Sustainable Development of Common - Pool Resources in Ban Don Bay, Thailand

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Abstract
The research team has introduced the concept of Ostrom to the sustainable development of common-pool resources in Ban Don Bay, Surat Thani province. There are mainly mangrove forest and fishery resources to be found in the context of the mangrove forest area, and the operation of Ban Don Bay Conservation Network. Samples were collected from six districts in Ban Don Bay. The purpose was to find the potential for common-pool resources management of the mangrove forest. The results were as follows**:** The Conservation Network in Ban Don Bay does not have rules, regulations or norms to be the same standard in the areas of Ban Don Bay. However, a combination of members of the resource conservation group in the Ban Don Bay area drive activities related to resource conservation. Design principles have only 4 aspects that are consistent: 1) Congruence, 2) Collective Choice Arrangements, 3) Conflict Resolution Mechanisms, and 4) Nested Enterprises are used to manage multiple organizations. Ecological society factors that are important to the participatory resource management of the Ban Don Bay area consists of five factors as follows: 1) Resource System Factor, 2) Outcomes factor, 3) Resource unit factor, 4) Interactions factor, and 5) Related ecosystems factor. The development of resource management in Ban Don Bay area is participatory. The community needs to manage their resources in a participatory environment including reliable information, conflict resolution management, management of compliance with the rules of the community, provision of infrastructure, and adaptation to the changes that have taken place including the community organization network to conserve the mangrove forest, Ban Don Bay. Rules should be developed to conserve the mangrove forest of Ban Don Bay to the same standard for sustainable resource management.
Keywords: Sustainable Management, Common-Pool Resources, Mangrove Forest, Ban Don Bay

Introduction
Ban Don Bay is located on the Gulf of Thailand in Surat Thani Province, covering 7 districts: Thachana district, Chaiya district, Tha Chang district, Phunphin district, Mueang Surat Thani district, Kanchanadit district, and Don Sak district. Ban Don Bay is a center of abundance and diversity in marine ecosystems such as mangroves, sea grass, coral reefs, various aquatic species which is aquaculture nursery, and a major source of fisheries in the community around the Ban Don Bay area. The Cabinet passed a resolution on August 1, 2000. Therefore, Ban Don Bay is an important international wetland. From the integrity of natural resources, it raises the extravagant exploitation of resources regardless of the impact that will occur, especially the Sea Food Bank. This focuses on the concept of the development of the seafood production base of the country to replace the natural yield, promote aquaculture along the

coast such as shrimp farming, shell farming, including the use of illegal fishing gear such as trawling and nuggets in commercial fishing. It also focuses on invasion of mangroves and coastal issues, centralized structure of state power in natural resource management, and unsustainable development policies which cause conflict between people and resource advantage, resulting in abundant resources, and a change in the way of life of the fishermen of Ban Don Bay (The Thailand Research, 2010). The forest-marine project is being developed for life. It is an NGO becoming amentor community around the bay and creating a community network to play a role in the management of natural resources and environment. Later, 19 community organizations formed another network of activities in conservation of Ban Don Bay. As a result, in 2014 Ban Don bay had a total area of 76.52 hectare (Marine and Coastal Resource Administration Office 5 Surat Thani, 2016)

The community organization network of mangrove forest conservation in Ban Don Bay encourages the community to see the direction of sustainable resource management and environment by emphasising community participation in resource management at all levels. It is because the community is the owner of resources and is closest to the resources; it is the strengthening of the community using activities as tools to increase the potential, such as study community information, creating a learning process on the maintenance and utilization of sustainable resources. The community also needs to be monitored, maintained, and protected from mangrove destruction and resource destruction. The establishment of surveillance teams in all areas and the regulation of the use of mangrove and coastal resources clearly is consistent with the concept of Ostrom (1990, 2010), so resource management is possible and better. The management and rules of management are handled by the resource user voluntarily. This is because in reality people can work together to achieve a common goal for all parties if they have a chance to talk. It is because resource users have ecological knowledge of the ecosystem and know other users of resources. It can be designed to be accepted and adapted to the context in the area.

