

**DEVELOPMENT OF COMPETENCY MODEL OF SMALL-SCALE
FISHERS IN FISHERY CO-MANAGEMENT**



NATTHITA ROJCHANAPRASART

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OF THE REQUIREMENTS FOR
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Thesis
entitled

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N. Rojchana prasart

Ms.Natthita Rojchanaprasart
Candidate

T. Chai

Asst.Prof. Teeradej Chai-Aroon,
Ph.D.
Major-advisor

Nawarat Phlainoi

Assoc. Prof. Nawarat Phlainoi,
Ed.D.
Co-advisor

K. Juntarashote

Assoc.Prof. Kungwan Juntarashote,
D.Agri.
Co-advisor

B. Mahai

Prof.Banchong Mahaisavariya, M.D.
Dean
Faculty of Graduate Studies
Mahidol University

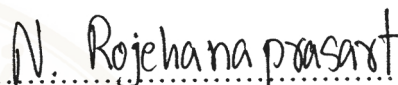
T. Chai

Asst.Prof. Teeradej Chai-Aroon, Ph.D.
Program Director
Doctor of Philosophy Program
in Population Education
Faculty of Social Sciences and Humanities
Mahidol University

Thesis
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on
January 21, 2010



.....

Ms. Natthita Rojchanaprasart
Candidate



.....

Assoc. Prof. Praphaphan Un-ob,
Ed.D.
Chair



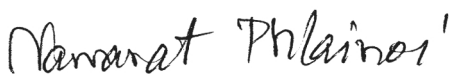
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Assoc. Prof. Kungwan Juntarashote,
D. Agri.
Member



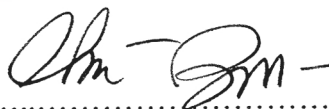
.....

Asst. Prof. Teeradej Chai-Aroon,
Ph.D.
Member



.....

Assoc. Prof. Nawarat Phlainoi,
Ed.D.
Member



.....

Lect. Varunthat Dulyapurk,
Ph.D.
Member



.....

Prof. Banchong Mahaisavariya, M.D.
Dean
Faculty of Graduate Studies
Mahidol University



.....

Assoc. Prof. Somboon Sirisunhirun, Ph.D.
Acting Dean
Faculty of Social Sciences and Humanities
Mahidol University

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Natthita Rojchanaprasart

DEVELOPMENT OF COMPETENCY MODEL OF SMALL-SCALE FISHERS IN FISHERY CO-MANAGEMENT

NATTHITA ROJCHANAPRASART 4736768 SHPE / D

Ph.D. (POPULATION EDUCATION)

THESIS ADVISORY COMMITTEE: TEERADEJ CHAI - AROON, Ph.D., NAWARAT
PHLAINOI, Ed.D., KUNGWAN JUNTARASHOTE, D.Agri.**ABSTRACT**

This study aims to (1) develop competency models of small-scale fishers in fishery co-management at individual and network levels and (2) study the competency level of small-scale fishers in fishery co-management, as well as conditional factors related to their competency at individual and network levels. The current study is survey research that focused on two levels of sample groups: individual and network levels of small-scale fishers who reside in the upper and lower provinces on the Andaman coastline.

The constructed competency model was based on concepts, theories and related research reviews and was improved with in-depth interviews of experts. The results indicated that there were 9 competencies in the individual competency model of small-scale fishers in fishery co-management which was comprised of three component groups consisting of hidden competencies, core competencies, and functional competencies. Each component group consisted of 3 sub-competencies. On the other hand, the network competency model was comprised of 13 competencies which were all core competencies and future categorized into four component groups: (1) network development competencies, (2) input utilization competencies, (3) knowledge extension competencies, and (4) change competencies. Each component group consisted of 5, 3, 2, and 3 sub-competencies.

The competency level assessment was conducted by using questionnaires for data collection. In the individual investigation, a total of 392 fishers were interviewed individually - 204 and 188 fishers from the upper and lower provinces on the Andaman coastline, respectively. The investigation of each competency of small-scale fishers showed that the small-scale fishers in the upper province had a higher competency level in the area of knowledge of geo-ecology and local resources than the small-scale fishers in the lower province. In addition, the simultaneous investigation using cluster analysis showed that there were three clusters of individual small-scale fishers: Cluster II: Small-scale fishers with a high competency; Cluster I and III: Small-scale fishers with a moderate and low competency, respectively. The conditional factors related to the competencies consisted of religion and culture, knowledge transfer, learning development, attitude toward occupational security, multi-role playing, and social relationships.

In the network investigation, a total of 24 networks were selected - 13 and 11 networks from the upper and lower provinces, respectively. Each competency examination revealed that the competencies of small-scale fisher networks in the lower province - regarding the four aspects of measures and regulation setting, negotiation, communication, and support from other sectors - were higher than those of networks from the upper province. Moreover, the simultaneous investigation using cluster analysis classified the small-scale fisher networks into three clusters: Cluster I: Small-scale fisher networks with a high competency; Cluster II and III: Small-scale fisher networks with a moderate and low competency, respectively. The conditional factors related to the competencies consisted of learning development, management system within the network, network life cycle, and structure/power relationships/politics.

In conclusion, the overall results suggest that the learning person competency is the highest priority to be developed for small-scale fishers, followed by holistic thinking, volunteer spirit, leadership, and communication. The necessary areas for development in the network competencies are knowledge management, new generation development, collaboration to other sectors, and administration.

KEY WORDS: COMPETENCY/ SMALL-SCALE FISHERS/ FISHERY CO-MANAGEMENT

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การพัฒนาตัวแบบสมรรถนะของชาวประมงพื้นบ้านในการจัดการประมงร่วม

DEVELOPMENT OF COMPETENCY MODEL OF SMALL-SCALE FISHERS IN FISHERY CO-MANAGEMENT

ณัฐทิศา โจรจนประศาสน์ 4736768 SHPE / D

ปร.ค. (ประชากรศึกษา)

คณะกรรมการที่ปรึกษาวิทยานิพนธ์ : ชีรเดช ฉายอรุณ (วท.ค.), เนาวรัตน์ พลายน้อย (กศ.ค.),
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บทคัดย่อ

การศึกษานี้มีวัตถุประสงค์เพื่อ (1) เพื่อพัฒนาตัวแบบสมรรถนะของชาวประมงพื้นบ้านในการจัดการประมงร่วมทั้งระดับบุคคล และเครือข่าย (2) เพื่อศึกษาระดับสมรรถนะของชาวประมงพื้นบ้านในการจัดการประมงร่วม รวมถึงเงื่อนไขปัจจัยที่เกี่ยวข้องกับสมรรถนะของชาวประมงพื้นบ้านในการจัดการประมงร่วมทั้งระดับบุคคล และเครือข่าย การวิจัยนี้เป็นการวิจัยเชิงสำรวจ กลุ่มตัวอย่างเป็นชาวประมงพื้นบ้าน มี 2 ระดับ คือ ระดับบุคคล และเครือข่าย ใน 2 พื้นที่ คือ จังหวัดหนึ่งในฝั่งอันดามันตอนบน และจังหวัดหนึ่งในฝั่งอันดามันตอนล่าง

การพัฒนาตัวแบบสมรรถนะ โดยการทบทวนแนวคิด ทฤษฎีและงานวิจัยที่เกี่ยวข้อง และตรวจสอบตัวแบบ โดยการสัมภาษณ์เชิงลึกผู้เชี่ยวชาญ พบว่า ตัวแบบสมรรถนะของชาวประมงพื้นบ้านในการจัดการประมงร่วมระดับบุคคลมี 9 สมรรถนะ ประกอบด้วย 3 ส่วน คือ สมรรถนะที่ซ่อนเร้น สมรรถนะหลัก และสมรรถนะเฉพาะงาน โดยแต่ละส่วนมี 3 สมรรถนะย่อย ส่วนตัวแบบสมรรถนะระดับเครือข่ายมี 13 สมรรถนะ ซึ่งทั้งหมดเป็นสมรรถนะหลัก แบ่งเป็น 4 ส่วน คือ (1) สมรรถนะการพัฒนาเครือข่าย (2) สมรรถนะการใช้ปัจจัยนำเข้า (3) สมรรถนะการขยายขอบเขตการเรียนรู้ (4) สมรรถนะในการเปลี่ยนแปลง ซึ่งแต่ละส่วนประกอบด้วย 5, 3, 2, และ 3 สมรรถนะย่อย ตามลำดับ

การวัดระดับสมรรถนะ โดยการเก็บรวบรวมข้อมูลด้วยแบบสอบถาม โดยในระดับบุคคลเก็บข้อมูลจากชาวประมงพื้นบ้านรวม 392 คน ในจังหวัดฝั่งอันดามันตอนบนและตอนล่าง 204 และ 188 คน ตามลำดับ จากการพิจารณาสมรรถนะเป็นรายด้าน พบว่า จาก 9 สมรรถนะ ชาวประมงพื้นบ้านในจังหวัดฝั่งอันดามันตอนบนมีสมรรถนะด้านความรู้ในภูมิโนเวศและทรัพยากรในท้องถิ่นสูงกว่าจังหวัดในฝั่งอันดามันตอนล่าง ส่วนการพิจารณาสมรรถนะทุกด้านพร้อมกัน โดยการวิเคราะห์การจัดกลุ่ม (Cluster Analysis) พบว่า จัดชาวประมงพื้นบ้านได้เป็น 3 กลุ่ม คือ กลุ่ม 2 เป็นชาวประมงพื้นบ้านที่มีสมรรถนะสูง ส่วนกลุ่ม 1 และ 3 มีสมรรถนะปานกลาง และต่ำ ตามลำดับ โดยมีเงื่อนไขปัจจัยด้านศาสนาและวัฒนธรรม การปลูกฝังถ่ายทอด การพัฒนาการเรียนรู้ ที่สะท้อนความมั่นคงในอาชีพ การมีหลายบทบาท และความสัมพันธ์ทางสังคมส่งผลต่อระดับสมรรถนะให้แตกต่างกัน

ส่วนในระดับเครือข่ายได้เก็บข้อมูลจากเครือข่ายชาวประมงพื้นบ้านรวม 24 เครือข่าย ในจังหวัดฝั่งอันดามันตอนบนและตอนล่าง 13 และ 11 เครือข่าย ตามลำดับ จากการพิจารณาสมรรถนะเป็นรายด้าน พบว่า จาก 13 สมรรถนะ เครือข่ายในจังหวัดฝั่งอันดามันตอนล่างมีสมรรถนะสูงกว่าจังหวัดในฝั่งอันดามันตอนบน 4 สมรรถนะ คือ การกำหนดกติกามาตรการ การต่อรอง การสื่อสาร และการได้รับการสนับสนุนจากภาคส่วนอื่น ส่วนการพิจารณาสมรรถนะทุกด้านพร้อมกัน โดยการจัดกลุ่ม พบว่า จัดเครือข่ายได้เป็น 3 กลุ่ม คือ กลุ่ม 1 มีศักยภาพระดับสูง ส่วนกลุ่ม 2 และ 3 มีสมรรถนะระดับปานกลาง และต่ำ ตามลำดับ โดยมีเงื่อนไขปัจจัยด้านพัฒนาการเรียนรู้ การจัดการระบบภายในเครือข่าย วงจรชีวิตเครือข่าย และ โครงสร้าง/ความสัมพันธ์เชิงอำนาจ/การเมืองส่งผลต่อระดับสมรรถนะให้แตกต่างกัน

ข้อเสนอแนะ สมรรถนะที่ต้องเป็นอันดับแรกของชาวประมงพื้นบ้าน คือ บุคคลเรียนรู้ รองลงมา คือ วิธีคิดแบบองค์รวม จิตอาสา ภาวะผู้นำ และการสื่อสาร ส่วนสมรรถนะของเครือข่ายที่ต้องพัฒนาอันดับแรก คือ การจัดการความรู้ การพัฒนาคนรุ่นใหม่ การเชื่อมประสานกับภาคส่วนอื่น และการบริหาร

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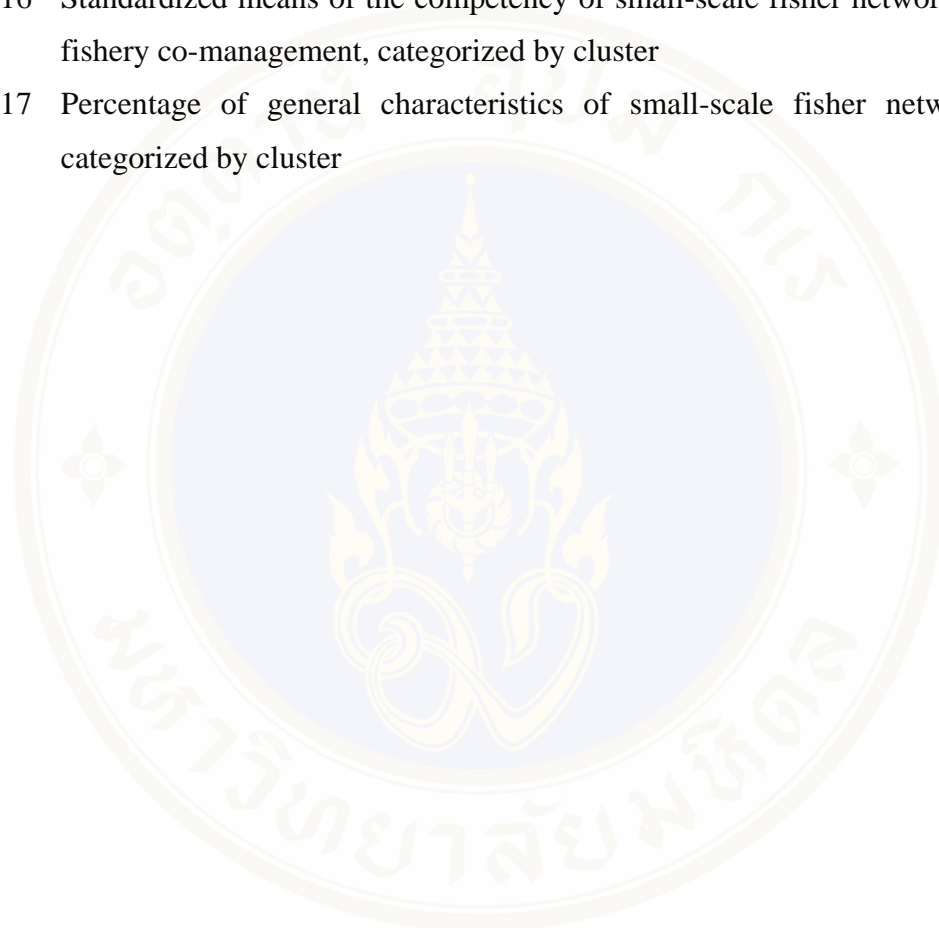
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LIST OF ACRONYMS



BOBP	Bay of Bengal Programme
CBFM	Community-based Fishery Management
CHARM	Coastal Habitats and Resources Management Project
CRM	Coastal Resource Management Committee
DOF	Department of Fisheries
MCS	Monitoring, Control and Surveillance
NGOs	Non Government Organizations
SAO	Sub-district Administrative Organization

CHAPTER I

INTRODUCTION

1.1 Background and problem statement

Since the way of living of small-scale fishers heavily relies on coastal resources, the impoverished aquatic resources directly affect them. Fishery problems concerning both environmental stability and competition over marine resources have a great impact on individual, community, national and international levels. According to Hauck (2004: 1), whatever threatens the quality of human life also jeopardizes human stability. The competency of resource users, particularly small-scale fishers, in fishery co-management is likely to reduce conflicts among or within groups and recover the depleted resources. A balancing in resource utilization between two generations--the present and the future generations--will also lead to the stability of fishery resources and a better life quality. Therefore, it is evident that the small-scale fishers' competency in fishery co-management accounts for their good life quality.

The government sector's fishery management largely involves a scientific model emphasizing Maximum Sustainable Yield (MSY) and Maximum Economic Yield (MEY) (Kungwan Jantarashote, 1998: 9), an approach based on rationalization paradigm, with more concern for economics and productivity than social or community factors.

The inefficient top-down management results in devastation of aquatic resources, which, according to Office of Natural Resources and Environmental Policy and Planning (2001), is indicated in the decline in the catch per unit of effort (CPUE) from 298 kg per hour of trawling (reported in 1961) to 3 kg per hour (reported in 1999). As a result, many fishing communities collapsed and migration into urban areas was on the rise (Somboon Khamhaeng, 1998: 7). Jobless situation was the main reason for the village members' abandonment of their community (Sunantha Suwannodom, et al., 1999: 55), apart from the resource degeneration and competition.

Environmental conflicts involve economic, political and social discords, resulting from accessibility to, ownership or deprivation of ownership and exploitation of environmental resources (Chaianan Samutawanich & Kusuma Sanitwong Na Ayudhya, 2003: 151). In Thailand, there are several factors that lead to conflicts and rivalries over resources. One of the factors is the authoritarian-based political and social structure in which the government sector and elite class steadfastly perceive resources in terms of “security,” inseparably from legal power. Local people, on the other hand, view security in life as related to exploitation rights of land, water and forest resources. Another factor is concerned with the predominance of the mainstream economic concept, which causes a wide-reaching impact, including Thai society, in which the development direction and policy are determined by it. This conception, which treats the world and nature as a distinct entity, sees as economical man and underscores a boundless growth, is evidently a principle that seeks to validate the authoritarianism of the government sector and business sector. Moreover, an overvaluation of scientific knowledge and techniques from a new Educational Plan, together with an underrated attitude towards local wisdom, gives rise to the strife over environmental resources (Yos Santasombat & Ammar Siamwalla, 1998: 4, 36-61). Disputes over fishery resource exploitation are varied. Some occur within the fishing community due to the use of prohibited fishing gears by their members. Yet, the most critical conflict is between the commercial fishers and the small-scale fishers, when the former invaded the protected area, that is, within 3000 m. from shore. To settle this conflict, property rights needs to be established.

In *The Tragedy of the Commons*, Hardin (1876 cited by Narongchai Jaroenrujithrup, 1999: 10) suggested two ways of using property rights in dealing with the resource overuse: (1) by granting resources to individuals or private sector, and (2) by endorsing government’s authority over resource management. However, Hardin’s conception appears to leave out the community’s resource management system, for it is believed that a mutual exploitation of common resources in a community is not likely to prevent an individual’s self-seeking behavior. Benefits from collaborative resource management can be obtained only through individuals’ participation in resource preservation. Those who do not go by this rule will lose their benefits. Anan Kanchanapan, et al. (2000: 27-28) stated that this approach of resource

management differs from a typical method that is more concerned with state property and private property than common property rights. Because of misconception that common property rights means opened accessibility to resources, the reckless exploitation of resources is often the case in Thai society, causing the role of common property rights in resource management to be questionable. Hence, it is quite obvious that in natural resource management Thailand has not yet fully implemented what is available to its maximal capacity. However, Ostrom (1972) had proposed the opposite way in resource management, embracing people or community participation which, she believes, can solve the resource devastation (Varakorn Samkoset, 2009: 6). Moreover, the community themselves must co-operate with government sector. In his discussion regarding "Three Dimensional State," Chaianan Samutawanich (2002: 31-32) notes that to maintain their dignity, people often seek to engage themselves in government sector schemes. Therefore, in this case, there are movements among local fishing networks to figure out ways to deal with the problems facing the community.

In the beginning, the movements of the networks against the coastal resource devastation of commercial fishery focused on activities of coastal resources conservation, inspection, later, confiscation of trawls and push nets for their forced entry into the protected areas. In Andaman coastline, small-scale fishers tried different ways to deal with this violation, including shifting the fishing time from nighttime to daytime; changing the types of fishing gear, such as from fish trap to net; changing fishing occupation to another occupation; building prevention zones, which were including the severed manners such as shooting invasive boat and hijacking and then burn the boat and crews, which are all illegal actions. These activities, therefore disappear and change to be working as a team for inspection task, led by a village headman, or through co-operation with police officers, fishery officers, or even a specific mission unit from Department of Fisheries (DOF); submitting a petition to the high-ranking government officials, politicians or even ministers; and establishing small-scale fishing groups or clubs with support and consultation from NGOs in the areas (Prapas Pintoptaeng & Anusorn Unno, 2000: 45-48). Anyhow, political, economic and social changes play an important part in the initiation and movement of the networks.

The concept of sustainable development, mentioned in the 1992 Rio Declaration (Principle 21), has caused paradigm changes in resource managements, that is, from rationalization paradigm to social/community paradigm which emphasizes community welfare and equality in fishery accessibility. These changes are evident in the pronouncement of the improvement of small-scale fishery management and establishment of fishing right system in the Seventh National Economic and Social Development Plan (1991-1996) (Pomeroy, 1995: 154). The issue concerning fishery management is also included in The Eighth National Economic and Social Development Plan (1997-2001) (FAO, 1998: 3). Moreover, the Constitution in 1997 and 2007 has imparted the rights in resource management to local community. Presently, there is also a revision of Fishery Law and an establishment of the Local Fishery Committee, which includes government officials. According to this law, all stakeholders will be endorsed authority to fishery resource management (Supaporn Anuchiracheeva, et al., n.d: 77). In addition, the Master Plan of Marine Fisheries Management of Thailand (2009-2018) has incorporated the co-management in Strategy I. In other words, structure, power relations, politics, economy and society are closely related to small-scale fisher networks. What is, indeed, important is the encouragement of small-scale fishers' participation in resource management, for example, in mangrove forest management that can take the form of a community forest; in arranging a sanctuary for aquatic organism; developing seagrass conservation areas, or by granting community rights in coastal resource management, conservation and restoration, especially the "coastal fishing right system", which is a co-management system between the government sector and community (Prapas Pintoptaeng & Anusorn Unno, 2000: 57-58). This approach coincides with Department of Fisheries (1996); Somying (1994 cited by Santhita Kanchanapan, 2000: 282) regarding the government sector's decentralizing the authority of resource management to community in the form of Territorial Use Rights in Fisheries (TURFS) or "coastal fishing rights," which lays emphasis on small-scale fishers' roles and highly regards the potential of fishery co-management system between the government sector and community.

The government sector's fishery and coastal resource management policy that incorporates small-scale fishers' opinions and involvement is, indeed, an

innovation in management that seeks to focus on resources users, instead of the resources themselves. Government sector-community co-management is carried out through a number of government projects. For example, a community based fishery management project involving the coastal fishing rights system is a joint program between Department of Fisheries and Bay of Bengal Programme (BOBP). This pilot program was carried out in 1995 at Phangnga Bay, Phangnga Province, and in 1997 at Bang Saphan Bay, Prachuap Khiri Khan Province. In 2001, Department of Fisheries had collaborated with Southeast Asian Fisheries Development Center (SEAFDEC) to organize the Community-Based Coastal Fisheries Resource management Project at Pathio District, Chumphon Province. This project incorporates locally based fishery management approach and co-management between the government sector and community (Department of Fisheries, n.d: 3). Moreover, on November 25, 2002, Department of Fisheries undertook the Coastal Habitats and Resource management Project (CHARM) with the duration of 5 years from 2003 to 2007 and the total budget of 660 million baht (funded by EU for 320 million baht and Thailand for 340 baht). The project, based on the co-management concept, is piloted in the areas of five provinces around Phangnga Bay, namely Phangnga province, Krabi Province, Trang Province, and Phuket Province, including the area of Ban Don Bay, Surat Thani Province. Not only do small-scale fishers join the activities, they co-operate with government sectors in coastal resource management by organizing conservation activities, such as zoning and recovering marine resources, cultivating mangrove forest as well as establishing the community forest, and restocking the aquatic animals (Prapas Pintoptaeng & Anusorn Unno, 2000: 58-59). The fishery co-management between government sector and community can thus take at least two ways: from government sector to the community or from community-generated initiatives to government sectors (Hildebrand, 1997: 3), and the stakeholders in this task are from several sectors.

The coastal resource management (including fishery resources) in different areas in Southern Thailand is a multi-party management. Some areas are jointly organized by university academics, government officials, business groups, media, students and Yadfong Association and Wildlife Protection Foundation (Pisit Charmsnoh, 1994: 49). NGOs encourage small-scale fishers to gather into the networks and SAO

(the Sub-district Administrative Organization) play a supportive role, especially in dealing with legal issues (Kungwan Jantarashote, et al., 2001: 4-15). Therefore, major participants in fishery co-management consist of government sectors (including the SAO), small-scale fishers, NGOs, academics and business sectors, but it is the government sectors and fishers who take a vital role in enforcing the co-management process (Charles, 2001: 266-267). While government sectors are responsible for process administration, they need to recognize the role of the local community as resources keepers (CHARM Project, 2007: 61-62). This same method has also been implemented in Japan, where the local resources exploiters are the most important decision makers in fishery resource management (Makino & Matsuda, 2005: 441). Yet, the effectiveness of fishery co-management depends on several conditions.

Competency building is one important requirement for success in fishery co-management (Pomeroy, et al., 1998: 6-19). The fishery co-management for sustainability necessitates human capacity or competency development at all levels: individual, group, and institutional levels (Berkes, 2002 cited by Jentoft, 2005: 2; Brown & Pomeroy, 1999: 549; Crawford, et al., 1993: 311; Jentoft, 2005: 2). The process of community development involves skill development of community organization through various activities such as training and workshop. Some activities that had been accomplished are: fishery management and leadership training (Mulekom, 1999: 446), skill training for local government officers, workers and villagers (Makoloweka & Shurcliff, 1997: 352-353); and a national training and seminar in human resources development for coastal resource management, organized by Southeast Asian Fisheries Development Center (SEAFDEC) in cooperation with Department of Fisheries and local organization in Satun province, during June 27-30, 2006 (SEAFDEC, 2006: 12). Therefore, the competency of participants, especially the small-scale fishers who directly benefit from aquatic resources, is necessary for effective fishery co-management.

The voluntary participation of small-scale fishers in the program led us to believe that a competency-based human resources development is more advantageous than human resource management through a traditional recruitment. Moreover, distinction in competency viewpoint leads to various ways of study. For instance, the US competency model emphasizes the input which determines an outstanding or

superior performance. Therefore, they focus on input and require person-oriented job analysis which involves the technique called Behavioral Event Interview (BEI). On the other hand, English competency model emphasizes output and requires a task-oriented job analysis or “functional analysis.” In the context of Thailand, job and superior performance are greatly emphasized (Thitinut Akkadechanunt, n.d: 11). Since small-scale fishers are not part of an organization that has a standard of position identification and have no definite job description, the job analysis cannot be undertaken efficiently for them. As a result, the present study seeks to focus on person-oriented job analysis.

The review of related literature indicates that small-scale fishers’ competency in fishery co-management contain many levels: individual, leadership, organization and network levels. In fact, a small-scale fisher may have more than one role, which can be as an individual, a leader, or as a member of organization or network. Hence, in order to clearly illustrate small-scale fishers’ competency, this study will mainly focus on individual and network levels of competency of small-scale fishers. According to Kirati Yodyingyong (2006: 8), outstanding performance is derived from a correlation between competency of an organization and its staff. The network-level competency alone is not enough to achieve successful fishery co-management, due to differences in the job characteristics of an organization or a network and a network member. While an organization or a network functions at a process level, an individual works at an activity level (Sukanya Rassametummachot, 2006 cited by Kirati Yodyingyong, 2006: 9). Therefore, to gain a fruitful result in the fishery co-management, a collaboration of a network-level competency and an individual-level competency is needed. However, no previous research has been, so far, fully undertaken to examine the components of competency at each level as well as the sub-competency in each component.

Krerkkiat Srisermpoke (2003: 24-25) has constructed an individual-level competency model which is made up of three types: managerial competency, generic competency, and technical competency. Managerial competency is a competency in planning, management, analytical thinking, problem-solving and decision-making. Generic competency is a competency relating to general aspects such as communication, negotiation, and team working. Technical competency is a

competency in the task in control. This competency model may be suitable for a recruitment purpose, but in case of small-scale fishers, it may be not. Small-scale fishers' competency is not as clearly defined as that of other occupations. It entails relatively specific characteristics.

So far, the competency of small-scale fishers in fishery co-management has remained inconspicuous. In the past, the small-scale fishery management was based on traditional rules and practices as well as small-scale fishers' knowledge about aquatic animal resources, which is experience-based ecological knowledge (Jentoft, 1999 cited by Piya Kitthaworn, et al., 2000: 46). In the former resource management of the small-scale fishery community, three systems came into play: value system, wisdom system, and ideological power system. Value or belief system, founded on religious belief which emphasizes mutual respect, played a major role in previous resource management of small-scale fishers, particularly in dealing with common resources like marine resources. Wisdom system is concerned with social relationship of people within or across community, where social rules are used to control community members. The system of power ideology is revealed in the prohibition of destructive fishing gears, thereby reflecting respect for others' rights (Piya Kitthaworn, et al., 2000: 46-64). In other words, the competency of small-scale fishers in fishery resource management in the past was highly inherent in character. After the proclamation of the 1947 Fisheries Act (B.E. 2490), the traditional management was replaced by the use of law enforcement and a scientific model. The conventional management systems that had been used by small-scale fishery community through generations, therefore, are destroyed or weakened by government sector systems marked with Western influences (Lertchai Sirichai, 2003: 1). Not only does this circumstance reflect the negligence of small-scale fishers' potentiality, it also indicates a denial of their talent, knowledge, skills in adaptation and ingenuity (Wattana Sukunsin, 2000: 536). According to Brown & Pomeroy (1999: 554), this situation illustrates the threat of modernization, namely the industrialization of coastal areas, tourism industry, the support of Free Trade Area, including the globalization such as capital, technology and information (Suwimol Piriyanalalai, 2006: 58). Another problem facing small-scale fishers is the present soaring oil price. Moreover, according to the current law, resources conservation and exploitation are regarded as

integrated practices. The effectiveness in rights distribution and local law enforcement is largely dependent on multilevel coordination organizations (Makino & Matsuda, 2005: 441). These factors, thus, cause the existing competency of small-scale fishers to become insufficient for fishery management both at present and in the future.

Despite the collapse of many small-scale fishery communities, there are some communities that are able to adapt themselves to external factors and manage fishery resources, in front of their own houses, in the form of fishery co-management. Participants in this activity are made up of various groups: government sectors (including the SAO), small-scale fishers, NGOs, business sectors and academics. This shows that small-scale fishers nowadays are capable of fishery resource management through new methods, particularly through the process of applying social capital. This process consists of (1) thinking system that involves beliefs, social rules and wisdoms; (2) methods of practices, e.g. a trust-based establishment of a local, eco-geographic, and regional of small-scale fisher networks, which will serve as a social movement for the improvement of small-scale fishers' life quality; and (3) some forms of outcome, such as community fund capitals, natural resources capital, and cultural capital. Community power, that is an integration of existing community capital with modern knowledge, is also used in fishery resource management while community capacity is used for common property protection, as evident in the prohibition of push nets and trawls within 3000 m. from shore. The small-scale fishers' understanding and adaptation of the process, thus, show their competencies in fishery co-management. However, since some competencies are easily affected while others are hard to change, it is necessary that a more appropriate competency model in fishery co-management be constructed so that it will best serve small-scale fishers.

Designing methods for competency model development are varied, including (1) a traditional method based on criterion samples; (2) a short competency model process operated by expert panel; (3) a case study; and (4) repetition of the process from small to large group. However, a small-scale fishing community is not a business organization or an organization with an official structure. Most of small-scale fishing communities are community organizations or small-scale fishing networks having loose structure or neither structure, level of management, nor supervisor or sub-commander in related field. The communities are mainly made up of stakeholders,

thereby engaging various groups of participants in fishery co-management. Therefore, the method that involves experts or those directly engaged in fishery co-management was applied in this study. Indeed, this expert panel has not yet been implemented into the construction of a competency model in fishery co-management. In this study, the experts consist of small-scale fishers and government sectors (including the SAO), NGOs, business sectors and academics. To achieve the goal of effective competency-based human resource development, the development process of small-scale fishers' competency model in fishery co-management is divided into three phases.

Phase 1 involves a construction and an examination of competency models at individual and network levels, based on information regarding important competencies in fishery co-management, derived from conceptual and theoretical reviews and related studies. To examine a competency model, an in-depth behavioral interview was conducted with experts in fishery co-management. These experts include small-scale fishers, government sectors (including the SAO), NGOs, business sectors and academics. Small-scale fishers' competencies were, then, identified in terms of their significance, and then applied for the development of a competency model at individual and network levels. **Phase 2** deals with an investigation of small-scale fishers' existing competency level in fishery co-management (that actually takes place in the present), through an evaluation of their competency per se, not the competency outcome. The evaluation tool is questionnaires and the method of evaluation is self-assessment in three levels of ability: beginner, application and leader. **Phase 3** is concerned with an examination of the results from Phase 2. Opinions regarding a competency level in each area are gathered from stakeholders within the area, which include small-scale fishers, government officials at an action level, Sub-district Administrative Organization, NGOs, business sectors and academics. The results will then be used for the improvement of small-scale fishers' competency.

Co-management is the knowledge-based utilization, which requires a combination of traditional knowledge and scientific knowledge (D'Incao & Reis, 2002: 531). Small-scale fishers' knowledge of aquatic resources, obtained from their experience, learning process and adaptation, indicates that small-scale fishers have already had some competencies in fishery co-management. However, questions

concerning what competencies these fishers have and at what level their competencies are remain unanswered. This study, therefore, was conducted, with a purpose to develop small-scale fishers' competency in fishery co-management.

1.2 Research objectives

1.2.1 To develop competency models of small-scale fishers in fishery co-management at individual and network levels.

1.2.2 To study the competency level of small-scale fishers in fishery co-management, as well as conditional factors related to their competency at individual and network levels.

1.3 Research questions

This study was conducted to answer the following questions: (1) what should a competency model in fishery co-management be like?; (2) what sub-competencies are needed in the model?; (3) what is the competency level of small-scale fishers at present?; and (4) what are conditional factors relating small-scale fishers' competency in fishery co-management at individual and network levels?

1.4 Research scope

1.4.1 Area scope

Because of different fishery co-management activities and various groups of participants in each area, purposive sampling was used in this study. Two study areas were selected: one with an outstanding fishery co-management and another area with a typical fishery co-management (based on area selection criteria described in Chapter 3). The area with the best practice in fishery co-management is the upper province on the Andaman coastline, where illegal fishing gears, such as push nets, trawls and set bagnets, no longer exist. In this area, there is also evidence of conflict resolution and sustainable fishery management (Supaporn Anuchiracheeva, et al., n.d.: 4).

On the other hand, the area where there is a typical fishery co-management and illegal fishing gears are still used in the lower province on the Andaman coastline (Sanchai Tandavanitj, February 28, 2008, Interview).

1.4.2 Study unit

In the development of the competency model in fishery co-management of small-scale fishers, the study unit includes small-scale fishers at both individual and network levels.

1.4.3 Scope of content

In this study, the construction of an appropriate competency model covered both individual and network levels. The constructed model was then used to evaluate the existing competency of small-scale fishers, the results of which would benefit the competency development of small-scale fishers in the future.

1.5 Operational definitions

Small-scale fishers refer to fishers who mainly use household labor in fishery, including catching, trapping, shooting, harming, killing or confining aquatic animals. Their traditional fishing is operated not far from shores, by using small fishing gears. Small-scale fishers do not use fishing boats, or may use a boat with external engine (long-tailed boat) or a boat with internal engine with loading capacity less than 10 gross tons only. They also undertake small-sized coastal aquatic animal culture such as fish cage farming practices.

Small-scale fishery network means individual or group connections of small-scale fishers either same area or different areas. Small-scale fishery network consists of (1) members; (2) goals; (3) awareness in work; (4) participation and change; and (5) relations and communications systems. Having mutual interests in fishery resources, network members negotiate and share responsibilities or roles in working, identify utilization of fishery resources, and share equal benefits among themselves. Small-scale fishery network may occur naturally, or it may be established

based on existing structure or through coordination of people or organizations outside community. It can be either horizontal network or vertical network.

Fishery co-management means collaborative working responsibilities and roles in fishery management among at least two parties who have mutual interests in fishery resources. Negotiation and sharing of equal benefits is also a task responsible by the groups.

Small-scale fishers' competency in fishery co-management at individual level means participants' relevant or contributory ability characteristics to fishery co-management, as expressed in their mutual interests in fishery resources, their negotiation and collaborative responsibilities and roles in working, and their ability to identify utilization of fishery resources and share benefits equally.

Small-scale fishers' competency in fishery co-management at network level means the network's capacity to operate for target groups, be able to respond to their needs and constantly solve their problems. There are clear objectives of operation and management systems. Members actively participate in the network's operation, and there are continuous projects or activities with collective interests in fishery resources, mutual negotiation, sharing of working responsibilities and roles, identification of utilization of fishery resources, and equal benefits sharing.

Small-scale fishers' competency model in fishery co-management means components of what illustrates small-scale fishers' capacity in fishery co-management at individual and network levels. Competency model consists of three component groups: core competency, required by all network members; functional competency, a task-related competency of the network members; and hidden competency. The network-level competency model entails core competencies consists of four component groups: network development competency, input utilization competency, knowledge expansion competency, change competency, each containing sub-competencies.

1.6 Research contributions

1.6.1 To obtain body of knowledge in competency model development for fishery co-management. An individual-level competency model will consist of both explicit and hidden competencies. In the developmental process of competency model, there is an integration of theories, research and empirical data regarding human mind, including various methods of data collection, such as in-depth interviews, questionnaires and group meetings. The result of this study will be a guideline for competency model development in other areas.

1.6.2 To obtain findings that can be useful for development planning of small-scale fishers' competency such as competency-based training.

CHAPTER II

LITERATURE REVIEW

In the development of competency model of small-scale fishers in fishery co-management, the researcher reviews the literatures related to concepts, theories and related research and applies results of the literature review to identify conceptual framework as follows.

- 2.1 Fishery paradigms
- 2.2 Fishery co-management
- 2.3 Small-scale fisher network
- 2.4 Small-scale fishers' movements in fishery co-management
- 2.5 Competency
- 2.6 Analysis of small-scale fishers' competency in fishery co-management
- 2.7 Conceptual framework

2.1 Fishery paradigms

The direction of fishery management of government sector depends on some concepts, which are complexity of fishery policy that can be explained by three fishery paradigms as follows: (1) conservation paradigm; (2) rationalization paradigm; and (3) social/community paradigm (Charles, 2001: 251-254), as illustrated in Figure 1 below. Each paradigm relates to objectives of the policy as follows.

2.1.1 Conservation paradigm: Policy that implements this paradigm will have an objective that emphasizes conservation or preservation of fishery resources.

2.1.2 Rationalization paradigm: Policy that implements this paradigm will have an objective that mainly emphasizes economic practice and aquatic animal productivity.

2.1.3 Social/community paradigm: Policy that implements this paradigm will have an objective that emphasizes social welfare and equity of community in accessibility to fishery resources.

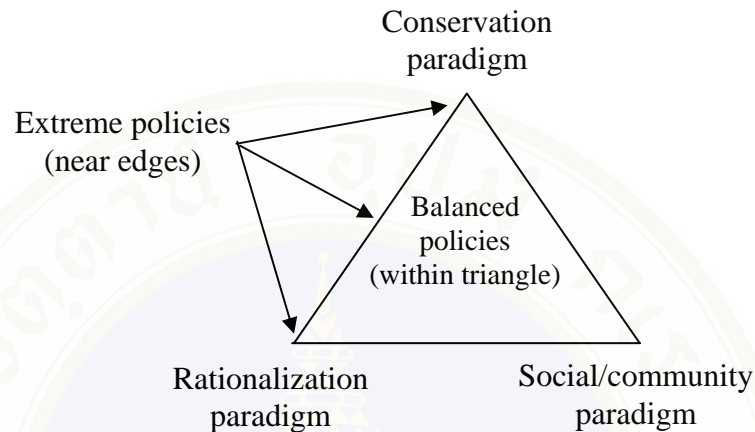


Figure 1 Fishery paradigms

From Figure 1 above, any fishery management policies that only focus on one particular paradigm are considered extreme policies. However, fishery management policies that give importance to many paradigms in combination are considered balanced policies.

Analysis of change in fishery paradigms in Thailand

Development of small-scale fishery prior to 1960 was small-scale fishery using customary rules and practices in management. There is the source called “fishing zone” meaning the area where villagers regularly catch aquatic animals. Specification of fishing zone of each community may utilize external layer coral reef or natural sand bar boundary that besieges the Bay area. Rights of exploitation from fishing zone of fishers are not only limited to one specific community, but it is the area where nearby communities often use for fishing or catching aquatic animals together (Maneerat Mitprasart, 1996; Rouhommaki, 1996; Wattana Sukunsin, 1997 cited by Wattana Sukunsin, 2000: 528-529). It can be stated that small-scale fishery management applies social/community paradigm that emphasizes equity in accessibility to community resources. After the Second World War, experts from Food and Agriculture Organization (FAO) indicated that Thailand’s fishery resource

management still falls behind, and there is a suggestion to the government to undertake various implementations in order to improve aquatic animal catching and expand the country's export into overseas market. After 1960, marine fishery industrial business in Thailand has continuously expanded. There is the support for using trawling tools as well as searching of new fishery location in order to attract more investments (Sunanta Ninpetch, 2001: 68). From commercial fishery development policy, this period is considered a paradigm shift from social/community paradigm to rationalization paradigm that primarily focuses on economy and aquatic animal productivity. Small-scale fishery development policy applies the policy that enhances standard of living of small-scale fishers even though it can be said that small-scale fishery development policy still gives primary importance to rationalization paradigm, as can be seen from the support given to small-scale fishers for aquaculture instead of fishery for economic reasons and to reduce conflicts between commercial fishery and small-scale fishery. Subsequently, small-scale fishery development policy also aims at fishery resource conservation; therefore, this policy implements conservation paradigm and, lastly, small-scale fishery development policy applies social/community paradigm. As a result of the global mainstream toward sustainable resources development, when the Earth Summit 1992 was organized in Rio de Janeiro, Brazil in 1992, results of the Summit lead to Rio Declaration on Environment and Development) and "Agenda 21 for sustainable development." From such mainstream, small-scale fishery development policy increasing gives importance to social/community paradigm. Fishery management, therefore, changes its policy from top-down to bottom-up by emphasizing community-based fishery management or fishery co-management. Therefore, this can be considered a starting point of paradigm re-shifting of small-scale fishery development.

It can be said that commercial fishery development policy is the extreme policy that highlights rationalization paradigm only. Even through the first priority of the small-scale fishery development policy emphasizes on rational paradigm, followed by conservation paradigm and social/community paradigm, respectively, that small-scale fishery development policy is the balanced policy more than commercial fishery development policy. Moreover, when comparing fishery paradigms of government sector and community, although government sector and community will implement

rationalization paradigm, conservation paradigm, and social/community paradigm, that rationalization paradigm of government sector focuses on trading economy while rationalization paradigm of community underlines sustenance economy; therefore, community has more balance in paradigm than that of government sector.

In conclusion, from the global mainstream of sustainable resource management and from social/community paradigm that concentrates on equity in accessibility to community's fishery resources, fishery management has changed from top-down to bottom-up management in the form of community-based fishery management. Community-based fishery management must first pass the process of fishery co-management.

2.2 Fishery co-management

Fishery co-management employs social/community paradigm that emphasizes equity of community on the issues relating to fishery co-management as follows:

1. Definitions of co-management
2. Participants in co-management
3. Stages of co-management
4. Levels of co-management
5. Co-management mechanism
6. Stakeholders' roles in fisher co-management
7. Processes of co-management
8. Results of co-management

2.2.1 Definitions of co-management

"...cooperation toward decision-making and duty of fishery co-management between the state and stakeholders such as fishers and fisher organizations in working in coordination with the state to develop and enforce fishery regulations and management measures. Mostly, co-management will be identified as the establishment and implementation of sustainable management" (Kearney, 1984; Pinkerton, 1989 cited by Charles, 2001: 265)

“...responsible resource management through cooperation between the state and resource exploiters” (Sen & Nielsen, 1996 cited by Charles, 2001: 265)

“...governmental unit and fishers as well as organizations cooperate responsibly in management...rules and regulations are decentralized from the government sector to fisher organizations. Therefore, fisher organizations do not only take part in a decision-making process, but also have power to formulate and implement rules of fisher organizations” (Kuperan & Abdullah, 1994 cited by Charles, 2001: 265)

“...management of shareholders through ability and interests of local fishers and community in association with ability of the government to grant legal empowerment, enforcement and consensus toward problem of conflict and the other assistances” (Pomeroy & Berkes, 1997 cited by Charles, 2001: 265-266)

Fishery co-management means government unit and fishers as well as organizations share responsibilities in management (Jentoft, 1989: 143).

State-community fishery co-management is the cooperation between government unit, people within community who are fishery resource exploiters, NGOs and related businesses or stakeholders in management with mutual responsibility and power in fishery resource management (Prayot Techapeolers, 1998 cited by Kanonkporn Kessuwan, 2003: 10).

State-community fishery co-management is the management that create responsibilities among all parties and/or have mutual power and duties between the government and resource exploiters (fishers)/ fishery community in fishery or resource management (Pairat Boonchuwong, 1998 cited by Kanonkporn Kessuwan, 2003: 10).

Therefore, co-management is the cooperation between the government sectors and stakeholders, including resource exploiters (fishers), community, NGOs, and people who are interested in environment. Co-management usually involves rights and responsibilities. Rights, in this case, mean management rights such as rights to get involved in formulation of measures and implementation.

2.2.2 Participants in co-management

Participants in co-management consist of (1) government sectors; (2) fishers; (3) fishery stakeholders including boat owner, aquatic animal traders, and

processors, (4) coastal stakeholders including tourism, seaports, and hotels, (5) external people including NGOs and academics (Pomeroy & Rivera-Guieb, 2005: 8). Government sectors and fishers are major participants in fishery co-management while the other sectors may take part only in some issues (Charles, 2001: 266). In this case, the model in fishery co-management will be considered as follows (Charles, 2001: 266-271).

2.2.2.1 Sector-based co-management is the management based on fishery sectors such as specific group of fishers, including (1) type of fish catching; (2) boat size; (3) type of fishing gears; (4) producer organization or cooperative; and (5) groups with other needs.

2.2.2.2 Community-based co-management: This model focus on geographical unit, which will identify community in the form of municipality or ecosystem, or coastal zone, or political decision-making power.

2.2.2.3 Multi-party co-management has many challenges occurred in the coast such as problem solving toward conflict, and decision-making on environmental issues, or various marine land use planning, and expansion of fishery area. In this case, there is the need for multi-party co-management (Pinkerton, 1994 cited by Charles, 2001: 271).

It can be said that fishery co-management in Thailand are mostly multi-party, consisting of government sectors (including the SAO), small-scale fishers, NGOs, academics and business sector.

2.2.3 Stages of co-management

Stages in the development of fishery management system from the government performance into community-based fishery management require passing the stages of co-management first. (Figure 2) as follows (Kungwan Jantarashote, 1998: 21-25; Pomeroy, 1995: 150).

2.2.3.1 Informing: The government sector must disseminate concepts of the government relating to transfer of power and responsibilities in fishery management to community in order for fishers to widely acknowledge.

2.2.3.2 Consultation: The government sector and fishers will consult one another to find a conclusion of whether fishers have interests and want this system to happen or not.

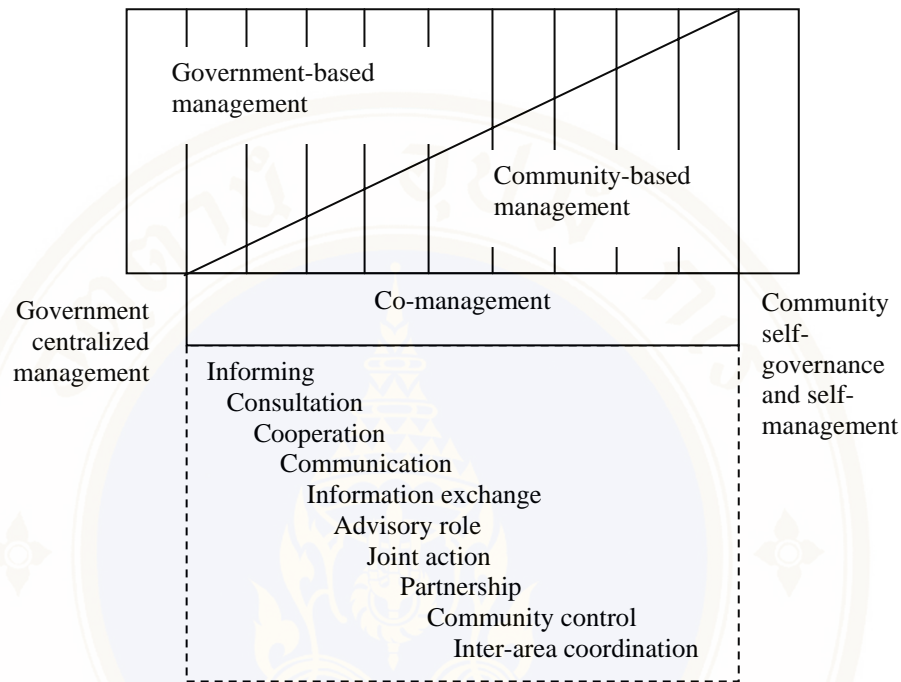


Figure 2 Stages of co-management

Sources: Adapted from Kungwan Jantarashote (1998: 21-25); Pomeroy (1995: 150)

2.2.3.3 Cooperation: After consultation and finding clear conclusion, then there is the establishment of cooperation between the government sector and community, between fishers, and between fishery communities in the nearby areas.

2.2.3.4 Communication: The government sector has to establish network of two-ways communication in order to create mutual understanding.

2.2.3.5 Information exchange: The government sector and community will have to exchange information mutually. Information provided by the government sector to community involves policy and operational plan, budget allocation for the project, and academic information while information provided by community to the government sector includes total catching rate, number of fishers, fishing boats, and various types of fishing gears.

