



## DYNAMIC LIVELIHOOD STRATEGIES OF FISHERY COMMUNITIES IN BAN DON BAY, SURATTHANI, THAILAND

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### ABSTRACT

*The purpose of this research study is to study the livelihoods of traditional fishery around Ban Don Bay in Suratthani, Thailand. This study applied the qualitative approach to collect data by interviewing key informants in the study area. The participants of the study were traditional fishermen and their household. It aims to use the sustainable livelihoods framework in data analysis. It is found that traditional fishery tends to be a vulnerable group due to rapid changes in the environmental degradation affected by governmental policies, capitalization and natural disaster. However, they are able to cope with such severe situations by utilizing their various livelihood strategies: human capital, natural capital and social capital. They could particularly apply their social capital with their local wisdom and knowledge gained from conducting their local research to deal with various problems. For example, local fisheries could find their own ways to adapt their traditional strategies in running their daily life to accommodate such changes. Future fishery communities need to develop suitable strategies in order to deal with more complicated situations. In addition, they will also need to share with neighboring communities the new solution they have gradually gained.*

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**Keywords :** Livelihoods, Traditional fishery, Sustainable livelihoods, Livelihood strategies, Capital, Vulnerability.

### Contribution/ Originality

The paper's primary contribution is finding that the adaptation of traditional fishermen in the context of a change in the concept of sustainable livelihood can be used to better understand the livelihoods of local fishermen today. The research is the first study

conducted on this area in Suratthani, that proposes a new method to understand competent traditional fisherman and adaptive their livelihoods styles.

## 1. INTRODUCTION

Ban Don is an important and fertilized bay. It is situated in Surattani province, the gulf of south Thailand. Local people around the bay are traditional fishermen so their daily lives depended on natural resources and environment. Not only various ecology systems are found in Ban Don Bay, but it also is an important fishery community. Besides, there is a gradual economic growth. There are housing settlements, facility buildings, shrimp farms, ports and resorts in the area of Ban Don Bay. Most marine area is used mainly for fisheries such as farms of shrimps, scallops, oysters, groupers and sea bass. According to the Department of Fisheries, the survey indicated that a total 96,754.28 acres of coastal area are covered with aquaculture farms consisting of 66,023.26 acres of shell farms, 30,726.80 acres of shrimp farms, and 4.22 acres of fish farms. In addition to coastal aquaculture farms, fisheries, and agriculture activities, there are also industrial factories, community expansion and tourism (Walailak University and coastal habitats and resources management project: CHARM, 2007). These changes cause various effects on Ban Don Bay.

Besides, many problems have been attacking Ban Don Bay upsetting the balance of nature. Coastal ecosystems are destroyed constantly, which cause critical loss of aquatic animals. This affects the fishermen on their income significantly because Ban Don Bay is the main source of livelihood for many people in this area. Since the government has established a Sea Food Bank project to help local people to earn more income, they extremely do unfriendly fisheries, so the environment was devastated. The project also impacted people, who live in Ban Don Bay, on their ways of life from simple livelihood existing together with natural resource. In this case, the development instead of aiming to the poverty reduction, it has created more problems of fishermen, who are the poorest among people (Bene, 2006). Generally, the fishermen are a group which has the most noticeable characteristics comparing with other groups in rural and coastal areas. Therefore, this event brought about uncertainty into the fishermen daily lives. This is because the fishermen lives are related to various fields, such as a risk of natural disasters in working, the fight with variation economy in increasing price of gas, decreasing price of products and fluctuating income in accordance with the seasons. Due to these changes, people had difficulties in doing fishing. This kind of uncertainty leads to their lives complexity of being traditional fishermen (Bene, 2006).

According to a survey in economic and social household situations in 2011, it was indicated that fishermen had the lowest income compared to others. They had 13,081 baht as an average income, while they had debts of quintuple amount (Bank of Thailand, 2012). In the past, fishermen used simple tools combining with their wisdom to fish easily. Their tools were classified to suit kinds of fish and aquatic animals. Various tools also were categorized according to seasons. The fishermen existed happily with the sea. Nowadays, many industries are being developed. The ways of life and livelihood of local fishermen in Ban Don Bay has been changing rapidly as a result of

main economic production. An invasion of mangrove forests spreading gradually in Ban Don Bay to do natural shrimp farming. Rice farms were exchanged to shrimp ponds, which destroyed the mangrove habitats and loss of fish nursery. Additionally, the government aims to publicize the policy to assist poor fishermen to own marine areas for aquacultures, but small fishermen did not have enough money or capital to do so.