Therefore, the research titled “Sustainable development of common-pool resources: a case study of community organization network of mangrove forest conservation in Ban Don Bay, Surat Thani Province” to assess the viability of sustainable mangrove forest management and study the sustainable development of the community organization network in mangrove conservation in Ban Don Bay with the concept of Elinor Ostrom, Nobel Laureate in Economics (2009) which defines a shared resource management approach for the development of participatory management of resources in the public sector including study enforcement, community rules, pattern analysis, appropriate methods of mangrove utilization, including mangrove resource management. By the conservation of Ban Don Bay Conservation Network these data will guide the establishment of a sustainable mangrove resource management plan for Ban Don Bay, and be a guide to other communities to get involved in resource management, as well as community rights to give the community the benefit of a fair allocation of resources.

Relevant Theories

The concept of collaborative resource management is a combination of knowledge about the proprietary system and the economic market mechanism to be used in community resource management, challenging traditional knowledge that is used to manage natural resources as a resource. The idea is based on the idea that shared resources that people can use and access freely without control is used up as no user will care and each user is competing to take advantage of that resource the most. Such behavior may be called "Tragedy of shared resources" (The Tragedy of Commons) (Hardin, 1968 cited in Ostrom, 1999). Common-Pooled Resources (CPR) Elinor Ostrom has developed a concept that can describe a collaborative effort to manage shared resources without compromise and that does not rely on

external factors, such as the state intervening. It is the evolution of successful management by self-organizing groups by pointing out that the key factors that contribute to collaborative management of shared resources are "Trust" and "reciprocity." When the same community members interact with each other it can create confidence, and make the collaboration easier. The return can be both positive and negative. There is dependence on each other. If the other party does not behave well, they can retaliate or sanction (Ostrom, 1990).

Principles of design rules in resource management. Ostrom, (1990) presented the "Design Principle" to be an institutional participant in the community of resource users in managing resources for longevity. There are eight principles in effectively managing public resources: 1) user boundaries and resource boundaries 2) congruence between the resource environment and its governance structure or rules 3) collective choice arrangements that allow most resource appropriators to participate 4) monitoring users and monitoring the resource 5) graduated sanctions depending on the seriousness of the violation or repetition of violations 6) conflict resolution mechanisms define as appropriators having a good and efficient (low-cost) system for conflict resolution among themselves or between appropriators and outsiders 7) minimal recognition of rights defined as government bodies allowing groups to self-organize by forming their own internal rules of conduct and 8) rules that are organized and enforced through multiple layers of nested enterprises. This is followed by analyzing the ecological system to evaluate the potential use of mangrove forest resources and the second phase in the ecological social analysis framework.

Analysis of social ecology to evaluate the potential utilization of mangrove resources. Binder, Hinkel, Bots, and Pahl-Wostl (2013) identify and evaluate ten established frameworks for the study of SES framework, all the while acknowledging that this is far from an exhaustive list. The concept of social ecology analysis variables consists of resource units (RUs) that are part of the resource system (RS). The governance system (GS) defines and sets rules for users (U). All of these affect interactions (I) and outcomes (O). These variables (including the concept) is an important CPR system, which is linked to external factors such as related ecosystems (ECO) and social, economic and political systems (S)In this document, the Resource System (RS) is a small fishery and resource unit (RU), a natural resource harvested by those involved in fishing. The Governance System (GS) is comprised of specific federal and local characteristics, as well as regulatory elements in Thailand. These set incentives and behaviors for users (U) involved in fishing. The actors include local fishermen, researchers, NGOs, and government officials. Socio-economic and political systems (S) is at Ban Don Bay. (McGinis and Ostrom, 2014; Ostrom, 2007, 2009)

Variable in the second phase of the ecological social analysis framework. In the resource system the variables that influence a person's decision on the benefits and costs of a new operating rule consist of size of the resource system, production of dynamic systems, ability to predict the dynamics of the system and performance indicators of the system user resource variables. Those that may be important for users are leadership, social norm/capital, knowledge about social ecology and resource dependence.