2.2.3.6 Advisory: The government sector has to be academic consultant to community, and community is also able to give consultation to the government sector, for examples, traditions, culture and values of community.

2.2.3.7 Joint action: Government officers and fishers must cooperate and jointly act based on a mission.

2.2.3.8 Partnership: Under community-based fishery management system, the government sector is legally the owner of resources, but, practically, these fishery resources are owned and exploited by fishers in community. Therefore, every fisher has partnership in fishery resources.

2.2.3.9 Community control: When the development of community-based fishery management system reaches the point where community is responsible for fishery management, the government sector will allow community to formulate rules and regulations for enforcement with community fishery.

2.2.3.10 Inter-area coordination: After there is community-based fishery management, each community will have its own fishing zone clearly, and the boundary will be linked to other communities whereby the nearby communities must have inter-area coordination through integration as a regional or provincial organization, which will be beneficial to fishery resource management that has migration into fishery areas of many communities.

2.2.4 Level of co-management

Relating to the ladder of co-management, steps of the ladder are the range from centralized management to self-management as follows (Figure 3) (Pomeroy & Berkes, 1997; Sen & Nielsen, 1996 cited by Charles, 2001: 273).

2.2.4.1 Instructive: The government sector is a controller by centralized management with the use of communication channel with users and community to inform about decision that has already been made and implemented.

2.2.4.2 Consultative: The government sector makes a decision in fishery after gathering opinions and suggestions as well as consultation with resource users.

2.2.4.3 Cooperative: The government sector and resource users, sometimes including community, will relate to one another as partnerships in decision-making toward management.

2.2.4.4 Advisory: Resource users make a decision and communicate those decisions to the government sector, but the government sector will evaluate and accept the decision if it is satisfied.

2.2.4.5 Informative: Decision-making power remains with user groups with complete decentralization and self-regulation.

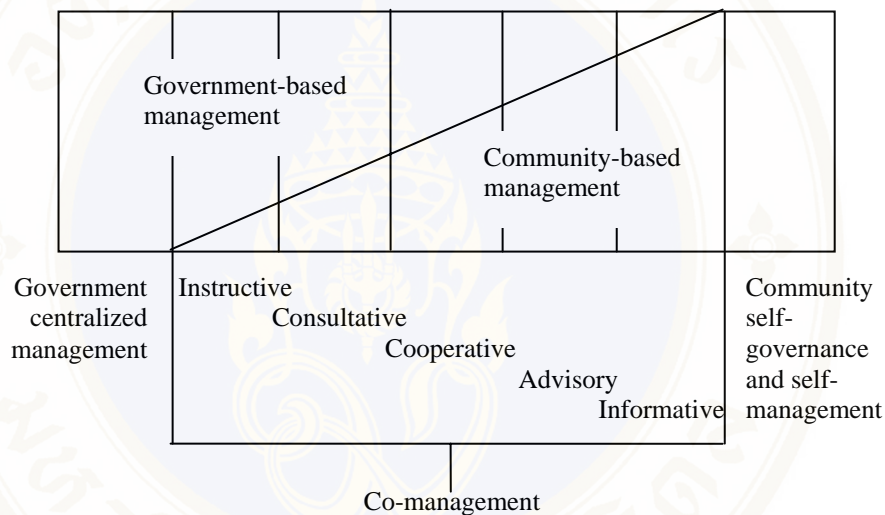


Figure 3 Model of fishery co-management

Source: Adapted from Berkes (1994); McCay (1993 cited by Nielsen & Vedsmand, 1995: 3)

2.2.5 Co-management mechanism

In fishery co-management, in order to create a connection between government sector and fishery organizations of the community, it is required to have mechanism in co-management in the form of fishery management committee by community (Association of Southeast Asian Nations, Southeast Asian Fisheries Development Center & Coastal Habitats and Resource Management Project, 2006: 40) as illustrated in Figure 4.

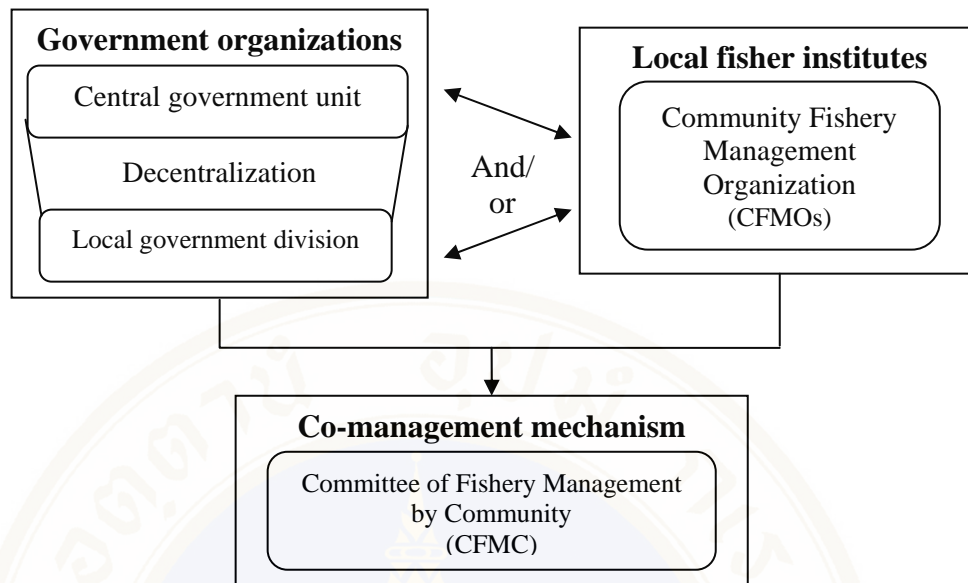


Figure 4 Co-management mechanism

2.2.6 Stakeholders' roles in fishery co-management

In this case, the roles of stakeholders will be mentioned in two aspects, which are 1) roles of stakeholders in fishery co-management, and 2) roles of central government sector in Thailand's fishery co-management, as follows.

2.2.6.1 Stakeholders' roles in fishery co-management

Co-management is divided into three phases, including pre-implementation period, implementation period, and post-implementation period. Roles of stakeholders in co-management are as follows (Pomeroy & Rivera-Guieb, 2005: 46, 64, 93, 153, 165, 211).

1) Roles of stakeholders in the pre-implementation period

Roles of fishers are participation in discussion, meeting and conversation, communication of needs and problems, and information provision in identifying initial agreement.

Roles of fisher leaders are seeking for information and assistance, leadership in planning and basic strategy, meeting organization, management of agreement, network building, and proposal and funding.

Roles of other stakeholders (business sector) are participation in discussion, meeting and conversation, communication of needs and problems, and information provision in identifying initial agreement.

Roles of government sector are information provision, categorization and provision of assistance, meeting organization, management of agreement, participation in meeting, community support, linkage development or network, and proposal and funding.

Role of external representatives (NGOs and academics) are information provision, categorization and provision of assistance, meeting organization, management of agreement, participation in meeting, community support, linkage development or network, and proposal and funding.

2) Roles of stakeholders in the implementation period in various issues, including community entry and integration, research and participatory research, community organizing, formulation of objectives, plan and strategy, and implementation of plan and strategy as follows.

(1) Community entry and integration

Roles of fishers are attending a meeting and briefing, and workplan preparation.

Roles of other stakeholders (business sector) are attending a meeting and briefing, and providing support.

Roles of government sector are attending courtesy calls, participation in meeting and discussion, assist in community meeting organization, assist in classification of community boundary, and assist in workplan preparation.

Roles of external representatives (NGOs and academics) are management of articulation to the government leader, identification of situation, observation, categorization of stakeholders, and planning preparation.

(2) Research and participatory research

Roles of fishers are attending a meeting and briefing, workplan preparation, participation in research activity, information provision, and learning of new skills.

Roles of other stakeholders (business sector) are attending a meeting and briefing, participation in research activity, and information provision.

Roles of government sector are attending courtesy calls, participation in meeting and discussion, community meeting organization, and planning preparation.

Roles of external representatives (NGOs and academics) are attending courtesy calls, identification of situation, observation, categorization of stakeholders, and planning preparation.

(3) Community organizing

Roles of fishers are participation in meeting, support for organization's establishment, development of organizational structure, support for and participation in organization and with leaders.

Roles of fisher leaders are participation in meeting, situational assessment, decision making on organizational mission, looking after community for support, support for consensus process, and support for organizational structure.

Roles of government sector are support for management, and law.

Roles of external representatives (NGOs and academics) are categorization of core leaders, support for core group in mobilization, establishment of alliance and network, and fund seeking for management.

(4) Co-management of plan and agreement

Roles of fishers are participation in negotiation and planning, preparation of input in establishing goals and objectives, provision of information and feedback in planning, identification of mission and vision, operation of sub-group discussion, participation in co-management organization, and establishment of consensus.

Roles of other stakeholders (business sector) are participation in negotiation and planning, and provision of information and feedback in planning.

Roles of government sector are provision of basic policy, legal and planning framework, participating in negotiation and planning, assist in categorization of benefit resources, participation in co-management organization, operation of community meeting, and implementation with responsibility.

Roles of external representatives (NGOs and academics) are facilitation process in negotiation and planning, technical and training support, building confidence in participation of organization and other stakeholders, convening stakeholders and groups for planning, training in negotiation and planning process, formulation of mission and vision, and building consensus.

(5) Implementation of plan and strategy

Roles of fishers are participation in implementation, compliance to rules and regulations, participation in follow-up, giving interests in studying and training, providing input for development and life-sustenance activity, and provision of information and feedback in planning.

Roles of other stakeholders (business sector) are participation in implementation, and compliance to rules and regulations.

Roles of government sector are support for plan implementation, support for institutional program, establishment of implementation structure in co-management, outlining and ordering, and assist in income collection and support.

Roles of external representatives (NGOs and academics) are competency building of co-management organization to obtain fund, technical and training support, building confidence in participation of organization and other stakeholders, strengthening community organization, leadership development and training, participation in follow-up, assistance for community development and life-sustenance activity.

3) Role of stakeholders in the post-implementation period is assessment.

2.2.6.2 Roles of central government sector in fishery co-management of Thailand

For fishery co-management to be operated efficiently, the government sectors have to determine this issue to be the policy and have law to support for local community to participate in resource management as well as applying the policy to be in a practical way. These will be discussed into two issues; (1) policy and legal framework, and (2) policy implementation.

1) Policy and legal framework

The governmental organizations related to fishery co-management have several organizations. Not only the Department of Fisheries, which is a direct organization, but also the Department of Marine and Coastal Resources, National Park, Wildlife and Plant Conservation Department, which support participation in coastal resource management. Each organization has the policy and legal framework as follows:

Department of Fisheries has the policy for supporting co-management. The National Fishery Development Policy (2002-2006) consists of five major policies. Co-management is indicated in the policy of fishery resources and environmental management in which significant matters include improvement of management, recovery, protection and reservation of fishery resources, environment and biological diversity, encouragement of people to recognize the value of resources and support community organizations at all levels to participate in fishery resources and environmental management (Department of Fisheries, 2009: 1-5). In addition, there is also the identification of co-management in the Master Plan Marine Fisheries Management of Thailand (2009-2018) in the first strategy of effective fishery management improvement and co-management. Co-management will support stakeholders of private sectors to participate in the central and local government organizations in fishery management. The Fisheries Department determines the method of operation for supporting fishery co-management in several ways: (1) to develop mechanism for fishers organizations/community to be able to participate in co-management; (2) to support local government organizations, fishers organizations and coastal community to accept fishery regulations; (3) to support networks in coastal fishery management; (4) to support cooperation and participation

of fishers' organizations with government organizations and among government organizations in marine fishery management; (5) to drive activities, which bring about an agreement of community or locals in fishery management; (6) to support the process of consultation that will lead to acceptance of fishery operation according to fishery rights, fishery duties and participation in co-management (Department of Fisheries, n.d.: 28-29). Moreover, nowadays the Department of Fisheries is under the process of improving the fishery law by the draft of Fishery Act, B.E...(Amendment) to appoint the local fishery committee, which gives authority to every stakeholder to manage fishery resources by having government sectors as the part of this committee. It can be considered as the establishment of co-management system primarily by community organization (Supaporn Anuchiracheeva, et al., n.d.: 77)

Department of Marine and Coastal Resources, Ministry of Natural Resources and Environments, is mostly related to coastal fishery with the policy to promote co-management, which is identified in the third strategy of management and development of the capacity of natural resources and environment by means of participation and integration at all levels (Department of Marine and Coastal Resources, n.d.: 1-2). However, Department of Marine and Coastal Resources is under the legislation of Marine and Coastal Resource Management Act and is under the consideration of the decree. This Act determines the regulations of supporting reservation, management, exploitation, protection of marine and coastal resources is including mangrove by the participation of people and organizations. Moreover, the Department of Marine and Coastal Resources has the Master Plan of Seagrass Ecological System Management (2007-2012) which one measure indicated that supporting the combination of people sector and increasing the efficiency of seagrass management to related sectors (Supaporn Anuchiracheeva, et al., n.d.: 59).

National Park, Wildlife and Plant Conservation Department, Ministry of natural resources and environments has the matters of reservation, and recovery the forests resources and management of conservative areas including marine national park according to the National Park Act (1961), which have a kind of participation issue indicated in the strategy of supporting the benefit use of resources with sustainability. Moreover, there is the policy of forest animals prohibited areas in 1984, which determined the prohibited areas of wild animals hunting or every kind of

fishery including wild animals hunting prohibited areas of Libong Island which is the living resources of dugong (Supaporn Anuchiracheeva, et al., n.d.: 55).

2) Policy implementation

To lead the policy of concept of co-management to the practical way, the Department of Fisheries has operated the project continuously as mentioned in 2.2.7.2.

2.2.7 Fishery co-management process

The fishery co-management process may compose of many phases. General fishery co-management process and Thailand's fishery co-management process are to be discussed as follows.

2.2.7.1 Fishery co-management process

The fishery co-management process is divided into three phases: (1) beginnings or pre-implementation, (2) implementation, and (3) turnover or post-implementation, as the following. (Pomeroy & Rivera-Guieb, 2005: 24)

1) Beginnings or pre-implementation

The pre-implementation phase may start when fishers and other stakeholders recognize a resource(s) problem that may threaten their livelihood, income, and/or social and community structure. Fishers will individually and collectively begin to discuss the problem and seek information, a process that often leads to consensus-building and agreement on an action plan. At this early stage, the fishers may seek assistance from the government sectors. These external agents and/or government sectors may enter at this point to assist the community by organizing meetings and providing information to prepare a preliminary program plan and strategy. A proposal for outside funding of the program may be prepared. Initial approvals for the program may be obtained from different levels of government sectors and local officials and leaders. At this point, linkages are established and strengthened between fishers, other stakeholders, external agents and government sector so that a partnership is developed. A formal or informal agreement for cooperation may be established at this time.

2) Implementation

During this phase, co-management is connected in 4 components, which are (1) resource management consisting of activities in management, reservation, conservation, restoration and rules and regulation setting; (2) development of community and economy/living to increase income and enhance standard of living; (3) competency building; and (4) supported institutions/ network/ supporters are related to mechanism of conflict management, connection of people and organization, interactive learning, and policy and legal support (Pomeroy & Rivera-Guieb, 2005: 26). The implementation phase consists of (1) community entry and integration are external division recruits people and community organization to categorize major stakeholders in which these people must be the persons who are interested in co-management; (2) research and participative research; (3) evaluation of problems, needs and opportunities; (4) community organization and participative activities of people within community are the heart of co-management; (5) co-management plan and agreement; (6) conflict management; and (7) implementation of plan and strategy.

3) Turnover or post-implementation

The turnover or post-implementation does not mean completing the co-management program. This phase consists of (1) turnover and phase-out, (2) post-evaluation, (3) scaling up, (4) replication and extension, and (5) sustainability (Pomeroy & Rivera-Guieb, 2005: 233-237).

In conclusion, there may be three phases of the fishery co-management including (1) beginnings or pre-implementation: problem recognition, seeking assistance, programs, preliminary plan and strategy and institutional linkages; (2) implementation: community entry and integration, participatory research, problem, need and opportunity assessment, community organizing, objectives, plans and strategies of co-management, conflict management, and plan and strategy implementation; and (3) turnover or post-implementation which is evaluation.

2.2.7.2 Thailand's fishery co-management

In order to present the methods of Thailand's fishery co-management, the Community-based Fishery Management in Phangnga Bay project

and Coastal Habitats and Resource Management Project (CHARM) are to be discussed as the following:

1) The community-based Fishery Management in the Phangnga Bay was a pilot project initiated in October 1995 through the following activities:

(1) Initially, a workshop was organized during February 14-16, 1996 in Phuket province with two major objectives. Firstly, the workshop aimed to build awareness and common understandings among the key stakeholders (small-scale fisher leaders, village leaders, NGOs, Department of Fisheries employees and BOBP) about the importance, benefits and constraints, roles and responsibilities, and needs for flexibility in undertaking the new approach of “partnership in management”. Secondly, the workshop provided a forum for discussion with key stakeholders on the objectives and general approach for implementation of the coastal fishery management project in Phangnga Bay. The community-based fishery management was used to ease conflicts between small and large-scale fishers (FAO, 1998: 1-2).

(2) After the workshop: Early results of the CBFM project include the following (FAO, 1998: 29-33):

-CBFM workshop direction: This marked the transition between the design and planning stage of the project to its implementation.

-CBFM governance approach: The local CBFM management structure was established, composed of village committees whose members include small-scale fishers and village leaders. The government officers serve as advisors to the committees and support implementation of their management initiatives and decisions.

-Training experience: Small-scale fishers are trained to enhance skills within community and they study activities in other provinces will bring about an exchange of experiences and lessons among small-scale fishers.

-Implementation of CBFM Solution: One of the first successful management initiatives was the ban on push nets and trawls in the Bay, which was agreed to and supported by the small-scale fishers and government

sectors of the three coastal provinces: Phuket, Phangnga and Krabi. It marked the first collaborative implementation of a management initiative by government sectors and the communities in the Bay. The fishery communities initiated the ban, the governors of each province signed it into force, and Department of Fisheries, universities and FAO are providing much of the technical means for its support under the CBFM project. The fishery communities have asked the Department of Fisheries to further increase the fishery monitoring, control and surveillance operation by providing additional enforcement officers and fishery patrol boats to cover the vast expanse of the Bay. In addition, conservation of mangrove and seagrass areas has been set up.

-Monitoring: Monitoring the effectiveness of the current actions will help the village committee and Department of Fisheries determine how to adjust the actions and develop new ones where needed. The participants are continuously learning as new information arises in the process. The monitoring results are an important source of this new information upon which to base decision.

2) CHARM Project covers the following three phases of the process (CHARM Project Management team, 2007: 9):

Phase 1: Preparation (2003). It began with data collection and setting up strategies: (1) preparing the project structure, (2) preparing the monitoring and assessing system, (3) preparing the project communication system, (4) collection and analysis of data of the pilot areas, (5) consultation of stakeholders and in-deep folk data survey, (6) preparing field projects and primary co-management, (7) linkages with government sector and connection, (8) determination of needs and training and research implementations. (Department of Fisheries, 2005: 4).

Phase 2: Implementation (2004 - 2007). This phase covered the following components: (1) institutes and framework including the project committee's monitoring, and impact assessment of national policies, laws and regulations; (2) local co-management development consisting of implementation of field projects, participatory monitoring and voluntary surveillance, partnership agreements, and development of livelihood options; (3) strength of supporting services covering providing trainings and educations, news and information/communication, and technical and science assistance. The operation in accordance with activities includes activities in coastal resource management (fishing gear change), career

development and promotion to increase income, fishery resources conservation, research and survey on coastal resources by community, and monitoring control and surveillance (MCS) (Department of Fisheries, 2005: 5).

Phase 3: Strength building (2007). Strength building began in the final year of the first phase and was developed into synthesis and transfer of experience. The matters of strength building, expansion and sustainability cover (1) designing and promoting technical manuals and material support, (2) co-management and approaches (model/procedures), (3) recommendations on integrated coastal resource management, (4) suggestion of management framework and (5) workshop and lessons on project completion.

In conclusion, Thailand's fishery co-management process can be divided into three phases covering (1) preparation: workshop for discussion about problem issues, management direction, planning, designing activities and strategies, publicizing and making understanding project and basic data survey; (2) implementation: training, selecting pilot areas, implementation of activities, and (3) strength building by summation of lessons on completion of the project.

2.2.8 Results of co-management are as follows:

2.2.8.1 Efficiency includes (1) fishery economic efficiency, and (2) management process efficiency

2.2.8.2 Equity includes (1) equitable approaches and representation, and (2) distribution of allocating process results

2.2.8.3 Sustainability includes (1) ecological sustainability, (2) socioeconomic/community sustainability, and (3) institutional sustainability (Boyd & Charles, 2006: 240-241).

In conclusion, the fishery co-management between the government sector and the community enables all party be responsible and/or have shared responsibility between the government sector and resource users (fishers)/ the fishery communities in fishery or resource management. Participants in such management include many sectors; however, the core leaders are the government sector, fishers. The co-management will result in efficiency, equity and sustainability. Additionally, there are many attributes to successful co-management including trust in partnership,

networking and sponsors, and recognition of resource management problems, which bring the small-scale fishers into networking for coastal resource management in their villages.

2.3 Small-scale fisher network

Definitions of the word “network” are various according to an individual’s view. The network is that individuals, organizations, authorities or agencies agree to be connected together under a united objective or agreement with cooperation in working or doing activities. According to this definition, a network may be cooperation between individuals/groups/organizations of the same nature or a connection of groups/organizations of different kinds (Kriangsak Charoenwongsak, 2000: 27-28). This is consistent with Seree Pongpit (2002) who studied about concepts, experience, examples, community network and civil society, and provided the definition of network that network may be a combined network between members with different statuses, including community leaders, government officers, business persons, and academics. However, when everyone has the shared goal, it can become the network. Another form is the organization’s network or people with the same status, occupation or level, consisting of agriculturalists, researchers, NGOs, and research institutes. From these meanings, it can be concluded that the definition of the word “network” is divided into two characters: cooperation among individuals/groups/organizations of the same nature and a connection with inter-relationships among groups/organizations of different natures. To facilitate an analysis and a measure of competencies of the small-scale fisher networks, the former definition referring to cooperation among individuals/groups/organizations of the same nature will be used here.

The basic concept of social network is that social network composes of the persons who have relationships with one another according to roles or duties of which each person or couple-relationship exist. Each individual not only has one role but several roles in his/her daily life. The individuals not only follow the roles and duties expected from the society or according to the criteria conveyed, the individual relationship also depends on the basis of perceiving and decision making to exchange to one another both material and mental sides (Tanapruek Chamarat, n.d.: 6).

The form of combination the relationship among individuals within the network of Wasserman & Faust (2005); Hanneman (n.d.); Garson (n.d.) cited by Pattama Suphunnakul, 2007: 33-35), which can be concluded as follows:

1. Nodes mean the persons who are the member in that network. Whenever that person has no interaction with other persons in the network, that person will have the meaning similar to the isolation person which can be replaced with the symbol as follows:



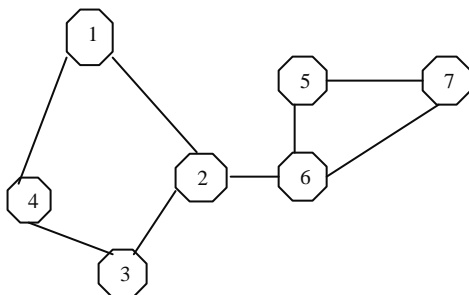
2. Dyads mean the combination between 2 persons and express the direction of relationship with the symbol as follows:



3. Star means the persons who have the relationship which combines among persons in the network which can be replaced by the symbol as follows:



4. Clique means the combination of relationship of more than 3 persons which combine in the same group.



Means = 2 sub-groups or 2 Cliques
 Clique 1 consists of the individual 1, 2, 3 and 4
 Clique 2 consists of individual 5, 6 and 7

In conclusion, the form of combination of relationship among persons within the network above can be applied to express the network structure.

The network structure can be divided into (1) network size, (2) intensity within the network, (3) collaboration within the network, (4) position and status of the person in the network, (5) group of the relationship of the person in the network (Pussatee Monzon, et al., 2004: 8). Besides Seree Pongpit (2002: 172) mentioned the difference of network structure both formal and informal network that the formal network has formal coordinative structure whereas the informal network doesn't have but the structure is depended on goals, resources (time, money and person) and is depended on the network members that what kind of the organization setting they want.

The networks in the Thai contexts are the horizontal networks which have several sub-groups. The formation of the networks is from strong sub-groups. The individuals in the networks have several roles which are the members of several groups at the same time. The networks do not have only one leader but the group leaders by having small-scale fisher networks to be the networks according to the functional structures which relate to other benefits groups including government sectors, NGOs, academics and business sector as follows:

Pussatee Monzon, et al. (2004: 6) mentioned about the horizontal networks that when a community had problems, they would create the groups which relate to the four requisites and earnings for living including; setting the rice bank, buffalo bank, fertilizer bank, savings group or youth group to transfer and inherit. Likewise, the small-scale fishery networks set the group in horizontal way, including conservation group, crab bank program, saving group, career group, women group and youth group, etc. Kriangsak Charoenwongsak (1994: 73) said about the formation of networks that it is a kind of bringing the group/organization to participate in the network which may be considered from the strength of the group by starting at one of the groups, which has existed both informal group types; career group, housewife group and formal group type: cooperative of the village, etc. The beginning with the groups, which have existed, will make the network establishment faster. Likewise, the small-scale fishery networks at the beginning time, they come from the combination of saving group but the issue they discuss is the coastal resources conservation.

Tanapruek Chamarat (n.d.: 6) said that each person does not have only one role but several roles to play in the daily life. Not only fishers' roles in the family but the group members in the community at the same time.

Although Albert-Laszlo Barabasi (2002 cited by Pussatee Monzon, et al., 2004: 6) mentioned about the networks in city society that there are the social networks which drive like a web but without the spider. On the other hand, the relationship networks can drive by themselves which are the networks that has equal power without head of network or spider. All matters occurred have to have the networks that can access fast by efficient communication. However, the small-scale fishery network is the network in the dimension of rural society and has no efficient communication system with computer; therefore, it is the network which has to have "head" or "leader" as Kriangsak Charoenwongsak (1994: 79) said that the network is not a kind of only one person but the leader group which consisted of various kinds of people locality to help to one another. In several cases that the network comes from the collaboration of groups who have their own leaders and each leader would collaborate to one another to be the leader group of the network. The network will drive enthusiastically if each leader group can cooperate firmly.

Sutit Apakaro (Ob-Oon) (2004: 90-92) said about the small-scale fisher networks that they are the networks according to the functional structure. The aspects of this network will have the formulation according to the matters of benefits group. For Thai society, it is divided into four main parts, which are governmental network, private business network, NGO network, people network. At any rate, the activities and relationships are divided according to the functional structure which may have activities and relationships overlapped to each other and this can be seen in several dimensions. The activities occurred of the network are mostly the attempt of various parts which want to build the standpoint to build the social areas and participation in development. Each group develops the activities in terms of various types in order to be in accordance with the targets of own sectors. Therefore, the activities occurred in this network type are varied according to the matters of that sector. However, the network mentioned in each sector may have cooperation via communication channels and cooperation to each other without depending on physical areas but activities of combination instead as illustrated in Figure 5. In any case, the combination of the

relationship in any sector mentioned will be in accordance with the stakeholders in fishery co-management which consists of several sectors; government sectors (including SAO), small-scale fishers, NGOs, academics and business sectors. Each sector will collaborate with one another according to the roles and duties under co-activities.

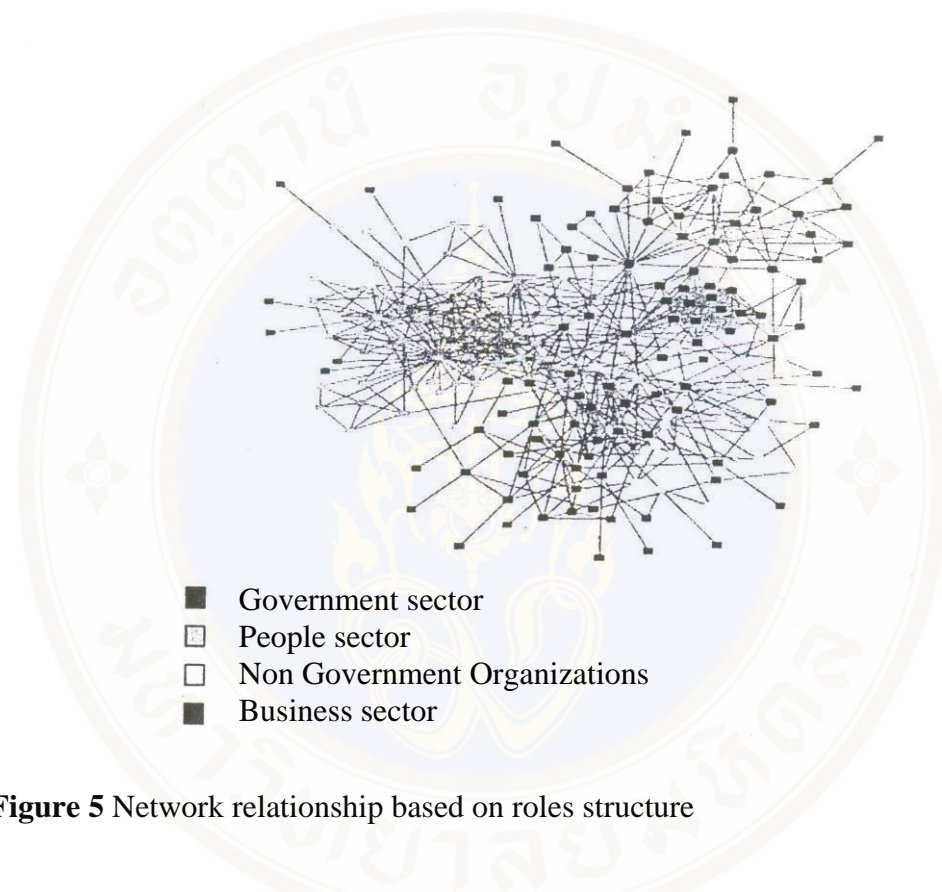


Figure 5 Network relationship based on roles structure

In southern Thailand, small-scale fishers play great roles in revival and conservation of coastal resources which has been operated and gradually growth for a long period since the beginning of the cooperation between the first NGO working in the Gulf of Thailand and the small-scale fishers in Songkhla in 1981. Later, in 1985, the first NGO of the Andaman coastline was established called Yard Fon (Rain Drop) Association, located in Trang. Up to present, there are many NGOs working across 13 provinces of southern Thailand. Through the gradual expansion of the concept of co-working with the small-scale fishers for nearly 20 years, there is “a trend of natural resource conservation of small-scale fishers in the southern” (Sunanta Ninpetch, 2001: 84-85).

A small-scale fisher organization of each area is the primary unit in the gathering of the small-scale fishers. It can be found in a village or a sub-district, such as a small-scale fisher group or a small-scale fisher club in each village. Roles and functions in the club are determined to and shared among village members together with conduct of its own activities, i.e. establishment of a savings group and financial fund-seeking for its conservation activities. Its structure is unobvious. Its village members gather loosely with the purpose of participation in occasional activities. Without specified positions of the organization, it is well-known among village/community's members who are main leaders in doing activities. On the other hand, an obvious organizational structure exists in an organization of a sub-district or district, i.e. the small-scale Fisher Club of Suksamran Sub-district is composed of the chief, the committee, the suppression, the public relations and the finance.

A small-scale fisher network is from a gathering of small-scale fisher organizations of an area. Its main role is assistance in solving and coastal resource rehabilitation in broad aspects: sub-district, district, province, and bay, coastal and regional levels, as the following:

1. Sub-district, district and provincial networks: (1) A sub-district network is composed of village groups/clubs doing conservation and activity rehabilitation to protect their own coastal resources. A strong village group/club plays a role as a leader group coordinating neighboring villages in order to join together and become a sub-district, district or provincial group/club for occasional movements in different levels. Their sub-district networks gathering are quite loose or for a specific matter. (2) A district or provincial network is not established as a formal organization or club because it is not necessary and practical yet to develop their gathering to such level. Thus network coordination of such level is loose and for occasionally specific matters.

2. Geo-ecological networks: (1) The Songkhla Fishers Association is composed of 5 fisher clubs around Songkhla Lake. (2) The Andaman Fisherfolk Assembly is a network of bay, established to push policy forward. Composed of small-scale fisher representatives from 14 sub-districts of 4 provinces in the Andaman Sea, it primarily aims to solve its members' fishery problems, especially the problem of push netters and trawlers intrusion into the forbidden 3000 m. from shore and the Phangnga Bay.

3. Regional network: It is the Southern Fisherfolk Federation, composed of small-scale fisher organizations of 13 southern provinces, with distinct organizational and structural management and plans, was established in September 1993. One year later, NGOs working together with the small-scale fisher communities in coastline southern also became a network called “the Sea NGOs (NGOs Lay)” with the purpose of support of the association’s activities (the Secretary Division of the Southern Fisherfolk Federation, 2002: 24). Since 1996, the association has work in campaigning and pushing forward related laws and policies (Sunanta Ninpetch, 2001: 86-91).

There are both geo-ecological and area small-scale fisher networks. According to Kriangsak Charoenwongsak (2000: 45), the area networks can be categorized into (1) intra-sub-district village networks, (2) inter- sub-district village networks, (3) intra-district sub-district networks, (4) inter-district sub-district networks, (5) intra-provincial district networks, (6) inter-provincial district networks, and (7) regional provincial networks.

In conclusion, small-scale fisher networks include geo-ecological ones and area ones of different levels covering sub-district, district, provincial, geo-ecological and regional ones. The small-scale fisher networks of all levels conduct social movements on the matters relevant to their livelihood and the fishery resources in their villages.

2.4 The movement of small-scale fishers in fishery co-management

The work system of small-scale fishers has changed by gathering into networks. Small-scale fishers with similar problems have been collaborated with the purpose of solving their problems systematically and powerfully (Suwimol Piriyanalai, 2003: 84), where small-scale fisher networks of all levels: districts, geo-ecology and regional, drive various approaches of coastal fishery management. Consistently, Prapas Pintoptaeng & Anusorn Unno (2002: 336) stated that the movement of the Andaman Small-scale Fishers Assembly in solving its members’ fishery problems, specifically the intrusion into the 3000 m. from shore and the Phangnga Bay of trawlers and push netters (Sunanta Ninpetch, 2002 cited by Prapas

Pintoptaeng & Anusorn Unno, 2002: 336) is a level of “new social movements (NSMs)” according to below definitions.

Social movements are matters of a grouping for collective action. Touraine (n.d., cited by Pasuk Phongpaichit, 2000: 2) proposes that there are three categories of the collective action. The first two are non-social movements covering defensive action when having attacked and collective action for modification of public policy or policy making procedures. Another one is collective action with intention of changing society’s primary power relationships (Bennet, 1992 cited by Pasuk Phongpaichit, 2000: 2).

Above Touraine’s definition is criticized for strictness by Bennet who proposes that the first two movements are possible to bring about broad social changes if they are widely spread and sustainable. According to Castells (1997, cited by Pasuk Phongpaichit, 2000: 2), social movements are collective action affecting... changing value system and society’ institutes. Omvedt (1993 cited by Pasuk Phongpaichit, 2000: 2-3) defines new social movements (women movements, class opposition movements, environmental movements and minor agriculturists fighting against market production) in India during 1980’s as social movements in the sense of setting wide structural organization and general ideals with intention of changing society.

Social movement theory is practical to Thailand. Pasuk Phongpaichit (2000: 13), analyzing for benefits in understanding of the roles of Thai social movements and social movements in western countries, concludes that social movements are applicable to the Third World. In case of the Third World, greater complexities are discovered in globalization and western domination problems. Moreover, with basic economic problems, most participants in social movements are non-privileged and peripheral at a degree. It can be said that Thailand and the other Third-World countries are facing two concurrent social movement phenomena. One is class-based social movements (a labour union, e.g.) and the other is new multi-class-related movements, such as an environment movement, a women’s movement, a students’ movement. In the Third-World countries, it is difficult to separate these two types of social movements because they simultaneously concur in the same society. Its undividable pervasiveness is through action participants, inter-group relationship networks and shared experiences under the same social, economic and political contexts.

In Thailand, livelihood rights or even low-class people's human rights become movement-led matters which are equally important, or probably more important than, ones of democracy establishment. Additionally, in the Third-World society, an emphasis on individual liberty may be obscure, or if obvious but not intense, or a case of such imported concept which is adjusted to community intellect. Some countries highlight community's roles or certain groups' roles. In the Third-World countries, a community concept is revived and renewed in order to be the basis of movements to challenge the state power and market power as well as to advise options on development of expected society. In case of Thailand, the poor people's movements, small-scale fishers' movements, hill tribes' movements and community forest movements are all based on the community movements rather than individual movements. Moreover, the movements may relate to fighting in order to make the community thinking or value and community intellect accepted and practically effective.

It can be said that there are many supporting factors in the small-scale fishers' movement such as social capitals, community power and community capabilities.

1. Social capitals: According to various definitions of social capitals, it can be concluded that there are two dimensions of its definitions. The social capital in the first dimension is defined as social relationships between humans or institutes, which are based on trust, kindness and assistance. The social capital in the other dimension is as a community capital, such as natural resources and cultures. Thus the small-scale fishers' social movement uses social capitals of both dimensions. In order to make an application of social capitals to the social movement more obvious, social capital process are to be discussed here.

Social capital process composes of two parts:

1.1 Internal factors: They include three factors. (1) thinking method covers religious beliefs: Muslim small-scale fishers believe that God grants all creatures and things (including the sea and aquatic animals) to the world so they have to be used most effectively without destruction or troubles to others. Consistently, Doloh Jeahkae, a Pattani small-scale fisher, stated that small-scale fishers around the Pattani Bay share the common sea to fish and consider it public granted by God to us jointly manage. Community cultures will be destroyed if

coastal areas are divided into pieces and distributed separately to an individual (the Prachatham Agency, 2005). Such belief affects the small-scale fishers' thinking methods and self-sufficient livelihood (Suwimol Piriyanalalai, 2003: 130). Traditions are also used in fishery management. The "fishing zone" is determined, where surrounding communities, rather than specific one, can fish and catch aquatic animals. The small-scale fishers express their community intellect through artificial reefs. Their thinking methods are from values of kindness, trust and harmony, for example. In the past, such thinking methods, lifestyle, cultures and traditions within these communities were as like as "social rules" contributing to conservation of aquatic animals (Suwimol Piriyanalalai, 2003: 3). (2) practices are affected by thinking method. With such thinking method in the community, its members behave and react to each other kindly and harmoniously. The Four Coastal Village Network is an example. The members of all four villages jointly manage fishery resources in front of their villages by zoning some coastal areas for conservation, limiting fishing gears, establishing fishery resource management strategies and public relation of the network. (3) results, which are affected by both the thinking method and practices, can be useful resources and various forms of capitals, such as financial capital (community funds: small-scale fishers' saving fund, energy fund, e.g.), human capital (helping labours: push netters to the shore for annual fixing, helping fix or push the boat to the shore in case of being out of order, e.g.), natural resources (community mangroves, networks' fishery resource conservation zones) and intellect (artificial reefs to prevent intrusion into the 3000 m. from shore of trawlers and push netters). These capitals belong to the community, which are accessible and available to its members.

1.2 External factors: There are concrete external factors covering funds, assistance and academicians. An example is multilateral coastal resource management which is extended from bilateral to trilateral and five-lateral managements, and lead to external multi-cooperation from university academicians, government officers, business groups, the mass media, students, the Yard Fon (Rain Drop) Association, and the Wildlife Protection Foundation (Pisit Charnsnoh, 1994: 49). Consistently, according to a study of Maneerat Mitprasart (1996: v) on establishment of a people organization and reinforcement of people power: a case study of small-scale fishers' communities in Si Kao District of Trang

Province, it was discovered that some external factors covering supporting NGOs, consistent state policies and complementation and the interested mass media contributed to people organizations' more effective power to negotiate with capitalists and/or anyone who would take advantage of communities' resources. Abstract external factors are academic assistance, information and knowledge. There are also external factors in the aspects of fishery management directions (up-to-down or managed by community), fishery paradigm (highlighting economics or community and society) and globalization (the flow of capital, information technology). Expensive fuel, destructive fishing gears and the constitution of 1997/2007 are all external factors which affect thinking methods and practices within groups, organization and communities. Thus such occurring social capital process is improvement and transformation of all capitals (natural resource capital, human capital, and knowledge capital) into community's capitals. Such process is originated from faith, trust, interdependence, treasured dwelling, possession feelings and people pride which lead to learning process and knowledge. In conclusion, a community with strong networks, network cooperation, good traditional practices and social capitals as humans, institutes, wisdom and cultures, spirituality, natural resources and community funds are always strong and self-dependent community as well as contributing to community fishery management.

2. Community power: The community has learning process and adjustment process by including community's existing capitals (natural resources/ecosystem, cultures; e.g., social relationships, relatives and wisdom; e.g., created knowledge and intellect) in external new knowledge (research and knowledge creation) to become community power within the globalization. The community plays main roles in starting action and going to people groups or organizations in order to unite the power of other groups for jointly resolving community's problems because, at the present time which is a period of flowing of capitals, technology and information. Therefore, learning and having reaction to and relationships with other relevant parts will significantly support social development (Suwimol Piriyanalalai, 2006: 58-59).

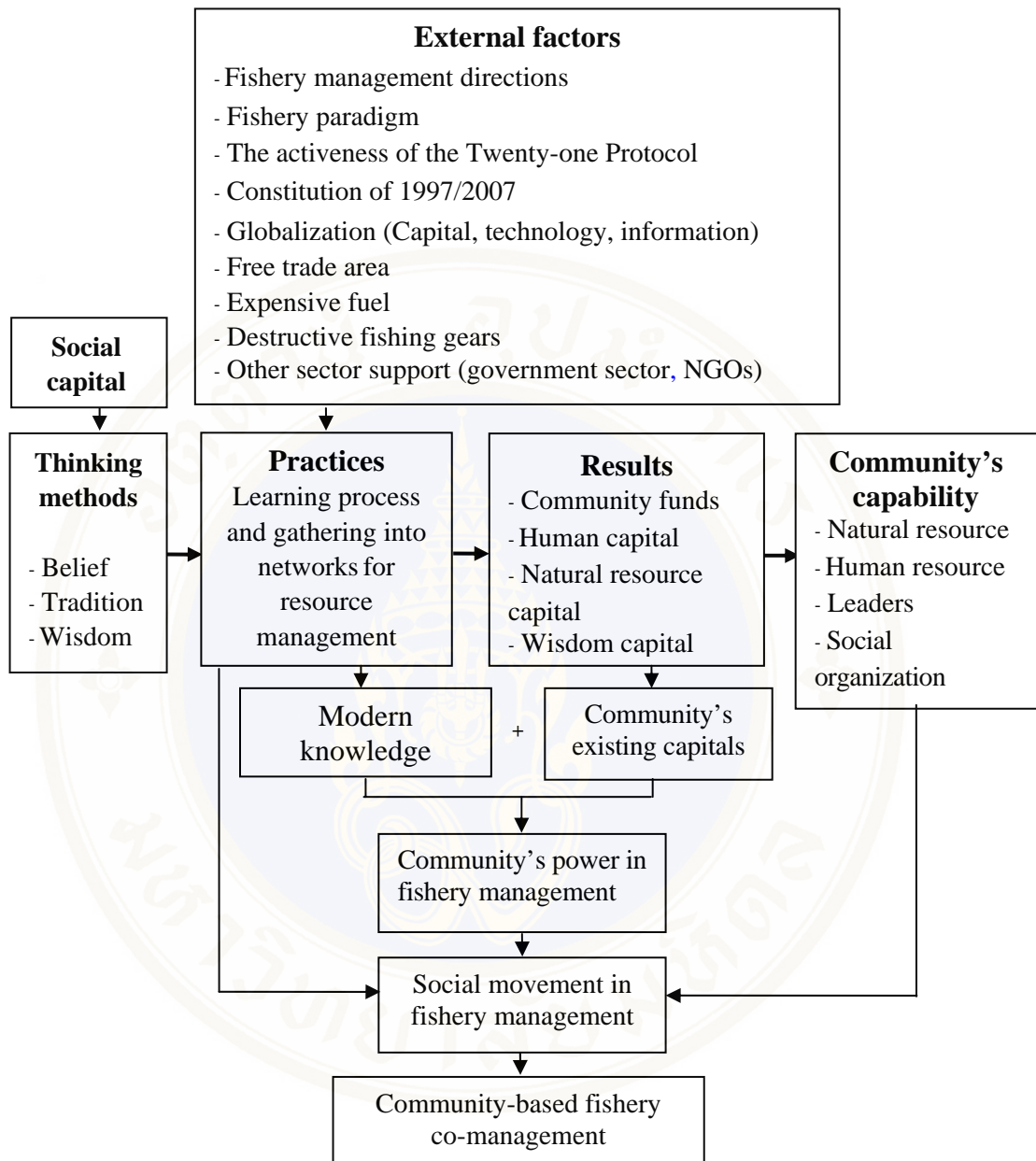


Figure 6 Relationships between social capital process, community power, community capability, and social movements of small-scale fishers in fishery co-management

3. Community capability: The community capability is defined as power to protect common property and ability in solving conflicts of common property control and management (Anan Kanchanapan, 2001: 156). The community capability also covers quantity and quality of community's resources (Somnuk

Panyasing, 1989 cited by Jaranporn Lertsahakul, 2005: 19). Moreover, Sanya Sanyawiwat (1999: 32-39) divides the capability and diffusion theory into two main parts. The first is community capability composed of four factors covering natural resources, human resource, leaders and social organizations. A community with all such four factors is potential to be more developed than one with fewer of such factors. The fifth factor is connection between people and government officers, which is part of the diffusion theory. On the other hand, such connection is possible to be considered as community capability. According to these factors, the community has capability to perform a movement to manage conflicts and protect common fishery resources.

In conclusion, social capital, community power, and community capability support establishment of small-scale fishers' social movements in fishery co-management (Figure 6).

Social movement of small-scale fishers in fishery co-management can occur in various forms. Such social movements express some of their competencies such as policy movements, movement on project development that will affect small-scale fishers, campaign for stopping the use of illegal fishing gears such as push nets and trawls, and conservation area expansion.

2.5 Competency

For fishery co-management, it has to have appropriate competencies of the participants in co-management, especially the competency of small-scale fishers who rely on aquatic animals directly. This study aims to apply the concept of competency. It will be discussed in six issues as follows.

1. Competency development
2. Importance of competency study
3. Definition of "competency"
4. Development process and design method of competency
5. Competency assessment
6. Competency application

2.5.1 Competency development

Competency was conceptualized in 1972 at Harvard University from McClelland's wonder why employees of the same position perform different achievements. He decided to do an exploration by separating the employees with good performances from the others with fair performances then comparing the working procedures of these two groups. According to the findings, it was concluded that the former group possessed a quality called "competency". In 1973, McClelland produced the article "Testing for Competency rather than Intelligence" which is considered the origin of the Iceberg model of competency conceptualization (Kirati Yodyingyong, 2006: 4).

2.5.2 Importance of competency study

To give an importance to the competency in different ways, it results in different methods of competency study. England gives an importance of recruitment personals to enter into work position; therefore, the concept of competency is focused on job performance of the duties which will lead to working standard according to an approval. This emphasizes the outputs by using task-oriented job analysis or it can be called functional analysis in order to indicate roles and duties in that position which have to be done for achieving the output according to the determined standard. In America, the focus is on personal development; therefore, the concept of competency emphasizes the inputs or emphasizes the person-oriented job analysis, such as the technique called Behavioral Event Interviews or BEI in order to seek the different characteristics between the persons who have better master pieces than the persons who have ordinary work. The characteristics compose of skills, drive, individual characteristics and roles.

In Thailand, competency are considered significant for both two parts: job and superior performance (Thitinut Akkadechanunt, n.d.: 11) as the Office of the Civil Service Commission (OCSC) set up competency model for Thai civil service officials primarily based on the job analysis (Work Panel of competency project, OCSC, 2005: 13). The interview technique was applied in the research of Sombat Preuttikul (2006) and Surapee Hemvanich (2005) to identify behavior, which were based on an individual. As the small-scale fishers are not members of organizations with specific

standards of job position and job description, job analysis is not effective. As a result, an individual-oriented analysis (small-scale fishers) is to be conducted.

2.5.3 Definitions of “competency”

According to related literatures, the researcher believes that the competency of small-scale fishery in co-management has several levels; individual, leader, organization and network. Actually, in the real situation, a small-scale fishery may have several roles and duties, such as individual, network leader or network members. In order to see the competency of the small-scale fishers in a clear image and not overlap to each other, here the researcher will focus on the competency of small-scale fishery in terms of individual competency and network competency only. As Kirati Yodyingyong (2006: 8) said that the excellent performance came from the relationship of the competency of organization and employee. It can be said that only the network competency is not enough to achieve in fishery co-management because the aspects of network organization is different from the aspects of network members. On the other hand, the network will be the work in the process level while the individual work is the work of activity level (Sukanya Rassametummachot, 2006 cited by Kirati Yodyingyong, 2006: 9). Therefore, in order to achieve in fishery co-management, it has to have the reinforcement in both competency in terms of network and individuals.

The meaning of the word “competency” or “ability” can be categorized based on two levels of study, including individual level and network level, as follows.

2.5.3.1 Definitions of individual competencies

Definitions of individual competencies apply the concept of competency, and it is found that the words that demonstrate ability are ‘competency’ and ‘employability’.

Krerkkiat Sriserpoke (2003: 21) provides the meaning of competency as knowledge, skills and abilities of humans that are expressed through attributes.