Consequently, many traditional farms have transferred the ownership to capitalists, who hired some small traditional fishermen to work in cockle stalls. It could be said that, this is a starting point that Ban Don Bay does not have an open access area anymore. This is because Ban Don Bay had been owned by the capitalism. In addition, it was found that there is an expansion of farming into a marine area because of a lack of a serious attention of the government. Even the navigation channel has narrowed down because the law states that fishing net boats are wrong when they are doing fishing in the sea. This is an example to show that there is a gap in the law, which leads benefits to capitalists. Hence, small fishing equipment and fishermen wisdom cannot compete with commercial fishing vessels full of fishing tools. This kind of large boats can bundle all shrimps, shells, crabs and fish in the sea. These vessels also destroy local fishermen' fishing tools, as well as ruin coastal resources terribly overnight.

Although many crises happened in Ban Don Bay, researchers are interested to study how traditional fishermen exist and survive under diverse and complicated problems. Despite traditional fishermen are vulnerable by living their lives under uncertainty of jobs and relying on the weather, the researchers are aware how traditional fishermen adapt themselves to sustainable living.

**2. METHODOLOGY**

This study applied the qualitative approach to collect data by interviewing key informants in the study area. The participants of the study were traditional fishermen and their households. This study applies the sustainable livelihoods framework below to understand traditional fishermen lives.

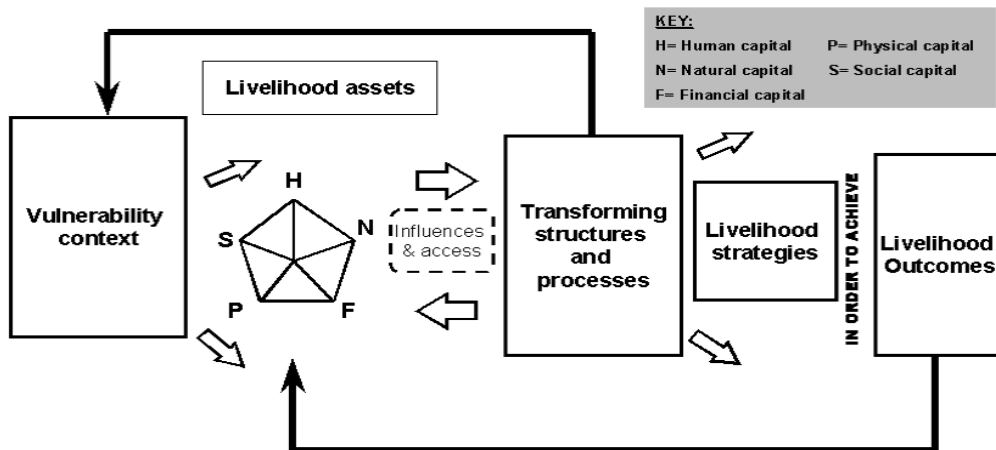


Figure-1. The sustainable livelihoods framework (source: (DFID, 1999))

The sustainable livelihood aims to understand the poverty and vulnerability of small aquaculture communities and traditional fisheries (Edwards *et al.*, 2002);(Neiland and Bene, 2004).This framework was used in development organizations and NGOs in order to better understand a system of natural resource management (Allison and Horemans, 2006).This framework seeks to improve policies in community development and practices, which emphasize on seasons and a cycle of complex strategies for living. (Allison and Ellis, 2001);(Carney, 2002). It was combined with a large process for people life by having a wide vision to do activities providing income with people participation (Chambers and Conway, 1992; Farrington *et al.*, 1999; Shankland, 2000).

The study areas consists of Ban Don Bay in Suratthani province covering 7 districts; ThaChana, Chaiya, Thachang, Phunphin, Muang, Karnchanadit and Donsak. There are 27 villages of traditional fisheries.