Factors influencing the success of participatory management. Dietz, Ostrom and Stern (2003) propose that external factors and internal factors that influence the need for participatory management include the reliable information about the stock of resources, stream of resources and resource systems including the implementation of resources, dispute resolution, action for resource users to follow the rules, providing infrastructure for participatory management and adaptation to change. Internal factors affecting participatory management include the rules that correspond to the ecology, clear access to users and scope of resources, a responsible monitoring mechanism with use of punishments according to the level of violation and a low cost dispute resolution mechanism. External factors affecting participatory management include the analytical discussions associated with various parties,

and management of embedded institutions is nested in stages from community to universal and institutional diversity.

Research Methodology

The sample group was 400 people in the Ban Don Bay Conservation Network. Information was from the Department of Marine and Coastal Resources. The samples can be divided as follows: 70 samples from Chaiya district and 70 samples from Tha Chang district, totaling 140 samples; sampling samples for 4 mangrove conservation groups from Tha Chang district which has 13 mangrove resource development stations. Therefore, there are 30 activities related to mangrove forests in Punpin district. Only one mangrove conservation group is involved, with 50 samples from Suratthani district. There is only one mangrove conservation group which is Kanchanadit district, with 100 samples, 2 are related to mangrove conservation groups, and it is the area where the Office of Coastal and Marine Resources Management 4 (Suratthani), and mangrove resource development station 14 are located. There are 80 activities related to mangrove forest and Don Sak district, sampling 2 mangrove conservation groups, and interviews in total with 40 people consisting of 6 community leaders, 18 community members, 11 network representatives and 5 mangrove stakeholders.

Quantitative Research used structured interviews: the interview form consisted of local resources, utilization of resources, mangrove resource management in the community, community participation in resource management, and assessing the potential for mangrove resource management. This was a questionnaire that looked like a checklist, and the assessment scale of the mangrove forest resource management model was the rating scale according to Likert's model with scoring from least to most. Semi-Structured Interviews were used to find the relationships among members of the corporate network in the community by interviewing about networking, community organizations, and community relationships with the community.

Qualitative Research in the community context study at Mangrove Conservation was by studying the history of communities, resources, areas, boundaries, regulations, grouping in mangrove conservation, mangrove forest utilization, participation in conservation, and the operation of the community organization network in mangrove conservation.

Participatory Action Research in focus groups involved: staged discussion or a brainstorming session for community/community organizations, listening to the problem which can lead to a way to make conclusions on certain issues, and together they seek the community's attention to problem solving. Join community/community network organizations to collect data during operation or co-operation, evaluation and analysis of operations to improve or continue to systematically summarize and evaluate the results of the operation, give the community a chance to express their opinions, suggestions and recommendations for summarizing research findings.

Research tools included: Observations on current mangrove forest condition, mangrove forest management in Ban Don Bay such as the physical characteristics of mangrove forest resources, utilization of mangroves, control, rules, regulations, laws, and mangrove conservation and rehabilitation. Structured interview form and a brainstorming session for sustainable and participatory mangrove resource management, interviews with community leaders, community networks, community organizations, organizations which are involved in mangrove resource management on the issue of mangrove forest context, local resources, utilization, roles in conservation, and community involvement, rules and regulations to conserve mangrove forest resources, mangrove conservation activities, and barriers. Questionnaire: the questionnaire structure consisted of the following sections: Part 1: Utilization of Mangrove Forest Resources, resource management in the area, mangrove forest resource conservation activities, making rules and regulations for community mangrove management. Part 2: Social ecological factors affecting

participatory resource management in the area which consisted of resources, resource users and management relational, ecological, social, economic and political implications.

Quantitative Analysis of Structured Interviews descriptive statistics such as frequency, percentage, mean, and standard deviation to compute using computer programs in order to describe the demographic data because the main information is descriptive. Statistical analysis is based on descriptive statistics. Analysis of mangrove resource management potential to find opinions about the rules and regulations in mangrove forest management, Ban Don Bay and factors that are important to mangrove resource management in Ban Don Bay using a Likert 5-point scale.

Research Results

Principles of design rules in resource management of Ban Don Bay. The results showed that the overall level of feedback agreed with the rules of Ban Don Bay based on the principles of Ostrom.