Furthermore, there are many academics who provide definitions of the word ‘competency’, including Blancero, Boroski & Dyer (1996); Bonder

(2003); Boyatzis (1982); Dalziel, Fitts & Mitrani (1992); Fleishman, Marshall-Mies, Uhlman & Wetrogen (1995); Green (1999); Klein (1996); Lohan & Rylatt (1995); Mansfield (1996), McLagan (1996), Spencer & Spencer (1993); McClelland (1973); Mirabile (1997); Slivinski, et al. (1996); Spencer, McClelland & Spencer (1994); Ulrich, Brockbank, Yeung & Lake (1995); cited by Piyachai Chantarawongpaisarn (2006: 10-11). Catano, et al. (2001 cited by Piyachai Chantarawongpaisarn, 2006: 11) concluded the definitions provided by these academics that most definitions will look at “Competency” in two groups, which are (1) behavioral group; and (2) KSAO group (Knowledge, Skill, Ability and Other Characteristics) that individuals must obtain. Both groups will recognize individual characteristic or behavior that will to job achievement.

Piyachai Chantarawongpaisarn (2006: 12) concluded that competency means skills, knowledge and abilities or behaviors of personnel that are necessary to work in order to ensure that they will be able to work until an objective or a goal of that job is achieved.

Civelli (1998: 49) mentioned that ‘employability’ refers to possibility that individual can use the set of competencies and knowledge within a new organizational boundary or different organizational boundary.

The competency can be represented by Iceberg model, which includes two parts; over water surface, this is a visible part easy for management which includes skills and knowledge, but under water surface is a hidden part difficult for management, which include (1) self concept which is the part of value, attitude and self image, (2) trait, and (3) motive (Krerkkiat Srisempoke, 2003: 21; Piyachai Chantarawongpaisarn, 2006: 12-13) as illustrated in Figure 7.

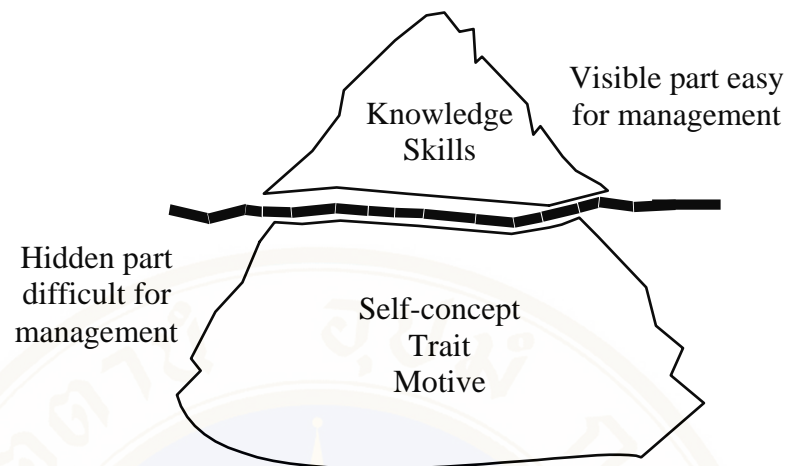


Figure 7 Iceberg model

Hidden competency, which is an attitude, is easy to change. The change of attitudes consists of three levels, which are thought change, emotional change and behavioral change. Such changes are directly related to one another. If all thoughts, emotions and behaviors are affected at whatever level, they will affect the change of attitudes absolutely (Nipa Limwilai, 2003: 13-14). Factors affect the change of attitudes are sources of things communicated, contents communicated and situations (Chom Pumipak, 1980 cited by Wassana Sawatdeenarunat, 1993: 45) whereas Zimbardo (1977 cited by Nipa Limwilai, 2003: 14) said that the change of attitudes depends on knowledge but the competency in terms of skills and knowledge are difficult to change although there are external factors to affect.

2.5.3.2 Definitions of network competencies

From the application of social network theory, even though many English words are found to have similar meaning to network competency, including powerful network, core competency network, competency network, and capability network, these words do not directly provide the definitions of network competency; instead, they only explain about the characteristics of the network. In Thai language, the often used words are “network strength” or “powerful network” or “achievement of network.”

Network strength is defined as the capability of the networking in implementation for a target groups, continuous response to needs and problem resolution of the target group together with specific objectives and management system, members' participation and consistent projects or activities (Department of Networking Promotion and Development, n.d.: 4). Kanitta Karnchanarangseenon (2004 cited by Department of Network Promotion and Development, n.d.: 15-17) mentioned about qualitative indicators of network strength as follows: (1) relationship; (2) clarity of goal; (3) opinion giving and decision-making process; (4) activity characteristics and continuity; (5) source of resources/ proficiency; and (6) learning and innovation.

Powerful network's parties means possession of expertise in management of the following aspects: (1) knowledge/technology, (2) policy and laws, (3) standards, (4) imparting and instructing information, (5) assessment, (6) social movements, (7) organizational culture, (8) development of information, (9) human resource administration/development, (10) learning organization development (Prasert Louicharoen, n.d.: 1-5).

Achievement of network contributes to consistent learning and development covering (1) learning process, (2) increased opportunities of problem resolutions, (3) self-dependency, (4) local resource management, (5) policy mobilizing process, (6) authority or power (Sutit Arpakro (Ob-Oon), 2004: 106-108)

According to the meaning of network strength, powerful network's parties, achievement of network mentioned above, it can be concluded that the competency of networks which have co-characteristics in each concept, which are, concept of Department of Network Promotion and Development (n.d.: 4) and Kanitta Karnchanarangseenon (2004) is in accordance with several issues included (1) having objectives or goals of operation clearly, (2) the relationship within the networks or members participate to one another for network operations, and (3) having the continuity activities. Moreover, Department of Network Promotion and Development (n.d.: 4) and Prasert Louicharoen (n.d.: 1-5) has coherent issues as well which are management and assessment. The Department of Network Promotion and Development (n.d.: 4) and Sutit Arpakro (Ob-Oon), 2004: 106-108) has the issues coherent of problem solving of target group continuously, Kanitta

Karnchanarangseenon (2004) and Sutit Arpakro (Ob-Oon) (2004: 106-108) has the coherent issue, resources and resource management in the locality, Kanitta Karnchanarangseenon (2004), Prasert Louicharoen (n.d.: 1-5) and Sutit Arpakro (Ob-Oon) (2004: 106-108) has the coherent issues, which are learning process, knowledge and technology. Besides, Prasert Louicharoen (n.d.: 1-5) and Sutit Arpakro (Ob-Oon) (2004: 106-108) has the coherent issue of driving the policy and law. Moreover, ability of networks in a concept of Prasert Louicharoen (n.d.: 1-5) demonstrated that (1) information transfer, (2) personal development, and (3) social drive.

In conclusion, the competency of network has several items as follows; (1) clear goals of operations, (2) relationship within the networks or members that participate with one another for network operations, (3) continuity activities, (4) management as well as problem analysis and assessment, (5) source of resource and local resource management, (6) learning process, knowledge and information transfer, (7) personal development, and (8) social movement in driving policy and law.

The network competencies are the same as individual competencies, those some competencies are easy to change by the external factors affect. Shared goal will change, when there are developing coastal areas to become industry or tourism. If the goals of networks change, it will affect other competencies; administration, individual development, learning competency. Therefore, the knowledge and learning of networks are the competency which has more stability.

2.5.4 Development process and design method of competency

2.5.4.1 Competency development processes in organization consist of five processes as follows (Krerkkiat Srisermpoke, 2003: 33-34).

Step 1: Development of Strategic Human Resource Management Roadmap is the first step of the development of competency-based approach because it is the organization of basic and overall picture of human resource management in every dimension whether it relates to competency or human resource management system.

Step 2: Core competencies and technical competencies refer to the development of competencies required by the organization and these competencies are then identified as standards for each position, which will be the core competencies that every position in the organization must acquire based on roles and responsibilities

of that position. At the same time, each position is also directed by technical competencies, which are specific competencies for each position.

Step 3: Competency mapping and dictionary mean applying competencies that are identified by the organization to map with each position, and then consider that each position will have ability standard at what level. Normally, the mapping will be between the units, and within the unit. It also requires the organization of dictionary in order to categorize competencies and to be the central standard for personnel to acknowledge.

Step 4: Competency assessment or Gap analysis means evaluation of individual competency in comparison to ability standard of the position whether that individual obtains ability according to standard, lower or higher than standard in order to apply those data into personnel development.

Step 5: Prepare applications of the competency based HRM is the process of applying competency data into human resource management in each aspect such as selection and employment, performance evaluation, wage payment, and training and development (as shown in Figure 8).

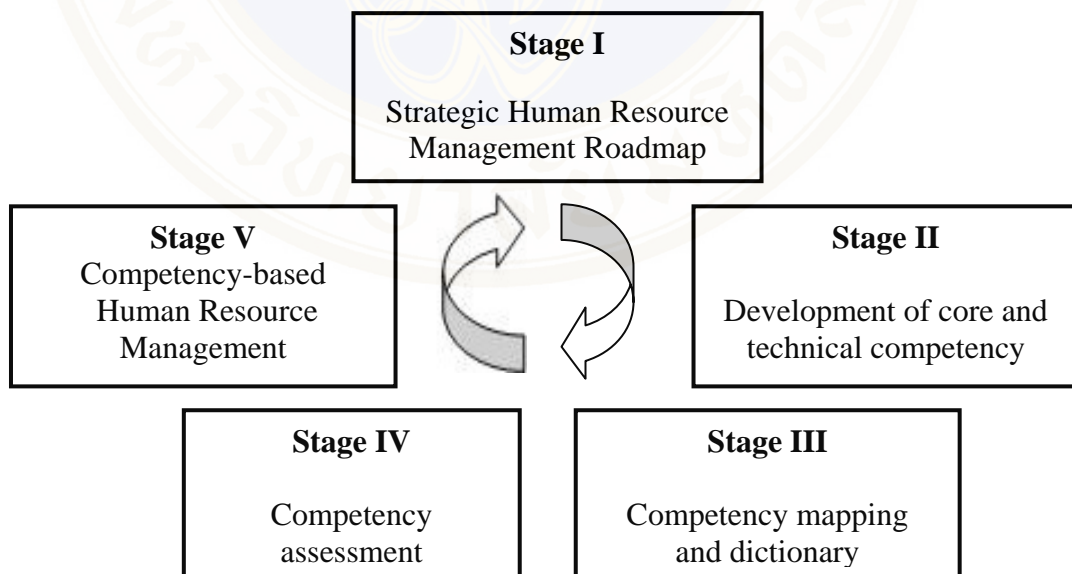


Figure 8 Processes of organizational competency development

Source: Krerkiat Srisermpoke (2003: 33)

2.5.4.2 Designing competency studies

In order to obtain efficient competency model of small-scale fishers, the following issues will be mentioned: (1) designing competency studies; (2) categorization of competencies; and (3) identification of capability level.

1) Designing competency studies

Spencer and Spencer (1993 cited by Nisada Wedchayanon, 2006: 121-133) explained 3 methods as follows: (1) criterion sample; (2) a short competency model process based on expert panel; and (3) studying future jobs or single-incumbent jobs. Another method is the method of King, et al. (n.d. cited by Teeradej Chai-Aroon, 2006: 35-37), which mentioned about “method of repetition from small to large” in order to develop competency model of an evaluator. In this case, four methods are presented as followed.

Method 1: Criterion samples consist of six stages as follows.

Stage 1: Define performance effectiveness criteria. The best criterion should be the one obtained from powerful data. In identifying or finding powerful criteria, it can be done by asking supervisor, colleagues or sometimes sub-commander to provide information. Sometimes, identification of criteria may require self-identification and better improvement.

Stage 2: Identify a criterion sample. This stage is the search for superstars and then mapping with people who have average performance and poor performance.

Stage 3: Collect data. There are 6 methods of data collection and each method is appropriate to the form of competency model, including (1) Behavioral Event Interviews (BEI); (2) expert panel; (3) surveys; (4) competency model database expert system; (5) job function/ task analysis; and (6) direct observation.

Stage 4: Analyze data and develop a competency model. Analyze and identify competency characteristic and skill that is different and separated between superstars and people with average performance. This process is called “Hypothesis generation”. Analysis of data requires an expert to bring the data of two

groups into comparison and try to find differences in terms of motive, skill, characteristics. These have in high performance groups and do not have in other groups.

Stage 5: Validate the competency model. There are three methods of validation, including (1) concurrent cross-validation, meaning ability of the test obtained from the competency model to be used for measuring and predicting behaviors and performance of two groups (high and general performance) in comparison to the competency model in the first study; (2) concurrent construct validation. This method will construct the competency test, and then try out the test with people who have high performance and average performance by asking executives to weigh or rank using a rating form or Q-score; (3) predictive validity. This method can be done by selecting people through the use of competency framework, and then consider whether the selected people have better performance or not.

Stage 6: Prepare applications of the competency model. After passing validity test of the competency model, the model is then used for selection by constructing as a tool for interview, assessment centers or career path, and wage payment, or applying into information system for management.

Method 2: A short competency model process based on expert panel consists of four steps as follows.

Step 1: Convene expert panels. This step is an analysis by HRM expert, supervisor, and high performance people to mutually identify (1) key accountabilities regarding what important responsibility is and what result is; (2) results measures regarding appropriate criteria should be found; (3) career paths; (4) identification competencies necessary for working, by dividing into two levels including baseline or threshold level and superior level. At the same time, these experts must construct a questionnaire called CRQ (Competency Requirement Questionnaire) that will help assessing competencies that are both baseline level and superior level.

Step 2: Conduct Behavior Event Interviews (BEIs) by interviewing high performance people, and then asking them to provide examples and details of why they have such behaviors. Behavior Event Interviews will enable us to obtain the details of competencies.

Step 3: Analyze data and develop the competency model. This step will enable an analyst to identify behaviors or characteristics that separate high-performance people from average-performance people. Obtained data is also derived from individual who actually possesses that position.

Step 4: Validate the competency model. This method is an assessment of the model through ranking of high-performance and average-performance people using criteria specified in Step 3 to affirm that high-performance people must obtain higher score than average-performance people.

Method 3: Studying future jobs or single-incumbent jobs. The study of future jobs can be undertaken by three methods, including (1) expert panel; (2) study of relationship between job and competency; and (3) analysis and comparison to current job.

The study from single-incumbent jobs can be done through data collection of the key persons who have relationships with others in working, or through interview with closed persons such as supervisor, colleagues, customers and employees, by asking those people to identify important situations. This method will give out the number of competencies.

Method 4: Repetition from small to large. In the competency model development of an evaluator, King, et al. (n.d. cited by Teeradej Chai-Aroon, 2006: 35-37) provided the following steps.

Step 1: Extract ideas from opinions of a small group of people concerning what competencies an evaluator should have, and then categorize those competencies and find a conclusion together in group.

Step 2: Apply the obtained competencies to examine with other literatures.

Step 3: Face validity. The researcher applies the outlined competencies to re-validate with a group of 31 evaluators using a consensus process called "Multi-Attribute Consensus Reaching (MARC)". Processes are as follows: (1) divide participants into groups of not exceeding 10 persons; each person gives rating to each competency regarding how important it is (range 0-100 scores); (2) find mean and range of each competency whereby high mean and low range indicate the importance of that competency and congruent opinions; (3) group

members mutually discuss results of why they give such rating. This is in order to allow everyone to listen to opinions of one another; (4) each member will give rating to each competency again after seeing and hearing other members' opinions; and (5) find the mean and then load with competency score.

Therefore, in the competency model development of small-scale fishers in fishery co-management, in order to obtain the efficient competency model the expert panel will be applied to construct the appropriate competency model. This is because small-scale fishers are not business organization or an organization with an official structure; most of them are community organization or network of small-scale fishers with no structure or with loose structure, without level of management, and without supervisor or sub-commander according to each field, but it is rather in the form of stakeholders. Therefore, experts consist of various stakeholders who are small-scale fishers and government sector (including the SAO), NGOs, business sector and academics. Important competencies are used to construct the competency model of small-scale fishers in fishery co-development in the future.

2) Types of competency

There are many criteria for the classification principles of the competency, including profession criteria, learning process criteria, and origin of competency criteria, as follows.

(1) Profession criteria

Generally, competency can be categorized into two main types: (1) Core competency is the competency that is a core of that organization in which everyone within the organization must acquire these similar qualifications; (2) Technical competency is the competency identified for each aspect of work or based on job characteristics, which have different layers of capability according to assigned responsibilities.

Krerkiat Srisempoke (2003: 24-25) divided individual competency into three types. Type 1, Managerial competency (activity level) means the competency of personnel relating to planning, management, analytical thinking, problem-solving and decision-making. Type 2, Generic competency means the competency of personnel relating to general aspects such as

communication, negotiation, and team working. Type 3, Technical competency means the competency of personnel relating to responsible job content.

(2) Learning process criteria

The concept of learning of Bloom's taxonomy (1950 cited by Krerkkiat Srisermpoke, 2003: 86) indicated that learning process and capability of humans can be divided into three main groups: group 1, cognitive domain; group 2, behavioral group or attitudinal group called 'affective domain'; and group 3, skill group or achievement group called 'Psychomotor domain'.

(3) Origin of competency criteria

Origin of competency can be explained by iceberg model, which consists of two parts. First, water surface is a visible part that is easy for administration and management. It includes skill and knowledge. Second, under water surface is a hidden part that difficult for administration and management. It includes (1) self-concept which is value, attitude and self-image; (2) trial; and (3) motive (Krerkkiat Srisermpoke, 2003: 21; Piyachai Chantarawongpaisarn, 2006: 12-13).

Concerning the classification of the competency at the organizational level, Escrig-Tena, et al. (n.d. cited by Nisada Wedchayanon, 2006: 235) stated that core competency of the organization can be categorized into 4 types, which are (1) management competency consists of leadership, and ability to use organizational resources and environment; (2) utilization ability of input consists of knowledge and expertise of employees, and ability to create collaboration with external; (3) ability to create change includes ability to establish mutual spirit, organization commitment, ability to expand learning boundary, and ability in terms of speediness and flexibility; and 4) ability based on productivity includes reputation.

3) Levels of competency

After selecting the competency, then the competency level must be identified. Competency level means the categorization of levels of competency based on position, role and responsibility in order to enable each personnel to perceive and understand competency standard of the department, and what the organization wants to have. Generally, the pattern of the competency level are identified in three patterns, which are Pattern 6 consisting of strategize, expert, leader, supervise, application, and beginner; Pattern 5 consisting of strategize, master,

supervise, application, and beginner; and Pattern 4 consisting of leader, master, application, and beginner (Krerkkiat Srisermpoke, 2003: 73-76).

Classification of competency level can have the following indicators. Level 1, Beginner: There is still the need for training and receiving advice from supervisor. Level 2, Application: Be able to apply existing system without receiving any advice, and able to apply a new system under advice, but there is still the need for training on a new topic. Level 3, Expert: Be able to follow without receiving any advice, and able to apply a new working system and give advice to others. Level 4, Leader: Be able to plan and apply new works, evaluate, follow up and improve work.

2.5.5 Competency assessment

Competency assessment enables us to know the gap between actual competency and expected competency. In this case, type of assessment and method of assessment will be discussed as follows.

2.5.5.1 Type of assessment: Competency assessment can be categorized into two types as follows (Krerkkiat Srisermpoke, 2003: 91).

1) Competency-based assessment or what is called “Backward competency assessment,” meaning consideration of knowledge, ability, skill and behavior.

2) Competency-based results assessment or what is called “Forward competency assessment,” meaning consideration of job achievement in relation to competency.

2.5.5.2 Method of assessment: Thitinut Akkadechanunt (n.d.: 78) stated that there are several techniques of competency assessment: (1) self-assessment and assessment together with director; (2) behavior observation; (3) test; (4) interviews; (5) questionnaire; (6) 360-degree assessment. Method of 360-degree competency assessment of small-scale fishers consists of various evaluators, as illustrated in Figure 9.

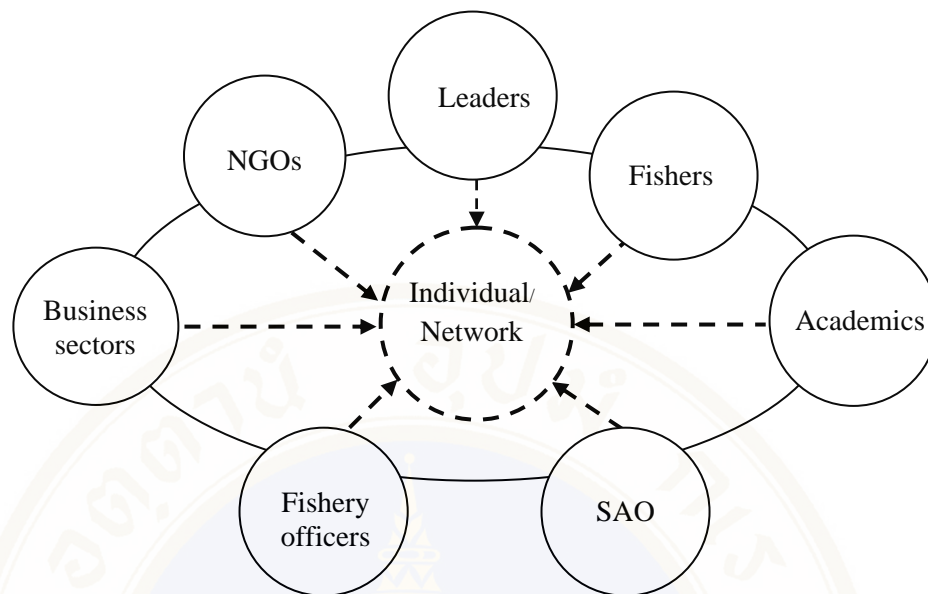


Figure 9 360-degree assessment

In conclusion, this study aims to evaluate competency rather than results occurred from competency. Assessment tool is a questionnaire. This study applies the form of self-assessment because the assessment does not affect wage payment, and individual will know the best of what competencies and level there are. In addition, three levels of competency will be applied, including beginner, apply, and leader.

2.5.6 Application of competency

The application of competency can be undertaken in two parts: (1) Human Resource Management (HRM) includes manpower planning and selection, promotion, wage payment, and performance achievement assessment; and (2) Human Resource Development (HRD) includes succession planning, career development, competency development, and talent group development (Rangsan Thamoonsaen, n.d.: 15). Previous development that may only focus on knowledge and skills has to give more importance to working behaviors as well as training personnel to have working behaviors that meet organization's expectation. Blank (1982 cited by Kirati Yodyingyong, 2006: 162-163) specified that competency-based training has four characteristics, consisting of (1) WHAT-student learn emphasizes trainees to acquire the desired competency, (2) HOW-student learn concentrates on learner-centered

learning, (3) WHEN students proceed from task to task provides sufficient time for learning, (4) If student learned each task in which trainees in a competency-based training program must acquire competency of that job prior to being assigned to the real job, by comparing competency of trainees to work standard.

In conclusion, the development of competency model of small-scale fishers in fishery co-management in order to apply the competency model into the competency-based development of small-scale fishers only. The purpose is not to select, promote or pay any wages. However, competency of small-scale fishers in fishery co-management should be analyzed in the following part.

2.6 Analysis of small-scale fishers' competency in fishery co-management

During “the small-scale fishers’ crisis” since 1987, though some communities were collapsed, some of the others ceaselessly developed their learning of and adjustment to changes caused by external factors which affected directly their lifestyle and life quality both positively and negatively. Thus it was necessary for them to gather into groups or networks and, by social capitals, community power and community capability, originated social movements in fishery co-management in the fishery zone in front of each member’s village. A significant success factors in fishery co-management is building participants’ competency, especially small-scale fishers whose lifestyle is directly aquatic animal resource dependent. With literature review, their appropriate competency in fishery co-management is concluded as follows.

2.6.1 Competency at the individual level

2.6.1.1 Thinking method of community uses rationalization paradigm aiming at economy for sustenance as well as conservation paradigm and social/community paradigm that aim at equity in resource accessibility. It can be stated that thinking method of community has the balance of three paradigms more than government sector in which the thinking system is in the relationship of coastal resources and the way of lives of oneself and of the community, as mentioned by Lertchai Sirichai (2002: 155) that “the way of lives of villagers are integrative.”

2.6.1.2 Motivation: The most important motives' small-scale fishers in cooperation with the government sector are (1) abundance of fish resource, (2) conflicts between small-scale fishers and industry-based fishers, (3) no rights to access, (4) conditions of impoverishment in fishers' and fishery communities' livelihood, (5) conflicts among small-scale fishers, (6) conflicts between fishers and other interested sectors, and (7) lack of representatives to decide fishery management (Sverdrup-Jensen & Nielsen, 1998: 16).

2.6.1.3 Attitude: fishers have various attitudes towards coastal fishery or community fishery management depending on their different aspects covering fishery types, such as a fishery group, a breeding group and a pus-net group (Metee Juntaropakorn, 1998: iv); Thai literacy; types of fishing tools, such as push nets, trawls, gill seines, hooks and surrounding traps (Pirut Jeerasatian, 1997); membership of a small-scale fishers' group; and perception of news (Wantana Chenkitkosol, 1997).

2.6.1.4 Values and beliefs: The small-scale fishers have religious beliefs and values that pay respect to the nature and human beings. Aquatic animals in the sea always move so no one can claim the possession. They belong to everyone who has rights to catch them, rather than destroy them in a large number by using destructive fishing gears (Piya Kitthaworn, et al., 2000: 47-48).

2.6.1.5 Conservation spirit: Fishery resource conservation: Small-scale fisher networks have cooperated with NGOs in preservation of mangroves, sea grasses and shellfish zone and prevention of rare aquatic animals as dugongs, dolphins and turtles more than 15 years.

2.6.1.6 Communications: Small-scale fishers' and their leaders' communications and reaction in the fishery co-management is building their competency in conduct efficient fishery co-management (Brown & Pomeroy, 1999: 567; Habermas, 1990 cited by Soreng, 2006: 150; Pomeroy, 1991: 46; Soreng, 2006: 147). Similarly, the Regional Office for Asia and the Pacific (n.d.: 3-4) also indicates that communications and information exchanges among networks is a significant factor of a success. Discussion for resolution is an indicator of the community's stability (Boyd and Charles, 2006: 241) and support for communications: free verbal presentation via two-way conservation mechanism, various communication channels and reaction

relationship learning (Donda, 2000: 21; Nuchanad Juntavises, 2000: iv; Soreng, 2006: 152).

2.6.1.7 Learning of new skills: Pomeroy & Rivera-Guieb (2005: 46) mentioned that resources users or community must have learning of new skills.

2.6.1.8 Knowledge sharing: What relevant to the fishers' organization is an increased demand in capability to access to new learning process and increased competence in interpretation of such knowledge as a specific subject and relevant activities (Nielsen, 1996: 14). Moreover, improvement of resource management in an accessibly flooded area is conducted by different groups in a knowledge sharing process (Sultana & Thompson, 2004: 329). With new experiences and lessons from conducted activities, they need to exchange them with their friends' in the network (the Secretary Division of the Southern Fisherfolk Association, 2002: 28, 31, 33).

2.6.1.9 Participation in small group discussion: For co-management in the preparation phase, small-scale fishers must participate in a small group discussion (Pomeroy & Rivera-Guieb, 2005: 165).

2.6.1.10 Feedback provision in planning: Pomeroy & Rivera-Guieb (2005: 165) stated that small-scale fishers or fishery organization must provide feedback in co-management planning.

2.6.1.11 Participation in research: Pomeroy & Rivera-Guieb (2005: 165) stated that resources users or community must participate in research.

2.6.1.12 Self-development: In the CBFM project, there is the support for the enhancement of human capitals of small-scale fishers as well as adult education and training, and the establishment of local institutes, compliance with traditional practices, and ecological knowledge in control of access (Thompson, et al., 2003: 308). Consistently, Brown & Pomeroy (1999: 554) mentioned about competency building of resources users and stakeholders as well as education, training, and perception building program for reinforcement and participation effective for management (Pomeroy, 1991: 46). In Chile, co-management system has vocational training in marine biology provided for organizational representatives of small-scale fishers (Schumann, 2007: 101). In the development of human resources for sustainable and responsibility of coastal resource management, the target group that should be developed are local community leaders (Southeast Asian Fisheries Development

Center, 2006: 17). Training topics include (1) adult training, (2) action planning, and (3) basic business skills (Makoloweka & Shurcliff, 1997: 352-353).

2.6.1.13 Leadership: Communication is highlighted in development of a small-scale fishers' leader to connect and contact local authorities. A powerful leader and broad participation of community's members can minimize conflicts (Pomeroy, 1991: 46, 48). An excellent people's organization can be originated when leader groups in the community have competency to reach the problems and analyze the causes of problems then find appropriate resolutions (Maneerat Mitprasart, 1996: v).

2.6.1.14 Basic knowledge, primary knowledge and intellect: The local knowledge in fishery community, the small-scale fishers support efficient conduct of fishery action (Amarasinghe, et al., 2002: 41). The stakeholders think of accuracy of basic knowledge in fishery management which is required to be in relating with the purpose of such management (Nielsen, et al., 2002: 9). Scientific knowledge is supported by traditional knowledge: general scientific approaches which include the fishers' knowledge and scientific knowledge in consideration of ecological and social systems (D'Incao & Reis, 2002: 531).

2.6.1.15 Making of traditional fish aggregating device (artificial reefs): Villagers help one another to build fish aggregating devices and lay them in the sea to prevent fishing boats from entering into the 3000 m. from shore. It can protect at a certain level whereby the area around the fish aggregating devices will have abundant aquatic animals and villagers can catch them around that area.

2.6.1.16 Knowledge and fishery law enforcement: small-scale fishers cooperate with the government officers and other sections in making law enforcement efficient. They accepted that it was an effective method in cooperation with the government officers in monitoring and arresting push netters and trawlers intruding into the 3000 m. from shore (Piya Kitthaworn, et al., 2000: 132).

2.6.1.17 Fishers have the role to act in compliance with rules and regulations (Pomeroy & Rivera-Guieb, 2005: 212).

2.6.2 Competency at the network level

2.6.2.1 Network building: The community's members build a network for resource management. Small-scale fishers with similar problems jointly work to solve their problems systemically and dynamically. (Suwimol Piriyanalalai, 2003: 84).

2.6.2.2 Common mind building in the network: thinking basis, attitudes and value.

2.6.2.3 Connection with other networks: In Trang province, there is resource management ranging from the mountain to the sea; i.e. there is the connection of sago palm forest up to the mountain area (Pisit Charnsnoh & Kovit Pongchababnapa, 2005: 3). The connection of network in Songkhla province has the management of "forest-mountain-field-sea (Pa-Khao-Na-Lay)" while Surat Thani province has the management of "forest-mountain-sea (Pa-Khao-Lay)."

2.6.2.4 Coordination with other sections: The small-scale fishers' organization lobbies both internal and external official institutes through broad networks to support its strategies (Nielsen, 1996: 12). Accepted by the villagers, coordination with government sector were efficient and effective in dealing with push netters problems, for example, coordination with the Southern Province Administrative Center, officials of the Department of Fisheries, the Provincial Governor and the police (Piya Kitthaworn, et al., 2000: 96, 99).

2.6.2.5 Information searching: For co-management in the preparation phase, the core leaders of fishers must search for information (Pomeroy & Rivera-Guieb, 2005: 46).

2.6.2.6 Building knowledge of fishery resource management and its application: The data collection by the small-scale fishers in order to present the government service their actual livelihood and problems was their attempt at building their own knowledge of fishery resource management (Piya Kitthaworn, et al., 2000: 94, 111, 147). Their community organization also had working procedures in building such knowledge by starting from discussions about the matters to be done, preparation of data and personnel, implementation and conclusion/assessment (Suwimol Piriyanalalai, 2006: 36). An individual and groups of fishers limit an access to marine resources and manage acquired information and ecological

knowledge of resources (Jentoft, 1996: 1). Additionally, their organization must be capable to transform such knowledge into specific one (Nielsen, 1996: 14).

2.6.2.7 Information system development: Prasert Louicharoen (n.d.: 1-5) mentioned that powerful network must have the ability in information system development, which is consistent with Molares & Freire (2003: 485) who stated that network data, system as well as database and geographical data program are designed for independent use in each network.

2.6.2.8 Establishment of knowledge sharing process within and between networks is the working process emphasizing the participation of small-scale fishers themselves. When each area conducts activities and gain experiences and lessons, they will want to share, transfer and exchange with people within the network and between networks (the Secretary Division of the Southern Fisherfolk Federation, 2002: 21).

2.6.2.9 Information access and transfer: Prasert Louicharoen (n.d.: 1-5) stated that powerful network must have the transfer of information.

2.6.2.10 Knowledge and expertise of network members: Nisada Wedchayanon (2006: 235) mentioned about knowledge and expertise of organizational employees.

2.6.2.11 Analyses of problems and resolutions: Small-scale fishers gather into a network and emphasize participatory working so that all sectors can know and perceive the problems and help to find resolutions (Suwimol Piriyanalalai, 2003: 84). Consistently, D’Incao & Reis (2002: 536); King & Faasili (1999: 136) present that fishers are relevant to resource management from starting discussion of problems, options of resolutions and result of each option. Each village is called to a meeting, determines important problems, thinks of causes, presents resolutions and implements a plan. Similarly, according to Pomeroy (1991: 46), various meetings can help to classify problems and needs: a quartet meeting for exchange of analytic thinking with win-win voting. Moreover, Classification process of action leads to perfect resolution and consideration of possible effects on different interested people (Sultana & Thompson, 2004: 327).

2.6.2.12 Planning, implementation and assessment: The community plays a role in developing its management plan and implementation of the plan (Regional Office for Asia and the Pacific, n.d.:7). This is consistent with the

community-based resource management in Bangladesh which was effective since the starting through the participatory action plan development (PAPD) (Sultana & Abeyasekera, 2008: 201). Additionally, the CBRM project in the Philippines presents the effectiveness of the community organization as establishment which will make a plan and implement a developed project (Alcala, 1998: 183). Consistently, Nielsen (1996: 13) points that a fishers' organization is required to have vocational skills in teamwork management and making strategies. Reis & D'Incao (2000: 588) stated that the forum should be composed of representatives from many sectors, who will discuss a working plan and observe implementation of the plan in which fish stocks are expected

2.6.2.13 Improvement of working process through learning from past lessons: There are four important lessons of the community. The first lesson is that government's policy directly affects the way of lives. The second lesson is that without serious action being taken, the use of legal restriction measures alone in problem solving of destructive fishing gears will not be efficient. The third lesson is that relationship characteristics within the community is mutual support and dependence because villagers believe that one cannot live alone and has to rely on mutual assistance. The fourth lesson is that the reason for community's cooperation in resource management is because it provides long-term benefits more than each individual competing for resource exploitation.

2.6.2.14 Network communication system establishment: Most of the network members receive MCS training from the CHARM Project. After the training, CHARM has allocated communication radio to the networks. Prapapan Oon-Op (2009: 23) pointed out that one method of network management is communication system management.

2.6.2.15 Assistance seeking: For co-management in the preparation phase, the core leaders of small-scale fishers must seek for assistance (Pomeroy & Rivera-Guieb, 2005: 46).

2.6.2.16 Proposal and funding: For co-management in the preparation phase, the core leaders of small-scale fishery must create the project and request for fund (Pomeroy & Rivera-Guieb, 2005: 46). Villager organizations should have ability of financial resource for operation and responsibility management (Nielsen, 1996: 13).

2.6.2.17 Designing measures for coastal resource management:

The fishers' organizations must develop its own rules and regulations which are significant factors to a success (Regional Office for Asia and the Pacific, n.d.: 3-4).

2.6.2.18 Establishment of coastal monitoring and surveillance

system: In the integration for monitoring the fishing boats using push nets and trawls sneaking into the area, there are many methods ranging from self-integration to catch them by having village headman as the core leader or sometimes the village headman may coordinate with police officers or fishery officers in monitoring or in some areas the related governmental departments such as Department of Fisheries used to send a specific mission unit to help for sometime (Prapas Pintoptang & Anusorn Unno, 2000: 45-48).

2.6.2.19 Boundary identification and area public relation:

Small-scale networks have coastal resource management by inviting governmental units to participate in resource conservation activities, for examples, boundary establishment and marine resources restoration, mangrove forestation, and community mangrove forest boundary establishment (Prapas Pintoptaeng & Anusorn Unno, 2000: 58-59). The four-village network organizes media for area promotion by using students to distribute leaflets to the boats in the sea.

2.6.2.20 Conflict management: Development of resource users'

conflict elimination approaches needs understanding of actual mechanism and reasons behind compromise procedures of various user groups (Nielsen, et al., 2002: 9). A strong community leader and broad participation of community members can minimize conflicts (Pomeroy, 1991: 48). Dealing with conflicts was conducted through plan review (Sultana & Thompson, 2004: 346), decision of conflicts by votes and intervention (Ruddle, 1998: 19). In Africa, co-management was used as an important mechanism in deciding conflicts more than achieving natural resource sustainability (Sverdrup-Jensen & Nielsen, 1998: 2).

2.6.2.21 Bargain: The main role in bargaining is negotiation for

efficient participation of the resource users, which relates to bargaining competency (Brown & Pomeroy, 1999: 554). Thus the small-scale fishers' organization is required to have practical competency in "economic bargaining" (Nielsen, 1996: 14).

2.6.2.22 Mutual consensus finding: Small-scale fishers have the role to participate in the meeting, discussion, and brief meeting summary (Pomeroy & Rivera-Guieb, 2005: 46, 64).

2.6.2.23 Decision: Co-management requires co-decision of various groups covering fishery interested groups, the committee/neutral, local resource users, fishers, communities and government organizations, for example, to make a decision on the use of natural resources needs a clear decision frame (Hughey, et al., 2000: 126; Kitts & Silva, 2006: 832). Co-decision is a method of reinforcement of community power: encouragement of the suburbia people's decision is an indicator of a sustainable community (Boyd & Charles, 2006: 241; Donda, 2000: 21). Decision process requires morality which brings impartiality and legality (Habermas, 1990 cited by Soreng, 2006: 150).

2.6.2.24 Connection of external environments and internal networks' competency: The small-scale fishers' organization should be capable to manage fishery affairs and competent at management of different external conditions (Nielsen, 1996: 13).

2.6.2.25 Social movement: In Satun province, there is a campaign to change destructive fishing gears. In Pattani province, the two sets of push nets are changed, which were equivalent to the total of 146 boats. In the fishing gears change activities, there are leaders who can build relationship and expand the work base to other communities. In addition, small push nets in Pattani province have been decreasing in almost all of them. In Moo 1, Koh Yao Yai sub-district, Phangnga province, there is the establishment of savings co-operatives. that provides credit loan to the members, especially those who want to change occupation and stop using trawls and push nets will receive help. Moreover, the Southern Fisherfolk Federation and sub-networks campaign for continuous policy/ legal support. The Southern Fisherfolk Federation has been working to solve problems at the policy level related to small-scale fishers (Sunanta Ninpetch, 2001: 87).

2.7 Conceptual framework

In the development of the competency model of small-scale fishers in fishery co-management, the review of concepts and theories, and related research leads to the construction of conceptual framework as follows (Figure 10).

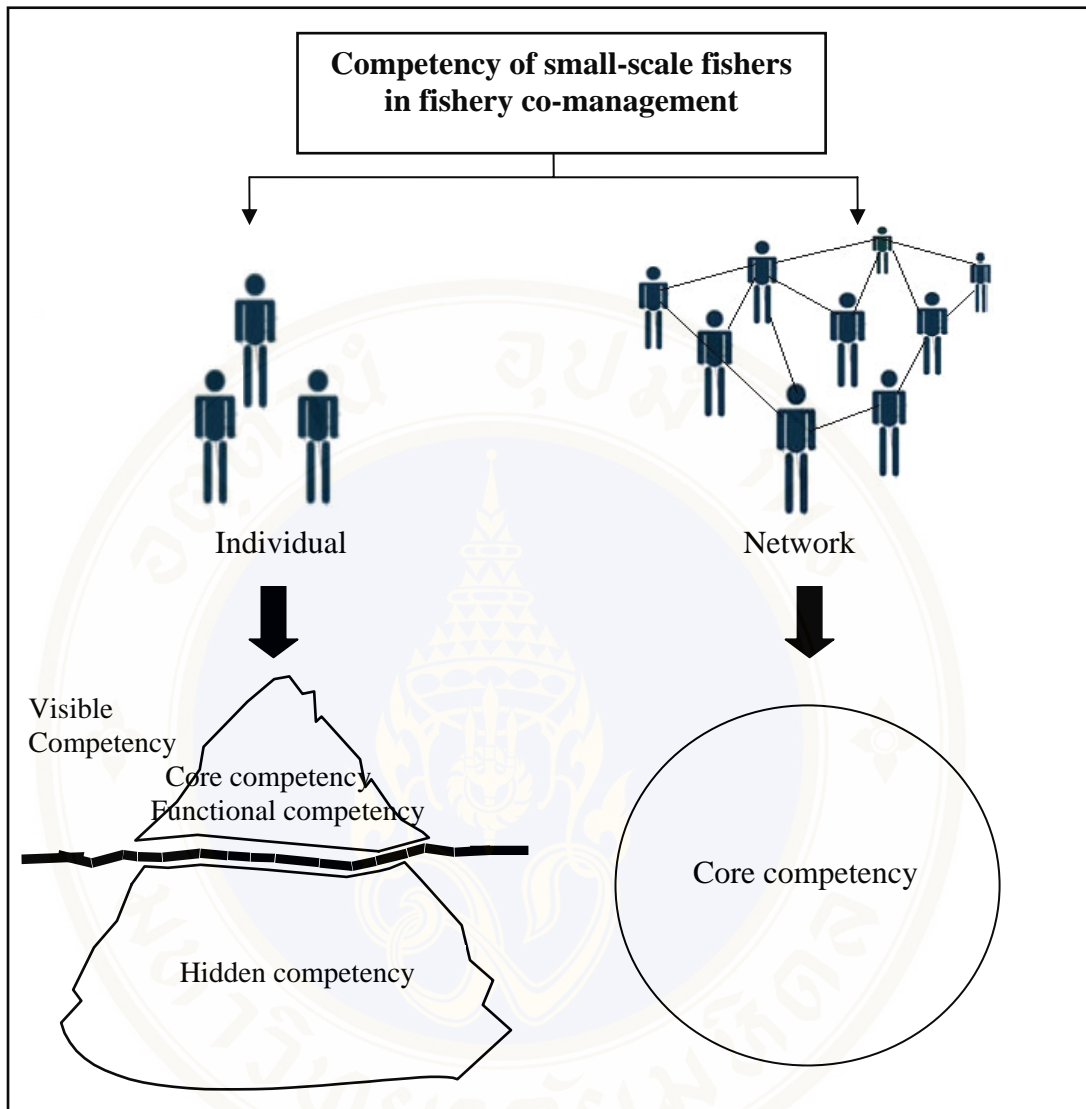


Figure 10 Conceptual framework

The competency of small-scale fishers in fishery co-management consists of two levels, which are the individual and the network levels. The competency at the individual level includes two main groups, which are visible competency and hidden competency. Moreover, the visible competency consists of core competency and functional competency while the competency at the network level consists of core competency.

CHAPTER III

RESEARCH METHODOLOGY

The development of small-scale fishers' competency model in fishery co-management consists of three phases. **Phase 1** deals with the model construction and examination. **Phase 2** focuses on the investigation of small-scale fishers' competency level in fishery co-management. **Phase 3** is an evaluation of the results of competency assessment. This chapter is also concerned with aspects regarding (1) study areas, (2) study processes, and (3) selection of small-scale fishing networks.

3.1 Study areas

Since the fishery co-management in each area runs different activities and involves diversity of participants, two areas are selected for this study: an area remarkable for the best practice of fishery co-management, and an area with normal fishery co-management.

Selection criteria of study areas

1. The best practice area must have well-established small-scale fisher organizations and networks in each community. There are rules and regulations in fishery resource exploitation, effective conflict management, and abundance of coastal resources. Likewise, the normal fishery co-management area ought to have similar characteristics to the best practice area; however, the expectation level is not the same.

2. The selected areas should be located on the same coastline, which can be the Gulf of Thailand or Coastal Andaman Sea. They should also be in the same region, that is, in the eastern, the central, or the southern region.

3. The selected areas must have fishery co-management or community-based fishery management, which can either from government sector initiatives to the community or from community-generated initiatives to government sectors

4. The selected areas must provide various activities for the fishery co-management, including change of destructive fishing gears, coastal monitoring and surveillance, fishery resource conservation in different forms, and coastal resource management plan. The tasks should also include planning, implementation and assessment. In addition, fishery co-management activities should involve various groups of participants, namely government sectors (including the SAO), small-scale fishers, NGOs, business sectors and academics.

5. The selected areas must have easy and safe access.

In this study, two areas were selected by means of purposive sampling. The upper province on the Andaman coastline was selected as the best practice of co-management, and the lower province on the Andaman coastline was selected as an area with normal co-management. There are several aspects that make the upper province a stronger fishery community than its counterpart: the availability of community aquatic animal traders, a large number of central markets for aquatic animals, success in developing a sustainable approach to cope with conflict in fishery management (Supaporn Anuchiracheeva, et al., n.d: 4), and abundant mangrove forests in terms of both quantity and quality. The upper province occupies the most mangrove forests, that is, 190,265.25 rais, while the lower province covers 150,596.75 rais (Sanit Aksornkaew, 1998: 8). Moreover, the mangrove forests in the upper province are more bountiful than those in other provinces (Environment and Energy Engineering Center, n.d: 4-60).

Despite the lack of community rafts and central markets for aquatic animals, the lower province is abundant with coral reefs and seagrass. During 2002-2003, prior to the Tsunami disaster, the coral reefs in the lower province were more plentiful than those in the upper province. Specifically, five percent of the coral reefs in the lower province were still in good condition, compared to 1.8 percent of the coral reefs in the upper province (Nipon Pongsuwan, et al., 2005: 66). Regarding seagrass,

in 2006 the lower province had the total area of 21,040 rais while the upper province covered the area of 15,470 rais (Sombat Poowachiranon, et al., 2006: 125).

Nevertheless, the lower province is still confronted with the problem of luring purse seines, built by a fishery association a few years ago, which illegitimately operate within 3000 m. from shore. Though the luring purse seines also operate in the upper province, they are from the Gulf of Thailand. Moreover, despite the operation of the black net fishery in this area, it is run offshore.

3.2 Study processes

The study processes are divided into three phases (Figure 11).

In response to Objective 1, which aims to develop the competency model of small-scale fishers in fishery co-management, Phase 1 was carried out as follows:

Phase 1: Construction and examination of the competency model

Since the aim of this phase is to construct and examine a competency model, including making a competency dictionary, the results were the developed competency model of fishery co-management, at individual and network levels, and a competency dictionary. This phase consisted of three stages.

Stage 1: Competency model construction: First, concepts, theories and related research were reviewed. Then, the competency messages both at individual and network levels were specified, prompting sub-competencies of small-scale fishers in fishery co-management. Based on specified competency messages, a competency model was constructed by grouping the same types of sub-competencies into categories such as hidden competency, core competency and functional competency. The result of this stage is the competency model in fishery co-management both at individual and network levels.

Stage 2: Content-based examination of competency model: This follow-up stage was to examine the constructed competency model from stage 1, to see whether it is compliant with the real content of fishery co-management in the area. As a fishery co-management involves several stakeholders, an examination of the competency model by experts is needed. These experts groups, or groups of

experienced persons or people directly involved with fishery co-management, can be anyone from within or outside the study areas, and can be made up of participants from different sectors, namely small-scale fishers, government sectors (including the SAO), NGOs, business sectors and academics. The following was the list of thirty-eight fishery co-management experts in this study:

1. Six persons from government sectors: Chiefs of Provincial Fisheries Office from the upper and lower provinces, an academic from Department of Fisheries, the Director of Marine and Coastal Resources Conservation Center No. 5 (Phuket) and Head of Mangrove Development Station (Department of Marine and Coastal Resources);

2. Three SAO administrators from the upper and lower provinces;

3. Two persons from CHARM Project—Thai Director of Coastal Resource Management Project and an expert in coastal resource management;

4. Leaders of small-scale fishing networks, from sixteen networks: 1 from secretary of the Southern Fisherfolk Federation, 7 from the networks in the upper province and 8 from the networks in the lower province;

5. Four NGO representatives from Rak Talay Thai Foundation, Yard Fon (Rain Drop) Association, Save Andaman Network (SAN), and Andaman Organization for Participatory Restoration of Natural Resources (ARR);

6. Six academics from Sukhothai Tamathirat University, Kasetsart University, Mahidol University, Prince of Songkla University (Hat Yai Campus and Pattani Campus) and Rajamangala University of Technology Srivijaya, Trang Campus; and

7. One local aquatic animal trader.

After the competency models of both at individual and network levels were constructed, they were used to design the question framework for data collection. Based on this question framework, an in-depth interview was conducted with experts. Based on the field data, individual and network level competencies of small-scale fishers were then specified and improved. The improved competencies are the result of this step.

