satisfied level about Giang Xuan FA.

Table 9: Level of satisfaction about prefers establishment, responsibilities, regulations, and implementation in Giang Xuan FA.

Level of satisfaction	Prefer FA establishment		Responsibilities		Regulations		Implementation	
Strongly satisfied	9	9.9	7	7.7	5	5.6	5	5.5
Satisfied	55	60.4	52	57.1	52	58.4	67	73.6
Indifferent	27	29.7	32	35.2	32	36.0	19	20.9
Dissatisfied	0	0.0	0	0.0	0	0.0	0	0.0
Strongly dissatisfied	0	0.0	0	0.0	0	0.0	0	0.0
					No answer: 2			
WAI (%)	70.1		68.1		65.9		71.2	
Overall assessment	Satisfied		Satisfied		Satisfied		Satisfied	

(Source: My own survey, 2012)

Note: Strongly dissatisfied: 1 to 20%; Dissatisfied: 21 to 40%; Indifferent: 41 to 60%; Satisfied: 61 to 80%; Strongly satisfied: 81 to 100 %.

The table 9 shows four parts consisting of the support of FA establishment, responsibilities, regulations, and implementation in Giang Xuan FA. First of all, the result of WAI (%) for evaluating the level of satisfaction of FA members on local FA establishment was 70.1%. It means that overall local people were satisfied with the establishment of Giang Xuan FA. No one expressed that they were dissatisfied or very dissatisfied.

Secondly, the result of WAI (%) for evaluating the level of satisfaction of FA members in responsibilities was 68.1%. 52 out of 91 respondents (57.1%) satisfied with their responsibilities and nobody was dissatisfied and strongly dissatisfied.

Thirdly, the result of WAI (%) for evaluating the level of satisfaction of FA members in FA regulation was 65.9%. There are two sheets without any answers as the interviewees were hesitant in making decision. 58.4% respondent expressed their satisfaction, 5.6% dissatisfaction, and 36% indifference. The result of WAI (%) was 71.2%, which indicates that FA members were also satisfied with the operation of their FA. There were no respondents

who were dissatisfied or very dissatisfied with the FA’s performance. In details, more than half of respondents (73.6%) were satisfied, 5.5% respondents were strongly satisfied, and 20.9% respondents were in neutral level.

To sum up, interviewees expressed their high level of satisfaction and no respondents said that they were dissatisfied.

5.3. Communities perception about changes in Vinh Giang commune

The local commune, Province and NGOs (sometimes) and Giang Xuan FA (period of three months) organize meetings, workshops, training etc. and therefore the awareness of the local people about environment has improved a lot. They seem to think that the fishing resource is now in a better shape than before. The communities awareness and knowledge is higher is leading to the management in Vinh Giang is effective.

5.3.1. Communities perception about resource changes in Vinh Giang commune

When asked about change of the resource, most of respondents said that the quality of the water is better than before because awareness of people live in here improved by local and Province authorities, and NGOs. These organizations often encourage and train local people about the benefits of resource protection. Moreover, there are regulations with the objective of environment protection such as ban put on disposing garbage in lagoon, using destructive gears (explosive, chemical, small net size, etc).

Table 10: Perception of informants about changes resource

Items	Better (increase)		Unchanged		Worse (decrease)		Total	
	No	%	No	%	No	%	No	%
Environment	88	96.7	3	3.3	0	0	91	100
Fisheries resources	83	91.2	7	7.7	1	1.1	91	100
High value species	43	47.2	45	49.5	3	3.3	91	100
Local species of fish	32	35.2	57	62.6	2	2.2	91	100
Size of fish	47	51.6	42	46.2	2	2.2	91	100
Scope and status of ecosystem	71	78.0	19	20.9	1	1.1	91	100

(Source: My own survey, 2012)

(Questionnaire: in your opinions, how do affect a change after Giang Xuan FA establishment? The detail information in the Appendix 2,)

The table indicates that the resource situation has changed to the better. Specifically 88 out of the 91 interviewees (or 96.7%) said that environment pollution has become less serious. Thank to FA members activities for protection environment as collecting garbage ground lagoon where they live have improved and no using destructive gears. 91.2% of interviewees confirmed that fisheries resources have been improved. 47.2% of interviewees said that the high value species such as grouper, white- and orange-spot rabbit fishes have been on the increase because environment is better and fishermen did not use small mesh size and 49.5% of interviewees thought that there has been no change. However, 57 fishers (62.6%) said that local species have undergone no change. The scope and status of ecosystem in the commune lagoon has been improved, according to 71 interviewees (78%). In conclusion, there have been significant and positive changes of the resources and environment after the establishment of Giang Xuan FA.



Figure20: Collecting garbage aground Tam Giang lagoon

Source: IMOLA project, 2009

5.3.2. Communities perception about changing social, awareness in Vinh Giang commune.

The main aims of regulation of Giang Xuan FA is preventing conflicts fisheries ground, protecting aquatic resources, and improving knowledge of FA members. Giang Xuan FA's regulation has been built and explained to members through meetings, brochures or radio. Therefore, the awareness of the local people about aquatic environment, knowledge of regulation and policies, and law has been enhanced.

Table 11: Perception of informants about changes social and awareness

Items	Better (increase)		Unchanged		Worse (decrease)		Total	
	N	%	N	%	N	%	N	%
Violation cases	0	0	3	3.3	88	96.7	91	100
Living standard	86	94.5	5	5.5	0	0	91	100
Job opportunities	43	47.3	46	50.5	2	2.2	91	100
Awareness about environment	86	94.5	3	3.3	2	2.2	91	100
The behavior in associating among stakeholders	88	96.7	3	3.3	0	0	91	100
Residents' knowledge of policy	71	78.0	20	22	0	0	91	100
Residents' knowledge of laws	54	59.3	33	36.3	4	4.4	91	100

N: number of interviewee

(Source: My own survey, 2012)

The table shows a change perception of informants about social awareness. Specifically, 88 out of the 91 interviewees (or 96.7%) said that the number of violation cases dropped sharply after the establishment of Giang Xuan FA. Some of violation case was destructive gears using, fishing in spawning aground In addition, 88 out of the 91 interviewees (94.5%) confirmed that the awareness of the environment was the better because Giang Xuan FA mobilized its members to collect garbage around the lagoon in Vinh Giang commune. Moreover, they have changed their habits. For example, instead of throwing household garbage into the lagoon, the villagers dug rubbish holes or put it into rubbish-bins. Besides, a job opportunity increased with 47.3% of respondents and residents' knowledge of laws with 59.3%. On the other hand, 2.2% interviewees said that job opportunities were declining and 4.4% resident's knowledge of laws were reduced. To sum up, most of respondents were choose "better" column.

5.4. Level of awareness and satisfaction FA member about fisheries law

"Awareness raising was an important crosscutting issue for lagoon fisheries Co-management" (FAO, 2012). There are many methods to improve people's awareness of Giang Xuan FA such as workshops, meetings, radio and television banners, leaflets, etc. However, most of Giang Xuan FA members have low education. Therefore local authorities used methods of communication such as banners, leaflets, radio or television which work the better.

Table 12: Level of awareness of Giang Xuan FA member about fisheries law

Level of understanding	Fishing law of Central Government		Fishing law of Province		Local FA regulation	
	N	%	N	%	N	%
Very strong	0	0	6	6.6	23	25.3
Strong	29	31.9	63	69.2	63	69.2
Average, neutral	49	53.8	21	23.1	5	5.5
Weak	10	11.0	1	1.1	0	0.0
Very weak	3	3.3	0	0.0	0	0.0
WAI (%)	53.57		70.33		79.95	
Overall assessment	Average		Strong		Strong	

(Source: My own survey, 2012)

Note: Very weak: 1 to 20%; Weak: 21 to 40%; Average: 41 to 60%; Strong: 61 to 80%; Very strong: 81 to 100 %.

The fisheries law promulgated by the Government is relatively broad. Therefore, the relevant lower authorities have developed their specific and more appropriate laws based on the central government law. As mentioned Chapter III, the departmental structure of the government is copied from the national down to the commune level in Viet Nam. In fact, most of fisheries laws of Central Government given down PPC, therefore FA members understanding fisheries law from Central Government are still limited with average level (53.57%). Besides, according to the statistics shown in the table above, most of FA members understand regulation of FA with 79.95% (strong level). The fishing law of Province also is well understood with 70.33% (strong level).

Table 13: Level of satisfied of Giang Xuan FA member about fisheries law

Level	Number of respondents	Percent (%)
Strongly satisfied	8	8.8
Satisfied	51	56
Indifferent	32	35.2
Dissatisfied	0	0
Strongly dissatisfied	0	0
WAI (%)	68.4	
Overall assessment	Satisfied	

(Source: My own survey, 2012)

Note: Strongly dissatisfied: 1 to 20%; Dissatisfied: 21 to 40%; Indifferent: 41 to 60%; Satisfied: 61 to 80%; Strongly satisfied: 81 to 100 %.

According to the statistics shown in the table above, 51 out of 91 respondents (56%) satisfied with the fishing law and 8.8% of interviewees were highly satisfied. Especially, no one was dissatisfied or strongly dissatisfied. In conclusion, FA members satisfied with the fisheries laws issued by the central government, and provincial authority and regulations by Giang Xuan FA.

5.5. FA members' participation in CBFM

Participation in Co-management as local FAs can occur in many types such as participation in decision making, in meeting, in implementation, in fisheries resources conservation, in solving the problems, and in monitoring and evaluation. The details are shown below:

5.5.1. Giang Xuan FA members' participation in decision making

Based on the local situation, the number of meetings and the contents of the meetings may be different. When asking fishers about frequency of meeting in establishment, management plan, action plan, and giving ideas their answers are shown in table 14 and 15 below

Table 14: The frequency of meeting established FA

(Answer for questionnaire: What is the frequency of meeting established by local FA?)