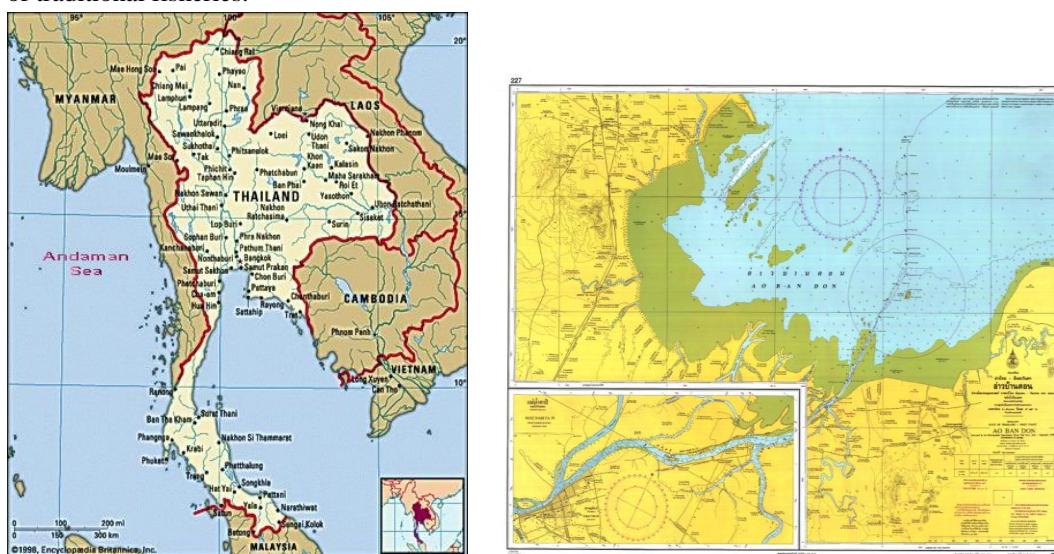



Figure-2. Map of Study Area: Ban Don Bay, Suratthani Province, Upper South of Thailand.

 illustration of the fishery communities around Ban Don Bay

### 3. RESULTS

The results of this study were presented in 2 parts. The first part described contexts of Ban Don Bay. Another explained patterns of livelihoods of traditional fishermen around Ban Don Bay, Suratthani Province, and upper South of Thailand. The results were shown as following.

#### 3.1. Community Contexts

Ban Don Bay is an international wetland, geographically situated in Surattani Province, extending in ThaChana District in the north to Phunphin District in the south, and to Kirirattanikon District in the west. Ban Don Bay encloses 7 districts of Suratthani Province; ThaChana, Chaiya, Thachang, Phunphin, Muang, Karnchanadit and Donsak. There are 27 villages around the bay. People of Ban Don Bay rely their livelihood on fisheries, which show the relationship between

their ways of live and the sea as their workplace (Walailak University and coastal habitats and resources management project: CHARM, 2007). Traditional fisherman livelihood has been modified from an original way, which work and earn income for sustaining their life, to a new development in marine resource utilization. The government has been publicizing policies to support economic growth, and then marine resources have been shifted from food and sustenance to more economic value causing terrible natural resource destruction (Lertchai, 2003). Coastlines and the sea zone of traditional fisheries deteriorated rapidly because of use of fishing tools in mass destruction, including the impact from a Sea Food Bank project in 2004, which required people to exchange their assets to capital, in order to solve poverty problems and set up a seafood production base. It was believed that this project could replace traditional fishery, and it would establish a production process with a safety standard without any effects on the environment. Consequently, those assets belonged to a specific owner group. The sea doesn't belong to the public, but it is owned by the individuals. In addition, changes in economy, society, cultures, politics, natural resources and environment affect local people on their traditional fisheries directly and indirectly. Hence, traditional fishermen need to adapt their livelihood in order to survive and exist in new contexts. They turn to use their wisdom transferred from their ancestor, and they put more capability to employ their livelihood assets and the capital in the community to become clever strategies. This relates to words said by the ancestor that "the sea is a grandfather, and a rice cooker is the sea" This wording reminds traditional fishermen to recognize the value of the sea, where they can gain many benefits and maintain the land for their livelihood. As a result, there was a life adaption of fishermen to do various activities to continue their career lives. For instance, they run a small coastal aquaculture. Some of them do extra jobs such as food processing, and ecotourism to lean fishermen's ways of life. They also span their network to restore the natural resource conservation. In terms of the society in Ban Don Bay community, it was revealed that the cultural legend of traditional fisheries was retold recently, which was called "the mountain buddy and the sea buddy". This culture represents a happy reliance between people and the nature. In terms of economic dimension, fishery is a main occupation of local people in Ban Don Bay.