Congruence found that the rules are consistent with the ecological environment and the existing natural resources. There were 6 conservation groups in Ban Don Bay that apply rules and regulations to their respective areas, such as conservation groups in Chaiya and in Tha Chang district. There are rules and regulations to preserve the Thai vinegar crabs to sell the crabs to local traders because they do not buy a small crab. All mangrove conservation groups have rules and regulations including do not cut wood from the mangrove forest, if necessary obtain permission from the board and illegal fishing, and establishment of a savings fund etc.

Collective Choice Arrangements found that "the rule of law was discussed together": community involvement in the drafting of rules, regulations, and public hearings, participation in the consultation process then make a press release in order to comply with and practice and the rules and regulations in the community.

Conflict Resolution Mechanisms found that "the rule of law is to resolve conflicts in the use of resources". Information was needed to rule out beyond the context of space, and resource utilization data must be consistent with community rights and laws related to fishing, according to the Marine and Coastal Resources Management Act BE 2015 etc. The regulation has the information needed to rule out some regulations for the conservation group in order to reduce the conflict between people in the community and outsiders including the conflicts in resource mobilization by state agencies and communities, such as shells and mangrove areas.

Rules and management of resources are linked and consistent with larger systems (Nested Enterprises). "Using multiple organizations to manage Ban Don Bay Resource Management System" comply with the provisions of the local government and consistent with fisheries law. Members of the mangrove conservation network are involved in the drafting of the fisheries law, being a member of mangrove forest resource station to run mangrove activities. (Table 1)

Table 1 Opinion on rules, regulation of Ban Don Bay

Items	$\bar{X}$	SD.	Opinion level
Rules are consistent with ecological, environmental, and existing natural resources.	3.98	0.94	Agree
The scope of the resources specified in the rules is clear.	3.65	0.88	Agree
Rules explicitly identify groups of users.	3.74	0.85	Agree
Monitoring, following rules that are credible.	3.74	0.76	Agree
The punishment of violators is gradual, light punishment for the first time to warn, and then harder for next punishment.	3.76	0.89	Agree

Table 1 (Con.)

Items	$\bar{X}$	SD.	Opinion level
There are mechanisms to resolve conflicts that do not require much investment.	3.72	0.80	Agree
Rules are discussed among those involved.	3.82	0.93	Agree
There is a division of authority to adjust resource management hierarchically from community to central government.	3.70	0.91	Agree
There are many types of organizations in management such as local groups, provincial governor	3.78	0.79	Agree
In order to rule out, there is enough information needed to rule out.	3.79	0.83	Agree
Rules are issued to resolve conflicts in the use of resources.	3.79	0.84	Agree
Try to convince people to follow the rules set.	3.75	0.92	Agree
Provides infrastructure, such as roads, fences, access to resources, group formation	3.75	0.81	Agree
Promoting adaptation and change of community.	3.74	0.88	Agree
Total	**3.78**	**0.86**	Agree

Eco-social factors that are important for participatory resource management in the area (SES framework): The factors that show significantly importance for the community are the following: resources system (average = 3.88), the output factor (mean = 3.79), resource factor (mean = 3.77), relationship factor (mean = 3.76), related ecosystem factors (mean = 3.75), resource user factor (mean = 3.71), management factors and social, economic and political factors (average = 3.62) detail in Table 2 and Figure 1.

Table 2 Factors are important to the resource management capabilities of Ban Don Bay

Factors that are important to the ability to manage resources	$\bar{X}$	SD.	Important level
1. Resource System	3.88	0.84	High
2. Resources	3.77	0.81	High
3. Resource Users	3.71	0.80	High
4. Management	3.62	0.83	High
5. Relationships	3.76	0.80	High
6. Output	3.79	0.82	High
7. Related ecosystems	3.75	0.79	High
8. Social, economic, and political	3.62	0.84	High