No	Participation level	Number of respondents	Percent (%)
1	Weekly	4	4.4
2	Monthly	3	3.3
3	Every 3 months	76	83.5
4	Sometimes	7	7.7
5	Never	1	1.1

(Source: My own survey, 2012)

Note: Never = 0; Rarely = 1 to 25%; Occasionally = 26 to 50%; Often = 51 to 75%; Always = 76 to 100%

Generally, meetings of Giang Xuan FA were organized every three months with 83.5% of FA member's attendance. Four members of Executive Board always organized their weekly meetings. Only one female member did not take part in any meetings. These meetings provide members with opportunities for discussion, exchanging ideas, sharing information and making agreements. In the meetings, Giang Xuan FA will report on the activities in the recent time and ask for inputs from members for coming actions or solving remaining problems. All members were invited to participate in those meetings.

Sometimes, representatives from the commune authority, district, provincial agencies, NGOs projects were also invited to attend the meetings in the report six monthly or in the end year or Congress.

Table 15: Level of attending of activities in meeting

Participation level	Attending of meeting		Attending for establishment of management plan		Attending for establishment of action plan		Give ideas	
	N	%	N	%	N	%	N	%
Always	7	7.7	6	6.6	7	7.7	2	2.2
Often	51	56.0	29	31.9	12	13.2	9	9.9
Occasionally	25	27.5	43	47.3	47	51.6	59	64.8
Rarely	5	5.5	10	11.0	20	22.0	17	18.7
Never	3	3.3	3	3.3	5	5.5	4	4.4
WAI (%)	64.8		56.9		48.9		46.7	
Overall assessment	Often		Often		Occasionally		Occasionally	

(Source: My own survey, 2012)

Note: Never = 0; Rarely = 1 to 25%; Occasionally = 26 to 50%; Often = 51 to 75%; Always = 76 to 100%

According to the statistics shown in the table above, there are four parts including attendance in of meeting, attendance in meetings for establishment of management plan, attendance for establishment of action plan, and giving ideas in the meeting.

First of all, most of FA members (56 %.) say that often attend meetings. The table also shows that WAI (%) was 64.8%. In general, meetings organized by Giang Xuan FA have attracted the participation of fishermen. Most of fishermen perceived the benefit by attending these meetings.

Secondly, building management plans and action plans for Giang Xuan FA is important activities. However, FA members attending were often at the WAI level of 56.9%. There attendance at action plan was lower than management plan with WAI (%) by 48.9% and it got occasional level. Five people never attended in action plan.

Finally, in terms of the number of people expressing opinions or giving suggestion in the meeting, it shows that the WAI % was 46.7%, meaning that local people attending meetings occasionally raised their opinions. In addition, just a few of the FA members were passive in the meetings, with 4.4% of respondents never expressed ideas and 18.7% of respondents rarely voiced opinions.

5.5.2. *Giang Xuan FA members' participation in the implementation*

Table 16: Attending of the activities in the implementation of Giang Xuan FA

Levels of participation	Attending of the activities	
	N	%
Always	9	9.9
Often	63	69.2
Occasionally	14	15.4
Rarely	4	4.4
Never	1	1.1
WAI (%)	70.6	
Overall assessment	Often	

(Source: My own survey, 2012)

Note: Never = 0; Rarely = 1 to 25%; Occasionally = 26 to 50%; Often = 51 to 75%; Always = 76 to 100%

According to the statistics shown in the table above, the overall assessment is often level with 70.6%. There are 63 out of 91 interviewees of participation with often level (69.2 %) and 9 out of 91 (9.9%) with always level. Only one people (or 1.1%) did not participate in the implementation of Giang Xuan FA.

Table 17: Levels of following Giang Xuan FA's regulation

Levels of following FA regulation	N	%
Very strong	4	4.4%
Strong	35	38.5%
Average, neutral	50	54.9%
Weak	1	1.1%
Very weak	1	1.1%
WAI (%)	61	
Overall assessment	Strong	

(Source: My own survey, 2012)

Note: Very weak: 1 to 20%; Weak: 21 to 40%; Average: 41 to 60%; Strong: 61 to 80%; Very strong: 81 to 100 %.

Table 17 shows that the overall level of following FA regulation is WAI % with 61%. This is a strong level. 50 out of 91 respondents sometimes followed and sometimes did not follow Giang Xuan FA's regulation. In details, 4.4% of respondents very strong followed regularly and 1.1% of respondents rarely followed the regulation.

Table 18: Participation in fisheries resources conservation (multiple respondents)

No	FA member of participation	Frequency	Percentage (%)
1	Do not use destructive gears	37	40.7
2	Do fish in spawning areas	47	51.6
3	Inform about illegal fishing to village leaders/ FA committee	10	11.0
4	Unknown	1	1.1

(Source: My own survey, 2012)

Giang Xuan FA plays an important role in encouraging local people or FA members to conserve and protect fisheries resources in their fishing ground to ensure sustainable development of fisheries resources.

Based on the questionnaire survey, there were three ways that respondents used to conserve and manage their fisheries ground. There were three people answering items 1, 2, and 3; one person chose items 1 and 3; one person chose items 1 and 2; and one person did not answer the questionnaire because she said that she did not care. By analyzing multiple responses, table 18 shows that 47 respondents (51.6%) took part in fisheries resources conservation by not fishing in spawning areas, 40.7% of respondents did not use destructive gears, and 11% of respondents chose to inform illegal fishing activities to the village leader or the local FA committee.

5.5.3. Giang Xuan FA members' participation in benefit sharing

The question asked was as follows: "Do you think you got benefit when participating in local FA? Yes or No. If yes, what benefit have you had?" The result is shown in table below

There were three interviewees choosing items 1, 2, and 3; two interviewees chose items 1, 2, 3, and 4; two interviewees chose items 2 and 4; two interviewees chose items 2 and 3; and one interviewee chose items 2, 3, and 4.

Table 19: Benefits gained (multiple responses)

No	Benefits gained	Frequency	Percentage (%)
1	Increase food supply	10	11.0
2	Increase awareness	73	80.2
3	Increase fishing right	16	17.6
4	Reduce illegal fishing	10	11.0

(Source: My own survey, 2012)

From table 19, we can see that there are four types of benefits that local people think that they get from participating in local FA. They consist of increasing food supply, increasing awareness about resource protection and the problem of using destructive gears, increasing fishing right, and reducing illegal fishing. The table indicates that 80.2% of respondents had increase awareness; that was the main benefit obtained by respondents. It is also found that 11% of respondents informed that food supply benefit was gained, and another 11% chose reducing illegal fishing.

5.5.4. Giang Xuan FA members' participation levels in monitoring and evaluating

Most of FA member's well-being participated in monitoring and evaluation in activities of Giang Xuan FA. Fishers provide information, suggestion and recommendations in monitoring and evaluation process. The questionnaire for interviewee was: "Did you take part in monitoring and evaluation of local FA? If yes, which way did you take part in monitoring and evaluation?". The result are shown in the table below.

Table 20: Participation in monitoring and evaluation process

No	Items	N	Percent (%)
1	Meeting for monitoring and evaluation	8	9.9
2	Provide information	71	78.0
3	Provide suggestion and recommendations	4	4.4
4	Only participate	3	3.3
5	Do not participate	4	4.4

(Source: My own survey, 2012)

The monitoring and assessment process is considered important for the improvement of Giang Xuan FA. Table 20 shows that 78 % of respondents provided information for

monitoring and evaluation process of Giang Xuan FA. 9.9% of interviewees were meeting and 4.4% provided suggestion and recommendations. Meeting means that they can provide information and suggestion or not. There are 87 out of 91 respondents who participated in monitoring and evaluation of Giang Xuan FA. Only 4 out of 91 respondents did not participate in monitoring and assessment. However, 3.3% of interviewees said that they only participated and 4.4% of respondents did not participate.

5.6. The conflicts of local FAs and Giang Xuan FA participation in solving problems

5.6.1. Some of problems occur in Vinh Giang lagoon

There are three situations occurring in Vinh Giang lagoon that they are outsiders fishing, illegal fishing, and overexploitation.

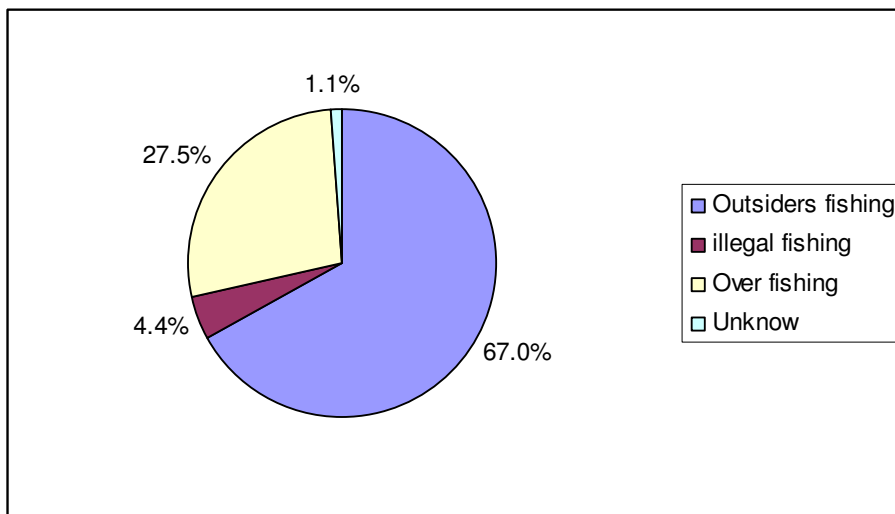


Figure 21: Some of situation problems occur in Vinh Giang lagoon

(Source: My own survey, 2012)

The pie chart above shows that there were three main types of problems existing including outsiders’ fishing, illegal fishing, and over fishing (over exploitation). 67% of interviewees said that outsiders’ fishing was the main and difficult problem in Vinh Giang commune. In addition, 27.5% of respondents mentioned over fishing and 4.4% chose illegal fishing. Only one person (1.1%) said that she did not know.