### **3.2. The Evolution of Traditional Fishermen Livelihood**

Traditional fishermen live their lives based on choice seeking by using their capacity to reach property and capital wisely. Once they faced problems caused by economy, society, politics, environment and climate change, they are able to survive and live on their own by passing on and accumulating knowledge from their ancestors. Traditional fishermen also are capable to manage the assets and capital in the community, such as natural resource, human resource and social resource, to adapt their ways of life.

In this study, living development of fishermen was divided into 3 sessions, which were pre-Sea Food Bank project, during-project, and post- project. The study found that before the Sea Food Bank project was established, fishermen mainly relied on natural marine resource as a source of livelihood. They had simply ways of life, and they helped each other. Fishery was a main career

without any part-time jobs. Although they were not rich, they were happy. Additionally, there was no destruction of natural resource. There was plenty of aquaculture and resources for everyone. As a result, local fishermen were satisfied with their rich resources of surrounding neighborhood. It was also found that during Sea Food Bank project; there was a division of coastal zones for poverty deduction of local fishermen in Ban Don Bay. Since there was limitation in cost of fishing, a majority of local fishermen sold their own divided sea area to capitalists. Then, they moved to other areas to do their own fishery. Increasing number of capitalists in Ban Don Bay caused many problems. For instance, there were many farming areas of shellfish cages and other types of marine animals, which trespassed on the sea area. Consequently, local fishermen had to go to other areas, which is far, but not over 3,000 meters in accordance with the law, to do their fishery for their lives. Moreover, mangrove was rapidly destroyed. This severely affected the ecosystem. It was obviously seen that a number of meder's mangrove crabs had been increasing. Meder's mangrove crabs are a huge income of fishermen there. Besides, they were employed by outsider capitalists from Mahachai to collect meder's mangrove crabs, which they could gain a good wage. When the areas were limited, fishermen initially began fishing illegally such as fish and shrimp poisoning. Later, there was an increase crisis of traditional fishery. A community organization was founded in order to fight with the capitalists, who trespassed on the sea to do shell farming, to get their own coastal zone back. This was a clear fighting of social participation of local people. Also, Ban Don Bay Conservation Group was started to work with a government section and private sectors.

According to the study, it was revealed that after the Sea Food Bank project has been operated, there was a group of local people gathering together to conserve Ban Don Bay. There were various conservative activities such as meder's mangrove crab farming, mangrove planting and ecotourism promoting. All activities were done in accordance with the idea that there should provide benefit to all parts in the community, and local people could gain income to live happily. Further, traditional fishermen developed and improved themselves and their human resource by learning from conducting the research to create the knowledge how to work sustainably in their community in corporation with the government and private sections, as well as local people. As a result, local people were able to develop human resource in the community, and they clearly understood their ways of life and ways of an ecological community integrally. They sought alternative occupations. For instance, they conserve the mangrove forest to increase meder's mangrove crabs, or kingfisher crabs. Some of them have been working as a part time job in ecotourism fields while others have been doing other jobs to support their family. It can be seen that traditional fishermen have adapted themselves resulting in income increment, well-being, vulnerability decreasing, food security increasing and sustainable resource usage. Considering closely, fisherman livelihood can be divided into 5 forms: 1) traditional fishery and coastal farming, 2) traditional fishery and ecotourism in ways of traditional fisherman lives, 3) traditional fishery and rehabilitation and conservation of meder's mangrove crabs, 4) traditional fishery and general working for wages, and 5) traditional fishery and working as an employee in industrial factories. Some people gave up traditional fishery, but they were able to adapt their lives to survive in their community.