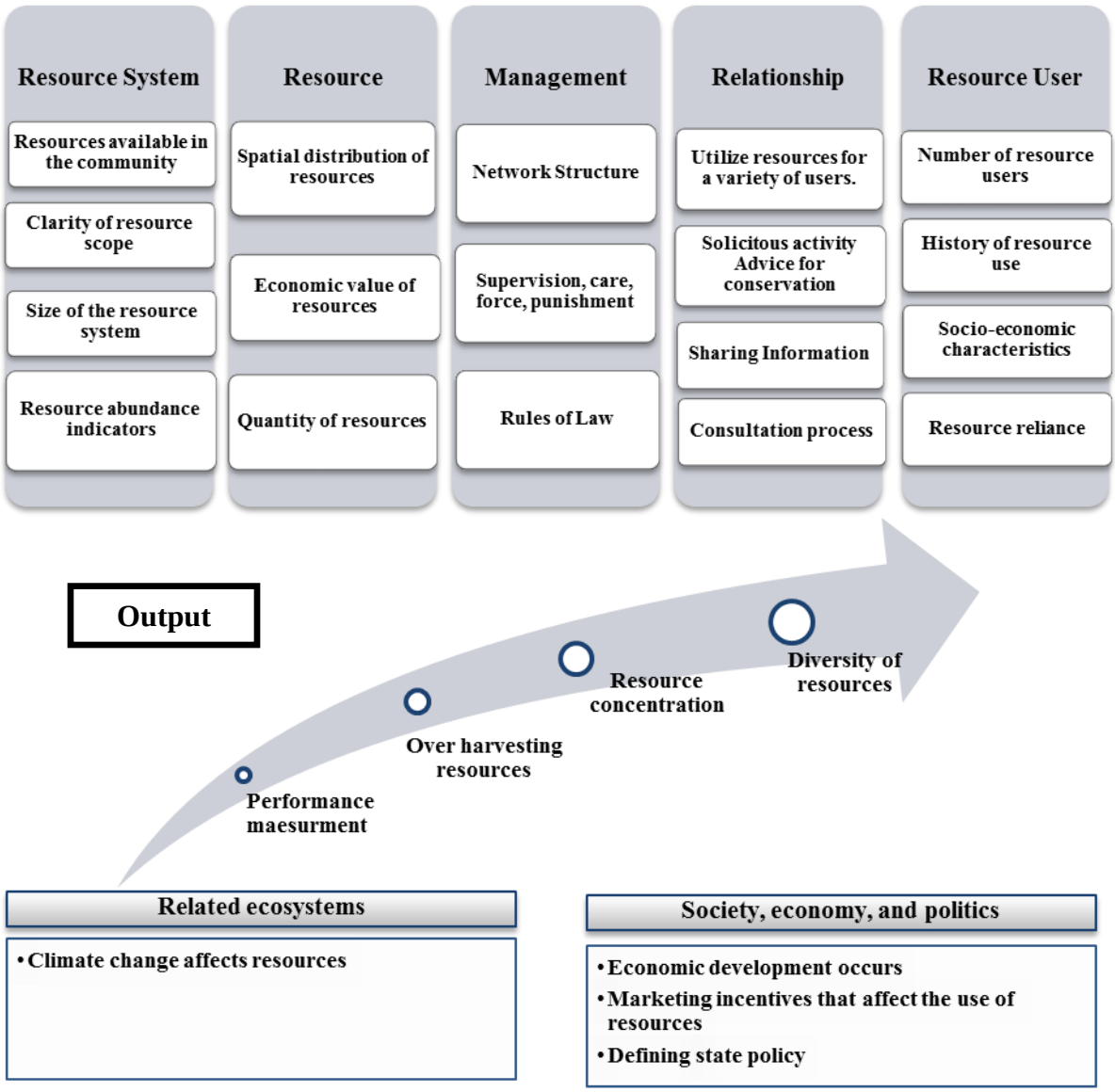

Figure 1 Social ecological factors affecting mangrove ecosystem management in Ban Don Bay