5.6.2. The conflicts in benefit sharing

Most of fishers thought that “private land, common water surface” and the fishing ground is common property. In addition, lack of clear definition of fishing ground boundary between

communities persists. Therefore, the conflicts occur in Tam Giang Cau Hai lagoon. The result of questionnaire “What are the conflicts in Vinh Giang area?” is shown in the figure below.

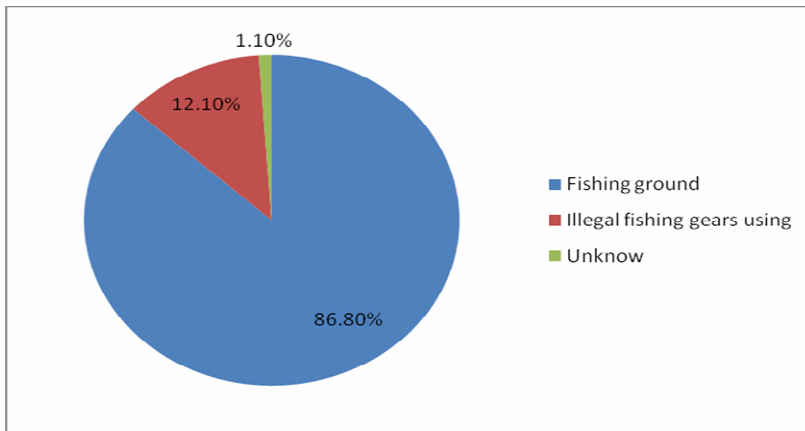


Figure 22: Conflict in benefit sharing

(Source: My own survey, 2012)

According to the survey data, there were two main types of conflicts in benefit sharing in the lagoon. They include conflicts related to fishing ground mainly due to the competition for water space for fishing and illegal fishing gears use between people who use fixed fishing gears and those who use mobile fishing gears. The pie chart above shows us that the majority of respondents with 86.8% reported that conflict on fishing ground still exists in their communities. It means that the conflict of fishing ground is the highest. In addition, 12.1% of respondents mentioned about conflict on illegal fishing gears use and 1.1% (or one interviewee) said that she did not know.

5.6.3. Giang Xuan FA member participation in solving problems

In general, Giang Xuan FA often had problems during its process such as encroachment of outsiders into its fishing ground, fishers using destructive fishing gears. In fact, Giang Xuan FA tried hard to solve these problems.

In the questionnaire I asked: “How do the Giang Xuan FA /committee solve conflict on the fishing ground or illegal fishing gear using?”

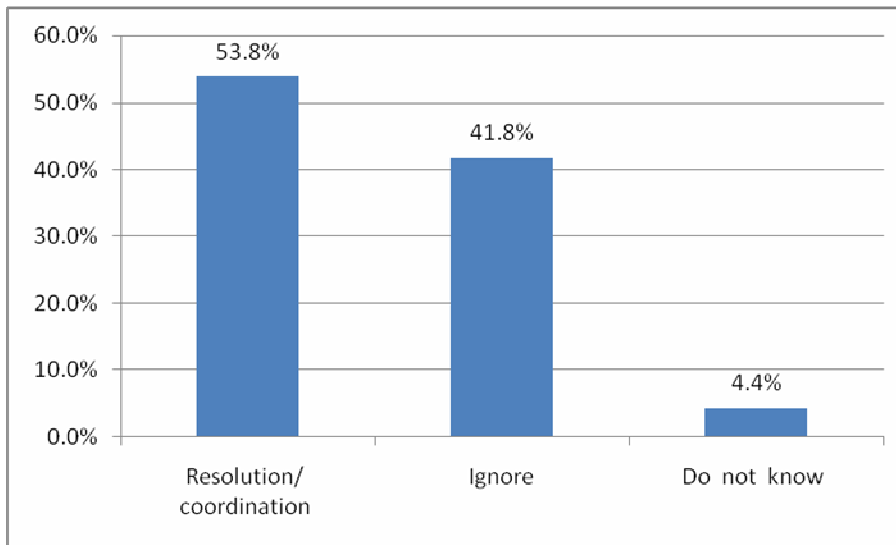


Figure 23: Giang Xuan FA member participation in solving problems

(Source: My own survey, 2012)

According to survey, there were three types of response about solving mechanism. They were “coordination or negotiation”, “ignorance”, and “do not know”. The figures above shows that 53.8% of respondents thought that the solution for problems is “coordination or negotiate”. 41.8% of respondents chose “ignorance” means that fishers will negotiate, warn or decide not to fine. However, 4.4% of respondents said “do not know”. It means that fishers (4.4%) did not know how to solve conflicts of fishing ground.

Besides, when asked fishers “Does the number of outsiders fishing increase or decrease or is stable?” The result was 90 out of 91 interviewees said that outsiders’ fishing declined after Giang Xuan FA was established and issued fishing rights. Fishing right is a kind of right where the fisher group have exclusive use for a designated area and resource. Fishing rights are allocated only to local FAs and not to individuals.

Chairmen of Giang Xuan Fisheries Association (2011) said that “Since we were given the fishing rights to certain areas in the lagoon, illegal capture activities such as using electrical gears and bottom mussel raking, etc. have died down and local fishers have become more aware of fisheries resource protection”.

5.7. Transaction costs

In 2007, particularly in October and December of that year, local officers in Vinh Giang commune recognized that Vinh Giang authorities had local FA for fishery management. Local people had a bit of time to prepare for the FA establishment in 2007. For that reason, the Stage I was added 2007 and 2008. The main objective of this stage is meeting/ discussion, searching for information for FA establishment, building a management plan after establishing FA, improving awareness of rules and regulations. The main goal of the Stage II is to train for Giang Xuan FA. Monitoring is also important for stage two. It is the most important stage of three. The Stage III has three main purposes: monitoring, rehabilitating and creating new jobs.

**Table 21: Transaction costs in implementation of Giang Xuan FA from 2007 to 2011
(VND million)**

No	Activities	2007	2008	2009	2010	2011
1	Recognition for new management regime	1	5	0	0	0
2	Meeting/discussion	1	6	5	0	0
3	Information for strategy and search	0	10	3	0	0
4	Regulation building	0	5	3	0	0
5	Management and operation in the local	0	5	5	0	0
6	Build management plan	3	10	5	0	0
7	Livelihood (create new job)	0	0	20	10	0
8	Communication and broadcast	0	2	3	0	0
9	Improvement of awareness	0	11	9	3	0
10	Assessment research	0	5	7	2	0
11	Adjudicating conflict	0	0	0	0	0
12	Monitoring and enforcement	0	2	10	7	6
13	Sanctioning violator	0	0	5	2	0
14	Protect environment	0	1.98	0.99	0	0
15	Research of resource and rehabilitation	0	10	10	3	0
Total		5	72.98	85.99	27	6

01 USD = 20.000 VND in 2011, (Source: My own survey, 2012)

The process of moving towards to Co-management has three stages. The first stage is from 2007 to 2008; the second stage is in 2009; and the last stage is from 2010 to 2012.

The cost of Stage I is 77.98 VND million. This cost focus on finding information which help recognition of need for new management regime or for the strategies and search. It can be called “information cost”. As mentioned chapter III, the cost of Stage I correspond with the theory of Williamson (1985).

The cost of Stage II was 85.99 VND million. In this Stage II, the cost of creating new job is the highest with 20 VND million. Particularly, some of fishers used destructive gears such as electrical fishing, explosives to catch fish. However, local authorities and Executive Board (EB) FA did not allow catch of fish by those gears. Therefore, they need to find suitable alternative jobs for these fishers. Besides, the cost of meetings/discussion, building management plan, researching of resource and rehabilitation were also concerned. The objective of Stage II was that improved knowledge for the fishers by job training, building the regulations of FA, and educating community and improving awareness about protection fisheries resources.

The cost of Stage III is 33 VND million and is the lowest of the three Stages. The cost of this Stage was focused on livelihood, monitoring and enforcement, research of resource and rehabilitation, improvement of awareness, and assessment research. The details of the cost were shown in table 21 above.

To compare among Stages, table 22 shown the average of transaction cost for each year in these three stages.

Table 22: Average of transaction costs for each stage

Items	Stage I (2007- 2008)	Stage II (2009)	Stage III (2010- 2011)
Total cost	77.98	85.99	33
Average cost/year	38.99	85.99	33

From table 22, we can see that the highest transaction cost is in stage II with VND 85.99 million per year. On the other hand, the transaction cost in stage 3 is the lowest with VND 33

million per year. In conclusion, the transaction cost is different among stages. This section will be further discussed in the next chapter.

Summary, chapter five describe result on study in 2012. Giang Xuan FA can come in as an alternative tool in fisheries management. They had protected their area by themselves as patrolling, ban fishing in spawn areas. Most of people increased income. The nature water environment is better before. In addition, the awareness and knowledge of FA members about regulation, policy, and environment had increased. Especially, most of FA member satisfied about objective, regulation, implementation, and their responsibilities. The deeply analysis was discussion in chapter six.

CHAPTER SIX: DISCUSSION

One of the main conditions for the successful Co-management and community-based fisheries management is fishing right which were granted for local FAs. As mentioned chapter III also “Decentralization and delegation of authority” is one such condition. Fisheries organization will be more active in managing their fishing ground, protecting aquatic resources, and so on when they receive fishing right. Giang Xuan FA has been issued fishing right in February 2010. Nowadays, in 2011, 18 local FAs have been issued fishing rights and the process to issue such rights has continued for other local FAs.

Fishing rights were authorized based on of Decision 4260 (Appendix 4), and were allocated by the DPC to local FAs. Fishing rights are allocated only to local FAs, and not to individuals. Individual fishers were authorized to be members of local FAs to undertake their fishing activities legally and following the fishing rights regime (Decision 4260, 2005). The main fishing rights allocation document consists of the status of the FA and lagoon water surface use; regulations of resource management and management administration such as fee, conflict management, violation handling, etc.