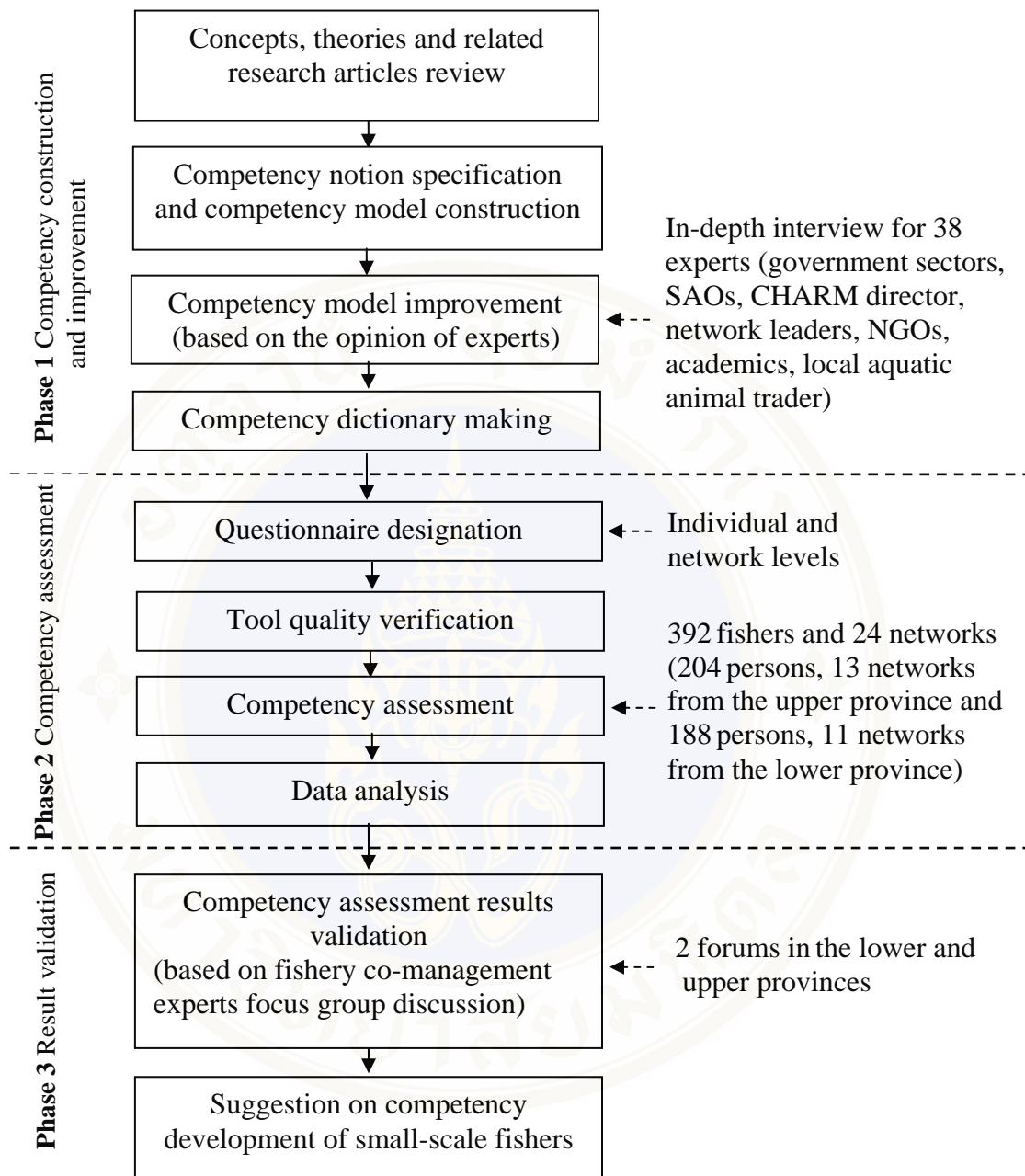


Figure 11 Study process

Stage 3: Competency dictionary making: to enhance mutual understanding, regarding small-scale fishers’ competencies in fishery co-management both at individual and network levels, among those involved in competency development of small-scale fishers, a competency dictionary was made, based on the improved competency models from Stage 2. The dictionary is composed of three parts: terms of competency, definitions, and criteria for competency level assessment.

In order to fulfill Objective 2, which aims to investigate the competency level of small-scale fishers in fishery co-management, the procedures in Phase 2 and Phase 3 were carried out as follows:

Phase 2: Study of small-scale fishers' competency level in fishery co-management

Assessment of small-scale fishers' competencies was undertaken, based on self-assessment method. First, the target groups were determined, that is, the small-scale fishers of both at individual and network levels. Then, the questionnaire was constructed, followed by an evaluation of content validity in the competency model. After the data were collected by means of questionnaires, field data were analyzed. The results obtained from this phase are the competency level of small-scale fishers in fishery co-management and conditional factors relating their competencies both at individual and network levels.

Stage 1: Target group selection

1. Population: Population at network level were selected from small-scale fisher networks in two study areas, that is, from the upper and lower provinces. The selected networks are those with authorized fishery co-management activities. The co-management can be with government sectors (including the SAO), NGOs, academics, or business sectors. It can also be a state-run or a community-run co-management. (See details and list of networks in no. 3.3). The number of small-scale fishers at individual level is illustrated in 2.

2. Sampling: At network level, small-scale fishers' competencies from twenty four networks were measured. At individual level, assessment was conducted with network members selected by applying Taro Yamane's formulation (1973: 729). The formula is as follows:

$$n = \frac{N}{1 + Ne^2}$$

When n = Sample size
 N = Population size
 e = Standard error of sample group at 0.05

Table 1 Population and sample size of small-scale fishers

Locations	Population*	Samples
The upper province on the Andaman coastline	7,917	203
The lower province on the Andaman coastline	7,271	187
Total	15,188	390

* Source: National Statistical Office (2001: 92-93, 84-85, 88-89, 140-141)

The formula-based calculation provides the sample size of 390 persons, in which the sample size from each location is obtained by means of proportional stratified sampling. Based on the network size and by means of quota sampling, the sampling of small-scale fishers within the network is then undertaken. The sample size of small-scale fishers of each network and the exact number of obtained data are as shown in Table 2.

Table 2 Sample size and actual collection of small-scale fishers of each network

No.	Name list	Sample size	Actual collection
The upper province			
1	Small-scale Fisher Network I	27	30
2	Small-scale Fisher Network II	15	14
3	Small-scale Fisher Network III	15	14
4	Community Resource Conservation Network	15	15
5	Community Resource Management Group	15	14
6	Resource Restoration and Conservation Group	15	15
7	Small-scale Fisher Network IV	26	28
8	Coastal and Marine Resource Protection Volunteer Group	15	13
9	Resource Conservation Network	15	15

Table 2 Sample size and actual collection of small-scale fishers of each network (cont.)

No.	Name list	Sample size	Actual collection
10	Conservation Group	15	15
11	Community Resource Conservation Group	15	15
12	Restoration Group	15	16
13	Provincial Small-scale Fisher Association on Upper-Andaman Coastline	0	0
	Total	203	204
	The lower province		
14	Coastal Resource Conservation Network	22	22
15	Coastal Resource Conservation Volunteer Network	22	22
16	Natural Resource and Environmental Management Network	20	22
17	Seagrass Zone Network	20	21
18	Offspring Aquatic Animals Conservation Network	22	23
19	Andaman Estuary Network	22	22
20	Conservation Group	15	14
21	Natural Oyster Conservation Group	15	14
22	Conservation Group for Mangrove Forest and Hard Clam	15	15
23	Natural Resource Conservation Group	14	13
24	Provincial Small-scale Fisher Association on Lower- Andaman Coastline	0	0
	Total	187	188
	Net total	390	392

Stage 2: Tool construction: Based on the constructed competency dictionary, two sets of questionnaires for evaluation of small-scale fishers' competency were designed, one for individual level, the other for network level.

Stage 3: Tool quality assessment: The content validity of the designed questionnaires at individual and network levels was examined by thesis advisor, and then improved. After that, the questionnaires were administered to the target groups including small-scale fishers, academics and NGOs, for content validation. The processes were as follows:

1. Questionnaire for individual level: The content accuracy test of questionnaire was conducted in the lower province based on small-scale fisher interview of nine persons: five small-scale fishers from Moo 8 and four persons from Moo 4. Data was used to improve and correct the questionnaire.

2. Questionnaire for network level: The content accuracy test of questionnaire was conducted based on expert interviews: three from academics and three from NGOs. Data was used to improve and correct the questionnaire.

Stage 4: Data collection: Collect data of small-scale fishers at both individual and network levels from the two areas, which are in the upper and lower provinces by means of questionnaire. The personal interview was conducted specifically from those who earn their living as small-scale fishers, considering either from dedicated labor time or from major source of income. In the network level, the interview was conducted with network leaders. If there are several leaders, the interview will be recorded as a group.

1. Individual level: The interviews were conducted with a total of 392 small-scale fishers: 204 and 188 small-scale fishers from the upper and lower provinces, respectively.

2. Network level: The interviews were conducted with a total of 24 small-scale fisher networks: 13 and 11 networks from the upper and lower provinces, respectively.

Stage 5: Data Analysis: The quantitative data analysis was conducted by means of the SPSS software as follows:

1. The general characteristics of small-scale fishers at individual and network levels were described by percentage, means, standard deviation, and median.

2. The assessment of competency level of small-scale fishers at individual and network levels (considered by each competency) have been carried out to determine competency levels of small-scale fishers. The competency level specification

was determined based on the arrangement of means of competencies and the designed level of three score interval: leader (level 3), application (level 2) and beginner (level 1). In order to indicate the difference between each competency level, the score intervals have been designed by using real score of group examination with equal intervals: $\text{Score interval} = (\text{Maximum score} - \text{Minimum score}) / 3$

3. The cluster analysis was applied to classify competency level of small-scale fishers. In case of individual level analysis which comprises of numerous data (392 samples), all nine competencies were analyzed by means of the K-Mean Cluster Analysis. For less number of sample analysis such as in network level (24 samples), the analysis was conducted by means of the Hierarchical Cluster Analysis. The similarity distance was measured on the basis of the Squared Euclidean distance and grouped by using the Ward's Method. The variation between groups of competency, both at individual and network levels, was tested with Analysis of Variance (One-way ANOVA).

4. Qualitative analysis was used to determine the conditional factors relating the competency of small-scale fishers, both at individual and network levels.

In conclusion, Phase 2 of the study deals with competency level and conditional factors related to competency of small-scale fishers in fishery co-management, both at individual and network levels, from two areas – the upper and lower provinces.

Phase 3: Results of competency assessment validation

In order to examine the results to fit with the reality of areas, results of competency assessment of small-scale fishers in fishery co-management at individual and network levels were validated by experts. The expertise forums had been held at two places: the lower and upper provinces. The details are as follows;

1. Expertise forum at the lower province: The forum was held on July 21, 2009. Thirty-one participants who joined the discussion comprises of 6 small-scale fisher leaders, 1 community enterprises group, 3 sub-district headman and village headmen, 4 NGOs staff from the first organization, 2 NGOs staff from the second organization, 1 volunteer from France, 3 student trainees from Taksin University,

1 SAO member, 1 Chief of District Fishery, 2 staff from the Marine and Coastal Resources Conservation Center No. 6 (Satun), 6 academics, research assistances and students from the Department of Fishery Management, Rajamangala University of Technology Srivijaya, Trang Campus, and 1 local aquatic animal trader.

2. Expertise forum at the upper province: The forum was held on July 27, 2009. A total of 13 participants who joined the discussion comprises of 5 small-scale fisher leaders, 1 NGOs staff, 4 staffs and Director of the Marine and Coastal Resources Conservation Center No. 5 (Phuket), 1 Chief of District Fishery, 1 academic from the Department of Marine Science, Rajamangala University of Technology Srivijaya Trang Campus, and 1 local aquatic animal trader.

In conclusion, Phase 3 of the study deals with data from the experts meeting, which led to summarized results of the study. Therefore, competency levels of small-scale fishers in fishery co-management at individual and network levels of two areas, the upper and lower provinces, were completely validated.

The aforementioned study process attempts to prove the internal validation which is considered by the triangulated examination as follows:

1. Combined-level triangulation: The combined competency checking between two levels, individual and network levels, was conducted in order to get actual and non-overlapped competencies of small-scale fishers.

2. Space triangulation: This triangulation was done to discover significant competencies which may be clearly found in some place clear but not in the other. Therefore, it is reasonable to check both the best practice and normal practice of fishery co-management areas.

3. Triangulation of sources: To balance the data, checking from several sectors - such as government sectors (including SAO), small-scale fishers, NGOs, academics and business sectors - is appropriated.

4. Method triangulation: To get actual data, the several data collecting methods - such as deep interview, questionnaire and group meeting – were used in this study.

3.3 Selection of small-scale fisher networks

The current study has not dealt only with individual but also investigated the networks competency level. The important guidelines for network selection in this study were as follows.

1. Network represents a relationship between small-scale fishers who gather to form a network or between small-scale fishers and other sectors that support coastal resource management. Networks may overlap one another in the same area; that is, there are sub-networks within the large network.

2. Network may consist of members who are small-scale fishers or community members from various occupations, but most of them are small-scale fishers.

3. Network may be integrated either by the same eco-geological characteristics or by the same administrative district.

4. Network has a clear objective of integration, which may be particularly for coastal resource management, or for other objectives that support integration of people; including savings, community aquatic animal trader, fishing gears, community boat repairing and building, and eco-tourism. However, these networks also have coastal resource management as one of their objectives.

5. Network may encourage activity mainly for coastal resource management or other activities, but one of them includes coastal resource management activity.

6. The smallest network may comprise of small-scale fishers within the same area or community that encourages coastal resource management, such as, conservation group, and mangrove community group.

Lists of the small-scale fisher networks in the areas of the upper and lower provinces on the Andaman coastline are as follows:

Small-scale fisher networks in the upper province

1. Small-scale Fisher Network I: This network is the integration of seven villages, comprising of several sub-groups within the network, such as small-scale

fishery group, coral reef conservation group, saving group (combination of three villages), and eco-tourism group. The coastal resource management of the networks includes mangrove forest conservation; coral reefs and sea grass conservation zoning; conservation of threatened aquatic animal species such as turtle, dugong and dolphin; and report on illegal fishery rules which prohibit the use of fishing gears such as trawls, push nets, dynamite fishing, gill nets, poison fishing, and collapsible traps with small mesh size.

2. Small-scale Fisher Network II: There are sub-groups within the network which consist of mangrove forest conservation group, aquatic animal conservation volunteer group or MCS (Monitoring Control and Surveillance), saving small-scale fishery group, small-scale fishery group (offering installation payment of fishing gears), fish rearing in floating cage group, and women group. The coastal resource management of these networks includes mangrove forest conservation zoning; coral reefs and seagrass conservation zoning; and push nets and trawls monitoring. Furthermore, the networks also fight against a capitalist who builds the Marina Port within the area that leads to reduction in areas used to earn for a living of small-scale fishers as well as the fight against a capitalist who invades the upstream forest of villagers.

3. Small-scale Fisher Network III: There are sub-groups within the network, which consist of Sajja fishing group and Red Cross Group (selling fishing gears, robes and nets). The coastal resource management of the networks mainly deals with pearl oyster preservation zoning which villagers from other areas come to collect all of them and now pearl oysters disappear. Moreover, the area also has rules that prohibit the use of some fishing gears including gill nets, set nets, poison fishing and shooting fish.

4. Community Resource Conservation Network: There are several sub-groups within the network which consist of mangrove forest conservation group, savings group, processed seafood group, youth group, and women group. The network has established a prohibited area that prevents catching of aquatic animals and prohibits the use of all kinds of fishing gears in this area. There is also muddy crab fattening in mangrove forest.

5. Community Resource Management Group: There are several sub-groups within the network which consist of muddy crab and mangrove ecosystem study group, Sajja savings group, small-scale fisher group, youth group, and women group. This network has management of mangrove forest, the upstream forest, seagrass and aquatic animal conservation, coastal monitoring and surveillance, and establishment of environmental foundation. There are also rules that forbid the use of some fishing gears including push nets, poison fishing, dynamite fishing, collapsible traps with small mesh size, set nets, set bagnets, and gill nets.

6. Resource Restoration and Conservation Group: This network is the integration of two communities which are Moo 3 and Moo 10. There are sub-groups within the network which consist of mangrove forest special volunteer group, crab bank program, savings group, grouper culture group, youth group, women group, and community garbage group. There is mangrove forest management and pontoon laying for seagrass conservation zoning, as well as rules that forbid the use of illegal fishing gears, including push nets, trawls, dynamite fishing, and poison fishing.

7. Small-scale Fisher Network 4: This network is the integration of four villages which are Moo 6, Moo5, Moo 8 and Moo 9. There are sub-groups within the network which consist of MCS, crab bank program, mangrove forest conservation group, savings group, fund flow group (FAO vehicle engine and boat bank group), Profession group (oyster culture, fish rearing in floating cage, and processed seafood group), fishing gear group, Noi (youth) research group, youth group, women group, and home-stay group. This network has established blue swimming crab conservation zone that covers that area of 6-7 rais and prohibited crab sink net operation within the conserved zone. Outside the established zone, a mesh of four inch-crab sink net is allowed.

8. Coastal and Marine Resources Protection Volunteer Group: There are sub-groups within the network which consist of aquatic animal conservation volunteer group or MCS, mangrove protection volunteer group, fishing gears group (selling fishing equipments), profession group consisting of aquatic animal processing group (producing shrimp paste, fermented shell and salted fish), green mussel culture group, oyster culture group, and community-based tourism group. This network has established a forest foundation and has coastal resource management that includes

community mangrove forest conservation zoning, aquatic animal zoning, and specification of legal-based rules that forbid the use of fishing gears – push nets, trawls, set bagnets, dynamite fishing, and poison fishing. Fishing gears that are prohibited by the community are fish nets with net size less than 4 inches and collapsible traps with small mesh size.

9. Resource Conservation Network: There are sub-groups within the network which consist of mangrove forest committee, village bank group, fishing gears fund flow group, youth group, women group, and aquatic animal central market. There are rules prohibiting illegal fishing gears such as push nets, dynamite fishing, and poison fishing. The aquatic animal central market of the village will not buy aquatic animals captured by illegal fishery. They also undertake mangrove forest conservation.

10. Conservation Group: There are several sub-groups within the network which consist of mangrove forest and aquatic animal conservation group, land and waterway prevention and suppression unit, savings group, aquaculture group, women group, and sports group. The network builds aquatic animal conservation zoning and specifies the rules that the area within the radius of 50 meters from a fence is prohibited from catching aquatic animals, while the area exceeding 50 meters from the fence is prohibited from trawls and push nets. They also conduct a mangrove forest conservation campaign.

11. Community Resource Conservation Group: There are sub-groups within the network which consist of mangrove forest conservation group, savings group, fishing gears fund flow group, youth group, and women group. Within the coastal areas of 3000 m. from shore, the Chief of Provincial Fisheries Office has placed artificial reefs and the network is responsible for looking after them to prevent the use of trawls, push nets and anchovy fishery with light luring within the 3000 m. from shore, as well as prohibits the use of ray hook and line and the catching of spiny lobster. They also fight against a capitalist who invades into mangrove forest.

12. Resource Restoration Group: There are sub-groups within the network which consist of community mangrove forest conservation group, MCS, Sajja savings group, and ecotourism group. The network has conducted mangrove forest management.

13. Provincial Small-scale Fisher Association of the Upper Province on the Andaman Coastline: This is the provincial-level network that has 21 committees from the representatives of seven districts. The network is driving the expansion of fishery zone from three kilometers to three nautical miles. In addition, there is prohibition for the use of fishing gears, including gill nets and trawls in seagrass. There is also coastal resource conservation zoning to celebrate the glory of the King's reign.

Small-scale fisher networks in the lower province

14. Coastal Resource Conservation Network: This is the integration of four villages. The sub-groups within this network consist of mangrove forest protection group, marine special mission unit, crab bank program, coastal fishery group, coastal fishery savings group, youth group, and women group. The network specifies the coral reefs and seagrass conservation zoning area by laying down pontoon and creating a zoning signpost. Moreover, the coastal zone of 3000 m. from shore is prohibited from fishery using push nets, trawls, blue swimming crab traps, gill nets, small mesh size Thai purse seine, and purse seine. There is also mangrove forest conservation and specification of rules about wood usage in mangrove forest.

15. Coastal Resource Conservation Volunteer Network: This is the integration of 4 villages. The sub-groups within the network consist of marine special mission unit, small-scale fishery savings group, profession group (including batik, organic agriculture, fish rearing, and processing), women group, and eco-tourism group. The network manages coastal resources through identification of seagrass conservation zone, which is about 1,500 to 2,000 meters far from the coast. There is the laying down of pontoon and a signpost of the yolk-egg area, which is the area where dugong is residing in. Moreover, there is a campaign for prohibition from the use of illegal fishing gears and there is also mangrove forest conservation.

16. Natural Resource and Environmental Management Network: The sub-groups within the network consist of dolphin conservation group, mangrove forest conservation group, marine special mission unit, small-scale fishery savings group, rice community trading enterprises group, aquatic animal processing group (making sweet fish and salted fish), herbal tea from mangrove forest group, and women group. The network identifies the area of dolphin and dugong conservation in which - prior to

the announcement - the dolphin conservation group has undertaken a field survey and public hearings of nearby areas. The Provincial Governor had endorsed in the announcement of the dolphin and dugong conservation area. Additionally, there is also prohibition of fishery using push nets, trawls, dynamite fishing, poison fishing, hand line, beach seine, rays gill net, and gill nets. There is a suppression of illegal fishing gears and also mangrove forest conservation and rules about wood usage in mangrove forest.

17. Seagrass Zone Network: The sub-groups within the network consist of marine special mission unit, crab bank program, small-scale fishery savings group, fish rearing in floating basket, muddy crab fattening youth group, and housewives group. The network has coastal resource management of identifying the area of seagrass conservation, which is announced by Sub-district Administrative Organization. In the seagrass conservation area, there is prohibition from fishery using set nets, beach seine, trawls, push nets, and traps with net size less than 2.5 inches. There is also mangrove forest conservation and rules about wood usage in mangrove forest.

18. Offspring Aquatic Animals Conservation: This is the integration of four villages, which are Moo 4, Moo 3, and Moo 2 and Moo 5. This network has specification of marine zone of four villages, which is about 21,000 rais. Zone announcement is endorsed by the Provincial Governor, Chief of District Fishery, Chief of Provincial Fisheries Office, Chief of National Park, the village headman and the Administrator of Sub-district Administrative Organization. This network cooperatively applies the concept of fishery co-management and works with government sectors. The four-village coastal zone network committee consists of village representatives (3 persons/village), village headmen, the Administrator of Sub-district Administrative Organization from three sub-districts, as well as consultants which include the Chief of District Fishery, Chief of National Park and NGOs. The network established the rules that prohibit fisheries within the area that use beach seine, gill nets, rays gill net, rays gill net, dynamite fishing, poison fishing, anchovy fishery with light luring, trawls, push nets, hand line, blue swimming crab traps with net size less than two inches, and shellfish collection. Sub-groups within the network include mangrove

forest conservation group, marine special mission unit, small-scale fishery savings group, community shipyard group, youth group, and women group.

19. Andaman Estuary Network: This is an integration of four villages which are Moo 4, Moo 5, Moo 3 and Moo 8. Sub-groups within the network include aquatic animal resource conservation group, mangrove forest committee, marine special mission unit, savings for production group, small-scale fishery group (purchasing fishing gears for sales), and women group. The Department of Marine and Coastal Resources has placed artificial reefs (building fish home) around coastal areas of the four villages which is 1-km far from fish home. There is also a prohibition from the use of gill nets, shellfish collection, red filament net with 3.5 cm. mesh size, as well as prohibition from shellfish collecting, and from making illegal fishing gears, trawls and push nets. There is also mangrove forest conservation with the rules about wood usage in mangrove forest.

20. Conservation Group: The sub-groups within the network include mangrove forest protection group, and marine special mission unit. The network has formed coastal monitoring and surveillance, forestation, and seagrass and coral reefs conservation. Fishing gears that are prohibited within the area are gill nets, set bagnets, push nets, and trawls.

21. Natural Oyster Conservation Group: The sub-groups within the network consist of oyster conservation group, community mangrove forest conservation group, muddy crab fattening, hard clam management group, small-scale fishery savings group, profession group (including oyster culture group, green mussel culture group, and hard clam processing group), oyster research youth group, and natural conservation youth group. The network has monitored the use of illegal fishing gears, specification of oyster conservation area of 1,000 m², and rules about annual oyster catching. Additionally, there is also area preparation for muddy crab fattening in mangrove forest.

22. Conservation Group for Mangrove Forest and Hard Clam: The sub-groups within the network comprise of community mangrove forest group, savings group, and fishery occupation development group (green mussel culture). The network has laid down pontoon for conservation area of hard clam within the area of 500 rais and identifies rules for clam dredge prohibition. Community mangrove forest includes forestation and the rules about wood usage in mangrove forest.

23. **Natural Resource Conservation Group:** The sub-groups within the network comprise of community mangrove forest group, hard clam conservation group, savings group, profession group (including seabass culture and soft shell crab culture), youth group, and women group. The network also conducted hard clam conservation area and identified the zone of mangrove forest as a forest learning zone for students, forest zone for utilization, and forest zone for conservation with the rules for wood usage in mangrove forest.

24. **Provincial Small-scale Fisher Association of the Lower Province on the Andaman Coastline:** This is a provincial-level network with the strategy that focuses on the survival of communities of small-scale fishers and sustainable community-based coastal resource management. Members consist of 37 network villages in five districts. The committee of association consists of representatives from network villages (two persons per village). The network members are representative in the Provincial Environmental Committee through which the association cooperated with Chief of Provincial Fisheries Office and Chief of Provincial Resources Office, Chief of National Park, in identifying the area for fish egg laying and seagrass conservation, coral reefs zone, and the area for illegal fishing gears restriction in the coastal zone of 3000 m. from shore - including trawls and push nets. The association had proposed the provincial fishery officer to announce restriction on some types of fishing gears which are crab traps with mesh size less than 2.5 inches, gill nets, and rays gill net.

CHAPTER IV

SMALL-SCALE FISHERS AND FISHERY CO-MANAGEMENT

It is necessary to understand in the characteristics of small-scale fishers both at individual and network cortexes and fishery co-management, before know what are consisting of the competency model of small-scale fishers in fishery co-management and what competency level of small-scale fishers. This chapter, therefore will be proposed the general information of small-scale fishers both individual and network levels, and fishery co-management.

4.1 The general information of small-scale fishers

A small-scale fishing is when an individual or family makes a living using small scale commercial or subsistence fishing practices along near coastal environments. They usually have a deep understanding of the life histories and environmental roles of aquatic organisms, Furthermore, their time spent on the water and learning from elders gives them a great knowledge base of the physical conditions such as seasonal wind directions, tides, and moon phases and how they correspond to the life histories of aquatic organisms. In sustainable fishing, their fishing gear is designed to take advantage of seasonal behaviors of targeted species while fishing responsibly and not destructively. Their fishing gear includes hook and line, crab fish and shrimp traps, and small scale fish shrimp and crab nets. These fishing methods are usually very selective and there is not much by catch in relation to small-scale fishing. Fishers without access or ownership of a boat will use methods such as shrimp nets to gather shrimp, fumble shrimp or shells. Their fishing effort is restricted to near shore environments such as creeks within mangrove forests. Fishers who have boats without engines will typically fish in mangrove creeks using hooks and crab traps. Lastly, those with access to a boat and engine but can only carry less than 10 ton gross will fish inshore.

In this study 392 small-scale fishers were interviewed; 204 and 188 people from the upper and lower provinces on the Andaman coastline, respectively. Information on their age, religion, education obtained, marriage, number of children, and size of their family was obtained. The characteristics of the two populations are as follows:

The small-scale fishers from both the upper and lower provinces are nearly all male, from the age of 31-45 years old, Islamic, have an upper primary school level, and are married. Additionally, they have 1-2 children and the size of an average family is 4-6 people per family. Family dept is more than 40,000 baht. The duration of fishery occupation is range from lower 20 years to 30 years. The average duration of participating in coastal resource management is less than or equal to five years. The role within a community is a group member. The successful works in coastal resource management are successful in some parts.

The small-scale fishers in the upper province have the average monthly family income 7,008.54 baht. This family's financial status is expenses exceeded income (insufficient). The duration of residing within a community is range from 21 to 40 years. They had more one type of fishing gear to operate. The participated times in coastal resource management was averaging three times per year. The almost community members were accepted their coastal resource management participation.

The small-scale fishers in the lower province have the average monthly family income 6,103.62 baht. The family's financial status is income similar to expenses (sufficient for consumption). The duration of residing within a community is range from 41 to 60 years. They had more two types of fishing gear to operate. The participated times in coastal resource management was averaging two times per year. The entire community members were accepted their coastal resource management participation (Table 3).

Table 3 Mean, median, and percentage of personal characteristics of small-scale fishers, categorized by province

Personal characteristics of fishers	Overall (n=392)		Upper province (n=204)		Lower province (n=188)	
	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD
Monthly family income (baht)	6,575.96	4,175.30	7,008.54	5,032.78	6,103.62	2,910.82
	Median					
			Overall	Upper province	Lower province	
Number of annual activity participation in coastal resource management			2	3	2	
Gender						
Male			87.76	93.63	81.38	
Female			12.24	6.37	18.62	
Age						
Less than or equal to 30 years			9.97	8.37	11.70	
31-45 years			48.59	51.72	45.21	
46-60 years			35.29	34.98	35.64	
More than 60 years			6.14	4.93	7.45	
Religion						
Buddhist			17.14	10.29	24.60	
Islamic			82.86	89.71	75.40	
Education level						
Illiterate			6.39	4.93	7.98	
Lower primary school level			37.85	36.45	39.36	
Upper primary school level			43.99	46.31	41.49	
Secondary school level or above			11.76	12.32	11.17	
Marriage status						
Single			2.82	3.45	2.14	
Married			95.13	94.58	95.72	
Widowed, divorced, separated			2.05	1.97	2.14	
Number of Children						
None			5.36	5.39	5.32	
1-2 persons			43.37	43.63	43.09	
3-4 persons			37.24	39.22	35.11	
More than 4 persons			14.03	11.76	16.49	
Number of family members						
1-3 persons			23.85	19.70	28.34	
4-6 persons			65.90	69.46	62.03	
More than 6 persons			10.26	10.84	9.63	

Table 3 Mean, median, and percentage of personal characteristics of small-scale fishers, categorized by province (cont.)

Personal characteristics of fishers	Percentage		
	Overall	Upper province	Lower province
Family debt			
No debt	19.23	18.23	20.32
Less than or equal to 20,000 Baht	29.49	29.06	29.95
20,001-40,000 Baht	16.41	15.76	17.11
More than 40,000 Baht	34.87	36.95	32.62
Family's financial status			
Expenses exceeds income (insufficient)	43.62	52.94	33.51
Income similar to expenses (sufficient for consumption)	47.70	39.71	56.38
Income exceeds expenses (sufficient for savings)	8.67	7.35	10.11
Duration of residing within a community			
Less than or equal to 20 years	21.48	21.18	21.81
21-40 years	38.87	43.35	34.04
41-60 years	35.81	33.99	37.77
More than 60 years	3.84	1.48	6.38
Duration of fishery occupation			
Less than or equal to 20 years	39.43	39.30	39.57
21-30 years	29.38	31.84	26.74
31-40 years	20.10	17.41	22.99
More than 40 years	11.08	11.44	10.70
Number of types of fishing gears used in fishery			
1 type	30.15	35.00	25.00
2 types	35.31	29.50	41.49
3 types	25.77	25.00	26.60
4-5 types	8.76	10.50	6.91
Duration of participation in coastal resource management			
Less than or equal to 5 year	60.16	60.20	60.11
6-10 year	20.59	18.37	23.03
11-15 year	12.03	15.31	8.43
More than 15 year	7.22	6.12	8.43

Table 3 Mean, median, and percentage of personal characteristics of small-scale fishers, categorized by province (cont.)

Personal characteristics of fishers	Percentage		
	Overall	Upper province	Lower province
Role within community			
Not a group member	18.67	10.34	27.66
Group member	64.96	70.94	58.51
Group committee/ Network Leader/Village headman/ Sub-district Administrative Officer/Religious leader	16.37	18.72	13.83
Community acceptance their coastal resource management participation			
Acceptance by some people	24.86	30.37	18.24
Acceptance by almost everyone	42.86	45.55	39.62
Acceptance by everyone	32.29	24.08	42.14
Success of works from coastal resource management participation			
Not successful	1.71	1.57	1.88
Partly successful	86.04	86.39	85.63
Entirely successful	12.25	12.04	12.50

4.2 Small-scale fisher networks

Twenty four small-scale fisher networks were examined in this study; 13 and 11 networks from the upper and lower provinces, respectively were conducted in this study. A network is defined as the detail in chapter 3. In order to display the characteristics of small-scale fisher networks, this study has three tasks which are as follows; (1) network characteristics, (2) network formation and development and (3) network structure. Network characteristics include cultural networks, geo-ecological networks, cross-activity networks, and cross-occupation networks. Network formation and development is natural network, is built by external factors such as government sector or NGOs, and network structure is groups within network, leader, and working structure.

4.2.1 Network characteristics

Small-scale fisher networks are characterized as cultural networks formed by the art of small-scale fishing and their intimate relationship with the sea. The consideration for small-scale fisher networks uses general criteria, such as a club registration. However, fishery value, resources, and humanity are weighted more in defining a small-scale fisher network. Combined components into network can be dialed with complex problems and negotiated with other sectors. Although all three components are necessary to define a network, the importance of each may vary between networks

The small-scale fisher networks may be structured in a variety of ways. Traditionally, small-scale fisher networks were structured based on geo-ecological networks that included three or four villages and was based on the landscape or resources as opposed to administrative district. Some networks were established to act within their area and had responsibilities of protecting their coastal resources. For example, when push nets drifted into their Bay, they removed it before too much ghost fishing occurred on their reefs.

Small-scale fisher networks are more than occupational networks, rely on each other. At a village scale, small area networks, the conservation networks deal with other groups to insure growth and development of their youth, women health and occupational growth because they need the supporting from them, seem that are cross-activity networks.

In the case of more large scale cross linking, often is co-operation between conservation networks themselves. In addition for cross-occupation networks that link small-scale fishers, farmers, and religious leader (Toh-Kru) to name a few. Then, a network of small-scale fishers is determined by their activities. If their activities have focus on protected zone extension and those group have support that movement together or like a gardener rubber, also consumes fishes and they are friend joining movement in fishery related tasks. These behaviors implied that they have conscious, so those are concluded as network.

4.2.2 Network formation and development

There are several motivating factors for setting up a small-scale fisher network; the main factor is that there is a strong feeling that their coastal resources are being over harvested, and affected by anthropogenic factors such as development and eutrophication of near-shore environments. Because members of these tight knit communities are close friends (Pak Puak), the task of forming networks responsible with protecting vital natural resources becomes easier. It is obvious to the community members of the threats that affect their livelihood and further motivate them to implement these networks.

During 1986-1988, The networks in the upper province shows the problematic matters which are motivated them to generate their networks cause by mainly two reasons, such as mangrove forest devastation caused by the concession in mangrove wood for burning charcoal and mining. Some networks had been encountered with mining operated in mangrove forest, destroyed nearly 10,000 rai. These mining had flipped the land surface, consequence on immigrating to spawn of aquatic organism failure. Some networks also had been envisaged with the illegal fishing gears, causing small-scale fishers move to work in town which introduces disease and narcotic drugs to their villages. Even though, after Tsunami attacked Andaman coast (2005-2007), some networks were developed, cause from the resources devastation of a Tsunami, but major reason of network establishment is still similar previous phenomenon as resources depress causing by commercial fishing, like the invasion of trawls or push nets reach into 3000 m. from shore. In addition, some networks were activated by the capitalists rush to buy a coastal area for growing shrimp. Like some time, they buy the property just 200 rai, but in practical they covered reach up to 300 rai.

Similarly, the upper province, the lower province also displayed the problematic matters which are motivated them to generate their networks in 1991-1997 cause by similar reasons. The major problem was illegal fishing gear reach to small scale fishing ground and found minor in mangrove devastation cause from burning charcoal. In exemplified, once network was set up pushing by depleted oyster stock, because non size selected harvest had conducted on their resources. Since, after Tsunami disaster (2005-2006), the reasons for networks establishment still are illegal

fishing gear operation, was not found any network had establishment caused from Tsunami disaster.

The establishment of networks have mentioned previous caused by just one problematic matter. These networks may be called informal networks, which are originated naturally without any government sector intervention.

Furthermore, some networks were built resulting from external factors, including government sector and NGOs. Thus, these networks had a significance difference in both concept and method. In general, the networks developed by the government sector are called formal networks. The formal networks were established by two elite groups: (1) formal leaders such as village headmen/ sub-district headmen, and (2) International organizations such as the CHARM project. This project is the cooperation between the European Union (EU) and Department of Fisheries (Thailand). The CHARM project emphasized the establishment of stronger community ownership and responsibility. They support additional occupational groups. These groups were later pushed to change into a network when they have previously been strong. Almost all networks examined in this study are the existing networks and have received support from CHARM. Wherever they are located, either in the upper or lower province, they have had opportunities to participate in activities operated by CHARM. These activities are consist of occupational extension, fishing gear change, coastal conservation, training for aquatic organism monitoring control and surveillance (MCS) and radio communication system. However, they report the difference found between the upper or lower province both in terms of diversity and concentration of particular activities. Those differences are as follows: (1) in case of occupational extension, thirty six groups within networks in the upper province were supported, whereas 14 groups were supported for the lower province, (2) local action plan workshop for mangrove management supported three networks in the upper province and none in the lower province; (3) training and monitoring for coastal resources change based on community in the upper province, (4) learning centers were set up for tourism and vocational development in the upper province, (5) network in the upper province received supports that emphasized the development of their youth; they provided a workshop for conscious building and coastal

development in three networks, 6) networks in the upper province had proposed their strategy plan of people sector to Provincial Governor.

Although NGO's play important roles in establishing small-scale fisher networks, taking part in establishing several networks, they do careful discussion to design and implement these networks. They talk to the people of the community and exchange ideas with the people so there is community ownership of these important networks. This ownership provides a sense of pride to the people and leads to a versatile network that consists of many groups of people. Moreover, the local people become confident in their ability to deal with and lead in conservation efforts. They often feel empowered by the process and believe they can make more leadership via activity participation until leader apparent.

The development of natural networks resulted from conscious decisions of community members affected by unsustainable practices. Moreover, the networks set up by external factors, government sector or NGO's. In fact, the development of networks were not designed singularly around each factor, they were set up around previous informal network, and supporting by NGOs later. NGO changed the thinking method and adjusted the avenues informal networks took to address and solve the problem of unsustainable fishing and development practices. In general, the government sector often developed networks focusing on budget and administration while the informal sector developed networks emphasizing a strong and sustainable organization.

The development of small-scale fisher networks in the upper province were stimulated from the drastic decrease of aquatic organisms in 1979. During 1989-1992, this period of time, the Caller-period, they complained to the government sectors solve the problem because it seemed the fishers weren't being responsible. Later staff from the NGO World Wildlife Fund (WWF) visited them in 1993 and helped small-scale fishers plan to set up their clubs in sub-district in several areas, several networks had settled in 1993. As well, during 1995-2001, they showed a movement towards an Andaman Fisherfolk Assembly. These networks debated the practices of anchovy fishery with light luring, trawls, push nets, and extending the Phangnga Bay marine protected area (MPA). As a consequence of these vigorous debates, the Phangnga Bay MPA was enlarged more than previous 1998.

Furthermore, the problem situation of illegal fishing gear was lightly and whenever, trawls and push nets apparent, they will inform government sectors rather co-arrest. Therefore, this period is the transition time of networks in Phangnga Bay. Since 2002, some networks have been encouraged ecotourism as a tool for coastal resource management. Since 2006, several networks in Phangnga Bay have been changed their depending on current problems, such shifts were cause by an investment for marina construction of capitalists around 8 places in Phangnga Bay.

For networks in the lower province, one NGO was established in 1984 and worked together with coastal community enhancing local organization in several villages of that area. In the first phase, it designed and created the network. Between 1988-1990, the government sector had more confidence that working together resulted in collaboration of four partners and later extended to nearby districts in between 1991-1993. In 1991, they had developed a collaboration that included five partners. Other NGO had taken part in movement after Tsunami during the end of 2004. The collaboration movement along with the small-scale fisher club/networks and NGOs resulted in provincial command appointment for the special mission set, consisting of small-scale fishers and polices to collaborate in law enforcement against fishing boats that used illegal fishing gears. At this time, small-scale fisher networks and their partners had development thoughtful legislation that protected marine resources from irresponsible practices.

Like other networks, small-scale fisher networks have life cycle. All phases included the forming phase, expanded phase, progressive phase, decreasing phase and recovering phase as a small-scale fisher stated that “Networks have both ascending and descending phases”.

4.2.3 Network structure

The structure of small-scale fisher networks in this study composes of groups within network, network leader and functional structure.

The result showed that networks in both areas are horizontal networks. Most of the networks in the upper province have three to six sub-groups within their networks. The characteristic of functional structure is working team which includes representative from each sub-group. They have diversity of leaders with three

categories of leader: natural leader; formal leader (village headman and SAO member); and mixing leaders (natural, formal and religious leader) in the proportion of 38.46%, 30.77% and 30.77 %, respectively. The networks in the lower province have more than 6 sub-groups within their networks. Their working group members are representatives from each village. Each village also has intra-structure. Most leaders of network are natural leader which accounts for 54.55 % (Table 4).

Table 4 The network structure, categorized by province

Network structure	Percentage		
	Overall	Upper province	Lower province
Number of sub-groups			
1-3 groups	16.67	15.38	18.18
3-6 groups	50.00	61.54	36.36
More than 6 groups	33.33	23.08	45.45
Network structure characteristics			
Grouping with core leader	29.17	23.08	36.36
Working committee representing from sub-group or distinguished group	41.67	53.85	27.27
Working committee representing from each village and each village have organized themselves	29.17	23.08	36.36
Network leader categories			
Natural leader	45.83	38.46	54.55
Formal leader	25.00	30.77	18.18
Mixing leader	29.17	30.77	27.27
Ability of leader in trust from member			
Almost trust	75.00	61.54	90.91
Absolutely trust	25.00	38.46	9.09

1. Sub-group within network

In daily life of small-scale fishers, they play several roles - not only as the father, mother or children, but also as a member of several groups in their community, such as conservation group, specific mission unit, and monitoring and surveillance (MCS). At the same time, they are also members of saving group and occupation group as well.

Their networks often consist of several sub-groups. The diversity of sub-groups within the lower and upper provinces is similar. These similar groups are mangrove conservation, aquatic organism conservation, MCS, small-scale fishing group, small-scale fisher saving, the fund for fishing gear change, youth, women, and eco-tourism. However, they have some specific sub-groups in some areas. These are central aquatic animal markets are in the upper province and local shipyard in network of the lower province.

In the lower province, there is diversity of coastal resource conservation. They have nine networks for aquatic organism conservation, nine networks for mangrove conservation, and four networks for seagrass and coral reef conservation. While networks in the upper province seem to emphasize on mangrove conservation, they also set up eight networks for mangrove conservation, three networks for aquatic organism conservation, and two networks for seagrass and coral reef conservation.

From comparison of the two areas, there are equal numbers of MCS, saving group and women group. The upper province has more numbers of fund for fishing gear change group and eco-tourism group than the lower province. However, the upper province has more numbers of youth group. Similarly, they have youth research group in both areas. The youth research group in networks of the upper province was trained by CHARM, while those groups in the lower province were the outcome of primary school training.

The sub-groups within networks in the upper and lower provinces have placed high priority on activities that focus on conservation, which are part of activities which support their vocations, such as occupation group, saving group and funds for change fishing gear group. The followed priority relates to manpower development, such as women group and youth group. For the MCS, they show differences in working method. The MCS of networks in the upper province will inform government sectors

when there is transgressing of trawls or push nets in the protected area, which is 3000 m. from shore. The MCS in the lower province will cooperate with government sector, like a special set of police, to arrest intruder (Table 5).

Table 5 Priority of sub-group within network, categorized by province

Priority	Networks	
	Upper province	Lower province
1	Conservation group	Conservation group
2	Saving group	Occupation group
3	Funds for fishing gear change group	Saving group
4	Occupation group	MCS/Women group
5	Women group	Youth group
6	MCS/Youth group	Funds for fishing gear change group

2. Network leader

The leaders of networks are both natural and formal leaders. They comprise of village headman, SAO member and/or religious leader (Kor-Tep). If a network that has a formal leader, he or she will hold a routine village meeting to inform news and seek agreements. If a network that has a natural leader - such as religious leader - he will hold a religious teaching which involves natural resources to sermon wrong doing before prayer on Friday. However, most networks have several leaders who will interact with each other to do something.

3. Organizing structure, the organizing structure can be characterized into three patterns as follow:

3.1 Core leader structure which has one or several leaders in a team work. However, the apparent roles are unclear.

3.2 Committee structure is characterized by having a committee with representatives from each sub-group within the network or the dominant group.

Networks show either organization of chairman, vice-chairman, committee, secretary and treasurer, or other form of organization.

3.3 Committee structure is characterized by having a committee with representatives from each village. This structure originates from several villages in which each village has a committee structure as in 3.2. This pattern does not often require chairman or vice-chairman.

4.3 Fishery co-management

The government sector's resource management often defines procedures like the up-bottom results of resources degradation because those procedures are not accepted by resource users. Along with that, communities face with complex problems which go beyond their abilities to solve. Thus, it is necessary to co-operate with other sectors. The modern management, therefore, tend to focus on resource users. The paradigm had been changed from rationalization paradigm emphasizing on economic and products to social/community paradigm which encourages users to participate in resource management. This study addressed the fishery co-management in six issues as follow: (1) roles of stakeholders; (2) fishery co-management model; (3) fishery co-management mechanism; (4) participation in fishery co-management; (5) level in fishery co-management; and (6) conflict management and negotiation.

4.3.1 Roles of stakeholders

Stakeholders in community-based fishery co-management consist of government sectors, small-scale fishers, NGOs, academics and business sectors. The roles of each sector are as follows:

4.3.1.1 Roles of government sectors

In order to process the fishery co-management more efficiently, government sectors have to set up policies and law that encourage participation of local communities in resource management and implementation of policies. The policy framework and law of the related government sectors such as Department of Fisheries (DOF), Department of Marine and Coastal Resources and Department of

National Park Wildlife and Plants are as described in Chapter 2 (2.2.6.2). The implementation of policies may relate to central government sector (DOF), local government sector (SAO) and regional government sectors. The Department of Fisheries has several pilot projects that translate the implementation of fishery co-management concept into practice as described in Chapter 2 (2.2.7.2). Thus, this study has particularly presented the implementation of policies into practice of local and regional government sectors.

1) Roles of SAO: Based on Sub-district Council and SAO Act 1994, Section 66 has specified legal authority of SAO in protecting, monitoring and recovering natural resources and environment. For example, many areas have displayed sharing in co-management. Their first role is planning for coastal resource management. Several SAOs have specified coastal resource management plan in their yearly master plan. The plan may originate from several village discussions or single village plan and has been sent to fill in SAO master plan. The second role is providing finance. Some networks have received budget of about 20,000 baht from SAO for mangrove planting. The third role is issuing regulations. Some SAOs have announced and specified seagrass zone conservation of their sub-district which prohibits illegal fishing gears from operating within the conservation areas. The fourth role is consulting. The last role is participating in small-scale fisher activities, such as aquatic seeding restock enhancement and mangrove planting. However, it seems that their roles are limited because they emphasis on infrastructure development and the strategy for resource management is rated as the last in SAO master plan.

2) Roles of regional government sectors: Roles of regional office are related to several persons such as Provincial Governor, Chief District Officer, Chief of District Fisheries, Chief of Provincial Fisheries Office, the Andaman Sea Marine Fisheries Patrol Center, the Marine and Coastal Resources Conservation Center, and Mangrove Development Station.

(1) Provincial Governor: The regulation supports is the main role of Provincial Governor. They have authority on fishery planning and management. The Provincial Governor can issue a provincial

announcement to enforce provincial fishery operations. The lower province has provided a provincial announcement, particularly prohibition of all types of trawls, push nets which operate with boat engine, pull net, sand whiting sink net operating with under alarmed sound stem, and rays sink net to fish in seagrass area around 3000 m. from shore. They also have issues about nursery ground conservation area and dolphin conservation zone. In case of provincial policies and plan for coastal resource management making, they have appointed a committee to prepare policies and plan based on participation of coastal community and other sectors. For the upper province, the people strategy plan resulted from CHARM Project has been proposed to Provincial Governor. They also showed a sharing in resources conservation and rehabilitation as consultants and looked for a way to alleviate the coastal surveillance problems. In case of lawsuit, despite duties such as capture and release and buffering in conflict management, they invite representatives from both, small-scale fishers and commercial fishers to seek for a way to solve the conflicts together. Sometimes they also have to act as a chairman of the opening ceremony of planting activity.

(2) Chief District Officer: They have roles in policy and plan making for coastal resource management. In the lower province, one of Chief District Officer had appointed a committee to make the plan for coastal resource management in some Bays. That plan will be proposed to province as a part of provincial plan. The Chief District Officer also works in relation with resources conservation and recovering. Hence, they make plans for resources monitoring and act as a head team. In some area, fishers will invite Chief District Officer when conflicts appear in 3000 m. from shore. They also have announcement for conservation zone and act as chairman of the opening ceremony of planting activity.

(3) Chief of District Fisheries and Chief of Provincial Fisheries Office: They have roles in illegal fishing gear changing such as push nets, small-scale bamboo stake trap, and set bagnets. They suggest fishers to alter occupation to coastal aquaculture, such as fish and shellfish culture or vocational extension in form of funds for fishing gear investment. Sometimes they support aquatic seeding to small-scale fishers to be released in natural water. They also give advises according to coastal resource management to networks and teach them in several topics, such as how to grow aquatic organism and crab bank program and law.

(4) The Andaman Sea Marine Fisheries Patrol Center, Department of Fisheries: They have roles in monitoring and arresting illegal fishing gear such as trawls, push nets and anchovy fishery with light luring capture operating in 3000 m. from shore.

(5) Marine and Coastal Resources Conservation Center, Department of Marine and Coastal Resources: They have roles in coastal resources protection and suppression, including conservation and rehabilitation in seagrass bed and coral reef bed. They had collaborated activities with the two networks, such as in survey and buoy indicating seagrass zone. In addition, their roles also include seminar in law, particularly community rights and training in marine protecting volunteer.