It can be obviously seen that diversity of livelihood forms of local fishermen reflects ways of life in the community that they tried to work to support themselves and survive using their own strategies based on remaining resources. They also are flexible to adapt themselves to uncertain situations in their livelihood (Allison and Ellis, 2001).

### 3.3. Capital of Traditional Fishermen Livelihood

According to the concept and the theories of sustainable livelihoods, resources play an important role in living and they are: human capital, physical capital, financial capital, social capital and natural capital. Fishermen in Ban Don Bay tried to reach and use three of five capital mentioned above to respond their needs and preference described as follows.

#### 3.3.1. Human Capital

Human capital is very important in fisherman livelihood. Significantly, family members are a main mechanism in production process and up-to-date development. Advanced technology and techniques were utilized in a production process, and they led the family members to develop their skills. Due to a modern educational system, people of working age were motivated to leave fishery. They thought that it is not necessary to do fishery if they are high educated. They can have other more secure and stable occupations. The findings from the interview showed that there are many children in each family, labor force is still needed. There are only old people doing fishery in the family. Some families can modulate their livelihood strategies to do other jobs, which caused a decrease of a number of labor force continually.

#### 3.3.2. Natural Capital

Natural Capital has a great impact on livelihood of people in Ban Don Bay. Generally, people there relied on a circulation of natural resources and services (lands, water, forests, air quality, a rate of biodiversity, and so on). It was known that people used natural resources called Common Pool resource. In a case of fishermen in Ban Don Bay, they were obstructed to reach natural resources adequately. Most of them are poor, and they use only local tools to do fishery. Thus, natural resources are a major source of livelihood and vulnerable circumstance of traditional fishermen. It can be said that general natural resources help and support natural human because people can get food there, and those resources also can enhance people health. Considering characteristics of Ban Don Bay, it was found that it is a big and fertilized bay. It is 120 kilometers wide of the costal line. It covers 477 square kilometers. The bay is a main resource for local people who do traditional fishery. There are 3 reasons as discussed as follows (Taweesak, 2008).

1) It is a luxuriant brackish water source, where important rivers flow into. Those rivers have borne out abundance of forest areas such leaves, humus, microorganism and planktons into Ban Don Bay. These are very advantageous for the growth of the larvae of aquatic animals.

2) It is a habitat of various planktons such as oysters and cockles which are very famous and delicious in the country.

3) It is a main source of important aquatic animals. There are 6 groups; bivalves, shrimps, benthic fish, carnivorous fish, ground fish, and crabs. According to the study of Ananya et al., it was found that abundance of Ban Don Bay reflects from a large quantity of fishing catchment in 2011 as shown in Table 1.

Table-1. Timetable of Fishing Days in 2011

Aquaculture	Month										
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov
Bivalves											
Shrimps											
Benthic fish											
Carnivorous fish											
Ground fish											
Crabs											
Swimming crabs											
Benthic crabs											

Notes:  <50 kgs.  50-100 kgs  >100kgs .  None of catchment

Source: Jarernprnipat (2012)

### 3.3.3. Social Capital

Social Capital is very important to fishermen in their livelihood. They are proud of their own unique, cultures and ways of life, which represents strength of the fishery community. They are aware that benefit of the public is primary. They cooperate to solve problems in the community by using social resources linking to other resources in accordance with sustainable livelihood. Due to characteristics of community social as relatives, there is still more cooperative relationship among them. This leads to motivation, which raises the level of their livelihood of fishery. It is related to the findings of this study showing that a network of Ban Don Conservation group drives the community to have sustainable livelihood. In summary, all types of resources are important for living resulting in well-being. Local people have alternative ways to adapt their lives to suit their livelihood. They are also able to live in the community without severe obstacles. There is a relation among all types of resources, which traditional fishermen can reach and use their advantages for their living. This is good that people haven't gotten across modern technology seriously, yet. However, they try to employ and integrate their own stuff to create their livelihood sustainably.