According to Nguyen (2008) local FAs play a core role in the development of CBFM as local FA system in Thua Thien Hue province. Local FAs’ role has been recognized in the regulation on management of Tam Giang lagoon fisheries. Local FAs are fisheries organizations which are entitled to specific aquatic area for management, exploitation and raising aquatic product. Local FA helps the Government to manage fishing ground, fisheries resources, aquatic environment, and so on.

6.1. Fisheries resources

According to the reports by SDCFARP (2010, 2011), the officer of DARD, and my own survey, the amount of high-value fish, fish size, and status of ecosystem has been elevated in Vinh Giang lagoon. As described in Chapter V, Table 10, 91.2% of interviewees reported that fisheries resources were now in a better condition than they used to be. 47.2% answered that the amount of high value fish increased and 49.5% said that they were unchanged. In addition, 78% of the informants said that the size of fish has increased in Vinh Giang lagoon. Apparently, there is a correspondence between the reports and the results in this thesis. From the reports, individuals such as the leader of the commune and this study’s results point to

positive ecological outcomes in the Vinh Giang lagoon. Moreover, most of people in the communities expect higher benefits in the future in Vinh Giang lagoon. To sum up, according to FA members, Giang Xuan FA establishment seems to have improved the protection of the resource because this is no a responsibility of the FA.

6.2. Implementation of Giang Xuan FA/CBFM.

6.2.1 Legal framework in Giang Xuan FA

From the result of the key informant interviews (2012), it is believed that CBFM of the legal framework at local level as Giang Xuan FA is quite transparent and facilitates the development of CBFM. According to Chairperson of PFA and Director of SDCFARP, local FAs have been officially identified as the major partner of the State for the implementation of fisheries Co-management in Tam Giang Cau Hai lagoon. As mentioned earlier in chapter 4, Co-management is where government agencies and fishers share responsibility and authority for resource management (Abdullah et al. 2008). Thanks to the innovative and transparent regulation of the lagoon fisheries management, the network of local FAs has been developed in Thua Thien Hue Province with its legal status. For example, there is 01 FA in 2003, the number of FAs increased to 62 in 2011. Therefore, local people now have legal condition to work together for their common benefit, and they can add their voice to the fisheries management. Sometimes, local FAs members criticize fisheries management regulations and the government, Executive Board of Giang Xuan FA open meeting and they can write letter or reports for PFA or DPC to show their dissatisfied.

6.2.2. The consensus of stakeholders for the implementation in CBFM

There has been a change from top-down management to bottom-up management in natural water resources management. Based on the key informant interviews, strategies of the fisheries Co-management has reached a consensus among stakeholders in all levels including province, district, commune and community levels In Thua Thien Hue province. Most of respondents agreed that “Local FAs are a tool for the better fisheries management”. In fisheries management, this is considered like an incentive for local communities to participate through their local FAs.

6.2.3. Awareness of Giang Xuan FA in fisheries resources management

Most of Giang Xuan members have been aware more of their roles and responsibilities about use and protection of their fishing grounds to sustain their livelihoods.

In addition, illegal fishing activities have been decreased. Participating in Giang Xuan FA, local people are encouraged to protect and use lagoon fisheries resources. Therefore, their fishing ground has been managed in a more successful way.

6.2.4. Indigenous knowledge were used

The Chairperson of PFA (2011) said that indigenous knowledge or local knowledge is considered an important source of the base information needed for natural water resource management. Fishers understand more than anyone else about the situation of their areas. In addition, below CBFM mechanism, original knowledge has been used to complement scientific knowledge to manage lagoon fisheries resources in a sustainable way. For instance, local people have opportunity to attend in the establishment of regulations or rules of Giang Xuan FA. These reasons reflect the correlation with the interview results and statistics. Giang Xuan FA members were generally well aware of their FA regulation with 79.95% (WAI%) (Table 12) and satisfied with the fisheries law (WAI% by 68.4%) (Table 13). Moreover, management and action plans of Giang Xuan FA have been built based on the knowledge of local people. As shown in table 15, FA members participated relatively often in management planning with WAI% by 56.9% (Often level) and occasionally in action planning with 48.9% (WAI%) (Occasionally level).

6.2.5. Conflict solving in fisheries management

The function of fishing ground management: Local FAs in Thua Thien Hue province have built and developed by their own plans and management. Local FAs and Giang Xuan FA find some of things such as how to exploit, how to manage, and use lagoon fisheries resources in the better ways. When fishing rights are allocated to all of local FAs, FA members will to manage and protect their areas increases. “Fisheries Associations at the local level are responsible for resolving conflicts on the fishing grounds and about resources among individuals and/or household members. Only when conflict resolution fails do the authorities intervene” (article 8, Decision No.4260, 2005, Sknonhoft, 2007). Moreover, Giang Xuan FA members expect that the use of fishing grounds will be more sustainable.

Most of fishery conflicts happening in the fishing grounds have been solved effectively at the community level. Moreover, conflict solving mechanisms such as negotiation, coordination, fining of illegal practices and knowledge have been built along with the regulations in Giang Xuan FA. From the survey result, the conflicts related to fisheries have decreased gradually

in Vinh Giang lagoon. Particularly, 90 out of 91 respondents said that the number outsiders who were engaged in fishing have declined. The settlement of conflicts was done through the collaboration or negotiation (53.8% of interviewees) or ignore/neglectfulness (tendency of indifference) with 41.8% of respondents. This result is quite a coincidence with the study of Nguyen (2008, unpublished). He said that conflict solving function is one of the basic functions of local FAs. In the communities, most of the conflicts related to fisheries activities which occurred can be solved by local FAs. However, sometimes, when local FAs cannot solve the conflict, authorities will intervene. Moreover, it can be said that local FAs act as mediators with aiming to reconcile contradictory sides and interest in communities (Nguyen, 2008). In fact, these conflicts of solving mechanisms are proven to be very effective.

6.2.6. Participation of FA's members in fisheries resources conservation

As showed in chapter V, to protect fisheries resources conservation, most of FA members were involved in FA activities such as stopping the use destructive gears, stopping fishing in spawning areas, or informing the illegal fishing to village leaders/ local FA. All this has proved that the awareness of FA members about resource conservation has sharply improved. For example, 51.6% of respondents chose “not fishing in spawning areas” (Table 18) when responding to the question “How do you participate to conserve natural fishery resource?”. It can be in particular, Giang Xuan FA is more proactive in protection of the aquatic resources by themselves such as no destructive fishing gears, no fishing in spawning areas, and inform the illegal fishing to village leaders or Giang Xuan FA (Table 18). For instance, in 2010, FA members informed the leadership of the Commune Peoples Committee or FA when detecting illegal fishers (77.9%) (Nguyen, 2010) but only 11% of interviewees in 2011 were among these informants in my own survey (Table 18). The FA often organized patrolling so they can be proactive in taking measures to deal with improper fishing activities.

6.2.7. Supporting of many donor agencies

As mentioned earlier in chapter V, the local FAs system as well as small scale CBFM system in Thua Thien Hue, particularly Giang Xuan FA, have attracted a lots of support and contributions from NGOs as CCRD (Center for Community Research and Development in Thua Thien Hue province); projects such as CPR, FSPS II; which work in fisheries management as well as community development. In fact, these projects play an important role to promote the CBFM process. They have helped fishers to raise awareness, to build local FAs capacity, as well as to support the establishment of local FAs in Tam Giang lagoon

and their regulations, to identify suitable solutions for the allocation of fishing rights to Giang Xuan FA.

6.3. Some limits

Giang Xuan FA has an important role for fisheries Co-management development in Thua Thien Hue Province. Giang Xuan FA has got some of valuable achievements such as raising awareness and protection their fishing ground by themselves, controlling illegal fishing gears user, and so on. However, there are some of limitation still existed in Vinh Giang lagoon as following:

Women are also stakeholders in fisheries management. They can legitimately claim to be beneficiaries of resource rights but present management systems seldom grant them the rights (Jentoft et al, 2004). The government should concern more about the importance of the issue of the women's role in fisheries. Women can provide accurate information to researchers and related organizations about productivity, prices, services, market, and so on.

“The lack of women in government fisheries service is felt most acutely by those countries that devote significant effort to community fishery management and development, since female fishers and male government officers often find it difficult, for societal reason, to communicate directly. Because the role of women in community fishing is often different from that of men, a great deal of information is thus effectively unavailable to fisheries departments, and it is not usually easy to directly impart any development assistance to women or to provide access to external information. This also applies to fisheries service where women are in senior positions and where the policy is definitely sympathetic”. (Adams 1998:139).

In most countries, fishing is predominantly a male occupation. For example, in Europe women constitute only 3.2% of the fishing work force (McAlister, 2002). In Giang Xuan FA, only four women out of 127 FA members (3.1%) participate in FA. In addition, one woman did not understand about FA and she had never participated in meetings and implementation held by Giang Xuan FA.

6.3.1. Low education of Giang Xuan FA members

Knowledge is an important resource in life and in fisheries management as well as Co-management. As Kuperan et al (1997, page 4) said that “The lack of knowledge of marine ecosystems and the long-term effects of destructive fishing methods could have led to irreversible damage were it not for the timely intervention of external catalysts”.

Although there are efforts to raise awareness and knowledge of FA members have been done in recent time, the level of education of most of Giang Xuan FA members was very low with 56% of primary school (Figure 17). Low education makes limit the learning and understanding of the law. This may lead to the decrease in the level of awareness about fishing laws (from Central Government) of FA members in fishery management. As a mentioned table 12, level of awareness of FA members about fishing law of Central Government is only 53.57% (Average level).

6.3.2. Limited participation of Giang Xuan FA in the process CBFM

Most of local people around the lagoon are very poor and they have to work hard to earn money to support their family every day. Therefore, the number of local people participating in activities organized by Giang Xuan FA is still low. For example, only 3.3% attend monthly meetings and 48.9% attend the establishment of action plan. There are 3 main reasons for this situation. First of all, most of FA members are busy with their daily routines. Secondly, the incentive structure for individuals to participate in and the support process of CBFM is not clear. Finally, fisher need more time to increase income from others activities such as husbandry, aquaculture, trading, labors, etc.