(6) Mangrove Development Station: Their roles are mangrove seeding support, budget support, technical support, curriculum for training volunteer people for marine protection, and law supporting for more clearly about mangrove zone.

4.3.1.2 Small-scale fisher networks: They have roles in network establishment for coastal resource management and linking and seeking supports which are relevant to fund and materials, such as plant seeding, aquatic seeding and artificial reef materials from other sectors. Their helps include technical and legal assistance. They also have roles in setting regulation and measure for resource management. Those regulations are related to mangrove utilization, illegal fishing gear using and local prohibited fishing gear.

4.3.1.3 NGOs: Their roles deal with (1) manpower making, potential building and confidence building for networks, (2) material and fund supports, (3) support for meeting, training, and forum of discussion, (4) problem situation analysis assistance, (5) education tours supporting for networks, (6) document preparation, (7) contact government sector when fishers request to meet Provincial Governor, and (8) information giving, because they are embedded in villages.

4.3.1.4 Academics: Their roles relates to (1) environmental knowledge teaching, (2) networks' research advisory, (3) consultants for crab bank program, and (4) participate in network performance reflection.

4.3.1.5 Business sector: Several groups of business are related to fishery, such as tourist agency and food processing. It seems that fish trades in both

local and commercial trade may be the most important group that helps fishery co-management to operate successfully. Local aquatic animal traders are the most closed to small-scale fishers. They play direct role as aquatic product distributor. They have influence to small-scale fishers. When fishers run out of fund, they can give loan to them. In that case, fishers will refund as a fishing harvest. Thus, local aquatic animal traders are the significant mechanism in fishery management. If they receive many purchasing orders, they will be able to persuade fishers to catch more aquatic animals by advancing oil expense for them. Some local aquatic animal traders buy aquatic animals without restricting sizes, resulting in small-scale fishers to catch small aquatic animals. If they are concerned of conservation, they will not purchase small fish. In the upper province, one network has established a central aquatic animal market to solve under-price problems and build more power in price negotiation. That also helps them to build more strong community. They will not purchase fishes captured with illegal fishing gears. Some roles of local aquatic animal traders include participation in saving group setting which will help strengthen their network as well.

For commercial fishery, they take a role in provincial level such as the committee for resources administration plan-making of the lower province that includes one representative from commercial fishery association. In case of the lower province, they cooperate with networks like provincial small-scale fisher clubs to define the zone for anchovy fishery with light luring. However, that seems to be rather limited cooperation. There is no joining with lower provincial club level. This is a problematic matter because the degenerated maker does not take part in management. As an academic from Mahidol University said, “Co-management is the process which will help coastal management effectively. In responsibility sharing, the degenerated maker should be encouraged to participate as well as the victims. This is a weakness in management”.

4.3.2 Fishery co-management model

Fishery co-management model of both areas - the upper and lower provinces - is the community-based fishery co-management which can be described in two characteristics. The first characteristic focuses on the geographical community as well as ecology system or coastal zone or administrative district. As one NGO in the

lower province said, “The current co-management is operated based on community. Because we failed in co-management in which co-planning and co-working both in provincial level and policy level that can not be integrated. After community-based model is used, it leads several sectors to integrate either in community forest or marine resources in the area successfully”. In the second characteristic, there are two patterns that focus on the starting point of co-management. The first pattern starts from government sector to community, like BOBP and CHAM Projects, but these projects have fixed timing of operation. Another pattern initiates from community to government sector. Most of co-managements originate from community.

4.3.3 Co-management mechanism

Most community-based fishery co-management of networks in the lower province do not clearly show a mechanism for fishery co-management in terms of Coastal Resource management Committee (CRM) (consisting of government sector and community). In case of the upper province, only 3 networks from 13 networks had appointed the CRM which resulted from participating in the CHARM Project. It seems that most networks do not have mechanism like the Coastal Resource management Committee. However, they have mechanisms to work, like the action committee described in 4.2.3. Most networks have NGOs to help them, like the network assistance in the Provincial Governor meeting. Furthermore, these networks’ action committee contact with other sectors such as government sectors, academics and business sector, to join in coastal resource management or support them in forms of budget, materials, law and technique as shown in Figure 12.

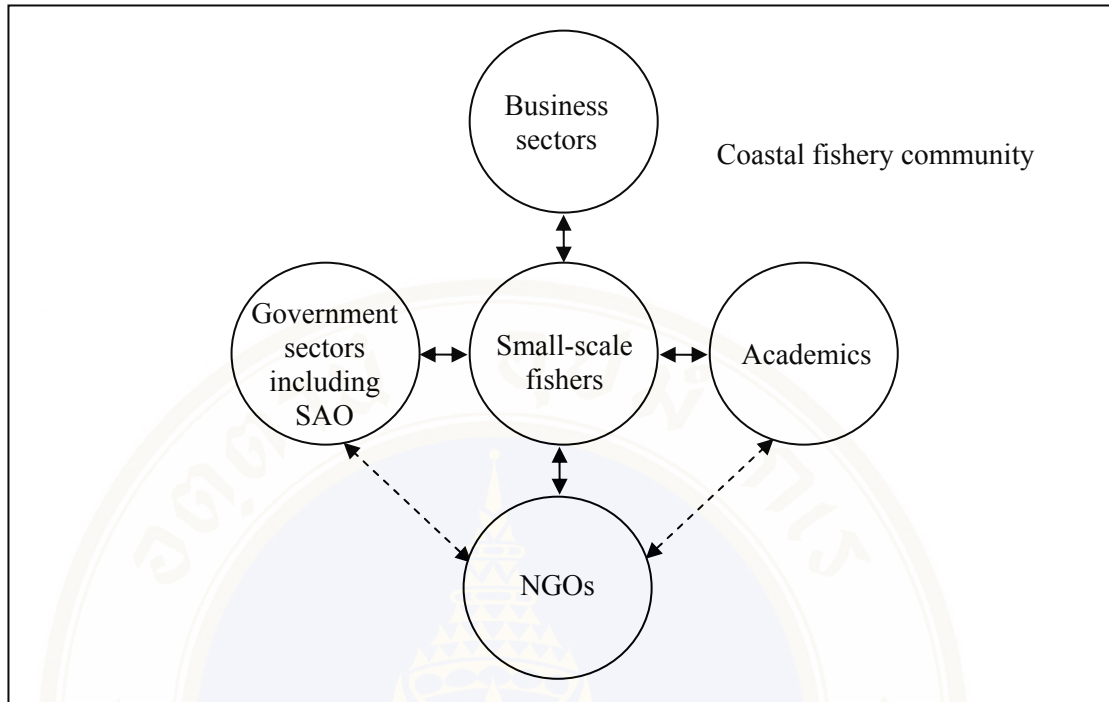


Figure 12 Mechanism of community-based fishery co-management

4.3.4 Participation in fishery management

The fishery management of networks do not refers only to aquatic resources but also relates to other coastal resources such as mangrove forest, seagrass and coral reef as well. These managements will enhance the health of aquatic habitats and increase number of aquatic animals because those tasks link to the same eco-system. The coastal resource management of networks has several dimensions which include conservation rehabilitation, and utilization. For conservation dimension, networks have actions that relate to conservation zone setting, coastal monitoring and surveillance and artificial reef sinking. In case of rehabilitation, networks have activities that relate to aquatic seeding release, crab bank program, mangrove planting and seagrass planting. The participations in fishery management consist of co-thinking, co-planning, co-acting and co-monitoring. These are described follows;

4.3.4.1 Co-thinking has many aspects depending on activity as follows:

1) Co-thinking within the committee of network such as (1) seagrass conservation zone setting of three networks, (2) aquatic releasing

of two networks, (3) crab bank program of two networks, and (4) seagrass planting of one network and mangrove planting of three networks.

2) Co-thinking of network committee and NGOs such as (1) Nursery ground conservation zone setting, (2) seagrass conservation zone, and (3) consulting of network with NGOs before meeting the Provincial Governor.

3) Co-thinking in village meeting in which includes sub-district headman or village headman or SAO members such as (1) oyster conservation zone of one network, (2) mangrove clam conservation zone of two networks, (3) blue swimming crab conservation zone of one network, (4) aquatic preserved zone of one network, (5) aquatic animal conservation zone of one network, and (6) mangrove planting of one network.

4) Co-thinking of the Committee of Coastal Resource Management (CRM) such as hard clam conservation. The CRM consists of sub-district headmen, village headmen, SAO members and at least one community leader from every village.

5) Co-thinking of network committee and government sector such as coastal monitoring and surveillance discussion when police ignored the duties to arrest or call paltry fines to illegal fishing boat operating in 3000 m. from shore. In that discussion, the participants consist of Provincial Governor, small-scale fisher leaders, Chief of Provincial Fisheries Office and Prosecutors. The result of the discussion is an agreement to confiscate the illegal fishing boat. Another result of co-thinking is seagrass conservation zone setting of one network and artificial reefs sinking of one network.

6) Co-thinking of several sectors (government sector, network leaders, NGOs and academics) such as (1) the seagrass conservation zone of one network that held a discussion in collaboration with Chief of National Park, Chief of Wildlife Protection Area Office, Chief of Provincial Fisheries Office, NGOs and small-scale fisher network; (2) artificial reefs sinking of one network which include co-thinking with several sectors, among police, special mission unit, academics, NGOs, provincial small-scale fisher club, the Southern Fisherfolk Federation and CHARM; and (3) dolphin conservation zone setting.

4.3.4.2 Co-planning

Planning is a consequence from co-thinking. Co-planning was found in some networks. It seems that there are no co-action plan between networks and government sector. They have only agreement in illegal fishing inspection, including litigation to those illegal boats operate in 3000 m. from shore and support gasoline payment for their inspection. A clear plan was found in co-planning of networks such as mangrove planting plan, which has a timetable, number of activity in each year, and number of planting in routine work or special days. In addition, they also have a special mission unit of coastal monitoring and surveillance which shows the timing of action.

4.3.4.3 Co-working exists in many aspects depending on their activities.

1) Co-working within network in which other sectors will be supported with funds, materials and academics. Examples seagrass and coral reef conservation zone setting. Some networks received supports from UN to make a survey program, including fishing regulation setting to prohibit some illegal fishing gear in conserved zone. Another example is seagrass conservation zone setting. Some networks received supports from NGO to set up fishing rules to control illegal fishing in conserved zone. The third example is seagrass planting. Some networks received support from CHARM and joined planting between student and local people. The last example is crab bank program. Some networks received support from NGOs to visit successful activity at Trad Province.

2) Co-working that networks require supporting law from government sector. In practice, government sector will make zoning announcement such as (1) an announcement of aquatic nursery ground conservation and dolphin conservation zone by Provincial Governor, (2) the announcement of seagrass conservation and oyster conservation zone making by SAO, and (3) pointing boundary of mangrove conservation zone for network by the Mangrove Development Station.

3) Co-working based on public hearing such as (1) the case of dolphin conservation zone which had started from public hearing before

setting of regulation to prohibit illegal fishing gears operated in conserved zone; (2) seagrass conservation zone in which the Chief District Officer had asked network to make a public hearing with villagers in the expected areas. After a conclusion, they should inform that to two nearby sub-districts that village headmen join in this meeting.

4) Co-working which applies mechanism of CRM based on public hearing in nearby area such as hard clam rehabilitation. These public hearing consists of CHARM Project, Department of Fisheries, Chief of District Fisheries, committee, sub-district headman, village headman, community and oyster farmers in that area. A total of 100 participants joined that meeting. The CHARM project gave fund to oyster farmers to change their oyster culture to a more eco-friendly occupation.

5) Government sector works together with networks; for example, seagrass and coral reef conservation zone setting. Some networks had joined with government sector to survey seagrass area and coral reef. They make a map in collaboration with the Marine and Coastal Resources Conservation Center No. 5 (Phuket).

6) Networks work together with government sector. The case of coastal surveillance have several aspects as follows: (1) special mission units send message to government sector - like the Andaman Sea Marine Fisheries Patrol Center or the Marine and Coastal Resources Conservation Center No. 5 (Phuket) - to inform news to them, not join in the arrest; (2) special mission units patrol with government sector in which small-scale fishers in some areas had joined with police or village headman or SAO to petrol illegal fishing gear; (3) special mission units join to arrest with government sector when anchovy fishery with light luring reach to seagrass conserved zone. The inspection team may comprise of Chief District Officer, village headman, the Andaman Sea Marine Fisheries Patrol Center, and special mission units.

7) Networks work together with several sectors (small-scale fishers, government sectors, NGOs and student) for mangrove planting which use mangrove seeding supported by the Mangrove Development Station. In this case, NGOs will help them to prepare the letter to invite government sectors. Some

networks had received support payment such as gasoline and refreshment from the Mangrove Development Station and NGOs. They also had invited Chief District Officer to open the ceremony and invited the Mangrove Development Station to join the planting with local people. In some cases, they had invited the Marine and Coastal Resources Conservation Center No. 5 (Phuket), Wildlife Protection Area, School and local people to join their activity

4.3.4.4 Co-monitoring: There are two methods for monitoring: observation and data collection. In case of crab bank program, some networks monitor the distribution of crab in creek. That research was set by NGOs based on the cooperation of their staff and academics according to experiment design and sampling. This activity is the research of local people in collaboration with NGOs.

In conclusion, the participation in community-based fishery co-management includes co-thinking, co-working and agreement, except co-action plan and monitoring.

4.3.5 Fishery co-management level

There are only three networks of community-based co-management that show co-management mechanism by Sub-district advisory committee or for Coastal Resource Management Committee (CRM). This implies that most networks (21 networks) have no mechanism, like the Coastal Resource management Committee. They also have no clear in co-planning with government sector. However, they have several ways of co-operations. For example, sometimes networks may be the host for government sector or some opposite action or joint venture activities like artificial reef sinking activity. In some cases, networks have consulted with government sector or reported result to government sector. In conclusion, co-management between networks and government sector is not really on the cooperative level. Thus, they have just the advisory level, because most of them report the decision to government sector. Those decisions are accepted and they are supported in law to set the conservation zone.

4.3.6 Conflict management and negotiation

Coastal resource conservation does not only focus on preservation but also on utilization, especially the utilization of fishery resources in the same fishing area or fishing breaker regulation which cause conflicts. Then, in order to be successful in coastal management, there should be negotiation between partners. This chapter will describe the conflict and negotiation as follows;

4.3.6.1 Conflict management: The conflicts of coastal resource management can be separated into several issues as follows:

1) The conflict between network and people in the same community or other communities. Causes of conflict are mostly originated from differences of fishing gears operating within the same area, using illegal fishing gears, or breaking fishing regulation. Thus, they have several methods to maintain conflicts: (1) talking to fishing gear users or fishing rule breaker and talk to local aquatic animal traders to stop buying fish captured using those methods; (2) talking through their relatives; (3) talking and encouraging them to join as network member; (4) talking them into changing gears; (5) talking and posting signs for conserved zone; (6) warning and inform them of a regulation in meeting; (7) implementing agreement of the committee; (8) making a public forum; (9) using social measures; (10) informing village headman to warn them; (11) negotiating by Chief District Officer; (12) consulting with Provincial Governor and Chief of Provincial Fisheries Office; and (13) notifying related agencies to act.

2) The conflicts between networks and capitalist. These conflicts are caused by using of trawls, push nets and light generating boat for anchovy fishery reach to fish in 3000 m. from shore. For those cases, networks had to maintain by using several methods: (1) talking with capitalist; (2) consulting with Provincial Governor and Chief of Provincial Fisheries Office; (3) joining to arrest with official staff; and (4) notifying related agencies to act.

3) The conflicts between networks and official staff. These conflicts are mostly caused by ignoring of duty of official staff with several claims such as no boat, no manpower, leak of news, benefits from capitalist, catch and easy release, pay small fines, or overlapping areas of local people and National Park Zone. Networks have several methods to manage the conflicts: (1) construct boat by

themselves, establish funds for gasoline, take a practice to work as Thai-volunteer national protection, and make friend with official staff; (2) change place of operation to avoid leaking of news; (3) consult with Provincial Governor or ask police to take more strong measures; and (4) assign a special mission unit by Provincial Governor and co-operation with official staff.

4.3.6.2 Negotiation: When it is necessary, networks' conflict is manipulated based on negotiation or creation of social movement of network in one way or another. Thus, they have several tasks of negotiation as follows;

1) Negotiation within network and between networks: (1) negotiation using their network mechanism by which network leader or committee negotiate about mesh size limits or negotiate with fishers to stop using trawls which request support from Chief of Provincial Fisheries Office to help fishers to change the fishing gear; (2) negotiation using mechanism of club in provincial level such as when there is a meeting of village members; (3) negotiation using mechanism of public forum, like when some networks make a public forum to negotiate about moving of oyster stem culture which is supported by CHARM project in their occupation.

2) Negotiation between network and government sector such as (1) in case of Phangnga conservation zone expansion, they worked together with fishers from Ranong, Krabi, Phangnga and Phuket to negotiate with Minister of Agriculture and Cooperatives which resulted in expansion of Protecting zone of Phangnga Bay in 1998; (2) negotiation for anchovy fishery with light luring, which is successful in 1996 in which there was provincial announce to prohibit that gear within the conserved zone; and (3) negotiation for illegal fishing gear changing. They have negotiated with the Chief of Provincial Fisheries Office for illegal set bagnets to change their occupation or gear.

3) Negotiation between networks and capitalist are, firstly, negotiate to push capitalist fishing outside 3000 m. from shore. Secondly, there is negotiated to extend the 3,000 m. to 5,400 m. from shore which is based on diving of the Southern Fisherfolk Federation and Poor Assembly with Ministry of Agriculture and Cooperatives. In this case, the lower province which acted on behalf of the Ministry of Agriculture and Cooperatives had managed for multi-parties

meeting which comprised of two local fishers, Fishery Association and NGOs. They had successfully negotiated with Fishery Association. The last one is negotiation for allowing local people to reach the terrace of bird nest concessive island in day time, which is usually prohibited. However, after they request Provincial Governor to talk with capitalist, they were allowed to come in day time.

In conclusion, fishery co-management is the responsibility sharing between stakeholders which emphasizes on the community-based fishery co-management. There is limited mechanism for fishery co-management. The participation such as co-thinking, co-working, co-planning, and co-monitoring are eminent. They show only co-activity and agreement but no co-action plan. Thus, this fishery co-management is still in the level of advisory in which they make decision and report to government sector. However, the success of fishery co-management depends on competencies of small-scale fishers. Thus it is necessary to construct competency model.

CHAPTER V

COMPETENCY MODEL OF SMALL-SCALE FISHERS IN FISHERY CO-MANAGEMENT

The competency development of small-scale fishers has the following process: development of competency model and competency dictionary (Chapter 5), competency assessment (Chapter 6 and 7), and competency applications, which may be necessary to develop competency of small-scale fishers, in Chapter 9. In order to achieve the first objective, this Chapter, therefore, present the development of competency model of small-scale fishers in fishery co-management.

To develop the competency of small-scale fishers effectively, it is essential to know important main components and sub-components of competencies in fishery co-management, including the meaning or definition of the competencies and criteria for assessment of competency level. To gain these important details, it is necessary to develop competency model of small-scale fishers in fishery co-management, which will be presented in two levels - individual and network levels.

5.1 The development of competency model of small-scale fishers in fishery co-management: Individual level

In order to have precise and accurate competencies, this study has developed competency model of small-scale fishers in fishery co-management at individual level in three steps: (1) competency model construction, (2) competency verification, and (3) competency dictionary making.

5.1.1 Competency model construction (Individual level)

This study has set to construct individual-level competency model of small-scale fisher in fishery co-management in two steps. The first step is competency designation and the second step is identification of competency types.

Step 1 Competency designation

In order to construct the competencies precisely and accurately according to actual situation of the areas studied, the initial model was developed from revision of concepts, theories and related researches. Then, the developed competencies were checked and approved by experts. The following designations resulted from the revised version of individual-level competencies of small-scale fishers in fishery co-management.

1. Thinking method
2. Incentives
3. Values and believes
4. Attitudes
5. Rare and endangered species conservation spirit
6. Communication
7. New skills learning
8. Knowledge sharing
9. Participation in small group discussions
10. Providing information and feed back in planning
11. Participation in research activities
12. Self development
13. Leadership
14. Traditional knowledge and ecological knowledge
15. Local fish trap (used as artificial reefs)
16. Knowledge in law and enforcement
17. Compliance with rules and regulations

In order to reduce repetition and redundancy, the competencies were arranged in new groups and named as shown in Table 6.

Table 6 Summarized competencies of small-scale fishers from literature review at individual level

Competency notions	Summarized competency
1) Thinking	1) Thinking method
2) Incentives	2) Incentives
3) Attitudes	3) Attitudes
4) Values and believes	4) Values and believes
5) Rare and endangered species conservation spirit	5) Conservation spirit
6) Communication	6) Communication
7) New skills learning	7) Learning
8) Knowledge sharing	
9) Participation in small group discussions	
10) Providing information and feed back in Planning	
11) Participation in research activities	
12) Self development	8) Self development
13) Leadership	9) Leadership
14) Traditional knowledge and ecological knowledge	10) Wisdom of small-scale fishers
15) Local fish trap (as artificial reefs)	
16) Knowledge in law and enforcement	11) Knowledge and compliance with fishery law
17) Compliance with rules and regulations	

Step 2 Types of competency grouping

The competencies of small-scale fishers in fishery co-management are different. Some are obvious competencies and easy to develop while some are hidden competencies which are difficult to develop. Some are the core competencies which are highly required for all small-scale fishers whereas some are functional competencies. Therefore, in order to discover significant features of competency model of small-scale fishers in fishery co-management and to understand their

contents and composition, it is necessary to classify types of competencies with combined criterion of sources of competency criteria and professional criteria. Thus, the initial individual-level competency model for fishery co-management consisted of three component groups: hidden competencies, core competencies, and functional competencies.

Hidden competencies

1. Thinking method
2. Incentives
3. Attitudes
4. Values and believes
5. Conservation spirit

Core competencies

6. Communication
7. Learning
8. Self development
9. Leadership

Functional competencies

10. Wisdom of small-scale fishers
11. Knowledge and compliance with fishery law

5.1.2 Competency model verification

Before utilizing the competency model in developing competencies of small-scale fishers, it is necessary to verify and confirm validity of the model. In validation process, the content of competencies was checked against the actual realities of small-scale fishers. The competency verification method by experts was carried out in the following steps: (1) designation of questions and interview framework, (2) competency specification, and (3) competency model improvement.

Step 1: Designation of questions and interview framework

The competency model of small-scale fishers in fishery co-management at individual level from the previous process was used in designing the interview

framework. Experts were in-depth interviewed according the framework. The 38 interviewed experts included 6 representatives from government sector, 3 representatives from SAO, 2 persons from the CHARM project, 16 leaders of small-scale fishers, 4 persons from NGOs, 6 academic staff, and 1 local aquatic animal trader.

Step 2: Competency specifying

Data from the interviews with experts were used in this step. The competencies of small-scale fishers in fishery co-management at individual level could be summarized as follows:

Competency notions from the in-depth interviews with experts:

1. Holistic thinking
2. Incentives
3. Attitudes of small-scale fishers towards fishery co-management
4. Volunteer spirit
5. Conservation spirit
6. Communication
7. Learning
8. News and information perceiving
9. Self development
10. Leadership
11. Wisdoms of small-scale fisher
12. Knowledge of geo-ecology and local resources
13. Knowledge and compliance with fishery law

Step 3: Competency model improvements

In achieve content validity and reality of the competency model of small-scale fishers in fishery co-management at individual level, it was necessary to improve the competency model developed from concepts, theories and related research in combination with competencies discovered from the interviews with fishery co-management experts. The result of this step was an improved individual-level competency model of small-scale fishers in fishery co-management (Table 7).

Table 7 Improved competency model of small-scale fishers in fishery co-management at individual level

Competencies from literature review	Competencies from in-depth interviews with experts	Improved competencies
Hidden competency		
1) Thinking method	1) Holistic thinking	1) Holistic thinking
2) Incentives	2) Incentives	2) Volunteer spirit
3) Values and believes		
4) Conservation spirit	3) Conservation spirit 4) Volunteer spirit	
5) Attitude	5) Attitudes of small-scale fishers towards fishery co-management	3) Attitudes of small-scale fishers towards fishery co-management
Core competency		
6) Communication	6) Communication	4) Communication
7) Learning (Knowledge sharing, co-research, information access)	7) Learning 8) News and information perceiving	5) Learning person
8) Self development	9) Self development	
9) Leadership	10) Leadership	6) Leadership
Technical competency		
10) Wisdoms of small-scale fishers	11) Wisdoms of small-scale fishers	7) Knowledge and experiences in small-scale fishery
	12) Knowledge of geo-ecology and local resources	8) Knowledge of geo-ecology and local resources
11) Knowledge and compliance with fishery law	13) Knowledge and compliance with fishery law	9) Knowledge and compliance with fishery law

The competency model of small-scale fishers in fishery co-management at individual level (as shown in Figure 13) was composed of two segments: (1) visible competency which could be divided into two groups - core competency and technical competency; and (2) hidden competency, which was composed of several sub-competencies (Figure 13). The hidden competencies are difficult to manage and can be easily influenced by external factors. Those external factors include scientific model, modernization resulted from coastal development, industrialization and tourism, free trade, globalization (capital, technology and information) and high price of oil.

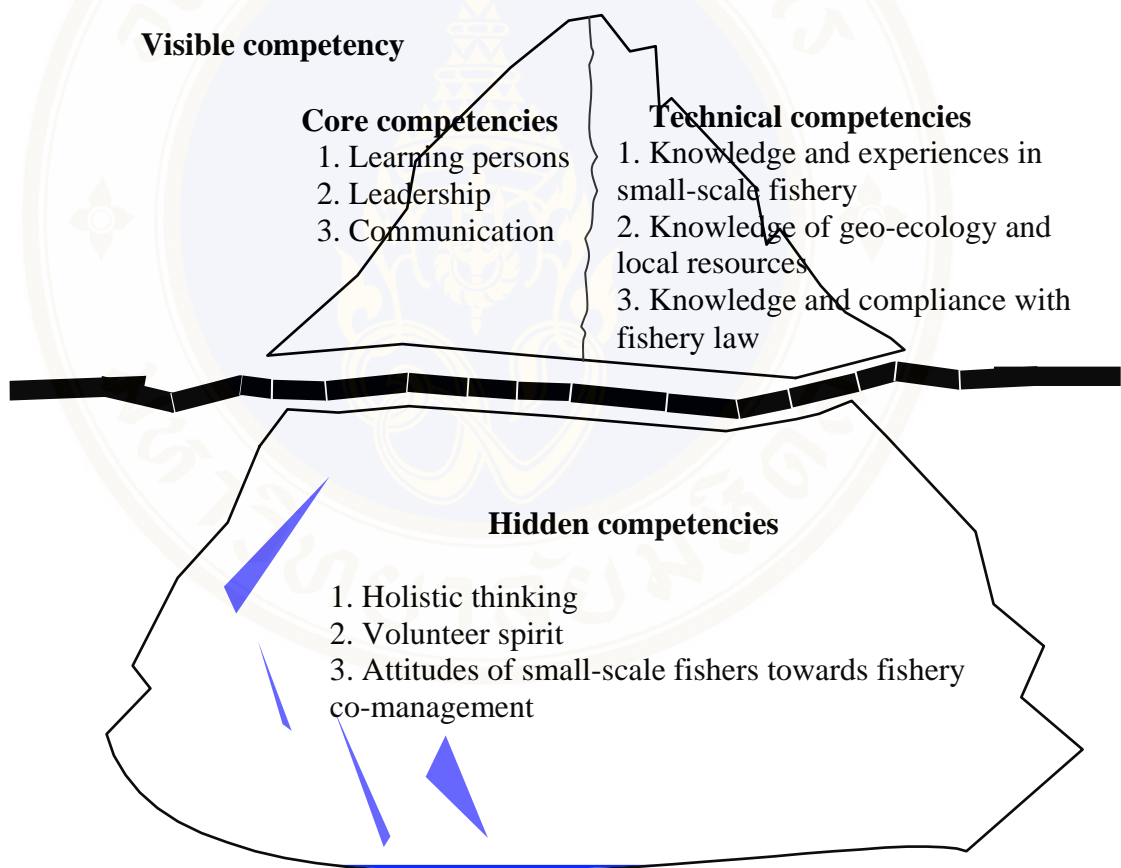


Figure 13 The competency model of small-scale fishers in fishery co-management at individual level

5.1.3 Competency dictionary providing

In order to make involved persons know about the competency development of small-scale fishers to enable consistent implementation, it is necessary

to provide a competency dictionary. The competency dictionary described name of competencies, definition, criteria and description of competency level.

There are three levels of competency. The first level is the beginner stage, which involves participation in training and receiving consultations. The second level is the application stage, which involves the ability to apply traditional usage without consultant and to apply the new system under recommendation or supplementary training. The third level is the leader stage. This stage involves application of the new knowledge and the ability in planning, evaluation, monitoring and improvement.

The competency dictionary of small-scale fishers in fishery co-management could be described as follows:

5.1.3.1 Holistic thinking

The ability of small-scale fishers to understand interconnection of ecosystems (for example, the connections between aquatic organisms and mangrove forests and/or seagrass) and the connections between coastal resources and people's way of life. The co-values that should be realized include perception of aquatic organism as the way of life and survival and sufficient consumption of resources to supporting sustainable utilization. This way of thinking implies that resources are the common property which can be used effectively. In this holistic thinking, fishers should know their rights and functions in coastal resource management.

Competency levels	Competency description
1. Beginner	The small-scale fishers understand the interconnection of ecosystems, aquatic organisms, and the way of life of both non-coastal and coastal people.
2. Application	The small-scale fishers understand the connections of aquatic organisms, mangroves, and seagrass. In addition, they understand the links between aquatic resources and their way of life. They can also realize the connection between the way of life of non coastal people, coastal people and aquatic organisms.

3. Leader	The small-scale fishers use aquatic resources to support sufficient living or to take care of aquatic resources for sustainable utilization.
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5.1.3.2 Knowledge and experiences in small-scale fishery

Small-scale fishers collected traditional knowledge from their experience, transferred from their ancestors, parents and local person in community. The knowledge in way of life was collected from several sources and mixed with perceptions based on religion, climate, environment, vocation and socialization to enable suitable living with their natural conditions. These accumulated knowledge were transferred from one generation to the next and were improved, applied, and transformed until they became new knowledge that fit in with current cultural and environmental conditions. Hence, these small-scale fishers have knowledge and experiences about the nature of aquatic organisms, natural conditions, wind direction, construction or use of seasonal traditional fishing gears, and local fish trap.

Competency levels	Competency description
1. Beginner	Small-scale fishers know and understand nature of aquatic organisms, and the relationship of aquatic organisms and natural factors (such as wind direction).
2. Application	Small-scale fishers or senior generation in community can make fishing gears or fishing methods which are environmental friendly, for example, mullet prod or tools that take care of their coastal resources, such as fish trap or handmade artificial reefs. They can also transfer the wisdom of fishery to the next generation in their community.
3. Leader	Small-scale fishers or senior generation in community can modify, apply and change their knowledge and experience into new knowledge and experience that fit with the current cultural and environmental conditions.

5.1.3.3 Learning person

This competency concerns with the ability of small-scale fishers to have commitment and enthusiasm in improving their knowledge and working on continuous self-development to the level of practice or awareness. The learning may be carried out in several ways, such as, from access to information, from affected problems, from actual practice, from trial and error, from religious doctrine, from training, or from study of various sources related to coastal management. These knowledges are stored and applied to gain benefits for themselves and networks in fishery co-management.

Competency levels	Competency description
1. Beginner	Small-scale fishers recognize the significance of self development to gain benefit in coastal resource management.
2. Application	Small-scale fishers develop their knowledge continuously. The learning may be carried out from several sources, such as, real performance, trial and error, religious doctrine, training, or study of various learning sources.
3. Leader	Small-scale fishers stored and applied the knowledge to gain benefits for themselves and networks in fishery co-management

5.1.3.4 Volunteer spirit

The volunteer spirit competency of small-scale fishers consists of goodwill for others, being helpful for others, and work commitment even without pay because they realize the value of coastal resources in their ways of living. They love their coastal resources and aware of their public share in conserving coastal resources.

Competency levels	Competency description
1. Beginner	Small-scale fishers learn that public work needs selflessness, dedication and inspiration even without payment.

2. Application	Small-scale fishers work for public with sacrifice of time, labor, and thought to make their community better for their youths, even without payment.
3. Leader	Small-scale fishers work and develop their community dedicatedly and continuously until they became good role models who are trusted by members of the community.

5.1.3.5 Attitudes of small-scale fishers towards fishery co-management

Attitudes of small-scale fishers towards fishery co-management include concept of co-management (sharing of management roles among government sectors, fishers, and other parties); level of co-management (participation in decision making – government sectors have more authority in decision-making than fishers, fishers have more authority in decision-making than government sectors, or both parties collaborate in decision-making); the fishery co-management process (sharing in thinking, planning, working, gaining benefits, and monitoring); and results of co-management (results concerning economical and management efficiency, equality, and resources sustainability). Each fisher has different attitude towards fishery co-management.

Competency levels	Competency description
1. Beginner	Small-scale fishers recognize and know about concepts of co-management, level of co-management, co-management process, and results of co-management.
2. Application	Small-scale fishers expressed different attitudes towards concept of co-management, level of co-management, co-management process, and results of co-management.
3. Leader	Small-scale fishers have positive attitudes towards fishery co-management. To achieve efficiency, equality, and sustainability of resources, they wish to have fishery co-management.

5.1.3.6 Leadership

This competency concerns the ability of small-scale fishers in terms of leadership, influence, and ability to lead other people in common direction and goals of coastal fishery co-management. The small-scale fishers should have ability in (1) self awareness about being liberal and dedicated; (2) creativity in problem solving which implies their ability to propose the problem and solving method; (3) motivation of other people which implies the ability to make decision and encourage other people; and (4) management of conflicts which refer to the ability in conciliation conflicts.

Competency levels	Competency description
1. Beginner	Small-scale fishers are ready to accept changes, have good understanding about goals of network and use it to guide the practice. They should have self-awareness, creative problem-solving, motivation, and conflict management.
2. Application	Small-scale fishers are well aware of their dedication to public work. They are able to solve the problem creatively and motivate others to participate in resource management. They are also able to conciliate the conflicts.
3. Leader	Small-scale fishers are the leader in good image-making of network which emphasizes on deeds and control of their acts in accordance with the desired image.

5.1.3.7 Communication

This include skills of small-scale fishers in communication or spreading messages about coastal resources to relevant receiver, such as other small-scale fishers, government sectors, NGOs, and academics. Communicating methods may be through speech, writing, body language, expression or other media. They should also understand symbol of different flag colors and buoyant in the sea which aim to motivate message receiver to respond in order to achieve expected results in fishery co-management.

Competency levels	Competency description
1. Beginner	Small-scale fishers agree to the necessity of communication to related sectors, such as community members, other networks, government sectors, NGOs, and academics. They should also understand how to use an appropriate communication means for various sectors.
2. Application	Small-scale fishers are able to communicate to members within their community and to other sectors as outside the networks, government sector, NGOs, or academics through listening, speaking, writing or other media.
3. Leader	Small-scale fishers are able to choose, improve or solve their communication problems.

5.1.3.8 Knowledge of geo-ecology and local resources

This is the knowledge of small-scale fishers about abundance and season of their local resources, such as mangrove forest, seagrass, coral reef, and aquatic organisms. They should also know about suitable eco-geographical condition for releasing of aquatic organisms seeding or artificial reefs, for example.

Competency levels	Competency description
1. Beginner	Small-scale fishers learn that they should know about eco-ecology and local resources in coastal resource management.
2. Application	Small-scale fishers know about their eco-geology and local resources. They also know about suitable location for stock enhancing or artificial reef sinking.
3. Leader	Small-scale fishers are able to integrate coastal resources utilization and attendance of coastal resources for sustainable use.

5.1.3.9 Knowledge and compliance with fishery law

This competency refers to fishers' knowledge in fishery law, such as the 3,000 m. from shore, illegal fishing gears, features of illegal acts, and arrest. They also have a share in enforcing laws and law-abiding. In addition, it also refers to knowledge about functions of each unit responsible in coastal resource management, both directly and indirectly.

Competency levels	Competency description
1. Beginner	Small-scale fishers aware that it is necessary to know fishery law in order to practice correctly and to gain benefit in coastal resource management.
2. Application	Small-scale fishers know basic fishery law such as the protected area 3,000 m. from shore, illegal fishing gears, characteristics of illegal acts, and arrest. They also share in enforcing laws and law-abiding.
3. Leader	Small-scale fishers are able to transfer knowledge of fishery law to other people, such as the protected area 3,000 m. from shore, illegal fishing gears, characteristic of illegal acts, and arrest, as well as motivate others to law-abiding.

5.2 The development of competency model of small-scale fishers in fishery co-management: Network level

In order to get the correct and real competency model, the competency model of small-scale fishers in fishery co-management at network level was developed from three processes: (1) competency model construction, (2) competency model verification and (3) competency dictionary making.

5.2.1 Competency model construction

The construction of competency model of small-scale fishers in fishery co-management at network level involved two steps: (1) competency specification, and (2) competency classification.

Step 1: Competency specification

The specification of competencies of small-scale fisher networks in fishery co-management from literature reviews are as follows:

1. Network settlement
2. Co-awareness of networks
3. Networks linkage
4. Collaboration with government sectors
5. Seeking of information
6. Building of new knowledge for coastal resource management
7. Information development for coastal resource management
8. Building of knowledge sharing process both within and
between networks
9. Information accessing and transferring
10. Knowledge and expertise of network members
11. Analytical thinking and evaluation of solutions of problems
through group process
12. Setting up of strategies, planning, implementation, and
monitoring
13. Improvement of working process based on lessons
14. Setting up network communication system
15. Seeking assistances
16. Preparing project proposal and seeking funds
17. Setting up measures and regulations for coastal resources
utilization
18. Setting up system for coastal monitoring and surveillance
19. Setting up and announcement of the preserved zone
20. Conflict management
21. Negotiation
22. Seeking consensus
23. Making decision
24. Liking network ability with external situation
25. Social movement in coastal resource issue

In order to reduce the overlapping, the above competency notions were arranged and classified as shown Table 8.

Table 8 Summarized competencies of small-scale fishers from literature review at network level

Competency notions	Summarized competencies
1) Network settlement	1) Co-awareness
2) Co-awareness of networks	
3) Network linkage	2) Collaboration with other sectors
4) Collaboration with government sector	
5) Seeking of information	3) Knowledge management
6) Building of new knowledge for coastal resource management	
7) Information development for coastal resource management	
8) Building of knowledge sharing process both within and between network	
9) Information accessing and transferring	
10) Knowledge and expertise of network members	4) Knowledge and expertise of network members
11) Analytical thinking and evaluation of solutions of problems through group process	5) Administration
12) Setting up strategies, planning, implementation, and monitoring	
13) Improving of working process based on lessons	
14) Setting up network communicable system	6) Communication

Table 8 Summarized competencies of small-scale fishers from literature review at network level (cont.)

Competency notions	Summarized competencies
15) Seeking assistances	7) Support from other sectors
16) Preparing project proposal and seeking funds	
17) Setting up measures and regulations for coastal resources utilization	8) Measures and regulation setting
18) Setting up system for coastal monitoring and surveillance	
19) Setting up and announcement the preserved zone	
20) Conflict management	9) Conflict management
21) Negotiation	10) Negotiation
22) Seeking consensus	11) Seeking consensus and decision making
23) Making decision	
24) Linking network ability and external situation	12) Linking network ability and external situation
25) Social movement in coastal resource issue	13) Social movement

Step 2: Competency classification

The classification of organization's core competency of Escrig-Tena, et al. (n.d. cited by Nisdarg Vetchayanont, 2006: 235) was applied to the classification of competencies. The competency model of small-scale fisher networks before approval was divided into four components as follows:

Core competencies

Network development competencies

1. Co-awareness
2. Measures and regulation setting
3. Administration

4. Seeking consensus and decision making

5. Communication

Input utilization competencies

6. Collaboration with other sectors

7. Support from other sectors

8. Knowledge and expertise of network members

Learning extension competencies

9. Knowledge management

10. Linking network ability and external situation

Change competencies

11. Social movement

12. Conflict management

13. Negotiation

5.2.2 Network competency model verification

It is necessary to correct and confirm the competency model of small-scale fisher networks before using it for validating the competency of small-scale fisher networks. Hence, the face validity of competency content is checked against the reality of small-scale fisher networks. The validation used in this study was applied with the expertise method which was carried out through following steps: (1) designation of questions and framework of interviews, (2) competency specification, and (3) competency model improvement.

Step 1: Designation of questions and interview framework

The competency model of small-scale fisher networks was used to prepare a framework of interview questions. Then, 38 experts in fishery co-management were in-depth interviewed. These experts consisted of 6 representatives from government sector, 3 representatives from SAO, 2 persons from the CHARM project, 16 small-scale fisher leaders, 4 representatives from NGOs, 6 academics, and 1 local aquatic animal trader.

Step 2: Competency specification

Data from the field survey was used to specify the competency of small-scale fisher networks. Those competencies are:

Competency notions from the in-depth interviews with experts:

1. Shared goal
2. Measures and regulation setting
3. Leadership
4. Analytic thinking of problems
5. Planning
6. Monitoring by observation
7. Communication
8. Collaboration with other sectors
9. Support from other sectors
10. Development of youth and new generation leader
11. Learning of network
12. Data collection
13. Co-research and co-survey
14. Timely response to external situation
15. Social movement
16. Conflict management
17. Negotiation

Step 3: Competency model improvement

In order to achieve validity and reality according to true local situations, the competency model of small-scale fisher networks in fishery co-management was improved by applying changes to the competency model based on concepts, and literatures reviews with those gained from the interview of experts in fishery co-management. The improved competency model of small-scale fisher networks in fishery co-management (as shown in Table 9) resulted from this step.

Table 9 Improved competency model of small-scale fishers in fishery co-management at network level

Competencies from literature reviewed	Competencies from in-depth interviews with experts	Improved competencies
Core competencies		Core competencies
1) Co-awareness	1) Shared goal	1) Shared goal
2) Measures and regulation setting	2) Measures and regulation setting	2) Measures and regulation setting
	3) Leadership	3) Leadership
3) Administration	4) Analytic thinking of problem 5) Planning 6) Monitoring	4) Administration
4) Seeking consensus and decision making		
5) Communication	7) Communication	5) Communication
6) Collaboration with other sectors	8) Collaboration with other sectors	6) Collaboration with other sectors
7) Support from other sectors	9) Support from other sectors	7) Support from other sectors
8) Knowledge and expertise of network members		8) New generation development
	10) Development of youth/new generation leaders	
9) Knowledge management (Knowledge seeking, Knowledge creating, Knowledge sharing)	11) Learning of network 12) Data collection 13) Co-research or co-survey	9) Knowledge management

Table 9 Improved competency model of small-scale fishers in fishery co-management at network level (cont.)

Competencies from literature reviewed	Competencies from deep interviews with experts	Improved competencies
10) Liking network ability and external situation	14) Timely response to external situation	10) Timely response to external situation
11) Social movement	15) Social movement	11) Social movement
12) Conflict management	16) Conflict management	12) Conflict management
13) Negotiation	17) Negotiation	13) Negotiation

The core competencies of small-scale fisher networks in fishery co-management were grouped into four component groups. Each group consists of several sub-competencies as shown in Figure 14.

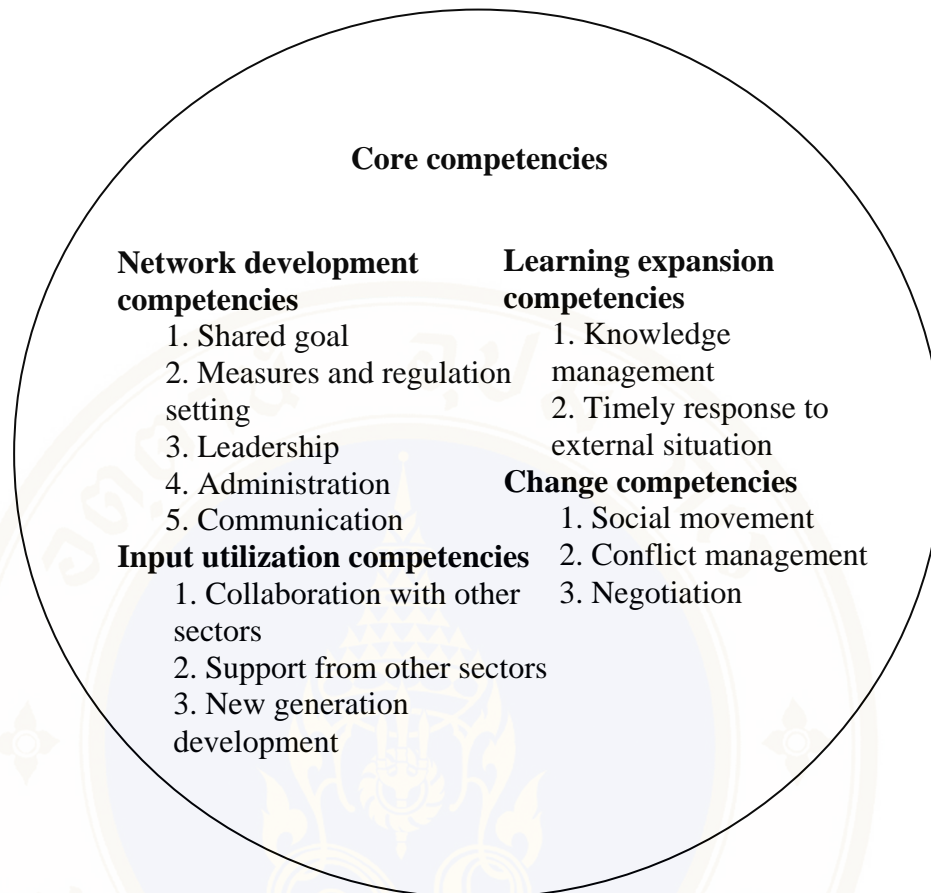


Figure 14 Competency model of small-scale fishers in fishery co-management at network level

5.2.3 Network competency dictionary

In order to communicate the competency development of small-scale fisher networks to involved persons, a competency dictionary should be prepared. The competency dictionary consisted of name of competency, definition, competency level criteria and competency descriptions. The competency dictionary of small-scale fisher networks in fishery co-management contained a total of 13 core competencies which were grouped into four component groups as follows:

5.2.3.1 Network development competencies refer to the setting of shared goal of the network, as well as the development of collaborative working guidelines between network members and action plan of the network. This also

included the setting up of network communication system to enhance interaction of network members. Hence, the network development covered shared goal, measures and regulation setting, leadership, administration and communication.

1) Shared goal

The network set up shared goal that made members saw the same destination and reached the same understanding. This shared goal focused on plentifully of coastal resources, increase of aquatic organisms, higher quality of life of small-scale fishers, well-being, professional security, strong family, strong community and social well-being.

Competency levels	Competency description
1. Beginner	Networks aware of the importance of shared goal and understand the method of shared goal establishment, including how to make network members understand the shared goal.
2. Application	Networks are able to set the shared goal and make their member understand the shared goal.
3. Leader	Networks have a strategy for setting up shared goal and making their members understand the same goal to achieve efficiency in coastal management.

2) Measures and regulations setting

This competency refers to the ability of small-scale fisher networks in setting up measures and regulations for coastal resource management, both within and between communities. The related measures include measures for mangrove utilization, fishing gear prohibitions, limit net mesh size in preserved zone, coral reef zone and seagrass bed zone. The establishment of measures should be made through public hearing or surveying. Means of public relations such as distribution of flyers or notification through village headmen or SAO members meeting could be used to share with fishers or nearby communities.

Competency levels	Competency description
1. Beginner	Networks accepted the importance of measures and regulations for coastal resources within and between communities. They should also understand how to set up measures and regulations and the importance of communicating measures and regulations to other members in the community.
2. Application	Networks are able to set up measures and regulations through several methods, such as meeting consensus, public hearing, opinion census, etc. This also includes the distribution of the regulations to fishers within community.
3. Leader	Networks can evaluate, monitor, and improve the measures or regulations and are able to recommend the method of measures setting to other networks.

3) Leadership

This ability of networks relates to new and advanced thinking and the ability to motivate other networks to follow their guidelines. The abilities also include synergy or accumulation of strength to push or move their network to the settled direction and goal and, consequently, achieve the objectives of network. The network leadership also reflects through that sharing of knowledge, experience, benefits, and opportunities to other unequal networks.

Competency levels	Competency description
1. Beginner	Networks are ready for the changes and committed to seek the approach in order to reach their goals.
2. Application	Networks are able to create the new methods or patterns to use for coastal resource management.
3. Leader	Networks set strategies to improve or change method or pattern and provide a good example for other networks.

4) Administration

This is the ability of small-scale fisher networks in administering their networks to reach the goal. These administrations consist of problem analysis, planning, action, monitoring and improvement. In problem analysis, the network may use group discussions to understand situation of the problem. They are able to specify sequence of the problems and they also know the sources and impacts of these problems. For planning, the networks have to forecast the reason and what/why/where/how and who to do the activity effectively to achieve their goals. For action, the networks should carry out the planed task and monitor the effect which the tasks had on coastal resource management activity. The monitor could be done through observation or record the results to be discussed in the network. Then, the network use lessons learned or results gained from past actions to improve the tasks.

Competency levels	Competency description
1. Beginner	Networks understand the significance of network administration to reach the goal as well as details of administering tasks, such as, problem analysis, planning, action, monitoring and improvement.
2. Application	Networks are administered to reach the goals by trying to understand situation, problematic matters, and identify their sequence, sources and impacts. The networks also planned beforehand and carried out their tasks as planned. Activities of the networks are monitored and results are used to improve their networks.
3. Leader	Networks set strategies to enhance effective network administration and recommend these to other people or other networks.