### 3.4. Factors Causing Vulnerability

When vulnerability happens in fishery communities, it effects on assets and ways of life directly. For instance, shocks affects badly on livelihood, especially the component of assets such as natural disaster, lack of money, social conflicts, health problems, humans, plants, animals and trends. Also, movement trends give a great impact on livelihood such as population, resources, economy, government, policies, technology and seasonality. This also includes circulations such as costs of products, health and an employment opportunity. According to the study, it was found that there were 3 factors affecting vulnerability as described below.

1. A decrease of resources and conflicts influence local fishermen on reaching the resources. The study showed that there was high vulnerability among fishermen in natural resources was in Donsak district, Kanthulee Sub district in Thachana, Thatong Sub district and Kanchanadit district respectively (Walailak University and coastal habitats and resources management project: CHARM, 2007). This vulnerability of natural resources impacts livelihood of traditional fishermen. Although traditional fishermen live in a vulnerability area, they are able to adapt their lives to suit it effectively.

2. Self-reliance is one of factors. Most fishermen do fishery since their ancestors. Consequently, they don't have any land for agriculture. There should be alternative livelihood to secure their lives. Fishermen should be trained and supported to be skillful.

3. Another factor is a limitation of using natural resources. The sea and its coast are common pool resource. There are many people tend to use those resources. It is very difficult to obstruct others to share them. Also, there was no balancing right between fishermen, the government and capitalists to use the sea. This caused vulnerability. Further, SEA FOOD BANK is a vulnerability creator, which encourages fishermen to get income without realization of sharing natural resources. Hence, the sea becomes a product, purchasable in the form of document.

### 3.5. Livelihood Strategies of Fishermen

There is a quick change in livelihood of fishermen caused by advanced technology. Traditional fisherman family faced many problems in their living and careers, so they need to adapt themselves to suit their circumstance. There are 3 adaptation strategies of fishermen in Ban Don Bay as follows.

- (1) Grouping and networking
- (2) Alternative livelihood
- (3) Self-development in conducting research in sustainable natural resource enhancement

### 3.6. Livelihood Development of Traditional Fishermen in Ban Don Bay

The livelihood developments of traditional fishermen were divided into 3 sessions; pre-, during and post Sea food Bank project. Before establishing the project of Sea food Bank, it was found that fishermen mainly depended on natural resources. They had simple ways of life relying among people in the community. Natural resources were a primary livelihood. They did fishery for their

sufficient living without any extra jobs. Even though they were not rich, they were happy. There was rarely natural resource destruction because huge natural resources could be served to local people's needs. As a result, the fishermen in the past were not wealthy, but they were happy with fertilized natural resources around them. During the project of Sea food Bank, the sea zones were separated and given to the fishermen to do their own aquaculture in order to get rid of the poverty. With some limitations in the capital, they couldn't manage their own area to do farming. Then, they needed to sell their own assets to capitalists. Hence, the areas of Ban Don Bay were full of cockle stalls of capitalists. Besides, the capitalists did other farming expanding to the sea, which destroyed marine natural resources. Now, only few areas are left on fishery.

The fishermen needed to go far away, not over 3,000 meters following the law, to do fishing. Mangrove forests were also ruined rapidly affecting the ecology system terribly. A number of mud crabs, which is an important indicator to show that Ban Don Bay was still fertilized, decreased gradually. Actually, this kind of crabs created a lot of income to local people. Before the fishermen had an idea to do mud crab farming for their extra income, the capitalists also hired them to collect the mud crabs. People began to use illegal fishing tools and techniques, such as poisoning fish and shrimps. Due to a lack of areas of livelihood and a crisis of traditional fishery, local organizations were set up to fight with the capitalists, who invested in cockle stalls in the sea. This was a clear combat process of the community in order to get the area of livelihood. Also, a conservation group was founded to rehabilitate Ban Don Bay by working together with the government, local people and NGOs. After finishing a project of Sea food Bank, there was a combination of Ban Don Bay networks to conserve the coastlines. They did various activities to rehabilitate this area, such as farming mud crabs, planting mangrove tree, and supporting ecotourism, on the basis of providing benefit to all sections in the community, creating income to local people, and living happily. Moreover, traditional fishermen can develop their own human resources by learning from doing the research to create a body of knowledge in coastal management to sustainable livelihood in cooperation with the government, NGOs, and people. Thus, people in the community can develop themselves and human resources to more understand the traditional fishery and the ecological community holistically.