6.3.3. Lack of budget

As mentioned above, most of FA members are poor. Budget resource was not available for supporting Giang Xuan FA in operating activities such as monitoring, enforcement, and undertaking patrol activities. Therefore, it is difficult for Giang Xuan FA to do their tasks. For example, doing the patrolling requires budget for buying fuel for small boats. The patrolling plays an important role in protection and management fisheries resources. The patrolling team has the right to confiscate destructive gear such as electric gear and will not be responsible for any damage to or loss this gears; the determination of fines for violations; and they report to the authorities. This has proved that Government has not provided financial support for Giang Xuan FA to take over the patrolling although it is the responsibility of Government and local authorities.

6.4. Household income

As mentioned in the chapter V, capture fisheries is the main income generation source in Giang Xuan FA (84.2 % of households). Their income increased from 44.3 (Nguyen, 2010) to 59.3 million VND per household compared with from 2010 to 2011 (Table 5). This indicates that fishers' livelihood has changed positively, for instance in terms of increase, decreased conflicts. The improved fisheries resources play important role in elevating the income of fishers.

6.5. Opportunities, threat, strong, and weak

According to result from key informant survey and my experience in working on DOFI (DARD now) in 7 years, we discussed and given some of points about opportunities, threat, strength, and weak for local FA as following:

6.5.1. Opportunities

Firstly, fisheries management based on CBFM is one of better ways management in the present and in the future. Secondly, many agencies and people are interested in Co-management fisheries. They are Government, NGOs, projects, donor agencies, me and so on. They are willing to help and support for local FA. Thirdly, local FA members have more information and improve knowledge about fisheries resource management through training courses, meetings, workshop, and sharing experience together by Government and donor agencies.

6.5.2. Threats

There are some threats in Giang Xuan FA such as many people live in here and their main income based on fisheries resources; solidarity among local FAs is still low; and the conflicts between fishermen in FA member and the local outsider still exist.

6.5.3. Strengths

There are some strengths in Giang Xuan FA consist of awareness of fisheries resource management increased. Especially, most of FA members understand roles to support their FA; Giang Xuan FA has legal status, fishing right to solve problem such as conflicts fishing ground and illegal gears; and most of Giang Xuan FA members improved knowledge and

providing more opportunities to learn, exchange information and sharing experiences in fisheries management together.

6.5.4. Weakness

Some weakness in Giang Xuan FA consist of most of Giang Xuan FA members have low education; Giang Xuan FA cooperative with others local FA is still limited; lack of financial for patrolling, monitoring and protecting fisheries resources.

6.6. Measurement transaction costs in Giang Xuan FA

The original goal was to compare transaction costs between centralized management and Co-management. However, records are not clear and not divided into two sections including transaction costs from centralized management and Co-management. They only focus to write the amount of money for expenditure on activities. According to Kuperan et al. (2008), “the difference in the total costs of fisheries management between centralized government management and Co-management is not significant”. This corresponds with the unexpected results of the paper.

They did not record expenditure resources from centralized management or Co-management. Therefore, this thesis only focuses on comparison among the stage I, II, and III which mentioned in chapter five (table 21 and 22), and it is impossible to do a direct comparison of the total transaction costs between a centralized and a Co-management system because no system existed in Vinh Giang commune before Giang Xuan FA establishment. According to Kuperan et al., 2008, “there is significant difference in the costs at the different stages of management. In stages one and two, which are the stages of initiating a new management regime and community education, the costs are higher for the Co-management approach compared to the centralized government approach. The costs are however lower in the third stage for a co-managed approach when monitoring and enforcement and conflict resolution become important”

From October 2007 to December 2008 fishermen and local authorities had meetings/discussions, built management plans, and held courses for improving people’s awareness, and studied resource and rehabilitation. This was called Stage I. The cost of Stage I is 72.98 million VND. Stage II mainly focuses on improved education and amendment of regulations. The cost of Stage II is 85.99 million VND. In Stage three, rules and regulations become more

solid, and then this Stage concentrates on monitoring and patrolling. The cost of Stage II is 33 million VND.

In consequence, there were some transaction cost achievements in Co-management as Giang Xuan FA. First of all, the costs in Stages I and II were higher than in Stage III (Table 21 and 22). This finding is consistent with that of Kuperan et al (2008) as in the analysis above. In addition, according to Makino et al (2005, page 449) researched in the case of Kanagawa prefecture of Japan shown that “The participation of local fishermen in coordinating or managing organizations (Co-management) cuts down on transaction costs, particularly those associated with monitoring, enforcement, and compliance”.

The cost of stage three (III) was less because it only focuses on monitoring and enforcement; and FA members can comply better with regulation and rule which have been developed with their involvement. It can be said that the transaction cost in Co-management will decrease over time. Secondly, when I asked officers of PFA, DARD, and local authorities, most of people did not remember and record the cost for Giang Xuan FA activities. It can say that the Government care for recording and documenting transaction cost data is still limited.

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATION

7.1. Conclusion

The legal framework fisheries management has been developed suitably in Tam Giang lagoon, in Thua Thien Hue Province, Viet Nam. This framework is divided into three levels for CBFM: national level, province level, and community level. First of all, in national level, according to the Fisheries law and Vietnam's fisheries management strategies showed that participation of local people as Giang Xuan FA and CBFM plays an important role in fisheries management. In order to improve the participation rate of local people in fisheries management, the State issued a decentralization policy. It means that fisheries management in lagoon, river, pond, and natural water area can be granted to province, district, commune and organizations like local FA. Secondly, at province level, most of related sector agencies perceived that Co-management is necessary to develop CBFM as local FA in Tam Giang lagoon fisheries management. In the CBFM system, local FAs in the lagoon play an important role for the fisheries management because local FAs can be major partners in Co-management to implement fisheries management with the State. Therefore, the PPC granted the management of fisheries resources to District level, then District level delegated fishing right to local FAs. Finally, at community level the Giang Xuan FA has built its own rules and regulations for sustainable fisheries resources management in their fishing ground. Giang Xuan FA members must follow these rules and regulations.

The establishment of local FAs is considered a good option for fisheries resources management in Tam Giang Cau Hai lagoon. In addition, this establishment of local FAs has initially contributed better management to small scale fisheries in Tam Giang- Cau Hai lagoon. Particularly, this helps improve the quality of the environment and strengthen the resources (natural water resources), household income, reduce conflict.

It can be said that the awareness of fisheries management of Giang Xuan FA's members has been raised when they participated in FA. Most of Giang Xuan FA's members said that they understand the regulations, and objectives of FA. Especially, they feel empowered and that they have gained responsibility in fisheries management with regard to spawning areas protection; patrolling activities etc. Granting fishing right helped the State reduce cost and time. Particularly, patrolling is the responsibility of the Government but Giang Xuan FA did carry it out. (Giang Xuan FA has done it.)

However, the level of participation of local people is still limited because of low level of education and poverty. In addition, participation in activities of Giang Xuan FA such as attending meetings for building management and action plans is also slow. People still hesitate to express their views at meetings. Participation of women in Giang Xuan FA's is also very low.

During the process of the research development, there are many difficulties and obstacles about transaction cost such as lack of information, national and local documents related to fisheries Co-management in Thua Thien Hue and in Vietnam. The study found transaction costs approach and measurement transaction costs in fisheries Co-management as the cost of each Stage in Giang Xuan FA member or in Co-management. Transaction costs in fisheries Co-management are total cost of three items that consist of information collection, collective fisheries decision-making, and collective operation. Total cost can increase or decrease. However, this paper shown that the cost of Stage III is lower than Stage I and II and is the lowest of three Stages. This result correspond with Hong (2010) researched in Trao reef marine reserve of Viet Nam, theory of Kuperan et al (2008) "The costs are however lower in the third stage for a co-managed approach when monitoring and enforcement and conflict resolution become important", and Makino et al (2005) researched in the case of Kanagawa prefecture of Japan shown that "The participation of local fishermen in coordinating or managing organizations (Co-management) cuts down on transaction costs, particularly those associated with monitoring, enforcement, and compliance"

7.2. Recommendation.

The thesis was based on the literature relating to Fisheries Association/CBFM and transaction costs of my own survey at Tam Giang lagoon in Vinh Giang commune, Phu Loc district, in Thua Thien Hue Province. This thesis found the success of Giang Xuan FA about the sharing of power and responsibility between State and local people or between resource users and government for managing fisheries resources. However, the transaction costs approach in particular reveal some obstacles about the data and reports for analyzing the Co-management system in the case study in Tam Giang lagoon.

Based on research findings, with objective to improve the implementation of CBFM/ FA in Thua Thien Hue province, some of recommendations are given follow:

1. Quality data is an important thing for the research of success. The government should care for and guide organizations communities or groups fishers or local FAs. Moreover, it should also prioritize information management systems.

2. Sector agencies, the universities, central research from international and in Viet Nam should encourage students, master, especially Doctor or PhD to research more about Co-management regimes and policy in fisheries management. It should encourage research more deeply into the transaction cost issue in Co-management.

3. Local FAs should have enough capacity to operate fishing rights and fishing ground management. Supporting and training technical programs should be provided to local FAs members and committees to improve their understanding about fisheries management, building management plans, new technology, common laws, and knowledge. DARD, SDCFARP, FA Province, and NGOs should have responsibility and support of financial, document, etc for the performance of this task. MARD and VINAFIS should cooperate to have a national guideline of Co-management. After that, MARD and VINAFIS should guide and apply Co-management models to all Province in Viet Nam with countries that have captured fish and aquaculture.

4. In the future, Co-management regime or CBFM as local FA may be a good solution for fisheries management in ASIA (as Viet Nam) and in Thua Thien Hue Province in particular. Therefore, the State should care more about this issue by supporting the policies of the legal framework of the government and common new fisheries laws by papers or internet.

5. Strengthen and develop the organization, create a network among stakeholders, be proactive planning and fishing ground, continue building suitable regulations for each period. Especially, it should encourage women attend to organization communities or groups fishers or local FAs.