5) Communication

This ability implies that small-scale fisher networks are able to find communication tools, create new communication channel or use existing communication, or communicate with expression or other means to deliver

messages about coastal resource management to related stakeholders both inside and outside the area. These communications consist of communication with members of the networks, communication with other networks, communication with government sector, preparing forum for power shows, inviting mass media reporters, etc. The objective of these communications is to motivate receiver to respond in the hope to achieve success in fishery co-management.

Competency levels	Competency description
1. Beginner	Networks understand the significance of communication, readiness of communication tools, and significance of communication channel used to communicate within and between networks.
2. Application	Networks provide sufficient communication tools and create communication channel both inside and outside the network, or be able to use existing channel to deliver their messages.
3. Leader	Networks are able to set a mechanism to control the communication according to strategies in order to achieve specified network goals.

5.2.3.2 Input utilization competencies refer to the ability to provide or arrange resources for coastal resource management. Those resources are human, funds, materials, technical knowledge, and law. The input utilization also regards the way of finding resources through contact with other sectors, support from other sectors and new generation development.

1) Collaboration with other sectors

This refers to the ability of small-scale fisher networks to collaborate with other sectors such as, government sector (including SAO), NGOs, academics and business sectors to reach effective and smooth fishery co-management in accordance with specific objectives of networks.

Competency levels	Competency description
1. Beginner	Networks understand both the significance of collaboration with other sectors and the options to link with appropriated sector in line with the network objectives.
2. Application	Networks are able to collaborate with relating sectors in agreement with the network objectives.
3. Leader	Networks set the collaborated strategies which focus on linking with other sectors for the success of the network objectives.

2) Support from other sectors

This is the competence of small-scale fisher networks in finding support from other sectors and receiving either at personal or corporation level support, such as, government sector (including SAO), NGOs, academics and business sectors. Those supports include confidence building (such as network's confidence in coastal resource management), information (such as press information, consultancy, groups discussion), document preparation (such as draft letter and meeting record), material and funds (such as budget, materials), technical support (such as knowledge transfer, workshop trainer, GPS usage training, data collecting, and table designation), and laws (such as zoning, protected area announcement). These supports are driving small-scale fisher networks to follow the goal of an effective fishery co-management.

Competency levels	Competency description
1. Beginner	Networks understand the importance of support from other sectors, such as, government sector (including SAO), NGOs, academics, and business sector. They also understand and need various supports, such as confidence, information, document, tools and fund, technique and law, etc.

2. Application	Networks receive supports from other sectors, such as government sector (including SAO), NGOs, academics, and business sector. This support include confidence building, information, document, tools and fund, technique and laws, etc.
3. Leader	Networks set strategies for receiving support from other sectors which drive the fisher networks to follow the goal of effective fishery co-management.

3) New generation development

This is the ability of small-scale fisher networks to develop a new generation which may refer to new group, such as youths and women, etc. The developing process may consist of building awareness in the value of coastal resources, making procedures for participative activities such as camping, training, study, local resources survey, grouping for aquatic organism conservation, etc. The new generation development also covers building new leader to replace the old ones with focus on team rather personal leader.

Competency levels	Competency description
1. Beginner	Networks understand the importance of developing new generation, such as the youth, women or new leaders.
2. Application	Networks are able to develop or build new generation by making youths aware of the value of coastal resources, encourage women to participate in coastal resource management, or build new leaders to replace the old ones.
3. Leader	Networks set strategies for developing new generations, such as youth, women and new leaders in order to support effective coastal resource management.

5.2.3.3 Learning extension refers to the desire learn to improve works, share ideas, create knowledge, and transfer knowledge. The learning extension also covers knowledge management and timely response to external situation.

1) Knowledge management

This is the ability of small-scale fisher networks in terms of searching knowledge both from within and external network; building knowledge in coastal resource management through practical, observation, trial and error, and data collection; collecting and storing both old and new knowledge; sharing knowledge both inside and outside the networks; as well as transferring and utilizing knowledge.

Competency levels	Competency description
1. Beginner	Networks understand knowledge management in terms of searching, building, sharing, transferring and using knowledge.
2. Application	Networks are able to manage knowledge, such as searching, building, sharing, transferring and using knowledge.
3. Leader	Networks set strategies for knowledge management and can recommend knowledge management to other persons or other networks.

2) Timely response to external situation

This is the ability of small-scale fisher networks to cope with positive or negative results from governmental projects, such as provincial strategic plan, Sea Food Bank project, mangrove forest thinning project, tourism policy, and exporting policy. These policies facilitate capital groups and affecting domestic coastal resources.

Competency levels	Competency description
1. Beginner	Networks understand positive and negative results from governmental policy or development project affecting small-scale fishers.
2. Application	Networks response to affective situations and have ability to adjust to these situations.

3. Leader	Networks are able to analyze, forecast or look for the ways to protect themselves or dilute the side affects of policy or government' development project.
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5.2.3.4 Change competencies are relating to the presentation and application of idea and new methodology in effective resource management, including management of possible problem and barriers which may arise from the change. These abilities also consist of social movement, conflict management and negotiation.

1) Social movement

This is the ability of small-scale fisher networks to act together for problem solving or for adjusting policy or policy making process of government sector. These movements should be described as linking between minor parts and other parts to point out that these are social problems, not local problem. The small-scale fisher networks can join into larger working party, such as when the illegal anchovy fishery with light luring in the protected zone, when the protected zone is extended, when a marina construction is taking place, or when forest is destroyed by investors.

Competency levels	Competency description
1. Beginner	Networks understand and see the effects on small-scale fishers, what has to be implemented, and which method is suitable for the movement.
2. Application	Networks create a movement in matter that affects small-scale fishers. These movements may be acted in co-problematic matter through movement in every area, movement with other network, or act as a leader of the movement.
3. Leader	Networks are able to create strategies for movement, act as a leader, and encourage other networks to join movements.

2) Conflict management

This is the ability of small-scale fisher networks in solving conflicts between persons or parties on differences of interests in thinking, acting, or taking action in fishery co-management activities. For example, there may be conflict between the network and fishers in using illegal fishing gear or breaking of fishing regulations of the networks. There may be contradictions between the networks and capitalists who operated push nets or trawls in the protected area or invaded mangrove forest. There may also be conflict between the networks and government sector in neglect of duty, use breaches of laws for the benefit of commercial fishery. These conflicts should be managed to reach mutual understanding and lead to the successful resolution of these situations.

Competency levels	Competency description
1. Beginner	Networks are able to find the source of conflict in the network, between networks, with capitalists, with or government sector. The networks also understand the method or choice of problem solving.
2. Application	Networks are able to solve the conflicts with appropriate method. The networks can conciliate the conflicts by themselves or invite other sectors to conciliate these conflicts.
3. Leader	Networks are able to analyze, estimate and set up the resolution, including protector against the possible conflicts within the network, between networks, or with capitalists or government sectors.

3) Negotiation

This the ability of small-scale fisher networks in negotiations between two or more parties to reach agreement or mutual understanding, based on valuable thinking, fairness, sustainability and ecological balance. These negotiations may be about the matters within network or between networks, such as fishing gears, mesh size, or zoning; the matters between networks and government

sectors, such as changing fishing gear or extending protected area; and the matters between networks and capitalists, such as extending protected area or determining specific area for anchovy fishery with light luring. These negotiations will lead to the desired solution in fishery co-management.

Competency levels	Competency description
1. Beginner	Networks are able to find information and understand techniques or method for negotiation. The networks are able to define the duration and objectives of the negotiation process.
2. Application	Networks are able to negotiate with appropriated technique and continue their work as planned.
3. Leader	Networks have flexibility to adapt when face with unexpected situation to reach the agreement in negotiation.

Both individual and network competency models results from this chapter were used to evaluate the competency level of small-scale fishers and their networks.

CHAPTER VI

COMPETENCY LEVEL OF SMALL-SCALE FISHERS IN FISHERY CO-MANAGEMENT AT INDIVIDUAL LEVEL

After constructing the competency model, the model is then evaluated. Generally, an evaluation is classified into two types, including (1) Backward competency assessment, referring to a consideration on knowledge, ability, skills and behaviors; and (2) Forward competency assessment, referring to a consideration on work achievement in relations to competency (Krerkkiat Srisermpoke, 2003: 91). However, in the competency -based development of small-scale fishers, it is important to primarily know about the level of competency of small-scale fishers; therefore, it requires the evaluation of competency rather than the evaluation of outcomes derived from competency .

In order to answer to Objective 2, which is to study the level of competency of small-scale fishers in fishery co-management, and to study conditional factors relating competency of small-scale fishers at the individual and network levels, as well as to better clarify the presentation of research findings at the individual and network levels, the presentation is divided into two levels, which are the competency level and conditional factors related to the competency of fishers at the individual level (Chapter 6), and the competency level and conditional factors related to the competency of fishers at the network level (Chapter 7).

The study of the competency level of small-scale fishers in fishery co-management and the study of conditional factors relating the competency will be presented in three aspects, including (1) the competency level of small-scale fishers in fishery co-management; (2) conditional factors related to the competency; and (3) the examination of result concerning competency assessment, as follows.

6.1 The competency level of small-scale fishers in fishery co-management: Individual level

After obtaining the competency model of small-scale fishers in fishery co-management at the individual level, it is important to primarily use the competency model to evaluate the competency level in order to know their weaknesses and strengths in each aspect of the competency in order to be beneficial to the competency development in the future. There are many methods of the assessment of the competency level, which are the methods of the assessment of the competency level that give absolute importance to each competency separately. This method can be considered in two cases. The first case is considered from the mean, which can only indicate an aspect of competency that small-scale fishers were good at or weak at, but it is unable to indicate the level of that competency. The second case is considered from decision criteria of three competency levels, which are Level 1, Beginner; Level 2, Application; Level 3, Leader. This method does not only demonstrate the competency that small-scale fishers are good at or weak at, but also identifies the level of competency regarding the level of weakness or strength of that competency. The researcher selects the assessment of the competency level in each aspect based on Case 2 because it is precise, easy to understand, convenient for implementation. In addition, another method, the competency level is considered all aspects simultaneously regarding how small-scale fishers have the competency. In order to perceive the competency level of small-scale fishers in fishery co-management at the individual level more clearly, the researcher will present research findings in two steps.

Step 1: The assessment of the competency level by considering each aspect of the competency separately. The objective is to identify the competency level of small-scale fishers in each aspect, consisting of level of leader or application or beginner.

Step 2: The assessment of the competency level by considering all aspects of the competency simultaneously. The objective is to demonstrate the competency level by cluster regarding the competency level of each cluster of small-scale fishers in fishery co-management.

Step 1: The assessment of the competency level by considering each aspect of the competency separately

The identification of the competency level of small-scale fishers regarding the level of competency in each aspect can be done by using the mean of each competency to compare with the three levels of criteria, including Level 3, Leader; Level 2, Application; Level 1, Beginner.

Result of the assessment of the competency level showed that the competency of studied small-scale fishers in the upper province on the Andaman coastline have the competency at the leader level (Level 3), consisting of five competencies. These include (1) knowledge and experiences in small-scale fishery, (2) volunteer spirit, (3) attitudes of small-scale fishers towards fishery co-management, (4) knowledge of geo-ecology and local resources, and (5) knowledge and compliance with fishery law. The competency at the application level (Level 2) comprises of three competencies, which are (1) holistic thinking, (2) leadership, and (3) communication, while the competency at the beginner level (Level 1) consists of one competency, which is learning person.

On the other, the studied small-scale fishers in the lower province on the Andaman coastline have the competency at the leader level (Level 3), consisting of four competency. These include (1) knowledge and experiences in small-scale fishery, (2) volunteer spirit, (3) attitudes of small-scale fishers towards fishery co-management, and (4) knowledge and compliance with fishery law. The competency at the application level (Level 2) comprises of four competency ,which are (1) holistic thinking, (2) leadership, (3) communication, and (4) knowledge of geo-ecology and local resources, while the competency at the beginner level (Level 1) consists of one competency , which is learning person (Table 10 and Figure 15).

Therefore, the competencies of small-scale fishers in fishery co-management that must be primarily developed is learning person, following by holistic thinking, volunteer spirit, leadership, and communication.

Table 10 Mean and level of competency in fishery co-management of small-scale fishers at the individual level, categorized by province

Competency	Mean		Level of competency	
	Upper province (n=204)	Lower province (n=188)	Upper province	Lower province
Holistic thinking	6.12	5.89	2	2
Knowledge and experiences in small-scale fishery	5.29	5.71	3	3
Learning person	9.34	9.04	1	1
Volunteer spirit	20.05	19.72	3	3
Leadership	33.56	32.05	2	2
Attitudes of small-scale fishers towards fishery co-management	30.94	30.05	3	3
Communication	11.91	11.27	2	2
Knowledge of geo-ecology and local resources	10.03	8.90	3	2
Knowledge and compliance with fishery law	9.72	9.41	3	3

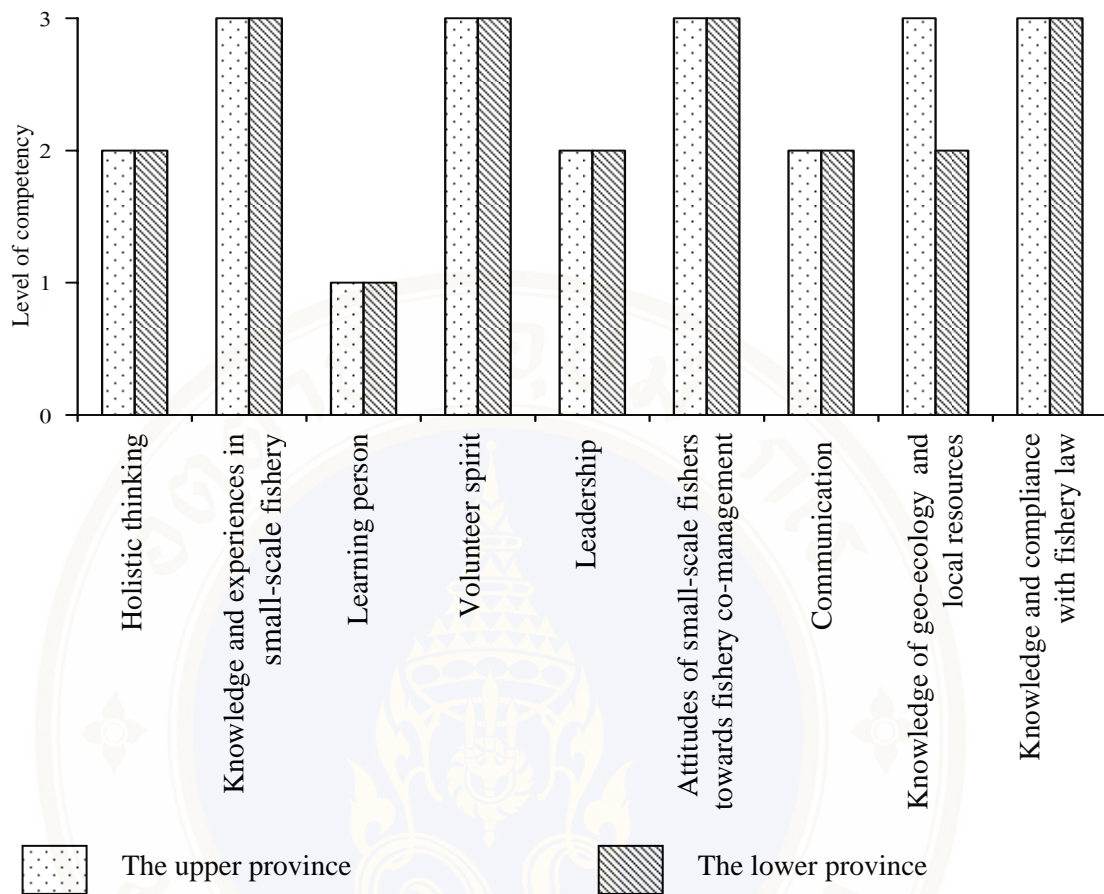


Figure 15 The competency level of small-scale fishers in fishery co-management at the individual level, categorized by province

Step 2: The assessment of the competency level by considering all aspects of the competency simultaneously

In Step 1, it is the assessment of the competency level by considering each aspect separately in term of the level of each competency concerning strength and weakness. However, it is considering the competency level from all aspects simultaneously by grouping small-scale fishers into cluster of small-scale fishers (Cluster Analysis), how many clusters of the competency level of small-scale fishers can be organized? How is the level of competency of each cluster? Which competency has strength or weakness?

There are 204 and 188 small-scale fishers in the upper and lower provinces, respectively, which is equivalent to the total of 392 people and can be categorized into 3 clusters. Cluster 3 is the biggest cluster, accounting for 35.97 percent. The majority of small-scale fishers in the upper province are in Cluster 1, which accounts for 41.18 percent, while the majority of small-scale fishers in the upper province are in Cluster 3, accounting for 46.28 percent. On the other hand, Cluster 2 has a similar proportion of small-scale fishers in both the upper and lower provinces (Table 11).

Table 11 Number and percentage of small-scale fishers at the individual level, categorized by cluster and province

Province	Cluster			Total
	1	2	3	
The upper province on the Andaman coastline	84 (41.18)	66 (32.35)	54 (26.47)	204 (100.00)
The lower province on the Andaman coastline	36 (19.15)	65 (34.57)	87 (46.28)	188 (100.00)
Total	120 (30.61)	131 (33.42)	141 (35.97)	392 (100.00)

Note: Numbers in a bracket is a percentage.

In grouping of small-scale fishers by using nine aspects of the competency, nine aspects of the competency including (1) holistic thinking, (2) knowledge and experiences in small-scale fishery, (3) learning person, (4) volunteer spirit, (5) leadership, (6) attitudes of small-scale fishers towards fishery co-management, (7) communication, (8) knowledge of geo-ecology and local resources, and (9) knowledge and compliance with fishery law can be categorized into three clusters at statistically significant level of 0.01. The most important competency in clustering small-scale fishers is leadership ($F = 115.30$) and volunteer spirit ($F = 105.01$), followed by communication ($F = 92.18$) (Table 16). It can be said that, in fishery co-management, it requires small-scale fishers of all clusters to acquire the three most

important competencies, which are leadership, volunteer spirit, and communication while the other competency are also important in a respective order.

Table 12 Standardized means of competency of small-scale fishers in fishery co-management, categorized by cluster

Competency	Cluster			ANOVA F (2, 389)
	1 (n=120)	2 (n=131)	3 (n=141)	
Holistic thinking	- 0.478 ^a	0.607 ^c	- 0.157 ^b	49.40**
Knowledge and experiences in small-scale fishery	- 0.765 ^a	0.593 ^c	0.100 ^b	83.76**
Learning person	- 0.329 ^a	0.780 ^b	-0.445 ^a	86.79**
Volunteer spirit	0.413 ^b	0.470 ^b	- 0.788 ^a	105.01**
Leadership	0.450 ^b	0.463 ^b	- 0.813 ^a	115.30**
Attitudes of small-scale fishers towards fishery co-management	0.197 ^b	0.381 ^b	- 0.522 ^a	36.73**
Communication	0.379 ^b	0.465 ^b	- 0.754 ^a	92.18**
Knowledge of geo-ecology and local resources	0.459 ^b	0.376 ^b	- 0.740 ^a	87.25**
Knowledge and compliance with fishery law	0.380 ^b	0.214 ^b	- 0.521 ^a	36.38**

** p < 0.01

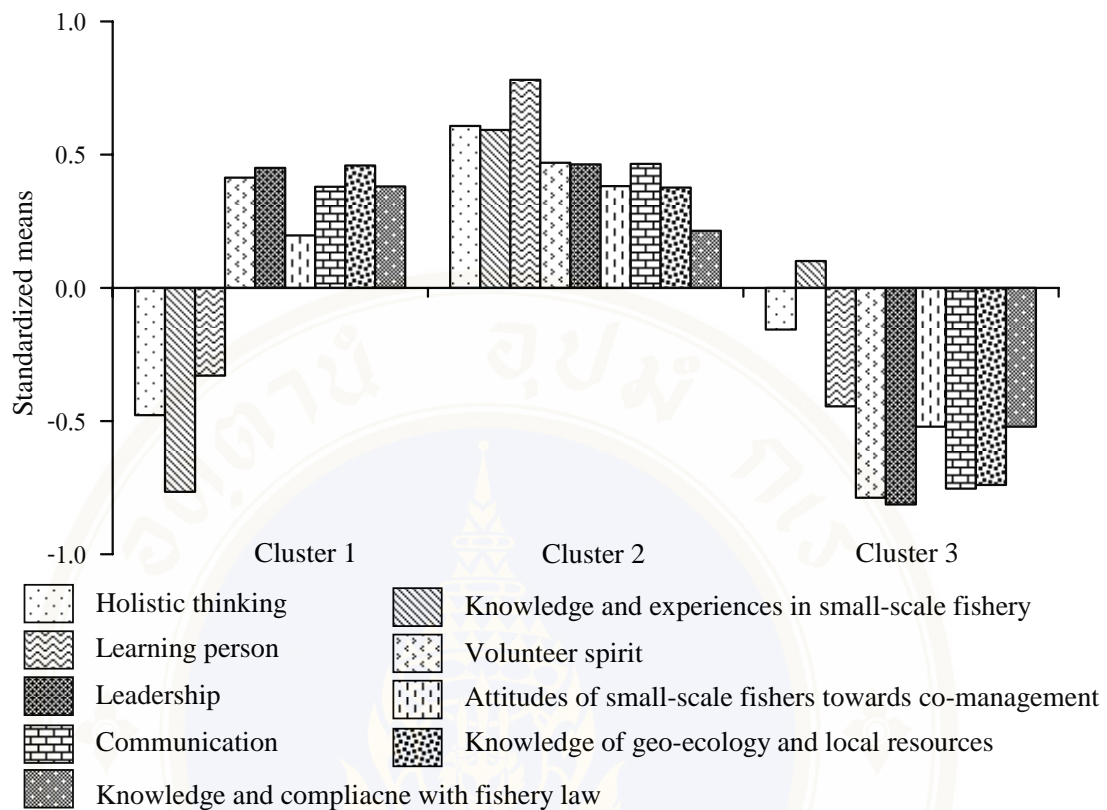


Figure 16 Competency of small-scale fishers in fishery co-management at the individual level, categorized by cluster

In order to perceive the competency level of small-scale fishers in each cluster, it is important to set up the name of the cluster to convey or explain the competency level of small-scale fishers in that cluster relating to whether they are good at or weak at such competency, and which competency they are good at or weak at (Table 12 and Figure 16).

Small-scale fishers in Cluster 1 have good competency in fishery co-management in two aspects, which are (1) knowledge of geo-ecology and local resources, and (2) knowledge and compliance with fishery law. On the other hand, the competency that they are weak at includes knowledge and experiences in small-scale fishery. Therefore, this cluster is named, “Small-scale fishers with a moderate competency.”

Small-scale fishers in Cluster 2 have the highest competency level in three aspects, which are (1) learning person, (2) holistic thinking, and (3) knowledge and experiences in small-scale fishery, respectively. Therefore, this cluster is named, “Small-scale fishers with a high competency.”

Small-scale fishers in Cluster 3 have no particularly distinctive competency in fishery co-management whereby the weakest competency of small-scale fishers in this cluster is leadership, volunteer spirit and communication. Therefore, this cluster is named, “Small-scale fishers with a low competency.”

After acknowledging the competency level of small-scale fishers in fishery co-management and acquiring the names that convey the competency level of each cluster, it is, then, important to know the characteristics of each cluster, including, for examples, in Cluster 2, “Small-scale fishers with a high competency”, whether the majority of small-scale fishers in this cluster are male or female, believe in which religion, or are at which education level. Similarly, in Cluster 3, “Small-scale fishers with a low competency”; what are its characteristics? The understanding towards characteristics of small-scale fishers in each cluster will help to see different or similar characteristics of small-scale fishers in each cluster, and will help to better explain the competency level of small-scale fishers in fishery co-management.

Cluster 1, “Small-scale fishers with a moderate competency”; The important characteristics of small-scale fishers in this cluster are that the majority of them are male aged between 31-45 years old, and are Islamic and married. Most of them have education level at upper primary school level and have 3 children with 5 members within a family. Monthly family income is lower than or equal to 5,000 baht, with family debt exceeding 40,000 baht. Their financial status is insufficient; the duration of residing within a community is 41-60 years; and the duration of fishery occupation is 21-30 years. There are two types of fishing gears used in fishery; the average duration of participating in coastal resource management is 6.96 years; the role within a community is a group member; and the number of activity participation in coastal resource management is twice a year. Almost everyone within a community accept their participation in coastal resource management, and the success of works of coastal resource management, which are successful in some parts. Most of them are in the upper province.

Cluster 2, “Small-scale fishers with a high competency”; The important characteristics of small-scale fishers in this cluster are that the majority of them are male aged between 31-45 years old, and are Islamic and married. Most of them have education level at upper primary school level and have 2 children with 4 members within a family. Monthly family income is 5,001-10,000 baht, with family debt exceeding 40,000 baht. Their financial status is sufficient; the duration of residing within a community is 21-40 years; and the duration of fishery occupation is 21-30 years. There are two types of fishing gears used in fishery; the average duration of participating in coastal resource management is 8.57 years; the role within a community is a group member; and the number of activity participation in coastal resource management is four times a year. Almost everyone within a community accept their participation in coastal resource management, and the success of works of coastal resource management, which are successful in some parts. Most of them are in the upper province and in the lower province in a similar proportion.

Cluster 3, “Small-scale fishers with a low competency”; The important characteristics of small-scale fishers in this cluster are that the majority of them are male aged between 31-45 years old, and are Islamic and married. Most of them have education level at lower primary school level and have 2 children with 4 members within a family. Monthly family income is below 5,000 baht, with family debt lower than or equal to 20,000 baht. Their financial status is sufficient; the duration of residing within a community is 41-60 years; and the duration of fishery occupation is less than or equal to 20 years. There are two types of fishing gears used in fishery; the average duration of participating in coastal resource management is 4.80 years; the role within a community is a group member; and the number of activity participation in coastal resource management is once a year. Almost everyone within a community accept their participation in coastal resource management, and the success of works of coastal resource management, which are successful in some parts. Most of them are in the lower province (Table 13).

Table 13 Mean, median, and percentage of personal characteristics of small-scale fishers, categorized by cluster

Personal characteristics	Overall		Cluster					
	(n=392)		1 (n=131)		2 (n=120)		3 (n=141)	
	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD
Duration of participation in coastal resource management	6.71	5.98	6.96	5.72	8.57	6.04	4.80	5.58
			Median					
			Overall	Cluster				
				1	2	3		
Number of Children			3.00	3.00	2.00	2.00		
Number of family members			4.00	5.00	4.00	4.00		
Number of annual activity participation in coastal resource management			2.00	2.00	4.00	1.00		
Gender								
Male			87.76	91.67	87.79	84.40		
Female			12.24	8.33	12.21	15.60		
Age								
Less than or equal to 30 years			9.97	3.36	6.11	19.15		
31-45 years			48.59	48.74	58.78	39.01		
46-60 years			35.29	42.86	30.53	33.33		
More than 60 years			6.14	5.04	4.58	8.51		
Religion								
Buddhist			17.14	10.83	13.08	26.24		
Islamic			82.86	89.17	86.92	73.76		
Education level								
Illiterate			5.04	5.34	8.51	5.04		
Lower primary school level			51.26	30.53	33.33	51.26		
Upper primary school level			35.29	49.62	46.10	35.29		
Secondary school level or above			8.40	14.50	12.06	8.40		
Marital status								
Single			2.82	2.52	1.53	4.29		
Married			95.13	94.96	98.47	92.14		
Widowed, divorced, separated			2.05	2.52	0	3.57		
Monthly family income								
Less than or equal to 5,000 Baht			49.096	57.627	42.748	47.826		
5,001-10,000 Baht			41.602	38.136	45.802	40.580		
More than 10,000 Baht			9.302	4.237	11.450	11.594		

Table 13 Mean, median, and percentage of personal characteristics of small-scale fishers, categorized by cluster (cont.)

Personal characteristics of fishers	Percentage			
	Overall	Cluster		
		1	2	3
Family debt				
No debt	19.23	9.17	18.46	28.57
Less than or equal to 20,000 Baht	29.49	33.33	26.92	28.57
20,001-40,000 Baht	16.41	15.00	17.69	16.43
More than 40,000 Baht	34.87	42.50	36.92	26.43
Family's financial status				
Expenses exceeds income (insufficient)	43.62	65.00	32.82	35.46
Income similar to expenses (sufficient for consumption)	47.70	29.17	55.73	56.03
Income exceeds expenses (sufficient for savings)	8.67	5.83	11.45	8.51
Duration of residing within a community				
Less than or equal to 20 years	21.48	15.00	19.85	28.57
21-40 years	38.87	40.83	46.56	30.00
41-60 years	35.81	41.67	31.30	35.00
More than 60 years	3.84	2.50	2.29	6.43
Duration of fishery occupation				
Less than or equal to 20 years	39.43	29.66	41.54	45.71
21-30 years	29.38	30.51	29.23	28.57
31-40 years	20.10	23.73	23.85	13.57
More than 40 years	11.08	16.10	5.38	12.14
Number of types of fishing gears used in fishery				
1 type	30.155	23.93	30.77	34.75
2 types	35.309	36.75	33.08	36.17
3 types	25.773	27.35	25.39	24.82
4-5 types	8.763	11.97	10.77	4.26
Role within community				
Not a group member	18.67	7.50	12.21	34.29
Group member	64.96	77.50	61.83	57.14
Group committee/ Network leader/Village headman/ Sub-district Administrative Officer/Religious leader	16.37	15.00	25.95	8.57

Table 13 Mean, median, and percentage of personal characteristics of small-scale fishers, categorized by cluster (cont.)

Personal characteristics of fishers	Percentage			
	Overall	Cluster		
		1	2	3
Community acceptance their coastal resource management participation				
Acceptance by some people	24.86	35.09	20.47	19.27
Acceptance by almost everyone	42.86	35.96	44.88	47.71
Acceptance by everyone	32.29	28.95	34.65	33.03
Success of works from coastal resource management participation				
Not successful	1.71	1.75	0	3.64
Partly successful	86.04	88.60	81.89	88.18
Entirely successful	12.25	9.65	18.11	8.18
Residing provinces				
The upper province	52.041	70.000	50.382	38.298
The lower province	47.959	30.000	49.618	61.702

In conclusion, the three clusters of small-scale fishers have similar characteristics in which the majority are male, Islamic, aged between 31-45, and married, and have two types of fishing gears used in fishery. They play their role as a group member. From their participation in coastal resource management, almost everyone within a community gives their acceptance and there is also the success of some works.

On the other hand, there are differences in characteristics of each cluster as follows. (1) education; Cluster 1 and Cluster 2 have the upper-primary school education level while Cluster 3 has the lower-primary school education level. (2) number of children; Cluster 2 and Cluster 3 have two children while Cluster 1 has three children. (3) number of family members; Cluster 2 and Cluster 3 have 4 members in a family whereas Cluster 1 has 5 members within a family. (4) economic status, Cluster 1 has insufficient financial status because of low monthly family income (less than or equal to 5,000 baht) but high family's debt (more than 40,000 baht) while Cluster 2 and Cluster 3 obtain sufficient financial status in which Cluster 2 has average monthly family income (5,001-10,000 baht) and high family's debt (more than 40,000 baht) while Cluster 3 has low monthly family income (less than or equal

to 5,000 baht) and low family's debt (less than or equal to 20,000 baht). (5) duration of residing within a community; Cluster 1 and Cluster 3 have the duration of residing within a community for 41-60 years whereas Cluster 2 has the duration of residing within a community for 21-40 years. (6) duration of fishery occupation; Cluster 1 and Cluster 2 have the duration of fishery occupation for 21-30 years while Cluster 3 has the duration of fishery occupation for less than 20 years. (7) duration of participation in coastal resource management; Cluster 2 has the longest duration of participation in coastal resource management for 8.57 years, followed by Cluster 1 and Cluster 3, which are 6.96 and 4.80 years, respectively. (8) number of annual activity participation in coastal resource management; Cluster 2 has the highest number of activity participation in coastal resource management (4 times a year), followed by Cluster 1 and Cluster 3, which are twice and once a year, respectively.

6.2 Conditional factors related to competency of small-scale fishers in fishery co-management: Individual level

To know about the competency level of small-scale fishers in fishery co-management as mentioned above, it will enable the development of the competency of small-scale fishers more effectively. In addition, knowing about conditional factors related to the competency of small-scale fishers will also support the development of the competency of small-scale fishers in one way. It is found that there are many conditional factors related to the competency of small-scale fishers, consisting of occupational pattern, multiple roles, religion and culture, learning development, and social relationship, as follows.

6.2.1 Conditional factors in term of occupational pattern consist of implantation and transfer, attitude toward occupational stability, and problems affecting occupation.

6.2.1.1 Implantation and transfer; Small-scale fishers have the duration of residing within a community for 21-40 years and 41-60 years, contributing to 38.87 and 35.81 percent, respectively. They acquire experiences in fishery occupation for less than or equivalent to 20 years and 21-30 years, contributing to

39.43 and 29.38, respectively. This illustrates that most of the small-scale fishers reside within a community since their childhood and the fishery's way of life is implanted from one generation to the next, affecting the competency of knowledge and experiences in small-scale fishery. As stated by the Director of Marine and Coastal Resources Conservation Center about the implantation of small-scale fishery among descendants, "Our descendants can dive and do fishery by going out into the sea since their childhood with their parents. These children will know that this atmosphere will have wind wave blowing in because their father tell them everytime they go with him." Moreover, the implantation and transfer affect knowledge of geo-ecology and local resources relating to which area will have abundant aquatic animals. As mentioned by one small-scale fisher about what was transferred from the previous generation, "Going sailing for fishery is done by the method of "Mai-Koh" or "Mark-Koh", which is the area that has abundant fish. It can be observed from the position and direction of the island." One small-scale fisher stated that, "By using paddle to listen to coral reefs, if there is a cracking sound, it means that there are plenty of aquatic animals underneath the coral reefs." The implantation and transfer from one generation to the next do not only affect knowledge and experiences in small-scale fishery, and knowledge of geo-ecology and local resources, but it is also the transfer of leadership as they have seen a role model from the previous generation.

6.2.1.2 Primary occupation, and secondary occupation/ part-time occupation; Small-scale fishers are a group of people living in a rural area. Fishery occupation is largely depended on the abundance of coastal resources. However, small-scale fishers are encountering the problem of deterioration of aquatic animal resources, which results in an inability to be solely reliant on or survive with fishery occupation. As a result, small-scale fishers usually find secondary occupation, such as, rubber plantation, boat riding tour, and labor. Having many occupations involves the need to interact with people from various contexts, which brings about the lack of single competency, but leads to linked competency from many occupations.

6.2.1.3 Attitudes toward occupational stability; Although the studied populations are small-scale fishers who do fishery as a primary occupation, the problem of commercial fishery invading into 3,000 m. from shore, and the deterioration of aquatic animal resources that can be called the crisis of small-scale

fishery, along with expensive gasoline, result in the high tendency to change occupation of small-scale fishers. Some turn themselves into rubber plantation as a primary occupation instead of fishery. Some turn themselves into laborers because they have to go out for fishery in the farther distance with higher gasoline expense. Additionally, they may not support their descendants to do fishery anymore. As can be seen from small-scale fishers aged less than or equal to 30 years, there is only 9.97 percent. The uncertainty of this occupation affects the competency, resulting in the lack of recognition of the need to develop the competency in fishery co-management.

6.2.1.4 Problems affecting occupation; When aquatic animal resources are abundant, the awareness and recognition towards coastal resources are not as much as when there are problems affecting the way of life and occupation. As stated by one of the NGOs, “We face with problems many times and it is a learning from direct problems and consequences. It becomes an inspiration for us to learn automatically because normally people will not have tears until they see a coffin. When doing nothing, their awareness could have been dropping.” This is consistent to one core leader who stated that, “In a village, there are 60 percent of the people who have fishery occupation. In the past, villagers were not very concerned because they believed that they could still earn for a living. But after Tsunami, people became highly concerned because they had learnt from the lesson that they could have lost everything.” Therefore, having no problem or having problems affecting occupation also have an effect on the competency level in fishery co-management.

6.2.2 Conditional factors in term of multiple roles; Small-scale fishers do not only have their role as a group member relating to fishery occupation, including conservation group, occupation group, and small-scale fishery savings group, but they also have their role as a member of a community. Therefore, they also play their role in other groups within a community, which are assistant village headman, village headman assistant, member of the SAO, village committee, community leader, village fund, mosque committee, school committee, civil defence volunteer (looking after village safety), village volunteer, Red Cross volunteer, and land group leader. Therefore, having multiple roles affect the competency in fishery co-management.

6.2.3 Conditional factors in term of religion and culture; Most of the Small-scale fishers are Islamic (82.86 percent). Small-scale fishers believe in religious teachings, “All Muslims in this world are siblings.” This awareness and relationship have an influence on resource management, which creates collaboration in overcoming community problems that are in crisis. The teachings, “Resources in this world, including ocean, belong to Allah. All Muslims shall live like a bird or live sufficiently.” The teachings, “Resources in this world belong to Allah; the exploitation of these resources must be done resourcefully and without causing problems to others.” From these teachings, small-scale fishers do not exploit resources only for themselves. It can be said that conditional factors in term of religion and culture related to holistic thinking. As mentioned by one leader who is a religious leader, “When giving a sermon prior to giving worship of the Allah's kindness on Friday, the topic about resources is also presented because in the AL-Qur’an. The Islamic constitution also cites on human destroying resources. Tsunami problem is clearly mentioned in the AL-Qur’an that it is because of human. When humans are destroyers, God will punish them by creating Tsunami or land slides to build awareness that they are destroyers. The most certain thing is that there is a chance to restore but they do not do it.”

It is in consistence with one leader who stated that, “if a religious leader (Toh Imam) does not mentioned about this topic, they will not understand and not know what to speak about on Friday. They talk about general topics and disasters that occur, about the future, and if we are not prepared to solve problems such as land and sea. The AL-Qur’an is added into a speech so that we can apply into the real life. If people are familiar with heaven and hell topic, they will translate and apply this topic; however, it is more than that. In terms of the environment, we think about why we don’t eat frogs or lizards. In fact, it is to maintain an ecosystem, which is consistent with what we are working now. It is a system; if we eat them, the system will be collapsed.”

6.2.4 Conditional factors in term of learning development consist of continuous development (training and study activities), and co-action in various activities.

6.2.4.1 Continuous development (training and study activities);

Continuous development affects the competency of learning person. As stated by the one expert in fishery management, “It was around 1995-1996, the organization of Bay of Bengal Programme is the resource management participated by communities. It started from there and is developed into a middle market where every village has the same market. At present, they combine networks into a network market or mother market situated at Klong Kian. This model is expanding into Baan Klang at Bangtoey.” Moreover, CHARM Project was operated from 2003 until 2007 with continuous development, resulting in the ability to communicate and knowledge in fishery law. As pointed out by one director of the CHARM Project, “MCS training for fishers and provide them with knowledge about monitoring and communication in surveillance, communication by radio-communication, ship inspection and capture of wrong-doer, and following a lawsuit. After finishing the training, MCS volunteer group monitor aquatic animal resources and both coastal sides. There are approximately 600-700 people and they obtain 300 communication tools with mother network. This network will cover the areas from various communities and sub-districts where people help one another in monitoring, with a support from radio network. They will link with one another to exchange news.” In addition, study activities affects learning person. As mentioned by one leader, “It can be clearly seen that craps are dramatically decreasing, so they turn to the crab bank program whereby the group invest by themselves for 3,000 baht to buy blue swimming craps and breed them in a floating basket. Mother craps that have already released eggs will be sold. Later, NGO brings them to study activities in Trad province, so they can see the difference and the problem when the craps release eggs, their fingers all fall down and their bodies are dirty, but in Trad province they use a net that makes the craps remain in a good condition. Therefore, when the group comes back, they change to a net. It can be observed that at the seashore the amount of the crap offspring significantly increase.”

6.2.4.2 Co-action in various activities; Co-action affects

learning person and attitudes toward fishery co-management. As stated by the expert in fishery management, “Regarding BOBP Project in 1995-1996, the crab bank program was established from the concept that blue swimming craps with eggs should not be caught because one crap can lay at least 300,000 eggs. If they are released back,

the number of crabs will increase. I invite people in a village to do this activity together, and give them floating baskets. Each group will receive two floating baskets. They will discuss about when catching pregnant crabs with grey or black eggs, these eggs will be laid with one or two days. Yellow eggs that come with a boat will be scratched and when they are irritated, they will be removed and not have babies. So, they focus on grey or black eggs to put in floating baskets. When crabs release eggs, they will then be sold. Villagers are beginning to see that after four months there are many ships surrounding rafts because they are recovered.”

Co-action affects knowledge of geo-ecology and local resources, learning person, leadership and communication. As one NGO person stated that, “Villagers created a local resources map covering the coral area, dugong’s access area, seagrass area, squid and mackerel source. The map was created from a village level upward where it was an area developed by NGOs for a long period of time. Then, the process was implemented with villagers by organizing informal small forums in more than 100 villages at that time. It was started from a village level, and then developed into a wider area such as the Bay, sub-district, or combining two islands together, depending on the conditions of geo-ecology. During an early period of establishing a stage, villagers were information providers with stimulation from NGOs. However, during a second period, village leaders started doing by themselves. We observed whoever was capable of communicating these information through brainstorming and through establishing reliability among village members, and then began to train them. After obtaining the map, it was divided into sets. Each set would have a representative who came to meet with one another in an appointment and discussed about problems, causes, and experiences in each area in order to create an exchange in learning.”

Furthermore, co-action affects knowledge of fishery law. As mentioned by one leader, “More than ten anchovy fishery with light luring entered into the area, a specific mission unit used to have surveillance in cooperation with officers of the Marine and Coastal Resource Conservation Center No. 5 (Phuket) once, and with the Andaman Sea Marine Fisheries Patrol Center once.” This is consistent with one leader who pointed out that, “In the coastal surveillance in Phangnga Bay in 2000, A Network met a Provincial Governor and consulted on the surveillance. A Provincial

Governor made a consensus to enforce each district to establish a surveillance plan, by having Chief District Officer, a Police Officer, Administrative Division, a village headman, and volunteers cooperatively create the surveillance plan at a district level. The surveillance plan consisted of operation unit throughout the whole week. Each operation unit contained two villagers who collected the data relating to number of boats entering in each month, and then reported to a Chief District Officer every month, and reported to a Provincial Governor every three months.”

6.2.5 Conditional factors in term of social relationship; It is the relationship between small-scale fishers and local aquatic animal traders, government sector, and a leader.

6.2.5.1 Relationship between small-scale fishers and local aquatic animal traders in a patronage system. When small-scale fishers catch aquatic animals and sell them to local aquatic animal traders to pay off their debts, it is a monopoly of local aquatic animal traders. If they receive many purchasing orders, they are able to persuade fishers to catch. They buy aquatic animals without restricting sizes, resulting in small-scale fishers to catch small aquatic animals as well. A patronage system affects a holistic thinking method.

6.2.5.2 Relationship between small-scale fishers and government sector; Power relationship between government sector and small-scale fishers affect communication ability. As mentioned by one leader, “In the past, there were trawls and push nets, and villagers did not go to see Chief of District Fisheries. When we went there to see him, nothing happened. We didn’t know what to do and whom to talk to because, between government sector and villagers, there was no foundation building from the bottom to the top. They only built from the top to the bottom.”

In addition to power relationship, a provincial policy in the upper province is focused on tourism, which affects small-scale fishers in the upper province as a result of the construction of Marina Port and the invasion of capitalists into the coastal and mangrove areas for resort construction, affecting the fishery areas. The movement against the invasion of capitalists into the areas had caused some small-scale fishers to be sued by capitalists in an accusation of illegal access without

permission. Therefore, power relationship of government sector or capitalists have an effect on the competency.

6.2.5.3 Relationship between small-scale fishers and a leader; Even though each small-scale fisher has leadership and volunteer spirit, each small-scale fisher does not fully and equally participate in activities because some of them leave their hope with leaders. The relationship between small-scale fishers and a leader affects the difference in the competency level of leadership and volunteer spirit. As stated by one leader, “The reason that I want to continue because villagers leave their hopes with me that if we have 12 persons, we will pass.”

In conclusion, there are many combining conditional factors that relate the competency level of small-scale fishers in fishery co-management, including conditional factors in terms of occupational pattern, multiple roles, religion and culture, learning development, and social relationship.

6.3 Examination of competency assessment results: Individual level

The examination of competency assessment results at the individual level is undertaken by organizing a sub-group meeting of experts in fishery co-management on two forums, which are the forums of the lower and upper provinces in order to examine the opinions of experts in fishery co-management (consisting of government sectors (including the SAO), small-scale fishers, NGOs, academics, and business sector) towards the competency level of small-scale fishers in fishery co-management. The competency is considered in each aspect and in overall aspect. Examination results of the competency are as follows.

Overall, the meeting consensus is in agreement with the competency level of small-scale fishers in fishery co-management, both in consideration in each aspect and in every aspect simultaneously. As stated by the forum of the lower province, “Today, if comparing each aspect, we have weaknesses comparing to the upper province. We have found our weaknesses.” In addition to the agreement in the meeting concerning the competency level based on research findings, the meeting also demonstrates the importance of competency or obstacles to competency. Details are as follows.

1. Holistic thinking; The upper province give an opinion on the competency level relating to holistic thinking that “holistic thinking of small-scale fishers in the upper and lower provinces is equal because if holistic thinking really occurs, separated thinking of each household or zone must decrease. However, they have not yet been integrated into one zone.” Moreover, the meeting gives an opinion that the government policy and politics affect holistic thinking. For example, villagers organize mangrove management but have a policy for deforestation, or when there is a change in politics, it will affect conservation in a way that no matter how villagers try to conserve, when there is a shrimp export policy, it will mostly have an effect.

2. Knowledge and experiences in small-scale fishery; The meeting agrees that a transfer process of fishery lifestyles is crucial. For example, if nowadays children can not make gill nets, no one will maintain the making of gill nets or local wisdom in the next five or ten years because fishery involves resource management in the future.

3. Volunteer spirit; Everyone has volunteer spirit. However, if people attend the meeting too often, family can be affected sometimes, and children will not permit to study, resulting in the loss of leader with volunteer spirit in many villages in the Andaman coast.

4. Leadership; The problems occur where the elected local leaders, including village headman and Chairman of SAO, do not seriously participate in resource management. There is only a small part of people attending. If the local leaders can change their behavior and fully give their interests to an environment, it should be better. On the other hand, the participated local leaders do not take an action in congruence with community needs. Furthermore, the word ‘leadership’ must also include the word ‘status’; that is, the leaders who are village headman will acquire more capability in cooperation for resource management, which is in accordance with their roles and responsibilities and is more advantageous than the natural leader. This is because the natural leaders do not wear any hat; sometimes when they go to meet villagers and talk about something, villagers do not usually listen to them. In addition, for the weakened leaders, part of this is due to local politics in which the natural leaders who used to be strong begin to run for the SAO election or the village headman selection when they become more widely known. This results in a division of

sides. The leaders also have economic problems in which the leaders do not obtain a lot of income and have their personal problems. The strong persons who understand life will be able to lead their lives and family. But if the leaders are weak and desperate, sacrifice will disappear.

5. Learning person; The meeting agrees that overall aspect of learning person in The upper and lower provinces is still in the low level. This is because learning by reading has limitations since fishers do not usually read and perception of news from television is not supportive to learning. Learning that will provide the best outcome is the establishment of both formal and informal forums; mutual conversation encourages an exchange in learning, or the leaders who attended the meeting share and transfer their knowledge with people within their village to create learning. When learning occurs, there should be an emphasis on knowledge storage in order to sustain knowledge, both knowledge that is inherent in a person and knowledge in writings in the form of a villager handbook, which can be kept in a mosque. If these knowledge are stored, it will ensure that co-management in the future will be sustainable because there is a transfer of lessons.

6. Attitudes of small-scale fishers towards fishery co-management; The meeting agrees that the attitudes of small-scale fishers affects resource management because small-scale fishers have to understand what they will get.

7. Communication; The meeting agrees that the heart of co-management is communication in which communication must be understood in the same direction from the top to the bottom. Whatever a group plans to do, when communication occurs, it must be in the same direction. Effective communication is a direct communication, which is both formal and informal conversation.

8. Knowledge and compliance with fishery law; The meeting agrees that small-scale fishers have some knowledge about fishery law.

Moreover, the meeting also mentions about effective reinforcement of competency of villagers; that is a sub-group conversation and a large group conversation, which is both formal and informal, as well as the use of 'co-action' method in which the development and invitation to the meeting must recognize the local culture where Muslim small-scale fishers will give worship of the Allah's

kindness every Friday. In addition, there is also a limitation in bureaucracy where the operation is closed during weekend and working hours is from 08.30 until 16.30. This is not congruent with lifestyles of small-scale fishers who usually go out for fishing in the early morning and come back home in the afternoon. An appropriate time for them will be after giving worship of the Allah's kindness in the evening.



CHAPTER VII

COMPETENCY LEVEL OF SMALL-SCALE FISHERS IN FISHERY CO-MANAGEMENT AT NETWORK LEVEL

The assessment of the competency level of small-scale fishers in fishery co-management at the network level applied the same principle as the individual level, which is for the benefit in the competency-based development of small-scale fisher networks. Therefore, this research aims to evaluate the competency, not the outcomes derived from the competency.

In order to answer to Objective 2, which is to study the competency level of small-scale fishers in fishery co-management, and to study conditional factors related to the competency of small-scale fishers at the network level. In this case, the researcher will present three aspects, including (1) the competency level of small-scale fisher networks in fishery co-management; (2) conditional factors related to the competency and; (3) results examination of the competency assessment as follows.