### **3.7. Livelihood of Traditional Fishermen in Ban Don Bay**

Traditional fishermen live on the basis of seeking many options to reach assets and the capital wisely for supporting their lives when they faced economic, social, cultural and political problems and the change of environment. Therefore, to exist in the community, they need to rely on transferred and accumulated knowledge and abilities to manage assets and capitals in the community such as natural, human, and social capitals to adapt their ways of life. They need to invest the capital transferred from their assets to support their careers. For example, they set up a group to farm and increase a number of mud crabs. They do some activities to protest against the capitalists. They also do some extra jobs to earn more income. They put a lot of effort to seek alternative options to gain more and more wage and income. This can lead them to live happily,

decrease vulnerability, and increase the stability in food and resource utilization. It was considered that there are various livelihoods of traditional fishermen, which can be classified into 5 categories; 1) doing traditional fishery and coastal aquaculture, 2) doing traditional fishery and ecotourism to learn fishermen's ways of life, 3) doing traditional fishery and rehabilitating mangrove forests to farm mud crabs, 4) doing traditional fishery and freelancing, and 5) doing traditional fishery and being employed in the industrial factories.

According to livelihood styles of traditional fishermen in Ban Don Bay, they can approach 3 kinds of capital consisting of human, natural and social capitals. Reaching these capitals results in people to have a strong community, and they are able to adjust the strategies to use the capital in their livelihood as well. Furthermore, it was found that there was vulnerability in natural resources of traditional fishery in Ban Don Bay. The highest vulnerability was recovered in Donsak District, Kabtuli village in Thachan District, Thatong village in Kanchanadit District respectively as shown in Figure 3. As a result, this vulnerability affected their livelihood on the natural resources. In spite the fact that traditional fishermen live within high vulnerability, they can adapt themselves well.

There are many conditions affecting traditional fishermen in Ban Don Bay on their livelihood covering the policy of the government, capitalism, natural disasters, and the variation of gas price. These are unavoidable difficulties that they have been facing, so they need to struggle to survive in vulnerable circumstances. It is necessary for them to adapt themselves to fit a new context, including establishing ways of sustainable livelihood, and solidarity of the fishery community by relying on a natural capital to rehabilitate natural resources, and the social capital to expand the networks in order to help each other and guard their own resources.