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APPENDIX 1

QUESTIONNAIRE

Part 1: General information

1.1. Interviewee name: Age:
Male ... Female ... Ethnicity.....

1.2. Address:
HamletCommune.....DistrictProvince.....

1.3. How many years have you been living here?years.

1.4. Education: Illiterate Primary Secondary school
 High school Vocational school University

1.5. Primary occupation:

1.6. Secondary occupation:.....

1.7. Main income of your family from:

Source of income	Annual average household income (mil VND/year)	Remarks
Fishing		
Aquaculture		
Husbandry (livestock)		
Trading/ business		
Labors		
Employee		
Other		
Total		

Part 2: The current practice of Community based fisheries management
 (Giang Xuan FA member's perception on community fisheries management)

2.1. How aware are you about fishing laws / regulations in fisheries management?

Laws/ regulations	Level of awareness						Other ideas
	Very strong	Strong	Average	Weak	Very weak	No answer	
Fisheries law							
Legal texts related to CBFM issued by Provincial Peoples Committee and provincial agencies							
Giang Xuan FA of regulation							

2.2 Can you express your degree of satisfaction on implementation of current community fisheries management?

Strongly satisfied Satisfied Indifferent
 Dissatisfied Strongly dissatisfied

Part 3: Perception of informants about changes in Vinh Giang commune

3.1. In your opinions, how to affect a change after Giang Xuan FA establishment in below fields?

Order	List	Worse	Unchanged	Better
1	Environment in Co-management area			
2	fisheries resources in general			
3	High value species			
4	Local species of fish			
5	Size of fish			
6	Scope and status of ecosystem			
7	Number of violation cases (exterminated fishing, capture in restricted areas, etc. in area.			
8	Living standard of residents in local			
9	Opportunities of job			
10	Awareness of residents about environment, in general			
11	The behavior in Giang Xuan FA among stakeholders			
12	Residents' knowledge of policy			
13	Residents' knowledge of laws			

3.2. Which funds do the Co-management (FA) system rely on?

Community Government Other stakeholder

Which ways do you choose to contribute by:

Labor Money Assets

3.3. Your proposals to improve the efficiency of Co-management area:.....

Part 4: The level of participation in fisheries management of Giang Xuan FA

A. Local people’s perception on Fisheries Association

4.1. Are you a member of local FA? Yes No

4.2. Do you know about the objective of Giang Xuan FA establishment? Yes No

If yes, what do you know?

Very strong Strong Average Weak Very weak

In your opinion, do you know the necessary of FA establishing?

Yes No

4.3. How do you prefer about the local FA establishment?

Strongly satisfied Satisfied Neutral

Dissatisfied Strongly dissatisfied

4.4. After the establishment of Giang Xuan FA, what are the regulations do you have in your community ?.....

4.5. How do you know about regulations established by local FA?

Very strong Strong Average Weak Very weak

4.6. Do you satisfy with those responsibilities? Yes No

If yes, what level?

Strongly satisfied Satisfied Neutral

Dissatisfied Strongly dissatisfied

4.7. What are legal responsibility do you have in your community after the establishment of Giang Xuan FA?

4.8.1. Do you satisfy with those regulations? Yes No

If yes, what level?

Strongly satisfied Satisfied Neutral

Dissatisfied Strongly dissatisfied

4.8.2. How do you degree of satisfaction on the implementation of Giang Xuan FA?

Strongly satisfied Satisfied Neutral Dissatisfied
Strongly dissatisfied

B. Local people's participation in FA

a. Local people's participation in decision making

4.9. What is the frequency of meeting established by local FA?

Weekly Monthly Every 3 months Sometimes Never

4.10. Have you attended meeting organized by local FA? Yes No

If yes, how regularly have you attended meeting organized by local FA?

Frequently Often Occasionally Rarely
Never

4.11. Do you attend meeting on establishment of Giang Xuan FA committee? Yes No

4.12. Do you attend meeting on establishment of Giang Xuan FA regulation? Yes No

4.13. How do you participate in decision making for Giang Xuan FA ?

-Establishment of management plan: Always Often Occasionally
Rarely Never

- Establishment of action plan meeting: Always Often Occasionally
Rarely Never

4.14. How actively did you attend the meeting?

Always raising your opinions Often raise opinions Occasionally raise
opinions Rarely raise opinions Never express ideas

b. Local people's participation level in implementation

4.15. Do you often participate in local FAs activities?

Always Often Occasionally Rarely Never

4.16. Do you follow the fisheries community (local FA) regulation and which level?

(Strong follow ; Follow ; Sometimes follow and sometimes not to follow ;Do not follow ; Strongly do not follow)

Very strong Strong Average Weak Very weak

4.17. How do you participate to conserve natural fishery resource?

No destructive fishing gears No fishing in spawning grounds

Inform the illegal fishing to village leaders/ FA committee

Other, please specify:.....

c. Local people's participation level in benefit sharing

4.18. Do you think you got benefit when participating in lGiang Xuan FA? Yes No

If yes, what is benefit?

Increase food supply increase awareness fishing right increase

Illegal fishing reduce other, please

specify:.....

4.19. What are the conflicts in Vinh Giang lagoon? Fishing ground Fishing gear use

other, please specify:.....

4.20. Which situation taken place at your village in present?

Outsiders fishing illegal fishing Over fishing Fined illegal fishers

4.21. How do the number of outsiders fishing?

Increase Decrease Stable

4.22. How do Giang Xuan FA /committee solve this problem?

Negotiate/ coordination Ignore I do not know

Fined illegal fishers

Others, please specify:.....

d. Local people's participation level in monitoring and evaluation

4.23. Do you participate in monitoring and evaluation of local FA? Yes No

If yes, which way do you ?

Meeting for monitoring/ evaluation Provide information Provide suggestion and recommendations Only participate

4.24. Who are responsible for community fishery monitoring and evaluation in Giang Xuan FA?

Villagers Fisheries officers local FA committee

Do not know Other, please specify:

4.25. Do you think monitoring and evaluation is important for ensuring the effective in fisheries management?

Very important Important Normal Not important

Very unimportant

Thank you for your answers!

APPENDIX 2

QUESTIONNAIRE FOR TRANSACTION COST

(Million VND)

No	Activities	2007	2008	2009	2010	2011
1	Recognition of need for new management regime					
2	Meeting/discussion					
3	Find information for strategic and searching					
4	Building of regulation					
5	Management and operation in the local					
6	Build management plan					
7	Livelihood (find and create new job)					
8	Communication and broadcast					
9	Improvement of communities awareness such as training, workshop, meeting					
10	Another assessment research					
11	Adjudicating of conflicts					
12	Monitoring and enforcement (patrolling)					
13	Sanctioning violator					
14	Protect environment (renewable resource, garbage collection, etc.)					
15	Research of resource and rehabilitation					

Stage I: 2007-2008

Stage II: 2009

Stage III: 2010- 2011

APPENDIX 3

QUESTIONNAIRE FOR KEY INFORMATION

Interviewee name : Age:

Name office:.....Position:

- 1) What are important for Giang Xuan FA and other local FAs?
- 2) What are the duties of local FA/ Giang Xuan FA?
- 3) What do you think illegal fishing activities (increase or decrease) after establishment of FA? Why?
- 4) What do you think fishing production (increase or decrease) after establishment of FA?
- 5) Do you think local people are willing to participate in local FAs/Giang Xuan FA activities?
- 6) What are the roles of NGOs, project agencies in supporting local FAs/ Giang Xuan FA?
- 7) What are the roles of your office in CBFM?
- 8) What are the strength, weakness, opportunity and threat of local FAs/Giang Xuan FA?
- 9) Do you have opinion/ suggestions/ideas to solve problems in local FAs/Giang Xuan FA?
- 10) What do you think about FA member/ local people attitude in fisheries resources management?
- 11) What do you think about regulation of local FAs /Giang Xuan FA?
- 12) What are the main problems and constraints of local FAs/ Giang Xuan FA?
- 13) What is the effectiveness and limits of the implementation of CBFM?

APPENDIX 4

THE PEOPLE'S COMMITTEE OF SOCIALIST REPUBLIC OF VIETNAM
THUA THIEN HUE PROVINCE Independence - Freedom – Happiness

REGULATIONS ON THE MANAGEMENT OF LAGOON FISHERIES IN THUA THIEN HUE

(Promulgated following the Decision numbered 4260/2005/QĐ-UBND dated
December 19th, 2005 by the People's Committee of Thua Thien Hue Province)

CHAPTER I GENERAL STIPULATIONS

Article 1. Principles management:

1. The management of lagoon fisheries is based on the principle of ensuring sustainable development for capture fisheries .
2. The management of fisheries is closely linked with the protection of environment and aquatic resources on the basis of ensuring the lagoon people's livelihood and economic benefits of the whole society.
3. To promote democracy at grassroots level and decentralization and to reduce the management cost of coastal fisheries, the State encourages the community-based fisheries management.
4. As the lagoon aquatic resources of the province are now being over-exploited, the Provincial People's Committee prohibits any new entrants to the activity of lagoon capture fisheries.
5. The arrangement of lagoon fishing gears should avoid domestic waterways, including secure corridors and berths. The Department of Fisheries updates and shows these positions in the lagoon fisheries management maps for local people's information.

Article 2. Definition

1. Lagoon fisheries can be understood as the exploitation of aquatic flora and fauna in the lagoon water bodies.
2. Fixed fishing gears are those connected to the lagoon bottom during the fishing season.

The fixed fishing gears in Thua Thien Hue Lagoon are including fish corral, bottom net, fixed lift net, mullet trap.

3. Mobile fishing gears are those not connected to the lagoon bottom, they are mobile during one fishing period and during different fishing periods.

CHAPTER II

FISHERFOLK ORGANIZATIONS

Article 3. Individuals and households participating in lagoon fisheries must organize themselves in Fisheries Associations at the village's level, inter-village or commune levels. The State will only delegate the power of lagoon fisheries management to the fishery associations at the grassroots level.