7.1 The competency level of small-scale fishers in fishery co-management: Network level

After obtaining the competency model, it is important to apply the competency model to evaluate the level of capability of small-scale fisher networks regarding aspects of the competency that small-scale fisher networks is good at or weak at in order to be useful for the competency development of small-scale fishers network in the future. The assessment of the competency level of small-scale fisher networks has the same principle as the individual level, which is the competency level assessment by considering each aspect of the competency as well as by considering all aspects simultaneously in order to see the competency level of small-scale fisher networks in fishery co-management at the network level more clearly. Therefore, the researcher will present research findings in two steps as follows.

Step 1: The assessment of the competency level by considering each aspect of the competency; The objective is to identify the competency level of small-scale fisher networks in terms of the aspects that they are good at or weak at, and the level that they are good at or weak at. Those levels are the leader level, or the application level, or the beginner level.

Step 2: The assessment of the competency by considering all aspects simultaneously; The objective is to illustrate the competency level by cluster in terms of characteristics of the competency level in fishery co-management of each cluster.

Step 1: The assessment of the competency level by considering each aspect of the competency

The identification of the competency level of small-scale fisher networks in terms of the aspects that they are good at or weak at, and the level that they are good at or weak at can be done by comparing the mean of each competency with three levels of criteria, Level 3, Leader level; Level 2, Application level; and Level 1, Beginner level.

Results of the assessment of the competency level indicated that, from 13 competencies, small-scale fisher networks in the upper province on the Andaman coastline have the competency at the application level (Level 2) in 10 competencies, including (1) shared goal, (2) leadership, (3) collaboration with other sectors, (4) conflict management, (5) timely response to external situation, (6) social movement, (7) knowledge management, (8) new generation development, (9) administration, and (10) communication. In addition, small-scale fisher networks in the upper province have the competency at the beginner level (Level 1) in three competencies, which are (1) measures and regulation setting, (2) negotiation, and (3) support from other sectors.

On the other hands, small-scale fisher networks in the lower province on the Andaman coastline have the competency at the leader level (Level 3) in 1 competency, which is communication, and have the competency at the application level (Level 2) in 12 aspects, consisting of (1) shared goal, (2) measures and regulation setting, (3) leadership, (4) collaboration with other sectors, (5) conflict management,

(6) negotiation, (7) timely response to external situation, (8) social movement, (9) knowledge management, (10) new generation development, (11) administration, and (12) support from other sectors (Table 14 and Figure 17).

Therefore, the competencies of small-scale fisher networks in fishery co-management that are primarily required to be developed are (1) measures and regulation setting, (2) negotiation, and (3) support from other sectors. In addition, the upper province must also be developed in term of communication.

Table 14 Mean and level of competency in fishery co-management of small-scale fishers at the network level, categorized by province

Competency	Mean		Competency Level	
	Upper province (n=13)	Lower province (n=11)	Upper province	Lower province
Shared goal	9.31	9.91	2	2
Measures and regulation setting	12.85	19.45	1	2
Leadership	6.08	5.27	2	2
Collaboration with other sectors	6.85	8.09	2	2
Conflict management	16.46	15.64	2	2
Negotiation	2.46	4.64	1	2
Timely response to external situation	6.00	5.73	2	2
Social movement	8.69	9.82	2	2
Knowledge management	33.69	36.36	2	2
New generation development	5.62	4.45	2	2
Administration	11.77	12.73	2	2
Communication	25.62	29.91	2	3
Support from other sectors	21.54	28.27	1	2

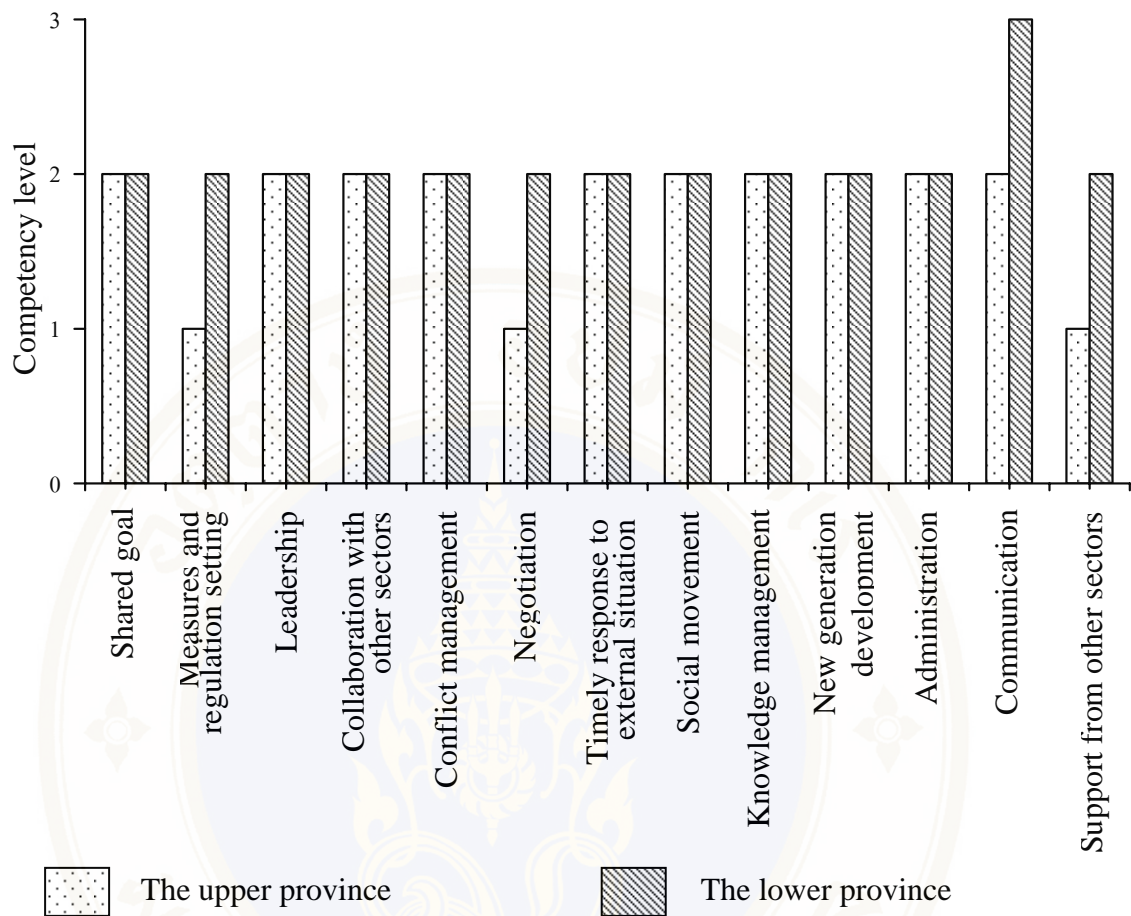


Figure 17 The competency level of small-scale fishers in fishery co-management at the network level, categorized by province

Step 2: The assessment of the competency by considering all aspects simultaneously

From Step 1, it is the assessment of the competency level with the aim of considering each competency separately in terms of the level of each competency and the competency that small-scale fisher networks are good at or weak at. However, it is interesting to see that if considering the level of competency in overall aspect by considering all aspects of the competencies simultaneously and categorizing them by the cluster of small-scale fisher networks (Cluster Analysis), how many clusters of the competency level of small-scale fisher networks can be categorized? What are characteristics of each cluster? Which competency they are good at or weak at?

Thirteen small-scale fisher networks in the upper province and 11 networks in the lower province, equivalent to the total of 24 networks, can be categorized into three clusters. Cluster 1 is the biggest, accounting for 41.67 percent. The majority of small-scale fisher networks in the lower province are in Cluster 1 (54.55 percent). On the other hand, the majority of small-scale fisher networks in the upper province are in Cluster 2 (46.15 percent) while the proportion of small-scale fisher networks in both the upper and lower provinces in Cluster 3 is not significantly different (Table 15).

Table 15 Number and percentage of small-scale fisher networks, categorized by cluster and province

Province	Cluster			Total
	1	2	3	
The upper province on the Andaman coastline	4 (30.77)	6 (46.15)	3 (23.08)	13 (100.00)
The lower province on the Andaman coastline	6 (54.55)	3 (27.27)	2 (18.18)	11 (100.00)
Total	10 (41.67)	9 (37.50)	5 (20.83)	24 (100.00)

Note: Number in a bracket is in percentage.

In the categorization of small-scale fisher networks by 13 aspects of the competencies, it is found that 11 out of 13 competencies can be categorized into the cluster of small-scale fisher networks at statistically significant level of 0.05. Those competencies are (1) measures and regulation setting, (2) leadership, (3) collaboration with other sectors, (4) conflict management, (5) negotiation, (6) social movement, (7) knowledge management, (8) new generation development, (9) administration, (10) communication, and (11) support from other sectors, while the other two competencies is not significant in categorization, including (1) shared goal, and (2) timely response to external situation.

The most important competencies in clustering are knowledge management ($F = 20.09$), management ($F = 13.33$), collaboration with other sectors ($F = 12.01$), and

new generation development ($F = 10.65$), respectively (Table 16). It can be stated that in fishery co-management all networks of small-scale fishers need to acquire the four most important competencies, which are knowledge management, administration, collaboration with other sectors, and new generation development while the other competencies are important in respective orders.

Table 16 Standardized means of the competency of small-scale fisher networks in fishery co-management, categorized by cluster

Competency	Cluster			F df (2, 389)
	1 (n=10)	2 (n=9)	3 (n=5)	
Shared goal	0.464	- 0.408	- 0.194	2.10
Measures and regulation setting	0.600 ^a	- 0.236 ^{ab}	- 0.776 ^b	4.71*
Leadership	0.610 ^a	- 0.013 ^a	- 1.198 ^b	9.45**
Collaboration with other sectors	0.797 ^a	- 0.334 ^b	- 0.992 ^b	12.01**
Conflict management	0.638 ^a	- 0.371 ^{ab}	- 0.609 ^b	4.74*
Negotiation	0.607 ^a	- 0.371 ^b	- 0.546 ^b	4.06*
Timely response to external situation	0.146	0.106	- 0.482	0.72
Social movement	0.671 ^a	- 0.474 ^{ab}	- 0.487 ^b	5.29*
Knowledge management	0.727 ^a	- 0.030 ^a	- 1.400 ^b	20.09**
New generation development	0.638 ^a	- 0.028 ^a	- 1.225 ^b	10.65**
Administration	0.736 ^a	- 0.148 ^a	- 1.205 ^b	13.33**
Communication	0.659 ^a	- 0.154 ^{ab}	- 1.041 ^b	8.04**
Support from other sectors	0.633 ^a	- 0.139 ^{ab}	- 1.015 ^b	7.17**

** $p < 0.01$ * $p < 0.05$

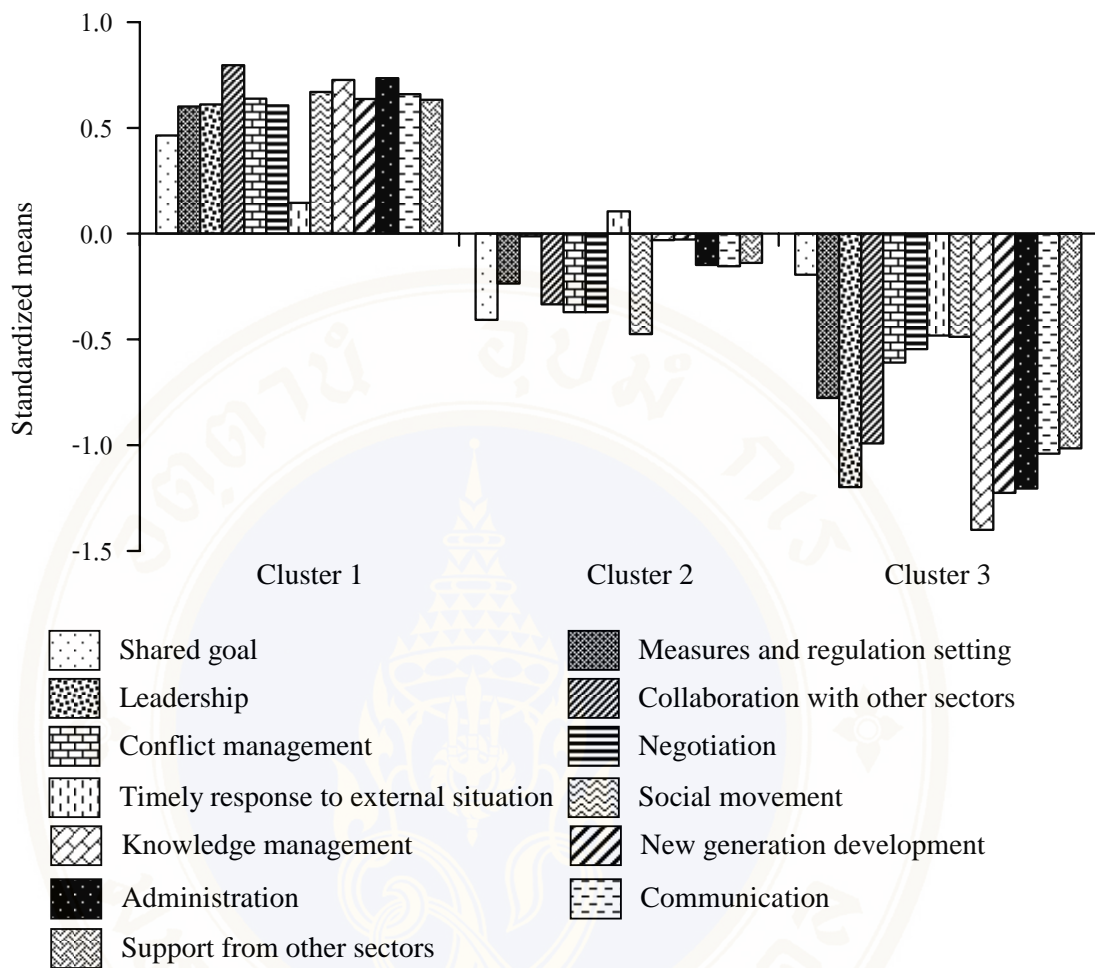


Figure 18 Competency of small-scale fishers in fishery co-management at network level, categorized by cluster

In order to see the competency level of small-scale fisher networks in each cluster, it is important to give a name to each cluster in order to convey or explain the competency level in terms of which one they are good at or weak at (Table 16 and Figure 18).

Small-scale fisher networks in Cluster 1 have two distinctive competencies, which are collaboration with other sectors and negotiation, and also four additional good competencies, including (1) administration, (2) knowledge management, (3) new generation development, and (4) leadership, respectively. Therefore, this cluster is named, “Small-scale fisher networks with a high competency.”

Small-scale fisher networks in Cluster 2 have good competencies in four aspects, which are (1) leadership, (2) new generation development, (3) knowledge management, and (4) administration, respectively. On the other hand, the weakest competency of this cluster is social movement. Therefore, this cluster is named, “Small-scale fisher networks with a moderate competency.”

Small-scale fisher networks in Cluster 3 have no distinctive competency in fishery co-management and the weakest competency within the cluster consists of four aspects, which are knowledge management, new generation development, administration, and leadership, respectively. Therefore, this cluster is named, “Small-scale fisher networks with a low competency.”

After knowing about the competency level of small-scale fisher networks in fishery co-management and have the names to convey the competency level of each cluster, then it is important to know about characteristics of each cluster. For examples, in Cluster 1, “Small-scale fisher networks with a high competency”; how many sub-groups within the network do most of them have? Similarly, in Cluster 3, “Small-scale fisher networks with a low competency”; what are its characteristics? The understanding towards characteristics of small-scale fisher networks in each cluster will help to see different or similar characteristics of small-scale fisher networks in each cluster, and will help to better explain the competency level of small-scale fisher networks in fishery co-management.

Cluster 1: “Small-scale fisher networks with a high competency”; Important characteristics of small-scale fisher networks in this cluster is the highest number of sub-groups within the network that is more than 6 groups, and a network structure is the central committee coming from the representatives of villages. Additionally, there are also sub-structures within villages as well as various leaders, who are natural leaders, religious leaders, and formal leaders where leaders can make most members believe and trust in them. Almost all of the network members have role and responsibilities for the works of the network and participate in the network meeting. Furthermore, the network explain about income and expenses or work performance of the network in every issue. When there is a decision making on the direction of the network project, there is a consultation everytime and they are mostly the networks in the lower province.

Cluster 2: “Small-scale fisher networks with a moderate competency”; Important characteristics of small-scale fisher networks in this cluster is number of sub-groups within the network in which there are 4-6 groups, and a network structure is the working committee coming from the representatives of sub-groups. Additionally, natural leaders can make most members believe and trust in them. Some of the network members have role and responsibilities for the works of the network and almost all of the members participate in the network meeting. Furthermore, the network explains about income and expenses or work performance of the network in some issues. When there is a decision making on the direction of the network project, there is a consultation everytime and they are mostly the networks in the upper province.

Cluster 3: “Small-scale fisher networks with a low competency”; Important characteristics of small-scale fisher networks in this cluster is number of sub-groups within the network in which there are 4-6 groups, and a network structure is the integration with core leaders, but there is still the lack of clear assignment of roles and responsibilities. Additionally, natural leaders can make most members believe and trust in them. Almost all of the network members have role and responsibilities for the works of the network and some members participate in the network meeting. Furthermore, the networks explain about income and expenses or work performance of the network in some issues. When there is a decision making on the direction of the network project, there is a consultation everytime and they are mostly the networks in the upper province.

In conclusion, the different characteristics of each cluster are Cluster 1 has number of sub-groups more than 4 groups while Cluster 2 and Cluster 3 have number of sub-groups within the network equivalent to 4-6 groups. Cluster 1 has the network structure that is the central committee coming from the representatives of villages and there are also sub-structures within villages while Cluster 2 has the network structure of the working committee coming from sub-groups, and Cluster 3 has the network structure of core leaders without clear division of roles and responsibilities. Cluster 1 has natural leaders, religious leaders, and formal leaders whereas Cluster 2 and Cluster 3 have natural leaders. In Cluster 1 and 3, almost all of the members have roles and responsibilities in the works of the network while Cluster 2 has some members who

have roles and responsibilities in the works of the network. In Cluster 1 and 2, almost all of the members participate in the network meeting while in Cluster 3 only some members participate in the network meeting. Moreover, in Cluster 1, the network explain about income and expenses or work performance of the network in every issue while, in Cluster 2 and 3, the network explain about income and expenses or work performance of the network in some issues. Cluster 1 is the network in the lower province while Cluster 2 and 3 are the networks the upper province (Table 17).

Table 17 Percentage of general characteristics of small-scale fisher networks categorized by cluster

General characteristics of networks	Percentage			
	Overall	Cluster		
		1	2	3
Number of sub-groups within the network				
1-3 groups	16.67	10.00	11.11	40.00
4-6 groups	50.00	40.00	55.56	60.00
More than 6 groups	33.33	50.00	33.33	0
Sectors supporting or stimulating the network formation				
No sectors support but with self-integration	8.33	10.00	11.11	0
Self-integration prior to the entrance of NGOs	62.50	60.00	55.56	80.00
Formation by NGOs/Clubs/and Government sector	29.17	30.00	33.33	20.00
Characteristic of network structure				
Group integration with core leaders	29.17	0	33.33	80.00
Single structure by having the working committee coming from representatives of sub-groups or distinctive groups	41.67	40.00	55.56	20.00
Complex structure by having the central committee coming from village representatives, and within each village there are sub-structures	29.17	60.00	11.11	0

Table 17 Percentage of general characteristics of small-scale fisher networks categorized by cluster (cont.)

General characteristics of networks	Percentage			
	Overall	Cluster		
		1	2	3
Type of network leaders				
Natural leaders	45.83	40.00	44.44	60.00
Formal leaders (Village headman)	25.00	20.00	33.33	20.00
Natural leaders, religious leaders, formal leaders	29.17	40.00	22.22	20.00
Ability of leaders to make members believe and trust in them				
Almost all of the members have trust	75.00	90.00	66.67	60.00
All members have trust	5.00	10.00	33.33	40.00
Network members have roles and responsibilities for the works of the network				
Some members have roles	45.83	40.00	55.56	40.00
Almost all of the members have roles	54.17	60.00	44.44	60.00
Members participation in activities related to coastal resource management				
Almost all of the members participate	79.17	90.00	77.78	60.00
All members participate	20.83	10.00	22.22	40.00
Participation in the network meeting				
Some members participate	16.67	10.00	0	60.00
Almost all of the members participate	83.33	90.00	100.00	40.00
Explanation about income and expenses or work performance of the network				
Some issues	30.43	0	55.56	50.00
Every issue	69.57	100.00	44.44	50.00
The networks have consultation to make a decision on the project direction				
Sometimes	8.70	0	22.22	0
Everytime	91.30	100.00	77.78	100.00
Provinces				
The upper province	54.17	40.00	66.67	60.00
The lower province	45.83	60.00	33.33	40.00

7.2 Conditional factors related to the competency of small-scale fishers in fishery co-management: Network level

Strength or weakness perception of competency level of small-scale fisher networks in fishery co-management above makes the competency of small-scale fisher networks is developed better straight to the point. Moreover, perception on conditional factors related to the competency of small-scale fisher networks also support for competency development of small-scale fisher networks. The conditional factors related to the competency of small-scale fisher networks include structure, power relationship, politics, network life cycle, internal network system management, learning development, and geological conditions.

7.2.1 Conditional factors in term of structure/ power relationship/ politics: by having the policy of small-scale fishery management as well as setting the fishing rights system in the seventh National Economic and Social Development Plan (Pomeroy, 1995: 154) and putting the community-based fishery management into the eighth National Economic and Social Development Plan (FAO, 1998: 3), the 1997/2007 constitution gives the community rights for local resource management especially in this time the amendment of fishery law is during the improvement which is the draft of Fishery Act, setting up the local fishery committees which gives authorities to every shareholder in fishery resource management and the government sector also the part of committees. Moreover, the Master Plan of Marine Fisheries Management of Thailand (2009-2018) indicates co-management in the strategy 1. This can be said that the structure/power relationship/politics/ economic and society have relationship with the movement of small-scale fisher networks directly. The most important is allowing the small-scale fisher communities to participate in resource management for all mangrove management in form of community forest, setting aquatic animal reservation area, planting and making the seagrass reservation areas or legislating to support community rights in management, reservation and coastal resources recovery, especially “coastal fishery right system” which is the coastal resources co-management system between government sector and community.

Moreover, structure/power relationship/provincial and local politics (SAO) also affect the competency of fishery co-management network, especially the upper province which has provincial policy for tourism development. In the year 2002, some networks bring the ecotourism to be the instruments for coastal resource management; networks of the upper province which study about reservation tourism or homestay found that 4 in 13 networks (30.77%) since 2006, several networks in Phangnga Bay has had problems of using coastal areas to build 8 Marina Harbor and mangrove area intrusion to make the resorts from capitalists. Therefore, the issues of network movement are variety depending on problems condition. It can be said that today the networks operate not only in terms of fishery management but also struggles to the globalization, living survival and reserves the ecological system together. Hence, there is the combination of tourism management which also affects the competency level in fishery co-management as well.

7.2.2 Conditional factors in term of network life cycle

The upper province has had a crisis of decreasing aquatic animals since 1979. The studied networks in the upper province started to form in 1989 and 1992. The combination caused from the main problems of the mangrove which has been destroyed from the concession or mineral boat and fishery with illegal fishing gears which affect the small-scale fishers in some areas have to move themselves to work in other provinces and bring back diseases and addict drugs to their own villages. The problem management in some areas at the beginning time used serious way, and then in 1993 the NGO came to manage by setting several clubs at the sub-district level. Moreover, in 1989-1992 the networks used the way of the request to the government sector for solving problems. The networks in the upper province drove seriously between 1995-2001 about anchovy fishery with light luring, push nets and trawls and the extension of Phangnga Bay. Besides some areas had co-operation plan at district level to arrest the push netters and trawlers. For the approval of extending the Phangnga Bay in 1998 made the situations of illegal fishing gears problem be relieved. When having push nets and trawls problem, the solving method usually made was informing government sector more than co-arrest. Moreover, the upper province had provincial policy for tourism development in 2002, some small-scale fisher networks

applied the ecological tourism to be the instrument for coastal resource management. It can be said that the small-scale fisher networks have development and life cycle like any other ordinary networks which includes the stages of formation, extension and weakness and adaptation. The network life cycle affects the competency as a leader said that “sometimes it seems to be intrusion but when stop intrusion, then we are slow, so it likes an advantage and disadvantage”

7.2.3 Conditional factors in term of internal network system management

Conditional factors related to internal network system management consists of the network structure, participation of network members, and network transparency.

7.2.3.1 Network structure: consists of the number of sub-group within the network, type of network leaders and the work structure.

1) Number of sub-group within the network: cluster 1 has the number of sub-group within the network more than 6 groups in maximum while cluster 2 and 3, the numbers of sub-groups are between 4-6 groups. The varied sub-groups not only lead the security to the network but also express the capability of network management as an academic said that “look at the results that how much the variety of activities in the network is or only management of the sea area, is there a saving group?, is there processing group? because the strong network has to have various activities based on their own work”. This is in accordance with another leader who said that “we view for the savings group recently that if the support way has not real basis, it will be failed all”. The sub-group within the network creates the knowledge base from real practical, therefore it makes a result to the knowledge management as a leader said about the seagrass planting that “before planting, we have a meeting among villagers first to find the way for planting, then villagers and students plant seagrass. Moreover we have to plant in the existing seagrass areas, the planting time must not be windy because waves will lap, the planting way is sticking wood first like wood of rubber mop then tying the seagrass like planting orchids and burying the roots for a little, after that the seagrass will extend its species by itself. People who place the crab nets in those areas can see the seagrass and also a lot of swimming crab around the seagrass.” Besides, the variety of sub-group shows the continuous and

various activities which affect the leadership condition that brings new methods to be used in the coastal resource management as a leader said that “the network motivates people to participate in the activity, such as anyone who stays at the homestay, let him/her plant one tree”. Moreover, the sub-group will affect the collaboration with other sectors as a leader said that “Aris is the sub-group headman. When he sees the dead fish, he takes it to the Marine Fisheries Development Center to investigate the cause of the death.”

2) Network leaders: Cluster 1 has mixed leaders which are natural leader, governmental leader and religious leader. Cluster 2 and 3 include natural leaders who are very important to the network as a Chairman of the SAO said that “the factor related to the competency of the network at the first level is a leader”

3) Work structure: the work structure is various among the 3 groups; cluster 1 has the work committees from representatives each village and within the villages there are sub-structures. Cluster 2 has the work committee from the sub-group representatives and Cluster 3 has the work committee from group combination by having leaders but not dividing certain or specific roles and duties. These work structures affect the competency of collaboration with other sectors as a NGO said that “for co-ordination with the government sector, villagers have to set up their base to be strong first by having the staff who has knowledge enough about forests. Any village which doesn't have strong community organization enough usually fail to coordinate with the government sectors”. This is in accordance with a leader who said that “the network must be good at management and have combination among the networks continuously. If facing problems, everyone within the network has to participate in the issues”. The work structure of the network is a kind of horizontal structure. Most of the networks will have a conference once a month and some network may have a conference twice a month or once per two months in order to discuss any problem to reach the solutions or inform the receiving-paying money or the operation results. Some network, both work committee and network members conclude the lessons to revise the work done every the end of the year. Therefore, the work structure affects the communication channel and competency of network management as a leader said that “the group has a meeting twice a month,

every nine nighttime and every the end of the year have a meeting to revise the lessons in the past and also plan the schedule for the future”. The conference or meeting makes the network members exchange and learn to one another. It can be said that the work structure affects the knowledge management of the network as well. Moreover, the work structure also affects the new generation development as a leader said that “when there is a meeting, we have to accompany 2 new generations and alternate among them. When they come back from the meeting, they will tell the contents to others”

In conclusion, the network structure which consists of the number of sub-group within the network, leaders and work structure will affect the competency of management, leadership, collaboration with other sectors, knowledge management, new generation development and communication.

7.2.3.2 Participation of network members consist of (1) members has roles and duties in the work of network (2) members participate related activities to coastal resource management (3) participation of network members which is participation of network members no matter what in terms of meeting participation or activities participation will affect the learning exchange (knowledge management) as an academic said that “if members often participate, they will perceive better. It is regarded as learning and if they participate in working often, they will be more excellent and one day they will become a leader. If there are ten activities and have one leader for one activity, so they can exchange their experiences among the groups”. Besides, participation of the network members will affect the literate of external situations as one academic said that “these groups have lessons in several areas and NGOs mostly has problem of synthesis stage”. This is in accordance with NGOs who said that “news and information from varied sources can be used for analyze in the group by having NGOs to be a supporter for consulting the government sectors or the Provincial Governor. The information is various in each time, for example, for this time, what kind of the topic to talk to the Provincial Governor. This has to set the topic and goal, and then see that whether we have sufficient information and all have to co-operate with the villagers”. The members participate to the activities related to the coastal resource management affect the administration (having plan) as a leader said that “set up the special team of forest treatment and investigate 15 days per

month by using boat for investigating mangrove as well as investigating push nets and trawls. The team is divided into three teams and each team has a leader with five team member and alternate to investigate. If the problem found can be negotiated, it's nothing but if cannot, it must be depended on the authorities.”

7.2.3.3 Transparency: (1) informing the receiving-paying money or work results of the network. (2) Network discusses to make a decision on project orientation. The transparency affects the administration as a leader said that “network will be excellent depends on sincerity of persons in the network, the group management means money and account must be equal to each other. It means transparency is important. The group will fail or not depends on this issue because it will cause unreliability to one another”

7.2.4 Conditional factors in term of learning development

Participation in BOBP project is the learning development of the network as an experts of fishery management said that “At that time, around 1995-1996, Bay of Bengal Programme was the resource management which had the community participated in until the community could set up the central aquatic animal market. It means every village has an equal market. Now, they can do co-network and to be the network market or head market located at Klong-Kean and this model will extend to Ban-Klang at Bang-Teuy”. To participate in CHARM with varied activities are learning development which include mangrove resource management plan, learning center, training on resources survey by community, strategic plan of people sectors and organizing the mechanism of sub-district consultant committee called CRM of three networks.

Learning development is not only one kind of participation to the project but also the co-operation. Some networks co-survey the seagrass and coral reefs which are reservation group co- survey with the Marine and Coastal Resources Conservation Center No. 5 (Phuket) for two times, do the map in 15 spots and have a meeting together to find the details of doing. The reservation center supports the pontoon and line whereas the anchor is supported by the island. The reservation group co-ordinates with the SAO About the regulation to prohibit the illegal fishing gears in 3,000 m. from shore, prohibit the push nets and trawls ,swimming crab trap and other kinds of

traps such as underwater noisy making stick, fine mesh–size black surrounding nets, and surrounding purse nets” Besides, a NGO said that “in the past, NGO and villagers co-surveyed and did the map of resources and the map of resources utility in folklore style for almost 100 villages, each village had the model of resource map itself. When having the map of each village, villagers were divided into zones by letting the villagers in each zone discussed to each other and invited the related government sectors to participate as well”

7.2.5 Geological conditions

The upper province of costal areas is divided into two coasts which are west and east. The condition of the area is being island and separating to one another so the combination of network is not so strong enough as the lower province. Some networks of the lower province in several villages combine to each other and they are determined the area by the Provincial Governor and there are several organizations to support. These managements are not found in the network of the upper province.

In conclusion, there are several conditional factors which affect the competency level of small-scale fisher networks in fishery co-management by having conditional factors of structure/power relationship/politics to be the main including other conditional factors which are network life cycle, system management within the network, learning development and geological conditions.

7.3 Examination results of competency assessment: Network level

The examination results of competency in network level, there is a sub-conference by the experts of fishery co-management for two forums which are the forums of the lower and upper provinces to examine the experts of fishery co-management which include government sectors (as well as SAO), small-scale fishers, NGOs, academics and business section about the opinions towards the competency level of small-scale fisher networks in fishery co-management in terms of each aspect consideration of competency and every aspect consideration together. The competency examination results are as follows:

As a whole, the conference agrees with the competency level of small-scale fisher networks in fishery co-management in terms of each aspect and every aspect consideration. The conference views that “thirteen competencies of networks are much enough especially the details described are covered fully”. Moreover, the forum in the lower province views that “it’s impossible to say that the lower province is more outstanding than the upper province. The upper province also has management in each spot and village. Sometimes it is the intrusion and when stop intrusion, it seems to be slow, so there is the advantage and disadvantage and the competency between the lower and upper provinces is similar to each other”. Moreover, the conference also gives the opinion which expresses the importance of competency or competency obstructions as details as follows:

1. Shared goal: the conference views that if the goals are separated, it cannot be combined to be the organization or network.

2. Measures and regulation setting: In case of decreasing resources, several networks do the resource areas which have regulation setting but the nearby villages smuggle for use, therefore the problem of regulation setting is occurred. For this case, there should have the rules among the communities or not only the coastal fishery has the right but also people from other areas which are not attached to the sea can reach the rules as well.

3. Leadership: the conference views that to create the leadership, it should have the fund within the network itself without relying on outside resources and the leadership condition has to be able to share knowledges, experiences or benefits.

4. Collaboration with other sectors: the conference views that more than 10 years ago, it is seen only villagers could survive to manage or take care of themselves, not about co-operation with other members but nowadays, only NGO and villagers are not enough because there are a lot of components in social structures. Therefore, between 4-5 years at this time, the networks try to drive the members or collaboration with other sectors which can help villagers to have wider visions.

5. Conflict management: the conference views that the conflicts among the community is decreasing or during these five years, there is more understanding between government sectors and communities because there are several

organizations and central forums to build the opportunities to make understanding more.

6. Negotiation: the conference views that the negotiations are not a kind of cake division, which is to see the related ecological system and the negotiation must be based on fairness and stability as well.

7. Timely response to external situation: the conference views that the situation literate is important because the “community fever” era of every organization no matter whatever the Department of Fisheries, Department of Marine and Coastal Resources, NGOs go to the community for all. Hence, the community has to literate the things happen to the community. Moreover, the combination to be the networks have to be literate that it is fighting with the capital and has to know about the strategies in all levels, sub-district, district and province and know the export orientation, tourists service orientation which are involved to each other.

8. Social movement: the conference views that the drive has to be able to explain even small things involved with other things, which is, it is the co-issue of society, not only the issue of one or specific area.

9. Knowledge management: the conference views that giving knowledge, participating to the forum of exchange frequently will be the “intellectual arm”. The networks have to create the community to have the intellect. Moreover, it focuses on keeping knowledge of the networks in both of forest and sea for conveying the lessons.

10. New generation development: the conference views that the new generation development is necessary. The example of fighting with the capitalist who built Marina harbor at some area started with the elderly who had the forum to tell their experiences of fighting. Next, the teenagers absorb the backgrounds and they will participate more. Moreover, the new generation development has to develop leader team more than single leader. Besides the conference noted that how to manage the new generation and keep the old generation in the co-management because it is found that several areas have no heirs to continue the resource management further while the old generation is becoming disappeared or some areas do not take importance to the old generations when they have the new generation instead.

11. Administration: consists of analysis, plan, doing, assessment and improvement. The conference views that if the networks have power from the analysis, the things perceived more will be the advantage, knowing how to think and analyze will be the immune for the community a lot.

12. Support from other sectors; the conference views that the networks have to be support from other sectors, government sectors, NGO or academics, etc. but the support should have the continuity.

In addition, the conference also indicates the issue which changes the coastal community that it is from outside “FTA which is the free trade of investment which has agreement with the foreign countries and it causes the serious problem of land owners change which made the principle of sufficient economy or principle of self-dependence has to be all disappeared”.

CHAPTER VIII

DISCUSSION

In Chapter 4,5, 6 and 7, the researcher presented the research findings on the development of the competency model of small-scale fishers in fishery co-management in four parts, which are (1) small-scale fishers and co-management, (2) the competency model of small-scale fishers in fishery co-management at the individual level, (3) the competency level of small-scale fishers in fishery co-management at the individual and the network levels, and (4) conditional factors relating the competency of small-scale fishers in fishery co-management at the individual and the network levels. In order to be congruent with research objectives, the discussion of results is divided into two parts as follows.

1. The competency model of small-scale fishers in fishery co-management
2. The competency level of small-scale fishers in fishery co-management and conditional factors related to the competency

8.1 The competency model of small-scale fishers in fishery co-management

The discussion of the competency model of small-scale fishers in fishery co-management will include four aspects: (1) the level of the competency model; (2) the competency model of small-scale fishers in fishery co-management at the individual level; (3) the competency model of small-scale fishers in fishery co-management at the network level; and (4) the development method of the competency model and competency assessment.

8.1.1 The level of the competency model

Research findings of the competency model of small-scale fishers in fishery co-management can be divided into two levels, which are the individual and the network levels. Reason for developing the competency model in two levels because work characteristics of the network level and the individual level are different in which work characteristics of the network are the works at a process level whereas work characteristics of the individuals are the works at an activity level (Sukanya Rassametummachot, 2006 cited by Kirati Yodyingyong, 2006: 9). Therefore, to be successful in fishery co-management in terms of efficiency, equity and sustainability, the competency at a certain level alone is insufficient to achieve such outcome. As result, it requires the reinforcement of the competency at the individual level and the competency at network level as stated by Kirati Yodyingyong (2549: 8) that outstanding work performance is derived from the relationship between organization's competency and employees' competency.

8.1.2 The competency model of small-scale fishers in fishery co-management: Individual level

Study results of the competency model of small-scale fishers in fishery co-management at the individual level consist of nine competencies, which can be categorized into three parts, including hidden competency, core competency, and functional competency, as follows.

Hidden competencies

1. Holistic thinking
2. Volunteer spirit
3. Attitudes of small-scale fishers towards fishery co-management

Core competencies

1. Learning person
2. Leadership
3. Communication

Functional competencies

1. Knowledge and experiences in small-scale fishery
2. Knowledge of geo-ecology and local resources
3. Knowledge and compliance with fishery law

The reason for categorization of the competency into main types, including hidden competency (under iceberg surface) and visible competency (upper iceberg surface) is because the 9 aspects of the competency are different. Some competencies are visible competency; some are hidden competencies, which are holistic thinking, volunteer spirit, and attitudes of small-scale fishers towards fishery co-management. These competencies are related to the feelings or spirit of people; they are difficult to see and manage. However, some competencies that are related to knowledge and skills, which are knowledge in fishery law, knowledge of geo-ecology and local resources and communication skill, are visible competency and easy to manage. The categorization of the competency is consistent with the Iceberg model of McClelland (1973 cited by Kirati Yodyingyong, 2006: 4) who stated that the competency of individuals consists of two parts, which are hidden competency and visible competency.

In addition, the visible competency can be categorized into two parts, consisting of core competency and functional competency, because some competencies are the competency that all small-scale fishers must acquire. These competencies are learning person, leadership and communication. However, some competencies are functional competency, which include coastal monitoring and surveillance that requires knowledge of fishery law and knowledge of geo-ecology and local resources. Therefore, the categorization of the competency into hidden competency and visible competency (core competency and functional competency) is useful for the competency management or the development of the competency in the future. Hidden competency, core competency, and functional competency are crucial for fishery co-management as follows.

1. Hidden competency is the competency that is difficult to manage and affects people's behavior. As stated by Prasit Sajjapong (n.d.: 1) that personal characteristics include trait, attitude and motive. These characteristics have an

influence on behavioral expression of that person. Therefore, hidden competency is necessary for fishery co-management because it will influence behavioral expression of small-scale fishers. If small-scale fishers have behavioral expression in a positive way, it will support fishery co-management to achieve the expected outcome. As mentioned by Pomeroy & Ahmed (2006: 196, 200) that small-scale fishers feel that co-management provides a positive outcome in overall picture, especially in terms of participation and equity. In addition, positive attitude also brings about work progress and achievement in co-management.

2. Core competency is the competency that everyone in the network must acquire because these abilities will identify or drive the network into goal attainment as well as reflect the values of people within that network and mutually act in compliance with such values. Therefore, core competency consists of learning person, leadership and communication, which are important to fishery co-management because these competencies are the competency that enable the works that are either personal or require cooperation with others to be effective, especially fishery co-management that involves many related sectors where communication is necessary. This is consistent with Pomeroy, et al. (1998: 6-19) who mentioned that one conditions and principle of success in fishery co-management in Asia is effective communication.

3. Functional competency is the ability that is specified for each aspect of work. These competencies will reflect the deepness of ability that people should acquire prior to the assignment of a particular work. Functional competency is important to fishery co-management because in fishery co-management different work characteristics in conservation and restoration of resources, including conservation zone establishment, coastal monitoring and surveillance, mangrove plantation, seagrass plantation, and crab bank program establishment require functional competency in order to work effectively in each job. This is consistent with one academic from Department of Fisheries who stated that, "In coastal monitoring and surveillance, monitoring volunteers (fishers) must know about fishery that is in the form of committing face-to-face illegal actions. If they are core leaders, they must also know about legal procedure." Furthermore, small-scale fishers have knowledge and experiences in small-scale fishery and knowledge of geo-ecology and local resources;

therefore, there is the support for co-management to become successful. D’Incao & Reis (2002: 531) pointed out that co-management requires the knowledge-based, which is traditional knowledge supporting scientific knowledge.

In conclusion, in fishery co-management, there are three combining parts, which include hidden competency, core competency, and functional competency, that will bring about the outcome of co-management in terms of efficiency, equity, and sustainability of resources.

The discussion of each aspect is as follows.

1. Holistic thinking is important to fishery co-management because it is the connection of relationships between aquatic animals and other types of coastal resources and the importance of aquatic animals and the way of lives of people by thinking that resources are for all and are exploited for sustainable living in order to sustain for the future generation. Holistic thinking will affect the outcome of sustainable co-management (Hutton, et al., 1999: 21-23), which is ecological sustainability, socioeconomic/community sustainability, and institutional sustainability (Boyd & Charles, 2006: 240-241; Charles, 2001: 188-189).

2. Volunteer spirit is important for fishery co-management because small-scale fishers are the persons who are close to resources and directly rely on aquatic animals. Volunteer spirit is related to motivation to participate in fishery co-management in which motivation comes from the reduction in resources, affecting income and the way of lives (Pomeroy & Ahmed, 2006: 192). If small-scale fishers have volunteer spirit to participate in resource management, it will reduce the limitations of the government sector in terms of insufficient manpower to stay in every area and also reducing expenses of resource management of the government sector. This is consistent with Wilson, et al. (2006: 524-525) who stated that the several divisions have the limited budget for resource management, and co-management can help reduce such expenses.

3. Attitudes of small-scale fishers towards fishery co-management are important to fishery co-management because if small-scale fishers have a positive attitude towards fishery co-management, it will make small-scale fishers have the behavior of participation in resource management with willingness,

which will result in sustainable fishery co-management. Pomeroy, Katon & Harkes (2001: 202) mentioned that the good preparation in some societies is having preciseness in the positive attitude towards the integration of action group and readiness in resource management and decision making. Moreover, Pomeroy & Ahmed (2006: 196) stated that co-management in Phangnga Bay (Baan Bang Chan and Baan Had Sai Pluek Hoi) demonstrates that small-scale fishers feel that co-management provides overall positive results, especially in participation and equity as well as co-management results.

4. Learning person: Nielsen (1996: 14) pointed out that things that are related to small-scale fisher networks are an increase in the needs towards accessibility to the new learning process and the competency in translating the meaning of knowledge into specific issues and related activities. Furthermore, the Secretary Division of the Southern Fisherfolk Federation (2002: 28, 31, 33) stated that when each area conducts activities and gains experiences and lessons, they will want to share, transfer and exchange with their friends within the network. Therefore, learning person creates knowledge which is both visible knowledge and deepened knowledge. These knowledge will lead to sustainable co-management as stated by D’Incao & Reis (2002: 531) that co-management requires knowledge-based, which is traditional knowledge that supports scientific knowledge.

5. Leadership: Leaders will enable co-management to run efficiently. Pomeroy & Rivera-Guieb (2005: 46, 153) mentioned that, in fishery co-management, small-scale fishers’ leaders have an important role in which in the pre-implementation phase the small-scale fishers’ leaders have the role of information seeking, assistance seeking, leading the plan and basic strategy, meeting organization, management of agreement, network establishment, and proposal and funding. In terms of community organizing in the implementation phase, the small-scale fishers’ leaders have the role of participating in the meeting, evaluating situations, making a decision on organization’s mission, looking after and support community, supporting the consensus process, and supporting organizational structure.

6. Communication is highly crucial in fishery co-management because fishery co-management consists of stakeholders from many sectors, including government sector (including the SAO), small-scale fishers, NGOs, academics, and

business sector. If communication is ineffective, conflict will occur. Pomeroy, et al. (1998: 6-19) pointed out that one of the conditions for success in fishery co-management in Asia is effective communication.

7. Knowledge and experiences in small-scale fishery is important to co-management because scientific knowledge alone is insufficient to create sustainability of resources. D'Incao & E. G. Reis (2002: 531) mentioned that traditional knowledge and scientific knowledge will be the knowledge-based that can be applied to problem solving.

8. Knowledge of geo-ecology and local resources is crucial to co-management because scientific knowledge alone is insufficient to create sustainability of resources as mentioned by Goetze (2004: 46) about the integration of ecological knowledge or wisdom and management system into the management process.

9. Knowledge and compliance with fishery law is essential to co-management because if small-scale fishers do not act in compliance with fishery law, the problem will occur to resource sustainability. McConney, Pomeroy, & Mahon (2003: 39) indicated that compliance with and enforcement of the environmental law is rare in the Caribbean as well as the situations on the ground, the coast and the sea because fishery rules and regulations or other regulations are inappropriate.

8.1.3 The competency model of small-scale fishers in fishery co-management: Network level

Research results of the competency model of small-scale fishers in fishery co-management at the network level consists of 13 competencies, by applying the categorization of core competency of the organization by Escrig-Tena, et al. (n.d. cited by Nisada Wedchayanon, 2006: 235) which can be categorized into four types and each type consists of sub-competencies as follows.

Core competencies

Network development competencies

1. Shared goal
2. Measures and regulation setting
3. Leadership

4. Administration
5. Communication

Input utilization competencies

1. Collaboration with other sectors
2. Support from other sectors
3. New generation development

Knowledge expansion competencies

1. Knowledge management
2. Timely response to external situation

Change competencies

1. Social movement
2. Conflict management
3. Negotiation

The reason for categorizing the core competency of the network into 4 parts is because even though the 13 competencies are different, many competencies are in the same direction, which are shared goal, measures and regulation setting, administration, communication as well as leadership that find new methods to implement in coastal resource management. These competencies are related to network establishment, administration and management of the network; therefore, there are categorized as network development competencies. On the other hand, collaboration with other sectors, support from other sectors, and new generation development are related to provision and preparation of manpower, money, and materials and equipment, which are input; therefore, they are categorized as input utilization competencies. Furthermore, timely response to external situation and knowledge management enhance the knowledge of the network; therefore, they are categorized as knowledge expansion competencies. Social movement, conflict management and negotiation are the competencies that affect changes in some aspects; therefore, they are categorized as change competencies. These categorizations will help to obtain the competency model that is easily understandable and to apply the competency model into management more easily in terms of which competency needed to be developed first or after. The four parts of the competency, which are

network development competencies, input utilization competencies, knowledge expansion competencies, and change competencies, are important to co-management as follows.

1. Network development competencies: Pomeroy & Rivera-Guieb (2005: 165, 46) mentioned that in the pre-implementation phase the small-scale fishers' leader must play the role of network establishment while small-scale fishers have the role in supporting for organization establishment and organizational structure development. Fishery co-management consists of many sectors; therefore, the integration of small-scale fishers into network will create the power of negotiation more than individuals, which is consistent with Pomeroy & Rivera-Guieb (2005: 165, 46) who pointed out that small-scale fishers have the role of participation in negotiation.

2. Input utilization competencies are important to fishery co-management because successful fishery co-management requires the supports in terms of information, fund, materials and equipment, academics and law, which is consistent with Pomeroy & Rivera-Guieb (2005: 46, 165) who identified that in the pre-implementation phase the fisher leaders have the role of information seeking, assistance seeking, and proposal and funding. Additionally, co-management also requires legal and policy support from government sector.

3. Knowledge expansion competencies are vital to fishery co-management because in the age of globalization at present there are many incoming issues concerning capital, technology, and information, both the networks and their members must be able to respond and adapt to external situation in a timely manner. Nielsen (1996: 14) mentioned that small-scale fisher organizations must have the ability to transform knowledge into specific aspect.

4. Change competencies (including timely response to external situation, conflict management, and negotiation): Change competencies are the presentation and application of new concepts and methods of working to create effectiveness in resource management as well as in successfully solving various problems and obstacles occurred from changes, particularly if the networks have change competency, which is being able to manage fishery conflict. In addition to the creation of benefits to all related parties (win-win), it also leads to sustainable fishery

co-management, which is consistent to Pomeroy, et al. (1998: 6-19) who indicated that one of the success factors in fishery co-management in Asia is conflict management.

Discussion of each aspect is as follows.

1. Shared goal: Small-scale fisher networks have shared goal in terms of an increase in the abundance of coastal resources and aquatic animals, and better quality of life and well-being of villagers, strong family, strong community, and good society. As a result, shared goal is crucial to fishery co-management in two aspects. First, the network that has shared goal demonstrates the networking. This is consistent with Kanchana Kaewthep (1995 cited by Narumol Niratorn, 2000: 7) who stated that the formation of the network must have shared goal; therefore, as long as the network has shared goal, it will create sustainability of the network, which also results in sustainable fishery co-management. Second, shared goal relating to the abundance of coastal resources will bring about an increase in aquatic animals, resulting in the outcome of co-management, which is sustainability of resources, as pointed out by Charles (2001: 188-189); Boyd & Charles (2006: 240-241) that sustainability involves ecological sustainability, socioeconomic/community sustainability, and institutional sustainability.