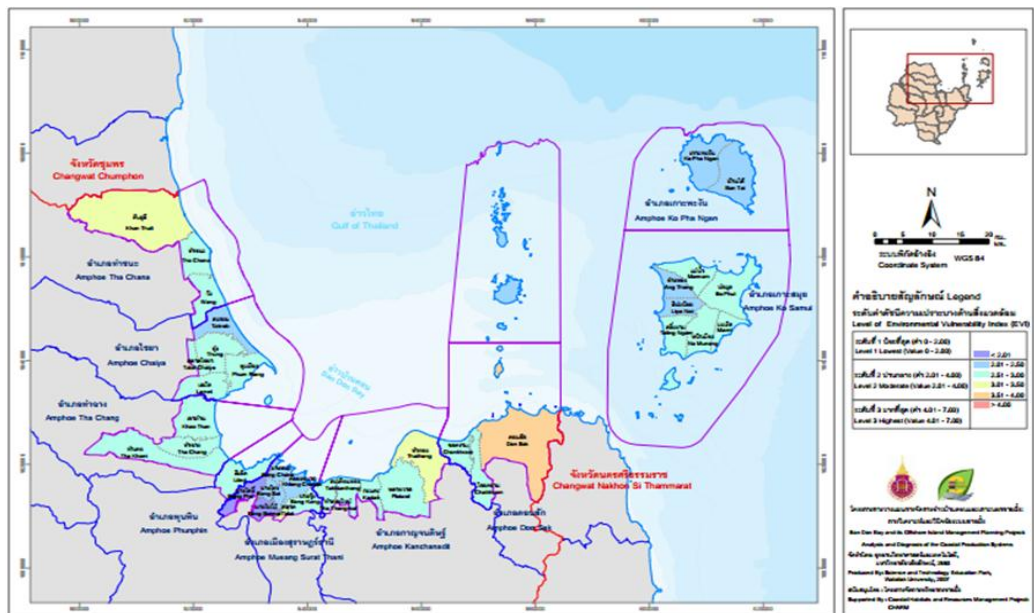


Figure-3. Environmental /vulnerability Index Map

Source : Walailak University and coastal habitats and resources management project: CHARM (2007).

#### 4. CONCLUSION

Traditional fishermen in Ban Don Bay have their own styles of livelihood. They continue their lives by using resources in the community such as human, natural and social capitals, which they can use to adapt themselves and their family for surviving. They do not only rely mainly on themselves, but also have strategies to cooperate with others through the government, organizations and NGOs to support themselves in their sustainable livelihood. There are a variety and complexity of livelihood styles of traditional fishermen in Ban Don Bay. According to the study, traditional fishermen are capable in self-adaption. They are able to utilize existing assets in the community usefully, and design various and necessary activities for their livelihood (Scoones, 1998). Sustainable livelihood can be seen when traditional fishermen can handle the vulnerability and uncertainty of the development, or they need to increase their capability level in asset utilization in daily lives in the moment and in the future while they do not destroy natural resource base (DFID, 1999).

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#### REFERENCE

- Allison, E. and F. Ellis, 2001. The livelihoods approach and management of smallscale fisheries. *Marine Policy*, 25(5): 377-388.
- Allison, E.H. and B. Horemans, 2006. Putting the principles of the sustainable livelihoods approach into fisheries development policy and practice. *Marine Policy*, 30(6): 757-766.
- Bank of Thailand, 2012. In Thai. Available from [http://www.bot.or.th/Thai/EconomicConditions/Thai/South/EconomicPapers/ReasearchPaper/fisheries\\_report.pdf](http://www.bot.or.th/Thai/EconomicConditions/Thai/South/EconomicPapers/ReasearchPaper/fisheries_report.pdf).
- Bene, C., 2006. Small-scale fisheries: Assessing their contribution to rural livelihoods in developing countries: Fao Fisheries Circular. No.108. Rome.
- Carney, D., 2002. Sustainable livelihoods approaches: Progress and possibilities for change. London: Department for International Development.
- Chambers, R. and G. Conway, 1992. Sustainable rural livelihoods: Practical concepts for the 21st century. IDS Discussion Paper No. 296. Brighton, UK: International Development Studies (IDS).
- DFID, 1999. Sustainable livelihoods guidance sheets. London, UK: Department for International Development (DFID).
- Edwards, P., D. Little and H. Demaine, 2002. Rural aquaculture. Wallingford, Oxford, UK: CABI International. pp: 358.

- Farrington, J., D. Carney, C. Ashley and C. Turton, 1999. Sustainable livelihoods in practice: Early application of concepts in rural areas, natural resources perspectives 42. London: Overseas Development Institute.
- Jarenpnripat, A., 2012. Assessing the potential of the bandon bay. Suratthani province using a mathematical model for resource management coastal sustainability. Research Paper Office of Research Fund.
- Lertchai, S., 2003. Articles about who and how traditional fisherman. Available from <http://www.thailis.or.th/tdc/>.
- Neiland, A.E. and C. Bene, 2004. Poverty and small-scale fisheries in West Africa. Kluwer Academic Publishers FAO.
- Scoones, I., 1998. Sustainable rural livelihoods: A framework for analysis. IDS Working Paper No. 72. Brighton, UK: Institute of Development Studies (IDS).
- Shankland, A., 2000. Analyzing policy for sustainable livelihoods. IDS Research Report No. 49. Brighton, UK: Institute of Development Studies (IDS).
- Taweesak, S., 2008. Synthesis overview of bandon bay. Office of Research Fund.
- Walailak University and coastal habitats and resources management project: CHARM, 2007. Project planning and management of Ban Don Bay and the Offshore Islands.

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