Article 4. Fisheries Associations at the grassroots level are social and professional organizations. Fisheries associations are under the Vietnamese Fisheries Society (VINAFIS). The Fisheries Associations are operated under the leadership of the Communist Party and authority of the communes, sponsored by the Department of Fisheries and Districts' Offices of Agriculture and Rural Development and professionally instructed by the higher Fisheries Associations.

Article 5. The State delegates management of fisheries resources in certain areas of lagoon to Fisheries Associations at the grassroots level. On that basis Fisheries Associations properly and creatively regulate the fisheries activities of their members, ensuring the harmony among members and between members and associations and the whole society.

Article 6. Fisheries Associations can take the initiative in arranging the fishing grounds while maintaining the traditional fishing grounds of individuals and households in line with the general planning of the State and the benefit of the community.

Article 7. Fisheries Associations have to act as management agencies on behalf of government agencies at all levels in the fields of lagoon fisheries tax, management and protection of aquatic resources, management of the aquatic environment and transportation through the fishing grounds, etc.

Article 8. Fisheries Associations at the local level are responsible for resolving conflicts in fishing grounds and about resources among individuals and/or household members. Only when conflict resolution fails do the authorities intervene.

Article 9. Within the framework of their associations, fisherfolk can create forms of voluntary fisheries economic cooperation in the community such as: credit, savings, fisheries product processing and sale, material supply, etc.

Article 10. Fisheries researchers, managers, traders, manufacturers and investors can participate in Fisheries Associations at the local level as unofficial members who provide assistance and cooperation for development. Fisheries Associations at the local level can admit or refuse these people.

Article 11. The State encourages Fisheries Associations at the local level, based on the State Law, to develop their “self-management rules” detailing community rules and aimed at protecting fishing grounds, aquatic resources and other issues such as protection of the aquatic environment and management of water ways and collection of fisheries tax, etc.

Article 12. Fisheries Associations at the local level have the right to expel members who seriously violate their rules many times, seriously violate the State Law or whose action adversely impacts the environment and aquatic resources.

CHAPTER III

MANAGEMENT OF FISHERIES CAPACITY

Article 13. The Provincial People’s Committee delegates power to the People’s Committees of Lagoon Districts to issue the fishing rights to Fisheries Associations at the village and commune levels in certain water bodies in their designated area based on the quantity and types of fishing gear, fishing seasons and aquatic species.

The fishing rights in the lagoon area include the rights and responsibilities to timely prevent acts of fishery law violation, responsibilities of protecting fishing grounds, developing aquatic resources, ensuring free access to water ways, preventing degradation of the water environment and ensuring submission of taxes to the State.

Article 14. Fisherfolk using fixed fishing gear can only locate their gear within the designated water area of their local association. They have to maintain corridors, for aquatic species to move, according to the improved planning. Fisherfolk using mobile fishing gear are allowed to carry out their activity in adjacent areas, but they are not allowed to disturb the fixed fishing gear.

Article 15. In the lagoon it is forbidden to use fishing boats with a machine capacity of more than 16.5 HP.

Article 16. Natural aquatic resources exploitation taxes in the lagoon fully contribute to commune budgets. The People’s Committees of the Communes define the percentage of tax that is left for Fisheries Associations at the local levels to cover the expenses of tax collection in the community, management, organization and implementation of aquatic resources protection and development activities.

Article 17. The taxed production norm of aquatic resource exploitation for each area of lagoon fisheries is agreed upon by the Provincial Tax Department and the Department of Fisheries and is then submitted to the Provincial People's Committee for approval after consultation is made with communes' authorities and local Fisheries Associations.

Article 18. Fisheries Associations are granted the fishing right for a period of ten years in normal water bodies and five years in sensitive water bodies. In extremely sensitive water bodies, the District People's Committee annually grants the fishing rights or authorizes the Commune People's Committees to carry out an annual auction for this exploitation.

Article 19. The State can revoke rights over all or parts of the allocated water bodies from Fisheries Associations in the following cases:

1. The Fisheries Association does not exist anymore.
2. The Fisheries Association voluntarily returns the allocated water bodies.
3. The term of use of the allocated water bodies has expired.
4. The Fisheries Association does not fish, protect the aquatic resources or abuse the resources without the permission of concerned agencies.
5. The Fisheries Associations seriously violate the law on fisheries management or other laws.
6. The term of use of fishing rights in the water bodies has not expired but the State needs the allocated water bodies for socio-economic development.

Article 20. The government agencies that decide to grant the fishing rights are entitled to make a decision to annul or cancel it.

Article 21. Sports and recreational fisheries and some small fishing jobs including hand-line fishery, fishing-tackle, casting-net fishing, gill net fishery with the net's length less than 50 m, fishing with pots of all kinds, oyster raking, crab and snail catching by hand can freely use the lagoon areas.

These activities cannot disturb the fishing gear registered by the local Fisheries Associations.

CHAPTER IV

PROTECTION OF FISHING GROUNDS AND AQUATIC RESOURCES

Article 22. It is strictly forbidden to carry out the following activities to destroy fisheries resources and pollute the lagoon aquatic environment:

1. Using poisonous chemicals, explosives, electricity to exploit fisheries resources.
2. Discharging garbage, letting pollutants and toxic substances leak beyond the limit.
3. Using such gear as push net, trawler, eel rake, stick net, drag net, mussel rake when fishing by motor-boat.
4. Destroying mangrove forests, reefs and other special biological landscapes.
5. Discharging diseased fisheries species into the fishing farms or into the lagoon water bodies.
6. Building, destroying or changing construction works in the lagoon water bodies without the authorization of concerned authorities and thus causing great damage to aquatic resources.

Article 23. It is forbidden to catch and sell aquatic resources of high economic value, rarity or in danger of extinction stated in the list of the protected species according to the State regulations.

Article 24. The regulations on non-fishing areas, where exploitation is forbidden during a long-term or short-term period, will be gradually developed in the lagoon while ensuring employment and livelihood of fisherfolk in line with the Fisheries Laws. The Department of Fisheries is responsible for doing research and making proposals on non-fishing areas in the lagoon.

The State encourages Fisheries Associations to develop their own rules to protect small areas used for reproduction, development and conservation of aquatic resources in the water bodies they administer.

Article 25. New exploitation activities are not encouraged in the lagoon. New activities must be approved by the Department of Fisheries who is in charge of assessing and appraising these new activities to ensure the principle of resources and environment protection.

Article 26. While irrigational works are built, study should be carried out on the construction of appropriate “fish passes”, “fish ladder” so that aquatic species can pass through and extinction of those species migrating for reproduction can be avoided.

Article 27. The range of the buffer zone of the irrigational dykes in the lagoon is 20 m. Except for the no-trespassing buffer zone, which has a 5 m range starting from the dyke’s foot, the area can be used for activities that do not impact the dyke’s safety.

Article 28. The bottom nets and fish corrals should be arranged as to ensure more than 1/3 of the inlet's width for traffic. If the width cannot ensure the free access to the water way, it should be widened to the minimum level stated in the regulations on domestic water traffic safety.

Article 29. The mesh-size of the collection bag of bottom nets is periodically fixed at the minimum level as follows:

From January 1, 2006: 2a=1mm

Article 30. The minimum mesh-size of fish corrals is periodically fixed as follows: From January 1, 2006 to December 31, 2007: 2a=14 mm

After January 1, 2008: 2a=18 mm

The minimum distance between the two units is 150 m (the distance is calculated from the upper corral to the lower corral)

The minimum distance between the two adjacent sides of fish corral units is 10 m.

The minimum distance between the side of fish corral and the bank of the lagoon is 50 m.

* In Cau Hai Lagoon, the side of fish corral should be at least 200 m away from the natural bank of the lagoon and the dykes surrounding shrimp ponds. It is applicable for communes in Phu Loc District.

Article 31. For catching “Gan” and “Hoi” shrimp (small species of shrimp), the Department of Fisheries will make regulations on the minimum mesh-size of fish corrals and specific times for exploitation before January 1, 2008.

Article 32. The State encourages Fisheries Associations to stipulate a minimum mesh-size larger than that defined by the State in order to raise the effectiveness of fisheries in line with their management capacity in the water bodies they administer.

Article 33. Electric drag nets are only used to collect aquaculture products and users have to register with the Sub-department of Fisheries Resources Protection who check carefully before issuing fixed-term licenses. Lists of users should be made public at the Commune's People's Committee Office for community's monitoring.

Article 34. It is not permitted to use net enclosures for a monoculture of tiger shrimps in lagoon water bodies. The deployment of net enclosures, rearing cages for aquatic resources that eat phytophagan and plankton and other raising forms should be in line with the planning and clearly stated in the fishing rights of the Fisheries Associations.

Article 35. The Department of Fisheries should develop plans to prevent diseases occurring among natural aquatic species in the lagoon. When diseased species are

discovered, fisherfolk organizations, individuals and local authorities have to deal with this in a timely fashion and report it to higher organizations and the Department of Fisheries for instructions and guidance.

CHAPTER V

DEVELOPMENT OF FISHERIES RESOURCES

Article 36. The State encourages additional breeding, regeneration and diversification of lagoon aquatic resources. In the water bodies where aquatic resources are shared among many districts, the Department of Fisheries is responsible for coordinating with the People's Committees of Districts for resources regeneration. In the water bodies where aquatic resources are independently managed, the districts' and communes' authorities develop plans and organize the additional breeding for fisheries resource regeneration.

Article 37. The popularization of fisheries resource regeneration is especially encouraged. The Department of Fisheries and People's Committees of Lagoon Districts develop annual plans of resource regeneration for mobilizing participation of individuals, households, Fisheries Associations and hatcheries. The additional breeding is monitored by the Department of Fisheries, Department of Natural Resources and Environment and local authorities.

Article 38. The introduction of new species into the lagoon water bodies is carried out by the Department of Fisheries in line with the Law.