Resource system factor: Variances which were higher than average were the resources available in the community, mangrove, and marine resources in Ban Don Bay area. Because the mangrove forest is an important breeding ground for aquaculture, and in the bay area, Ban Don has a professional fishing career. Clarity of resource scope in mangrove forest area of Ban Don Bay is clearly delineated by the collaboration between the community and government agencies. Size of the resource system for geographic location of the mangrove area of the conservation group in the area use the rules of the community in resource management. Resource abundance indicates abundance of mangrove forests and the amount of fish increased. Therefore, for resource management in the Ban Don Bay area communities should focus on the resources available in the community. The scope of resources is clear and the size of the resource system divided by the mangrove forest area of the conservation group can increase the abundance of resources in both mangrove and marine areas in Ban Don Bay.
Resource factor: Variances which are higher than average are the spatial distribution of resources, and non-mobile mangrove forest resources, but there is a new forest and the resources are more abundant. Economic value of resources of communities in the Ban Don Bay area live on the abundance of mangrove forests that make up the abundance of aquatic

animals. This is the main income of the community and fish are also consumed within the households. The quantity of resources of communities in Ban Don Bay area focus on the abundance of mangroves, through more mangrove planting every year. Therefore, in the management of resources in the area, participation should increase the amount of resources. By the mangrove planting activities, aquaculture, for spatial distribution of resources in Ban Don Bay is of economic value for the people in the community in terms of occupation and household consumption.

Management factor: Network structure in the bay area has a variety of resources in each community. This has led to the formation of a group for conservation activities in their own area. Each group will be members of the Ban Don Bay Conservation Network to fight in the arena related to mangrove forest Supervision, enforcement, force, punishment. Mangrove Conservation Group, Ban Don Bay monitoring of violations of rules and regulations of the community and there are activities in the forest. In terms of punishment, there is a gradual process of punishment. First offense is warned. If there are repeated offenses, they will be disqualified from the group and rules and regulations. They are consistent with the law in mangrove forest conservation. There is community acceptance in management and government agencies consulted conservation groups in the bay area.

Relationship factor: Variances which are higher than average are utilized resources for a variety of users, with access to both local and outsider resources are accessible and useable. Therefore, there must be cooperation in the practice of community rules and solicitous activity. For advice for conservation there are public relations campaigns on mangrove conservation, sharing information, knowledge management through the Ban Don Bay Conservation Network, with meetings every month to monitor information on activities in mangrove conservation. The process of consultation has conventions in the form of the Ban Don Bay Conservation Network which discusses problems and finds solutions, and with external agencies. Therefore, the participatory management in the participatory areas cannot determine the resource users. However, we must follow the rules of the community by sharing information between the community and outside agencies. Resource management needs a consultation process to find a sustainable resource management approach and the solicitation activities which recommend conservation of resources in the area.

Resource User: The number of resource users in the Ban Don Bay community has an area of land use in 6 districts. The majority of the fishery population is located in the seaside area. There are a variety of aquatic species in each area. Management and sharing of resources are also conflicting, especially aquaculture, history of resource use since mangrove invasion of capitalist groups, and socio-economic characteristics. There is a similar pattern in the fishing profession. However, there are differences in the income due to the pattern of capture fisheries and aquaculture. Resource dependence, and resource reliance on mangrove species in the nature of abundance will result in abundant aquatic animals. This is a main income of people in the community.

Output factor: Variables that are higher than average are the diversity of resources and Ban Don Bay which has a variety of mangroves and aquatic species. Performance Measurement will reflect the performance of mangrove conservation groups in the Ban Don Bay area. Therefore, performance measure is an important variable in the management of resources in the area. It measures the diversity of resources in the area. Resource Concentration Community rules will not overuse resources and damage the ecosystem. Over harvest of resources in the past, meat mangrove resources were compromised and ecological damaged. Resource Concentration reflects the abundance of resources in particular, mangrove forests are replanted and mangroves are regenerating.

Ecological factors involved: variances which are higher than average are climate change affects resources, climate change which affects mangrove forest resources, especially during

the monsoon. There will not be activities at the sea and activities in the mangrove forest in this season.

Factors Affecting Success in Sustainable Development of Ban Don Bay Resource Management consists of:

1) Reliable information about the resource system and the implementation of resources. Ban Don Bay Conservation Network is a community organization that has been recognized by government agencies both at the district and provincial levels.

2) Dispute resolution: There is a punishment for violating the rules, following light steps for the first offense, group committees will warn. If the offense happens repeatedly it will increase the penalty; for example, leave a group member. If a serious offense is committed, it will be forwarded to the relevant authorities for further punishment.