Article 39. The use of artificial reefs in the lagoon water bodies is carried out step by step depending on the budget of the authorities at all levels.

The State encourages local Fisheries Associations to independently develop artificial reefs in the water bodies they administer to increase the number of shelters and reproduction places for aquatic species.

CHAPTER VI

DOMESTIC AND INTERNATIONAL COOPERATION

Article 40. The State encourages domestic and international organizations and individuals to conduct study and investigation on aquatic resources, management, protection and development of fishing grounds and lagoon fisheries resources, especially applied studies to timely meet the concrete demands of local Fisheries Associations.

Article 41. The State encourages the education and training of staff, exchange of experts, information and experiences in coastal and lagoon fisheries management.

CHAPTER VII
IMPLEMENTATION ORGANIZATION

Article 42. The management of lagoon fisheries is the responsibility and duty of public organizations working in the field of fisheries, of the People's Committees at all levels and communities using the lagoon fisheries resources. Fisheries Associations allocated with fishing in certain water bodies have to develop plans and methods of aquatic resource protection and development and take initiative in the production and regeneration of aquatic resources.

Article 43. Fines will be applied to acts of violation of the regulations, depending on the extent of the act, according to the State regulations on administrative fines in the field of fisheries (Decree no. 70/2003/ND-CP), environment protection, water traffic. Criminal law will be applied in serious cases.

Article 44. All agencies, organizations and individuals that directly contribute to the management, protection and development of lagoon fisheries resources and the prevention of acts causing damages to the living environment and lagoon fisheries resources are commended and rewarded by the State according to the regulations depending their contribution.

Article 45. Any agencies, organizations and individuals are entitled to lodge claims and denunciation of acts by individuals, organizations and agencies violating this Regulation according to the current Law on Claim and Denunciation.

During the implementation process, any difficulties should be timely reported to the Department of Fisheries and Provincial People's Committee for consideration and amendment.

Article 46. The Department of Fisheries is responsible for organizing the implementation, dissemination and execution of this Regulation in the whole province, coordinating with the mass media organizations to widely disseminate this Regulation.

FOR THE PEOPLE'S COMMITTEE FOR CHAIRMAN

VICE CHAIRMAN

(Signed and sealed)

Nguyen Ngoc Thien

APPENDIX 5

THE PPC OF
VIETNAM
THUA THIEN HUE PROVINCE

SOCIALIST REPUBLIC OF
Independence-Freedom-Happiness

No. 3677/QD-UB Hue, October 25, 2004,

DECISION OF THE PROVINCIAL PEOPLE'S COMMITTEE

Approval of the overall planning for the management and exploitation of fishery resources on the lagoon system of Thua Thien Hue province towards 2010

THE PROVINCIAL PEOPLE'S COMMITTEE OF TTH PROVINCE

- Pursuant to the Law on the provincial council and committee organization dated November 26, 2003;
- Pursuant to the Decision No. 1198/QD-UB dated May 7, 2003 of the provincial People's Committee approving the outline and budget estimation for the overall planning of the management and exploitation of fishery resources on the lagoon system of Thua Thien Hue province;
- Pursuant to the conclusions of the provincial People's Council at the Announcement No. 22/TB-UB

dated March 2, 2004 on the project for the management and exploitation of fishery resources on the lagoon system of Thua Thien Hue province;

- In recommendations of the Petition No. 382/KT dated October 15 of the Director of DOFI in

application for the approval of the overall planning for the management and exploitation of fishery resources on the lagoon system of Thua Thien Hue province,

hereby

DECIDES

Article 1: To approve the overall planning for the management and exploitation of

fishery resources on the lagoon system of Thua Thien Hue province towards 2010 with the following contents:

1. New subjects (labourers, boats, fishing tools) are not allowed to freely participate in the exploitation of fishery resources on the lagoon system. The fishery resources exploitation capacity towards 2010 is reduced by 30% in comparison to that of present time, specifically:

- Reduce by 40% of the number, density of fishing tools equivalent to 40% of capacity
- Reduce by 25% of exploitation timing due to the ban on exploitation for 3 months in a year, equivalent to 15% of capacity
- Reduce by 25% of small individuals to be tapped due to the regulation on the increasing of the minimal mesh size, equivalent to 15% capacity

2. Hereunder is the planning on the reduction of the number of lagoon exploitation careers by administrative units:

Careers	Phong Dien		Quang Dien		Huong Tra		Phu Vang		Phu Loc	
	Number	%	Number	%	Number	%	Number	%	Number	%
Đăng	38	6	151	23.7	29	4.6	171	26.8	248	38.9
Đáy	0	0	49	11.4	46	10.7	260	60.5	75	17.4

3. Approach to fishery exploitation tools management:

Timing	Major decisions
From January 1, 2006	<p>- All exploitation (capture) and aquaculture (water surface activities) should have permission certificates</p> <p>- The minimal mesh size 2a is regulated as follows:</p> <p>+ Đăng (natural fishing gears): 10 mm</p>

From January 1, 2008	<ul style="list-style-type: none"> - Fishing gear (fish corrals) exploitation is banned for 3 months - The minimal mesh size 2a is regulated as follows: <ul style="list-style-type: none"> + Đãng (natural fishing gears): 18 mm + Đáy: 18 mm - Complete the arrangement of the corridor for protecting boats' circulation - Reduce the number/density of the fishing gears (fish corrals)
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4. Zoning of fishery resources management and exploitation:

Zoning	Administration units	Necessary administration regulations
Extremely sensible zone	Quang Thai, Thuan An, Phu An, Phu Xuan, Vinh Ha	<ul style="list-style-type: none"> - Only issue short-term fishing certificate permits annually - Shrimp farming area extension permits will not be issued in the future - Impose enforcement (Clear) on transgressing ponds without permits
Sensible	Dien Hoa, Dien Hai, Quang Loi, Huong Phong, Hai Duong, Phu My, Phu Thuan,	<ul style="list-style-type: none"> - Only issue middle-term fishing certificate permits (5 years)
	Tri, Loc Binh	<ul style="list-style-type: none"> - Impose enforcement (clear) on transgressing ponds without permits
Normal	The rest areas	<ul style="list-style-type: none"> - Issue long-term fishing certificate permits (10 years) - Impose enforcement (clear) on transgressing ponds without permits

5. The system of permits for the exploitation and culture of fishery resources on the lagoon area should be applied for more effective management of exploitation activities:

- The forbidden careers (tools/facilities) on the lagoon system include: explosives, electric drag nets, Te quệu, trawlers, eels screening nets
- The careers to be limited and/or improved by mesh size extension: Đãng (fishing gears), Đáy, aquatic weeds exploitation using engine boats.
- Sporting fishing activities, recreation activities, and small-scale activities

are allowed without any permits application: All types of fishing rods, nôm (fishing basket), dậm, vọt, chài quăng; câu giăng and screening nets (re ben) with length less than 50 meters; types of lờ (bamboo fish traps), lợp, đẽo hàu, cào ngao; manual tools for crabs, clams, shellfish collection.

6. Technical requirements for protecting and developing lagoon fishery resources:

- Gradually set up and protect breed grounds, birth grounds, and lagoon bio-diversity.
- Add more high economic-value fishery varieties into the lagoon system
- Protect and restore coastal mangrove forest; protect and develop aquatic weeds at shallow water areas as shelter, birth, growing, and development places of lagoonal species.
- Build fish outlets in line with economic capacity at dikes and hydrolic works blocking the immigration, growth, birth lines of aquatic species.
- Gradually complete waste water treatment systems for treating waste water released from daily life, industry, aquaculture before its entering the lagoon.

7. Information technology via GIS should be applied for serving fishery management and related sectors. IT and GIS need to be used for fishery exploitation zoning, aquaculture zoning, water traffic zoning, breed and birth grounds zoning. Areas with overlaps in usage purposes should be gradually rearranged for sustainable development.

8. The system of the community-based fishery management should be developed in order to reduce the management expense for the authorities; also, it is advisable to enhance democracy at grass-root level among fishermen's organizations in self-managing fishing territory, fishery resources, aquatic environment and other related fields such as water traffic, flood and storms mitigation, rescue and relief works. Fishermen's organizations at all levels under the Vietnamese Fishery Association are major partners of authorities in the co-management of the fishery exploitation in particular and the fishery in general on the lagoon system of Thua Thien Hue.

Article 2: Base on the major contents regulated in the Article 1 of this Decision, People's committees of districts are responsible for the following:

1. Set up detailed planning, organize management tasks, and implement the planning for sustainable management and exploitation of the fishery resources on the lagoon system

of Thua Thien Hue with integrated linkages to the coastal part.

2. Land use certificates will not be issued to land sites located near the lagoon, which make the lagoon shallower and degraded. The boundary between the water surface and the inland is identified by the topography map published in 1994 by the National administration of land-related issues.

3. Cooperate with the fishery sector to compile the system of natural fishery exploitation certificate permits for effectively managing and appropriately use the lagoon fishery resources.

4. Have an approach to modern tools and management technologies such as community-based management, zoning, GIS... in order to industrialize and modernize the fishery management.

Article 3: The Department of Fishery is responsible for the compilation of the “Statute on the exploitation of fishery resources on the lagoon system of Thua Thien Hue” in accordance with current regulations and submits to the PPC for approval in 2005; Also the Department should instruct agencies and sectors at all levels to carry out detailed management activities in the planning period.

Related Departments and agencies will base on this Decision to implement the co-management on the fields related to the production and development of fishery resources of the lagoon system, and guarantee the integrated management of the lagoon and coastal areas.

Article 4: The Head of the PPC office, Directors of the Departments: Fishery, Agriculture and Rural Development, Natural Resources and Environment, Planning and Investment, Finance; Chair persons of the districts: Phong Dien, Quang Dien, Huong Tra, Phu Vang, Phu Loc, and heads of related agencies are responsible for the implementation of this Decision./.

FOR THE PEOPLE’S COMMITTEE FOR CHAIRMAN

VICE CHAIRMAN

(Signed and sealed)

Nguyen Ngoc Thien