3) Action to ensure that resource users comply with the rules and regulations. The resource conservation group in each area will have a process in place for resource users to comply with the rules and regulations that govern each other, having a tracking mechanism; some areas have been labeled rules of the group.

4) Providing infrastructure for participatory management, having structure in management to be a forum for discussion and solutions including coordination with parties and agencies both public and private.

5) Adaptation to change: Ban Don Bay has a long history of fighting mangrove forest both the land encroachment for shrimp farming and local influencer problem of reduced sea resources which make a group to conserve resources in their area to cherish resourcefulness and awareness of the importance of mangrove forests. There is a campaign for youth to do conservation activities and mangrove rehabilitation.

Factors affecting the failure of sustainable development of Ban Don Bay Resource Management include: 1) The Ban Don Bay Conservation Network does not create common rules of association, which is a combination of the core conservation groups in each area. There are no common regulations due to the diversity of the Ban Don Bay area.

2) Identify who can access public resources. Because of access to resources, everyone can take advantage of resources. Therefore, outsiders take advantage of resources and abuse the rules of the group. The rules should be public relations, such as the campaign to protect the resources, monitoring of people in the community etc.

3) Thai law is not strong. Law enforcement is not rigorous to catch the offense of fishing gear such as trawling, helix, and crab trap, patrols of government agencies to catch offenders' intrusion of commercial vessels in the conservation area 3,000 meters from the coast.

4) The problem of capitalism and local influence such as the capitalism of shrimp farming, capitalism of shell farming, specifically in the embroidery area. There are benefits involved. The allocation of space in culture is also problematic. The demolition of shelters in the conservation area etc.

The constraints on the sustainable development of the Ban Don Bay Conservation Resource Management consist of:

1) There are no clear written rules of the Ban Don Bay Conservation Network to have the same practice.

2) Research area is Ban Don Bay which covers 7 districts. It is difficult to maintain and monitor. Therefore, the conservation groups are set up in each area, depending on the issues facing each area and find a common way to conserve resources.

3) Lack of public relations, rules, and information on resource conservation, and no paperwork.

The Sustainable Development of Community Organizations Network in Mangrove Conservation in Ban Don Bay consists of:

1) The use of resources in the past: Ban Don Bay is facing the crisis of Ban Don Bay in the deterioration of mangrove forest. Therefore, the use of resources in the past is the driving force for the participatory management of resources in the area.
2) Number of co-decisions in the beginning of the founding of conservation groups of Ban Don Bay. Each group has about 20-30 members. At present, the strongest group is about 70 members. The establishment of Ban Don Bay Conservation Network must rely on community leaders in deciding together.
3) Benefits must not be different: everyone in the community should benefit from being a member of a conservation group to make them feel welcome to join the group. It should have campaign Information in the perspective of the advantages of conservation of resources for future generations to use. It will encourage all people in the community to participate in local resource management.
4) Strong community leaders: If the community has strong leaders, it has the trust of the people in the community and can work together with all parties between the public and private sectors. It can induce people in the community to participate in resource management.
5) Community rules: Resource management starts with the rules of the group in resource conservation must be consistent with the ecosystem. People in the community must be involved in regulating the rules. Do not conflict with community lifestyle, but make the community happy to participate in resource management.
6) Compliance with the laws, regulations, and rules of the conservation group must be consistent with existing legislation and must be accepted by all parties involved. At present, resource conservation groups in each area are trying to push the rules as a sub-district administrative organization.
7) The power to make community rules: It should be authorized to make rules of the community. There are government agencies involved in the management of resources in the area. There is a constitutional reference and act. It can be counted as having the power to regulate the rules of the community.
8) Organization: The community must be organized and establish operational committees. There is division of work, direction of the operation, and there must be strong resource conservation leaders who people in the community recognize and trust.
9) Monitoring and surveillance: it must have a surveillance process to investigate and keep track of rules violations and regulations. For example, the establishment of volunteer marine and coastal resources with the support of the Department of Marine Resources and the shoreline training equipment was added. There may also be teams of established conservation groups.

Conclusion and Discussion

The Ban Don Bay Conservation Network does not have the same rules and regulations as the Ban Don Bay. It is a combination of members of the conservation groups in the Ban Don Bay area to drive activities related to resource conservation. Design Principle have only 4 aspects that are consistent. 1) There is a congruence. It is a rule that is consistent with the ecological environment and natural resources and resources. 2) Collective choice arrangements are rules that are discussed together. 3) Conflict resolution mechanisms are designed to resolve conflicts in resource use and 4) Rules and management of resources are linked and consistent with the larger system. Nested Enterprises is the use of multiple organizations to manage is associated with Tipyan (2017). Shared resource management is a process-based and socially responsible process that promotes collaborative management. Granting access to resources surveillance to the rule of law rules must come from participation. There are penalties for the unity of the community to be responsible for the community resources. Governmental

organizations are aware of and empowered to manage resources, both in large systems and in subsystems.

The social ecological factors that are important for the participatory resource management of Ban Don Bay are 5 factors including resource system factors; communities give importance to existing resources in the community; Clarity of resource scope size of the resource system and resource abundance indicators; Output factor the community attaches great importance to the diversity of resources; Resource concentration harvest resources too much and performance meter resource factor. Communities attach importance to spatial distribution of resources and economic value of resources and the amount of resources. Relationship factor focuses on the use of resources for a variety of users and persuasion tips for conservation sharing information and the process of consultation and related ecological factors. Communities pay attention to the climate that affects the resources. This the same as Silvia, Rojas, Martin, Scordo, Cisneros, Bustos, Perillo, and Piccolo (2017) where artisanal fishery is a common historical and cultural root, the presence of leaderships, the relevance of local knowledge, the dependence on the resource to sustainable livelihoods and the threat of big-scale fisheries area have generated incentives to collective action. But, simultaneously, internal conflicts are the most important barrier for an integrated community-based management. This is different from the research of Tokrisna, Khongkhon, and Mavongwai (2012) where the study was conducted on Best Practice. Participatory resource management in the area. In Trang and Trat provinces the results show that communities have a different focus on management and resource users; social, economic and political factors with less importance for resource management. The recognition and use of the SES framework has been accepted and incorporated into fisheries research (Basurto and Nenadovic, 2012; Basurto, Gelcich, and Ostrom, 2013; Cinner, MacNeil, Basurto, and Gelcich, 2013). Many of these definitions and framework components were relevant to fisheries and provided very useful base component metrics in which specific sub-systems and sub variables could be developed for fisheries generally. Stefan Partelow and Chad Boda (2017) have aimed to conceptualize a methodological approach for research in social-ecological systems generally, including a modified diagnostic framework for classifying lobster fisheries as SESs for assessing sustainability and improving management.

The Ban Don Bay Conservation Network has no rules for the group. It's just a combination of the conservation groups in the Ban Don Bay area of 7 districts. The resource conservation group will develop its own rules and regulations. Therefore, it is important to develop a participatory rule of law. Consideration should be given to ecological integrity. Creating rules to consider local resources is important. This is consistent with the research of Thirasirikul (2017) where problems were derived from community-based participatory adaptation and mitigation under development of problem-solving knowledge through practice of research and recognition and cooperation towards involving public agencies and Khamjainuk (2016) where the community needs to be integrated with sustainable political and economic agro eco systems in order to be compatible with the economy and reallocation. So that, conservation groups must make use of the history of the community and the use of resources in the community. There must be brainstorming from people in the community using the ecological knowledge of the community to develop rules for participatory resource management by the users of the constitutional resources. Communities can access resources use resources and maintain them. It cannot stop others from accessing resources. Resource conservation groups do just compliance. Rules have been set. There must be a campaign and publicity of the rules and regulations of the group, sustainable resource management and participation. Resource users must be involved in the drafting of rules and regulations. Those who violated the community rules in resource conservation groups must be punished for violating the rules of the group and according to the level of damage. A warning comes after the first such offense,

and if there is another offense it is the condition of being a member to have legal punishment. The punishment is to organize and make the behavior of the community comply with the rules and so the rules of the community are credible.

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