2. Measures and regulation setting: It is important to fishery co-management because the network members will act in compliance with measures and regulations that are mutually identified. Pomeroy, Katon, & Harkes (2001: 203-204) mentioned that the problem of conflict will be small when the users are the person who set and enforce those regulations. Therefore, if the conflict in resource exploitation decreases, it will not only bring about sustainable co-management, but also sustainability of resources.

3. Conflict management: Buckles & Rusnak (1999 cited by Pomeroy & Rivera-Guieb, 2005: 198-199) indicated that conflict in fishery and marine resources have many dimensions that are not only limited to power, technology, politics, gender, age, and minor group. Conflict can occur in many levels, both from within the household to the community, the region, the society and the world. Therefore, the direction of fishery management leads to severe conflict between the groups that obtain resource ownership right and responsibility. Conflict may result

from different power between individuals and the group or the acts that threaten sustenance. Consequently, if conflict can be managed, it will result in sustainable fishery co-management, which is consistent to Pomeroy, et al. (1998: 6-19) who identified that one of the success factors in fishery co-management in Asia is conflict management.

4. Negotiation: In fishery co-management, there are stakeholders from many sectors, comprising of government sector (including the SAO), small-scale fishers, NGOs, academics, and business sector; therefore, it is necessary to have negotiation between sectors as well as negotiation within the network itself in order to allocate benefits fairly. Molared & Freire (2003: 491) stated that there is an increase in equal negotiation between small-scale fishers and other marine resource users. In addition, Nielsen (1996: 14) mentioned that effective small-scale fishers organization must have the competency of “economic negotiation.” Hence, if there is the fair allocation of benefits among stakeholders, it will reduce conflict and result in sustainability in fishery co-management.

5. Knowledge management: It is vital to fishery co-management as mentioned by D’Incao & Reis (2002: 531) that co-management requires the knowledge-based, which is traditional knowledge supporting scientific knowledge. Additionally, Praphaphan Un-ob (2009: 62, 25) pointed out that knowledge management is an important tool to establish and develop network strength in which there must be new knowledge creation and continuous knowledge management. Therefore, knowledge management does not only create network strength, but also create sustainability in fishery co-management, which is consistent to one of the Directors of Marine and Coastal Resources Conservation Center who stated that “both inherent knowledge and knowledge that are stored in writings in the forms of villager handbook may be in the mosque; if there is the storage, it can be ensured that co-management in the future will be sustainable because there is the transfer of lessons.”

6. Timely response to external situation: It is important to fishery co-management because if the network can respond to external situation in a timely manner and connect external environment to internal ability of the network, it will lead to sustainability of the network and sustainability of co-management. Nielsen

(1996: 13) mentioned that small-scale fisher networks have ability to operate fishery management by being able to manage the differences of external conditions.

7. Social movement: Nielsen (1996: 13) mentioned that community organizations have lobbied formal institutes both internally and externally, by using their broad networks and connecting them to support their strategies. There are many characteristics of social movement. Many networks campaign for stopping people within the area from the use trawls and push nets in fishery, and handing over fishing gears to the responsible governmental unit. This type of movement is the social measures that make people follow; it is considered the support for legal measures. Therefore, social movement is supportive to fishery co-management.

8. Communication: In fishery co-management, it consists of stakeholders from many sectors, comprising of government sector (including the SAO), small-scale fishers, NGOs, academics, and business sector; therefore, communication system set-up, both within the network and external communication, is crucial for effective co-management. Pomeroy, et al. (1998: 6-19) pointed out that one of the success factors in fishery co-management in Asia is effective communication.

9. Leadership: The networks have initiation in applying new things to coastal resource management, making the other networks want to follow as a role model. Therefore, leadership will enable effective and sustainable co-management as Pomeroy, et al. (1998: 6-19) stated that one of the success factors in fishery co-management in Asia is leadership.

10. Administration: It comprises of problem analysis, planning, implementation, follow-up, and improvement of working method or activity. This management will support co-management to become effective. Sultana & Thompson (2004: 327) mentioned that stakeholders analyze the possible impact and problem-solving method by exchanging in terms of analysis and the method of problem solving where everyone gains benefits (win-win). In addition, Arthur & Howard (2005: 32) indicated that, in the implementation of management plan, stakeholders must have their roles and responsibilities that are agreed in the management plan, and take part in conducting activities. The successful management of the plan implementation must exchange of information within the group of related stakeholders is also required.

11. New generation development: Building new generation does not only lead to sustainability in fishery co-management, but also creates sustainability of the networks, as Nielsen (1996: 15) mentioned about the important thing that is required in the future to build positive motivation for learning in new generation, who are both small-scale fishers and working group. Moreover, Kriangsak Charoenwongsak (1994: 90-99); Praphaphan Un-ob (2009: 34) stated that one of the methods of network maintenance is building new generation leader. Wallapa Wisawasukmongchol (n.d.: 2) mentioned that leaders wish to create new leaders in all levels by using a simple strategy in building leadership, which is the expansion of work boundary and opportunity in order to enable everyone to participate and establish leadership from working widely.

12. Collaboration with other sectors: In fishery co-management, it consists of stakeholders from many sectors, comprising of government sectors (including the SAO), small-scale fishers, NGOs, academics, and business sector; collaboration with other sectors is supportive to effective co-management, as stated by Piya Kitthaworn, et al. (2000: 96, 99) that villagers accept that collaboration with government sector is an effective method in solving the problem of the boats using push nets, for example, collaboration with the Southern Border Province Administration Center (SBPAC), officers from Department of Fisheries, Provincial Governor, and police officers.

13. Support from other sectors: For fishery co-management to operate smoothly, small-scale fisher networks still require the support from government sector in terms of legal and academic support, and fund support from other related sectors. Nielsen (1996: 13) stated that small-scale fisher networks must have financial resource management ability. Additionally, Pomeroy & Rivera-Guieb (2005: 46) pointed out that the core leader of small-scale fishers must seek for assistance and proposal and funding.

8.1.4 The development method of the competency model and competency assessment

Concerning the concepts used in developing the competency model of small-scale fishers in fishery co-management at the individual level, since small-scale

fishers are not the persons who are in formal organization, there is no standard to identify position or job description, and small-scale fisher networks are not formal organization, the method of the competency model development is the identification of the competency of small-scale fishers at the individual and the network levels. From the review of concepts and theories and related research as well as examination of the competency model from an in-depth interview to identify behaviors from experts in fishery co-management, comprising of government sector (including the SAO), core leaders of small-scale fishers, NGOs, academics, and business sectors. This study is consistent with the competency concept of the United States that focuses on person-oriented job analysis by interview to identify behaviors, which focuses on inputs rather than using the competency model of England that emphasizes task-oriented job analysis, which focuses on outputs (Nisada Wedchayanon, 2006: 42-43).

The development method of the competency model in the first phase of this study is, therefore, the combination between the review of concepts, theories and related literature, and the method by experts, which is close to the one created by Escrig-Tena & Bou-Llusar (2005: 231) who developed the model in formal organization by studying on the topic, "The Organizational Competency Assessment Model: Application in the Context of Total Quality Management." The development of the model included (1) literature review; (2) job analysis; and (3) examination of the model by experts using questionnaire.

The assessment of the competency in the second phase is done by using the examined competency model to construct questionnaire in order to evaluate the competency level of small-scale fishers in fishery co-management at the individual level (1 questionnaire) and at the network level (1 questionnaire). The tool quality is tested for validity; content validity of the questionnaires is assessed by distributing questionnaires to small-scale fishers in each area while at the network level they are examined by NGOs and academics. The obtained data is used to improve the questionnaires. The questionnaires are then used to evaluate the competency level of small-scale fishers at the individual and the network levels. Then, the data are analyzed and results of the competency level are concluded. In the third phase, the competency assessment results are examined by organizing the group meeting of experts in fishery co-management in two forums, which are the forums of the lower

and upper provinces on the Andaman coastline. The examination is undertaken by the method of experts in consistence with Spencer & Spencer (1993 cited by Nisada Wedchayanon, 2006: 121-133).

In conclusion, the development of the competency model and competency assessment involve the examination in many characteristics, which are (1) triangulations of sources consists of small-scale fishers, government sector (including the SAO), NGOs, academics, and business sector; (2) methods triangulation is the collection of data from experts in fishery co-management, questionnaire, and group meeting; (3) space triangulation is the area that is the best practice of fishery co-management and the area that has normal fishery co-management; and (4) combined-level triangulation is the competency of small-scale fishers both at the individual and the network levels, which is consistent with Pongpan Traimongkonkul & Supap Chatrathorn (2006: 290-294) whose research is in the form of combination in the information level and the strategy level that is three-phase design.

8.2 The competency level of small-scale fishers in fishery co-management

In order to clarify the discussion of results of the competency level of small-scale fishers in fishery co-management, the researcher will discuss in two levels, which are the individual and network levels, as follows.

8.2.1 The competency level of small-scale fishers in fishery co-management: Individual level

The competency of small-scale fishers in fishery co-management at the individual level comprises of 9 competencies. Here, the discussion will be based on the competency assessment results in two parts, which are (1) the competency level by considering each aspect separately, and (2) the competency level by considering all aspects simultaneously, as follows.

8.2.1.1 The competency level by considering each aspect separately

Research findings indicated that, from the nine competencies of, small-scale fishers in the upper province have five competencies that are in the leader

level (Level 3), consisting of (1) knowledge and experiences in small-scale fishery; (2) volunteer spirit; (3) attitudes of small-scale fishers towards fishery co-management; (4) knowledge of geo-ecology and local resources; and (5) knowledge and compliance with fishery law. Three competencies are in the application level (Level 2), which are (1) holistic thinking; (2) leadership; and (3) communication, and one competency is in the beginner level (Level 1), which is learning person.

On the contrary, small-scale fishers in the lower province have four competencies in the leader level (Level 3), which are (1) knowledge and experiences in small-scale fishery; (2) volunteer spirit; (3) attitudes of small-scale fishers toward fishery co-management; and (4) knowledge and compliance with fishery law. In addition, small-scale fishers have four competencies in the application level (Level 2), which are (1) holistic thinking; (2) leadership; (3) communication; and (4) knowledge of geo-ecology and local resources, whereas one competency is in the beginner level (Level 1), which is learning person.

From study results, it is found that the competencies of small-scale fishers in two areas are not significantly different; from the nine competencies, there is only one competency that is different. The reason that small-scale fishers in the upper province have the competency in knowledge of geo-ecology and local resources higher than those in the lower province is because small-scale fishers in the upper province continuously survey on local resources. Since the past, NGO and villagers mutually survey and create the resources map as well as resource utilization map in almost 100 villages. After obtaining the map of each village, then it is divided into zones and organized villagers in each zone to meet up and exchange their ideas by inviting the related government sector to participate as well. Later, when participating in the CHARM Project, CHARM organizes a seminar on community-based resources survey to children and villagers by setting up the team of junior researchers in a village. Furthermore, at present, villagers and NGOs also mutually survey on four canals that are linked to one another in order to have a look at geographical conditions, aquatic animal resources, and plant species. McConney, Pomeroy, & Mahon (2003: 31) stated that, in fishery co-management, knowledge of local geo-ecology of small-scale fishers is important to implement in planning and management as it demonstrates intimacy and relationships.

Concerning the remaining eight competencies, one competency is in the beginner level (learning person), three competencies are in the application level (holistic thinking, leadership, and communication), and four competencies are in the leader level (knowledge and experiences in small-scale fishery, volunteer spirit, attitudes of small-scale fishers towards fishery co-management, and knowledge and compliance with fishery law).

From the nine competencies of small-scale fishers in fishery co-management, five competencies are in the leader level, and three competencies are in the application level, which can be stated that small-scale fishers in both areas have the competencies in fishery co-management in the quite high level. These support fishery co-management in terms of efficiency, equity, and sustainability of ecosystem, economy, and community organization; i.e. knowledge and experiences in small-scale fishery, and knowledge of geo-ecology and local resources are highly crucial because co-management that only applies scientific knowledge will not be able to achieve the outcomes mentioned above. D’Incao & Reis (2002: 531) stated that co-management requires the use of knowledge-based, which is traditional knowledge supporting scientific knowledge. However, in the future the transfer of wisdom from one generation to the next will be declined because small-scale fishers who are less than 30 years old are in small number where small-scale fishers aged below 30, aged 31- 60, and aged above 60 are equivalent to 9.97, 84.88 and 6.14 percent, respectively. Furthermore, fishery co-management requires effective communication since fishery co-management comprises of stakeholders from many sectors. If communication is ineffective, it will lead to conflict. Pomeroy, et al. (1998: 6-19) mentioned that one of the conditions for success in fishery co-management is effective communication. However, only a small proportion of small-scale fishers can communicate in writing. Arthur & Howard (2005: 32) pointed out that communication with stakeholders must increase effectiveness of people in learning by listening, seeing, and doing. Communication is based on the level of skills, language, education, and information requirement in which these factors are different. Moreover, small-scale fishers who have the positive attitude towards fishery co-management would certainly lead to behavioral change, which is willingness to participate in coastal resource management. Pomeroy, Katon, & Harkes (2001: 202) stated that good preparation in some societies

is having preciseness in the positive attitude towards the integration of action group, and readiness in resource management and decision making. This positive attitude can bring about volunteer spirit among small-scale fishers to participate in coastal resource management, which decreases the limitation of government sector that has insufficient manpower to work full-time in every area, and reduces expenses in coastal resource management. Moreover, holistic thinking makes most small-scale fishers utilize aquatic animal resources for sustenance by using small-scale fishing gears that rotate in accordance with season and do not dramatically destroy aquatic animal resources. Not focusing on sole exploitation by oneself will help reduce conflict from resource utilization. Not only leads to effective fishery co-management, but also sustainability of ecosystem. However, there are still some parts of small-scale fishers in the areas of the upper and lower provinces that use set bagnets and bamboo stake trap, which are equivalent to 0.47 and 1.72 percent, respectively.

8.2.1.2 The competency level by considering all aspects simultaneously (Individual level) by using cluster analysis. Results can be categorized into 3 clusters as follows.

Cluster 1: “Small-scale fishers with a moderate competency”; the small-scale fishers in this cluster have good competency in two aspects, which are (1) knowledge of geo-ecology and local resources, and (2) knowledge of fishery law, while the weak competency is knowledge and experiences in small-scale fishery.

Cluster 2: “Small-scale fishers with a high competency”; the small-scale fishers in this cluster have the highest competency in three aspects, which are (1) learning person, (2) holistic thinking, and (3) knowledge and experiences in small-scale fishery.

Cluster 3: “Small-scale fishers with a low competency”; the small-scale fishers in this cluster have no distinctive competency, and the three weakest competencies are (1) leadership, (2) volunteer spirit, and (3) communication.

Small-scale fishers in Cluster 2 has the competency greater than the other clusters as a result from religious and cultural factors in which small-scale fishers in this cluster are the members of the networks that have religious leaders in two networks who will apply religious teachings relating to resources to share prior to giving worship to the Allah on Friday. This affects holistic thinking. It is also due to

learning development factor in which small-scale fishers in Cluster 2 are the members of the networks that participate in the CHARM Project in activities that are more varied than the other clusters, which affecting learning person. Small-scale fishers have the three highest competencies, including (1) learning person, (2) holistic thinking, and (3) knowledge and experiences in small-scale fishery. These competencies are supportive to co-management whereby each small-scale fisher who is the network member is the learning person, and it will consequently bring about learning network. Moreover, it also enables small-scale fishers and the network to have new knowledge and methods for coastal resource management. On the other hand, knowledge and experiences in small-scale fishery is traditional knowledge that is transferred from one generation to the next. As a result, this cluster integrates traditional knowledge and new knowledge into planning of coastal resource management, resulting in fishery co-management with efficiency, equity, and sustainability.

Small-scale fishers in Cluster 1 has the competency in the moderate level because there is the problem of implant and transfer of small-scale fishery knowledge from one generation to the new generation; that is, small-scale fishers in this cluster who are aged below or equal to 30 account for only 3.36 percent, aged 31-60 accounts for 91.60 percent, and aged above 60 years accounts for 5.04 percent. It is also due to conditional factors related to attitude toward occupation stability in which there are small-scale fishers aged below or equal to 30 accounting for 3.36 percent, and it is possible that the new generation will not do fishery anymore. In addition, small-scale fishers in Cluster 1 are the members of the networks that use ecotourism as the tool for resource management, with the number of network equivalent to 3 out of 5 networks. Therefore, in the future the competency of small-scale fishers will change; i.e. there are not only the competencies in fishery, but there is the combination of the fishery competency and the tourism competency. Small-scale fishers in this Cluster have good competency in two aspects, which are (1) knowledge of geo-ecology and local resources, and (2) knowledge and compliance with fishery law. In contrast, the weak competency is knowledge and experiences in small-scale fishery. Knowledge of geo-ecology and local resources in terms of types of resources and exploitation of resources of small-scale fishers will help planning of exploitation,

conservation, and restoration, which will affect sustainability of coastal resources. In addition, knowledge and compliance with fishery law of small-scale fishers will help reduce conflict from utilization of resources and consequently affect equity in accessibility to resources and sustainability of resources.

Small-scale fishers in Cluster 3 has the weakest competency because small-scale fishers in this cluster are not the members, accounting for as high as 34.20 percent, which is higher than Cluster 1 and Cluster 2 that accounts for only 7.50 percent and 12.21, respectively. One of reason is because some networks have the problem of capitalists invading mangrove forest area, resulting in the partaking of some villagers with capitalists. Moreover, small-scale fishers in Cluster 3 are in the networks that have formal leader in two networks as well as in the networks that have formal leaders and natural leaders in two networks. It is possible that factor related to power relationship is the role and responsibility in resource management of the leader. What to do and not to do will rather depend on the leader while small-scale fishers are the followers. The three weakest competencies of small-scale fishers in this cluster are leadership, volunteer spirit, and communication. These competencies will affect the efficiency of co-management in which the lack of leadership illustrates that small-scale fishers are not opened to new ideas and cannot persuade others to participate in coastal resource management and cannot reconcile the conflict. Furthermore, the lack of volunteer spirit demonstrates that small-scale fishers do not sacrifice their time, energy and thought to manage coastal resources; as a result, there is the lack of active cooperation of small-scale fishers. Additionally, low communication ability will lead to conflict among stakeholders.

8.2.2 The competency of small-scale fishers in fishery co-management: Network level

The competency of small-scale fishers in fishery co-management at the network level consists of 13 competencies. Here, we will discuss according to the assessment results of the competency level in two parts:

1. The competency level by considering each aspect separately
2. The competency level by considering all aspects simultaneously

8.2.2.1 The competency level by considering each aspect separately

The results of the competency level is found that from 13 competencies, the small-scale fisher networks in the upper province have the competency at the application level (Level 2) in 10 competencies: (1) shared goal; (2) leadership; (3) collaboration with other sectors; (4) conflict management; (5) timely response to external situation; (6) social movement; (7) knowledge management; (8) new generation development; (9) administration; and (10) communication. In addition, small-scale fisher networks have the competencies at the beginner level (Level 1) in three competencies, including (1) measures and regulation setting; (2) negotiation; and (3) support from other sectors.

On the other hand, the small-scale fisher networks in the lower province have the competency at the leader level (Level 3) in one competency, which is communication, and have the competency at the application level (Level 2) in 12 competencies: (1) shared goal; (2) measures and regulation setting; (3) leadership; (4) collaboration with other sectors; (5) conflict management; (6) negotiation; (7) timely response to external situation; (8) social movement; (9) knowledge management; (10) new generation development; (11) administration; and (12) support from other sectors.

According to the study, it is found that the competency level of the small-scale fisher networks in both areas are not very high; most of the competencies are at the application level (Level 2) whereby the networks in the lower province have higher competencies than the networks in the upper province in four competencies, which are (1) measures and regulation setting; (2) negotiation; (3) communication; and (4) collaboration with other sectors. The reasons as a whole that the small-scale fisher networks in the lower province have the four competencies higher than the networks in the upper province are due to several reasons as follows.

First, the geological conditions of the upper province are divided into two parts, which are the east and the west and the areas of island which are scattered; therefore, network collaboration is not firm like the lower province. As a result, the upper province has resource management in a particular location, not covering the entire Phangnga Bay.

Second, external factors affected, resulting in the change of goals and methods of resource management. In the past, there is the problem of push-nets and trawls coming into 3,000 m. from shore. However, at present, there is the issue of tourism affecting many networks in terms of the problem of capitalists constructing marina seaport in Phangnga Bay in eight areas, or the capitalists invading mangrove forest to construct the resort, which affect the living area of small-scale fishers. Therefore, the networks turn to drive the issue of rights protection. In addition, the leaders, who used to do fishery in the past, now turns to earn their livings in tourism business, which results in some networks to change the methods of resource management by using ecotourism as the tool for resource management.

Third, networks in the lower province have management in terms of collaboration of several villages and then set the areas by letting the Provincial Governor on the area and let several organizations support. This kind of management has not been found in the networks of the upper province.

Fourth, the negotiation of extending the area from 3,000 m. to be 5,400 m. from shore in the lower province has already obtained the consensus for the extension, but the upper province has not yet gained consensus for the area extension.

Fifth, the networks in the lower province have collaboration with government sector whereby the Provincial Governor has appointed villagers to be the specific mission unit to co-operate with the police special mission unit to monitor the coasts, but the networks in the upper province wherein the previous time have ever had the investigation plan at the district level by having the investigators co-operated with villagers, but nowadays there is no co-action but news information instead.

The competency of the small-scale fisher networks in fishery co-management from 13 competencies can be considered that the small-scale fisher networks of both areas have the competencies in fishery co-management at the moderate level. This supports fishery co-management in terms of efficiency, equity and sustainability of ecosystem, economy and community organization at a certain level; i.e. the networks should have the competency in terms of collaboration with other sectors, which is in accordance with Pomeroy & Rivera-Guieb (2005: 46) who mentioned that small-scale fishers' leaders should develop collaboration by the

proportion of networks in both the upper and lower provinces which have collaboration with nearby government sector (60.71 percent and 61.80 percent, respectively). In the upper province, the networks have collaboration with NGOs higher than in the lower province (25 percent and 19.10 percent, respectively), but the networks in the lower province have collaboration with academics higher than the networks in the upper province (13.48 percent and 9.52 percent, respectively). Additionally, the networks in the upper and lower provinces have collaboration with nearby business sector (3.57 percent and 5.62 percent, respectively). Moreover, the networks have to have the competency in terms of support from other sectors because for fishery co-management to become efficient, the network must be supported in terms of legal support, funding support, and academic support. The networks in the lower province gain legal support from government sector concerning the announcement of aquatic animals conservation zone, seagrass zone, or identification of mangrove forest boundary (63.64 percent) whereas the networks in the upper province obtain the identification of mangrove forest boundary, equivalent to 15.38 percent). The competency in terms of collaboration with other sectors and support from other sectors not only increase efficiency in fishery co-management, but also affect the development of the co-management level into the cooperative level. Additionally, the networks must have communication competency by providing communication tool and establishing communication system both within and outside the network. Regional Office for Asia & the Pacific (n.d.: 3-4) mentioned that communication and information exchange through all networks are important for the success. Moreover, the competency in terms of conflict management and negotiation would make the problem solving of all coastal resource users gain benefits and equity. Goetze (2004: 46) pointed out that it has to have the forum for debating in order to solve problems among co-managers. The debate process for solving problems is important for conflict management between government sector and local people who participate. This would lead to an agreement. The ability in conflict management would solve the problems by letting everyone gain benefits (win-win). This is in accordance with Wilson, et al. (2006: 525) who stated that co-management of government sector could use the authorities and fishery conflict channels in an attempt to create the methods and maintain balanced equality between stakeholders who have

to negotiate on the outcome from the conflict. On the other hand, the competency in terms of measures and regulation setting would reduce conflict as Pomeroy, Katon, & Harkes (2001: 203-204) pointed out that it would have the a few problems of conflict when the users are the one who set the regulations and enforcement. Pomeroy (1995: 144) said that the fishery community could set the regulations on accessibility and enforcement of the regulation of community organization and social operation in terms of the sustainable exploitation of fishery resources. Moreover, the networks have to have the competency in terms of new generation development, which is in accordance with Nielsen (1996: 15) who said that the potential in terms of creating positive motivation of learning the future need is the presentation of fishers and management team who are the new generation.

8.2.2.2 The competency level by considering all aspects simultaneously using cluster analysis. The study result can be set in three clusters as follows:

Cluster 1: “Small-scale fisher networks with a high competency”. The networks in this cluster have the most outstanding competences of two aspects, which are collaboration with other sectors and negotiation. Besides, they also have four good competencies of (1) administration; (2) knowledge management; (3) new generation development; and (4) leadership.

Cluster 2: “Small-scale fisher networks with a moderate competency”. The networks in this cluster have the good competency in fishery co-management of four aspects, which are (1) leadership; (2) new generation development; (3) knowledge management; and (4) administration, respectively. The weakest competency in this cluster is social movement

Cluster 3: “Small-scale fisher networks with a low competency”. The networks in this cluster have the weakest competency in (1) knowledge management; (2) new generation development; (3) administration; and (4) leadership, respectively

The small-scale fisher networks in Cluster 1 have the highest competency because of the conditional factor in term of learning development that 50 percent of this cluster create the new knowledge through research and survey and is the networks that participate in the CHARM project with various activities. Besides, the conditional factor in term of system management within the network (network

structure), the networks in this cluster have more than six sub-groups and there are both mixed-leader including natural leaders, formal leaders, and religious leaders (Kor-Teb). Moreover, the work structure is from the representative in each village, and within the village there is the sub-structure. In addition, it is also due to conditional factors related to structure/ power relationship/ politics wherein some networks establish aquatic animals conservation zone by letting the Provincial Governor announce the area and apply the co-management principle that involve many departments for supporting. Furthermore, from the tourism policy, 50 percent of the networks in this organize ecotourism together with coastal resource management whereas conditional factors related to learning development indicate that 3.33 percent of the networks who participate in the CHARM Project have appointed the Coastal Resources Management Committee at the sub-district level or CRM, which is the committee that comprises of government sector and communities. The networks in this cluster have the most outstanding competency in two aspects, including collaboration with other sectors and negotiation. Besides, they have the good competency of four aspects, which are (1) administration; (2) knowledge management; (3) new generation development; and (4) leadership. These competencies support co-management: (1) collaboration with other sectors which can get cooperation from other sectors and it will have cooperation in terms of coastal resource management. If there is co-decision making, it will improve co-management to be at the cooperative level; (2) negotiation will create equality among stakeholders in each sector, and it will reduce the conflict of resource utilization; (3) new generation development, administration and leadership are the competency that create network strength and sustainability; and (4) knowledge management will create the knowledge-based within the networks that are both traditional and new knowledge. Moreover there will be knowledge storage and transfer. Co-management has to use both traditional and scientific knowledge. Hence, these competencies will make fishery co-management have efficiency, equity and sustainability in ecosystem, economy and community organization.

The small-scale fisher networks in Cluster 2 have the competency at the moderate level because they are the networks that are mixed between the networks that accumulate experiences from many life cycle periods and the new beginning networks. The networks have the good competency in fishery

co-management, comprising of (1) leadership; (2) new generation development; (3) knowledge management; and (4) administration, respectively. On the other hand, the weakest competency of this cluster is social movement. The outcome of these four competencies will be supportive to fishery co-management as previously mentioned in Cluster 1. However, the lack of social movement of the networks in various issues, which are the invasion of capitalists into mangrove forest area and the coastal utilization for establish marina port will certainly affect sustainability of ecosystem and inequity of resource access.

The small-scale fisher networks in Cluster 3 have the weakest competency because they are the small-sized networks that result in the weak-point in conditional factors related to internal network management system, which is the networks that have the structure with core leaders, but lack clear assignment of roles and there are no various activities. It is also due to conditional factors related to structure/ power relationship/ politics, which leads to the problem of the invasion of capitalists into mangrove forest area. This problem makes some community members to get involved with capitalists. Moreover, there is also the weakness of factor related to learning development in which there are only some networks participating in the CHARM Project and activities are not various. The weakest competencies of the networks in this cluster are (1) knowledge management; (2) new generation development; (3) administration; and (4) leadership. The networks in this cluster are not very strong because of their weaknesses in new generation development, administration, and leadership as well as weakness in knowledge management in which knowledge search, knowledge storage, and knowledge transfer are rare. These weaknesses of the competency will affect inefficient co-management.

CHAPTER IX

CONCLUSION AND RECOMMENDATIONS

The research on the development of the competency model of small-scale fishers in fishery co-management is a mixed methods research of qualitative and quantitative research. Qualitative research is conducted by an in-depth interview and group meeting of experts in fishery co-management. On the other hand, quantitative research is done by using questionnaire to collect the data in two areas, which are the upper and lower provinces on the Andaman coastline, from small-scale fishers at two levels, including the individual and network levels. The objectives of this research are (1) to develop the competency model of small-scale fishers in fishery co-management both at the individual and network levels, and (2) to study the competency level of small-scale fishers in fishery co-management and conditional factors related to the competency. In this chapter, the researcher will present methodology, conclusion of the study, and recommendations as follows.

9.1 Methodology

The development of competency model of small-scale fishers in fishery co-management is divided into three phases as follows.

Phase 1: Construction and examination of the competency model

In the basic construction of the competency model, the researcher reviewed concepts, theories, and related research by identifying the competency messages and applying the competency messages to construct the competency model both at the individual and network levels. Then, the researcher examines the competency model through in-depth interviews with 38 experts in fishery co-management, which consists of 6 experts from government sector, 3 experts from the SAO, 2 experts from CHARM, 16 experts from fisher leaders, 4 experts from NGOs, 6 experts from

academics, 1 expert from local aquatic animal trader. The competency messages are specified and then improved the competency model that is first obtained. Then, the competency dictionaries are created at individual and network levels.

Phase 2: Assessment of the competency level

The researcher implements the competency model of small-scale fishers in fishery co-management at the individual and network levels to construct the questionnaires for the individual and network levels. Then, the tools are tested for validity and reliability by assessing appropriateness of the contents considering to the areas. The obtained data is, then, used to improve the questionnaires. Later, the questionnaires are used to evaluate the competency level of small-scale fishers. At the individual level, the data are collected from 204 and 188 small-scale fishers in the upper and lower provinces on the Andaman coastline, respectively, which is equivalent to the total of 392 people. On the other hand, data collection at the network level includes 13 and 11 networks from the upper and lower provinces, respectively, which is equivalent to the total of 24 networks. The obtained data are then analyzed by using SPSS by means of descriptive statistics, including percentage, mean, standard deviation, and median. Cluster analysis technique is used to categorize the competency of small-scale fishers while one-way ANOVA is used to analyze the difference of the competency from the categorization of the competency of small-scale fishers at the individual and network levels. On the other hand, the analysis of conditional factors related to the competency of small-scale fishers at the individual and network levels is done by using qualitative data.

Phase 3: Examination of the competency assessment results

The examination of the assessment results of the competency is undertaken in order to examine the competency level that is evaluated by organizing the group meeting with experts in fishery co-management in two forums, which are the forums of the upper and lower provinces.

9.2 Conclusion

Conclusions of the study consist of: (1) general information of small-scale fishers; (2) fishery co-management; (3) the competency model of small-scale fishers in fishery co-management; and (4) the competency level of small-scale fishers in fishery co-management and conditional factors related to the competency of small-scale fishers in fishery co-management.

9.2.1 General information of small-scale fishers

General information of small-scale fishers can be divided into two levels, which are the individual and network levels, as follows.

9.2.1.1 General information of small-scale fishers: Individual level

Small-scale fishers both in the upper and lower provinces have similar characteristics in which the majority of them are male aged 31-45 years old and are Islamic. Most of them obtain education level of the upper-primary school and are married with number of children equivalent 1-2 persons. There are 4-6 members within the family because they are the families that are separated from a big family, with debt greater than 40,000 baht. They have experiences in fishery occupation that is less than or equal to 20 years and up to 30 years. The duration of participation in coastal resource management is less than or equal to 5 years. The role of small-scale fishers in the community is being a group member. Additionally, from the participation in coastal resource management, there is the achievement of some works.

Small-scale fishers in the upper province have average monthly family income of 7,008.54 baht and their financial status is insufficient (expenses are greater than income). The duration of residing within the community is 21-40 years. They have one type of fishing gears used in fishery and have number of participation in coastal resource management activities at an average of 3 times per year. Small-scale fishers are accepted by the community from their participation in coastal resource management in which almost everyone in the community give an acceptance.

Small-scale fishers in the lower province have average monthly family income of 6,103.62 baht and their financial status is sufficient (expenses are

similar to income). The duration of residing within the community is 41-60 years. They have 2 types of fishing gears used in fishery and have number of participation in coastal resource management activities at an average of 2 times per year. Small-scale fishers are accepted by the community from their participation in coastal resource management in which almost everyone in the community give an acceptance.

9.2.1.2 General information of small-scale fishers: Network level

General information of small-scale fishers at the network level comprises of: (1) network characteristics; (2) network formation; (3) network structure; (4) network leader; and (5) network goals and management as follows.

1) Network characteristics: The small-scale fisher networks are the cultural networks that are based on value-based, resource-based, and human-based; i.e. the value-based is referred to moral principle and religious knowledge. Co-value of small-scale fishers in perceiving marine resources as common belongings that can be exploited beneficially but they have to be valued utilization. However, the networks may be in many forms, including geo-ecology networks, cross-activity networks, and cross-occupation networks.

2) Network formation: It is found that the networks in both the upper and lower provinces are created naturally from the problem of mangrove deforestation as a result of concession/ mining dredge and deterioration of aquatic animal resources from illegal fishing gears. In addition, the networks are created from the support of government sector through two main groups, which are village headmen and government's mechanism together with international organization, which is the CHARM Project, as well as the networks that are created from the support of NGOs.

3) Network structure: It is found that the networks in both areas are the horizontal networks in which most of the networks in the upper province have number of sub-groups within the network equivalent to 3-6 groups. Characteristics of the work structure are that the working committee is from the representatives of sub-groups and there are various network leaders. The proportion of the 3 types of leaders are similar, including (1) natural leader, (2) formal leader (village headman, the SAO), and (3) mixed leaders that includes natural leaders,

formal leaders, and religious leaders equivalent to 38.46 percent, 30.77 percent, and 30.77 percent, respectively. On the contrary, the networks in the lower province have more than 6 sub-groups within the networks. The work structure is having the central committee coming from the representative of each village and each village has its own internal structure. Most leaders are natural leaders, accounting for 54.55 percent.

9.2.2 Fishery co-management

The research findings of fishery co-management comprises of: (1) role of stakeholders; (2) forms of fishery co-management; (3) co-management mechanism; (4) participation in fishery management; and (5) level of fishery co-management, as follows.

9.2.2.1 Role of stakeholders

In this study, stakeholders consist of government sectors (including the SAO), small-scale fishers, NGOs, academics, and business sector. Each sector has divided the roles and responsibilities differently.

1) Role of government sectors (including the SAO): Central government sectors, which are Department of Fisheries and Department of Marine and Coastal Resources, supports the policy and legal framework as well as implements the policy in many levels, which are central government sector including Department of Fisheries, local government sector including the SAO, and regional government sector including the Provincial Governor, Chief of Provincial Fisheries Officer, Chief District Officer, Chief of District Fisheries, the Andaman Sea Marine Fisheries Patrol Center, Marine and Coastal Resources Conservation Center No. 5 (Phuket) and No. 6 (Satun), and Wild Animals Hunting Restriction Area. In addition to the policy and legal support from government sector, there is also the support for academics, funds, and consultation.

2) Role of the small-scale fisher networks: The roles are to establish the networks in coastal resource management, to coordinate and to seek for assistance from other sectors as well as to manage coastal resources by setting

rules and measures for illegal fishing gears and fishing gears that break community rules and mangrove forest rules.

3) Role of NGOs: The roles of NGOs are to build awareness among small-scale fishers, reinforce power and capacity to the networks to have confidence, provide fund support and consultation, provide assistance in terms of documentation preparation, and organize the forums for different sectors to exchange learning.

4) Role of academics: The role is to provide environmental knowledge, provide research data to the networks, and give consultation on resource management and research, and reflect the performance of the networks.

5) Role of business sector: Local aquatic animal traders have the great role in fishery management if they conduct business that also recognize the benefits of resource management, they can direct fishers who utilize destructive fishing gears not to be able to use them by not buying aquatic animals. Additionally, there is also the role in establishing savings cooperatives. On the other hand, commercial fishery is not found to have the role in fishery co-management with the networks at the area level, but it is partly found at the provincial level or the association level.

9.2.2.2 Forms of fishery co-management

The study results showed that it is fishery co-management that particularly focuses on community-based fishery co-management, which emphasizes geographical unit and coastal zone. It is also fishery co-management that initiates from community to government.

9.2.2.3 Co-management mechanism

The research findings illustrated that most of them have not had the mechanism in the form of the co-committee between government sector and community. There may be some of the mechanisms that have already been initiated by the CHARM Project for three studied networks wherein the SAO are the committee in this committee. It can be stated that there is only the mechanism of the working group of

the network that cooperates with other sectors to participate case by case or to request for supporting fund, materials and equipment, legal support, and academic support.

9.2.2.4 Participation in fishery co-management

In the coastal resource management of networks both in the dimension of conservation and restoration, conservation not only involves preservation, but also exploitation. Conservation comprises of the establishment of conservation zone, coastal monitoring and surveillance, and artificial reefs sinking whereas restoration consists of the release of aquatic animal species, building the crab bank program, mangrove forestation, and seagrass plantation. Participation in fishery management includes mutual thinking, mutual planning, mutual action, and mutual follow-up. In community-based fishery co-management, it found that the networks and government sector mutually think and conduct activities; however, there is the lack of co-planning but there may be co-agreement, and the lack of mutual follow up.

9.2.2.5 Level of fishery co-management

The research findings showed that it is fishery co-management at the advisory level in which the small-scale fisher networks reports to the government sector about decision making, and government sector agrees or certifies on the decision made by the small-scale fisher networks, which are legal support in terms of conservation zone announcement or mangrove forest zone identification.

9.2.3 Research findings at the individual level

The research findings at the individual level consist of: (1) the competency model of small-scale fishers in fishery co-management, and (2) the competency level of small-scale fishers in fishery co-management and conditional factors related to the competency.

9.2.3.1 The competency model of small-scale fishers in fishery co-management at the individual level consist of three component groups, including hidden competencies, core competencies, and functional competencies, as follows.

Hidden competencies

1. Holistic thinking
2. Volunteer spirit
3. Attitudes of small-scale fishers towards fishery co-management

Core competencies

1. Learning person
2. Leadership
3. Communication

Functional competencies

1. Knowledge and experiences in small-scale fishery
2. Knowledge of geo-ecology and local resources
3. Knowledge and compliance with fishery law

9.2.3.2 The competency level of small-scale fishers in fishery co-management and conditional factors related to the competency: Individual level

The competency level of small-scale fishers in fishery co-management is divided into two parts, which are the competency level by considering each aspect separately, and the competency level by considering all aspects simultaneously, as follows.

1) The competency level by considering each aspect separately

Results of the competency level assessment showed that, from 9 competencies, small-scale fishers in the upper province have the competency at the leader level (Level 3) in five competencies, which are (1) knowledge and experiences in small-scale fisheries; (2) volunteer spirit; (3) attitudes of small-scale fishers towards fishery co-management; (4) knowledge of geo-ecology and local resources; and (5) knowledge and compliance with fishery law. In addition, they also have the competency at the application level (Level 2) in three competencies, which are (1) holistic thinking; (2) leadership; and (3) communication, and at the beginner level (Level 1) in one competency, which is learning person.

In contrast, small-scale fishers in the lower province have the competency at the leader level (Level 3) in four competencies, which are (1) knowledge and experiences in small-scale fisheries; (2) volunteer spirit; (3) attitudes of small-scale fishers towards fishery co-management; and (4) knowledge and compliance with fishery law. In addition, they also have the competency at the application level (Level 2) in four competencies, which are (1) holistic thinking; (2) leadership; (3) communication; and (4) knowledge of geo-ecology and local resources, and at the beginner level (Level 1) in one competency, which is learning person.

2) The competency level by considering all aspects simultaneously by using cluster analysis. Study results can be categorized into three clusters as follows.

Cluster 1: “Small-scale fishers with a moderate competency”; Small-scale fishers in this cluster have the good competency in two aspects, comprising of (1) knowledge of geo-ecology and local resources, and (2) knowledge and compliance with fishery law. On the other hand, the weakest competency is knowledge and experiences in small-scale fishery.

Cluster 2: “Small-scale fishers with a high competency”; Small-scale fishers in this cluster have the highest competency in three aspects, comprising of (1) learning person, (2) holistic thinking, and (3) knowledge and experience in small-scale fishery.

Cluster 3: “Small-scale fishers with a low competency”; Small-scale fishers in this cluster have no distinctive competency in fishery co-management. The three weakest competencies of small-scale fishers in this cluster are leadership, volunteer spirit, and communication.

There are many conditional factors related to the competency of small-scale fishers in fishery co-management at the individual level, consisting of conditional factors in terms of religion and culture, implantation and transfer, learning development, attitude toward occupation stability, multiple roles, and power relationship.

9.2.4 Research findings at the network level

The research findings at the network level consist of: (1) the competency model of small-scale fishers in fishery co-management, and (2) the competency level of small-scale fishers in fishery co-management and conditional factors related to the competency.

9.2.4.1 The competency model of small-scale fishers in fishery co-management at the network level found that core competencies consist of the competency in four component groups. Each group has the sub-competency as follows.

Core competencies

Network development competencies

1. Shared goal
2. Measures and regulation setting
3. Leadership
4. Administration
5. Communication

Input utilization competencies

1. Collaboration with other sectors
2. Support from other sectors
3. New generation development

Knowledge expansion competencies

1. Knowledge management
2. Timely response to external situation

Change competencies

1. Social movement
2. Conflict management
3. Negotiation

9.2.4.2 The competency level of small-scale fishers in fishery co-management and conditional factors related to the competency: Network level

The competency level of small-scale fishers in fishery co-management is divided into two parts, which are the competency level by considering

each aspect separately, and the competency level by considering all aspects simultaneously, as follows.

1) The competency level by considering each aspect separately

Results of the competency level assessment showed that, from 13 competencies, small-scale fishers in the upper province have the competency at the application level (Level 2) in 10 competencies, which are (1) shared goal; (2) leadership; (3) collaboration with other sectors; (4) conflict management; (5) timely response to external situation; (6) social movement; (7) knowledge management; (8) new generation development; (9) management; and (10) communication. In addition, small-scale fishers also have the competency at the beginner level (Level 1) in three competencies, which are (1) measures and regulation setting; (2) negotiation; and (3) support from other sectors.

On the contrary, small-scale fishers in the lower province have the competency at the leader level (Level 3) in 1 competency, which is communication and at the application level (Level 2) in 12 competencies, which are (1) shared goal; (2) measures and regulation setting; (3) leadership; (4) collaboration with other sectors; (5) conflict management; (6) negotiation; (7) timely response to external situation; (8) social movement; (9) knowledge management; (10) new generation development; (11) administration, and (12) support from other sectors.

2) The competency level by considering all aspects simultaneously by using cluster analysis. Study results can be categorized into three groups as follows.

Cluster 1: “Small-scale fisher networks with a high competency”; The networks in this cluster have the highest competency. The two most distinctive competencies are collaboration with other sectors, and negotiation. In addition, there are four good competencies, including (1) administration; (2) knowledge management; (3) new generation development; and (4) leadership.

Cluster 2: “Small-scale fisher networks with a moderate competency”; The networks in this cluster have the good competency in four aspects, which are (1) leadership; (2) new generation development; (3) knowledge

management; and (4) administration, respectively. The weakest competency in this cluster is social movement.

Cluster 3: “Small-scale fisher networks with a low competency”; The networks in this cluster have no distinctive competency, but have the weakest competency in (1) knowledge management; (2) new generation development; (3) administration; and (4) leadership, respectively.

There are many conditional factors related to the competency of small-scale fishers in fishery co-management at the network level, consisting of conditional factors in term of learning development, network life cycle, internal network management system (network structure), and structure/ power relationship/ politics.

9.3 Recommendations

9.3.1 Operational recommendations

9.3.1.1 From the analysis results of the competency level at individual level by considering from each aspect separately and by considering all aspects simultaneously, it is found that the competency of small-scale fishers in fishery co-management that must be primarily developed is learning person, following by holistic thinking, volunteer spirit, leadership, and communication. The development approaches are as follows.

1) Promote small-scale fishers to have confidence in the competency, which is by helping small-scale fishers to know their level of the competency as well as helping them to perceive the importance of the competency and believe that the competency can be developed.

2) Should support the competency development of small-scale fishers by interaction learning to act in a real-life situation repeatedly. This approach will enable small-scale fishers to learn from the stage of perception, understanding, to the stage of behavioral changing.

3) From the research results, it is found that conditional factors in term of culture related to the competency of small-scale fishers;

therefore, in learning development of small-scale fishers, government sector must reduce restriction of government working hours from 08.30-16.30 and day offs on Saturday and Sunday. Fishers will have more readiness to meet up and have an informal conversation after giving worship to the Allah in the evening because the way of life of fishers is to go out fishing in the early morning and come back in the afternoon or evening.

4) From the research results, it is found that small-scale fishers have the value-based that is based on and connected to moral and religious teachings. Therefore, in developing holistic thinking of small-scale fishers, there should be the support for the development of religious leader (Kor-Teb) to obtain knowledge of coastal resource management in order for the religious leader to integrate the knowledge of coastal resources into religious teachings and share them with the people prior to giving worship to the Allah on Friday.

5) Support small-scale fishers to have the positive attitude towards fishery co-management because the positive attitude will encourage small-scale fishers to participate in coastal resource management with willingness and volunteer spirit as well. The positive attitude creation is to build motivation to small-scale fishers that co-management will bring about sustainability of ecosystem, economic system, and community organization, especially, co-action in activities that enables small-scale fishers to learn by experiences. Those activities include mangrove forestation, seagrass plantation, the establishment of crab bank program, and participation in coastal resource management. This will make small-scale fishers to have the feeling of ownership and value coastal resources highly.

6) Small-scale fishers/ leaders who lose volunteer spirit do not participate in coastal resource management when the family faces with economic problem. Therefore, in developing the competency of small-scale fishers, there should be the promotion of income stability that is sufficient for the livings, which can be done by supporting occupational group based on interests.

7) Develop leadership by promoting mutual working in the form of gathering group that emphasizes the collaborative process in order to drive to the goal, the change that leads to positive effect on others and a society as well

as values that is importantly used as the foundation of social change along with learning of personal values in order to become the good leader in the future.

8) Develop communication ability of small-scale fishers by using simulated situation to develop the ability in encapsulating story from listening, communicating or transferring information or thoughts through speaking as well as using various communication tools, which will not only help effective communication, but also create learning.

9.3.1.2 There should be the support for the competency development in fishery co-management together with the competency in ecotourism management because small-scale fishers are a group of people living in a rural area with an occupation that relies on aquatic animals. However, due to deterioration of aquatic animal resources, they usually have secondary job. Having many occupations results in the need to interact with people from many groups and contexts, which disables them from having the single competency of fishery management. In addition, it is in order to fight against external capitals to survive and to be able to look after coastal resources. As a result, many networks apply ecotourism as the tool for coastal resource management. The method for developing the competency requires the support for the small-scale fisher networks to establish sub-groups within the networks, which are ecotourism group/ homestay group. Moreover, it is in order to create learning between ecotourism groups of each network that is located in the same zone. Therefore, there should be the connection between the small-scale fisher networks and the ecotourism networks whereby the small-scale fisher networks must support the ecotourism group to become the members of the ecotourism networks at the sub-district/district level that has the goal of ecotourism management for sustainable coastal resources. Furthermore, the method of the competency development of the small-scale fisher networks and the ecotourism network should focuses on interactive learning of small-scale fishers in actual practice.

9.3.1.3 From the analysis results of the competency level at network level by considering each aspect separately, and by considering all aspects simultaneously, it is found that the competencies of the small-scale fisher networks in fishery co-management that must be primarily developed are knowledge management,

new generation development, collaboration with other sectors, and administration. The development approaches are as follows.

1) Knowledge management should focus on knowledge creation from actual action of the network. In addition, in order to maintain the knowledge of small-scale fishery, knowledge/wisdom storage should be emphasized by storing in the community learning centers, including natural learning center from muddy crabs stable in mangrove forest, learning center that displays exhibition boards, village's resources map model, simulated fishery boat, simulated fishing gears as well as natural study route in mangrove forest by having labels for plant species. Moreover, there should be an emphasis on the implantation/transfer of lessons, especially traditional knowledge from adult generation to children, as well as village philosophers participate in making local curriculum related to coastal resources.

2) New generation development covers youths and women by awareness building on the value of coastal resources through participation in actual action and by establishing the participative process in various activities, including camping, seminar, study activity, establishing woman group, establishing youth team for local resources survey, conservation group integration for serrated mud crab farming, one baht a day savings group, giving opportunity to youth/women to take part in thinking, planning, acting, and flowing up with other groups within the network as well as building new generation leaders that bring about leader team rather than a single leader by assigning works to the new generation (including presentation of works when there is a visit from other networks), taking the new generation with the core leader when meet up with government sector, and assigning to coordinate with government sector.

3) Network administration: There should be the connection of coastal resource management with festival/tradition/value/local wisdom, which are Islamic savings group founding, walking on fire tradition in vegetarian festival in which there is the cutting of mangrove tree to use as the woodpile in walking on fire; After finishing the activities, there must be the renewal plantation of mangrove tree, the use of Pencak Silat as a strategy to convince people to gather together and do activity, boat racing tradition by using long-tailed boats and flatboats,

which is the application of local wisdom into the competition in order to build consciousness and to integrate people.

4) Collaboration with other sectors: The network should perceive the importance and identify the direction for collaboration with the related departments in order to create cooperation among government sector, community organization, NGOs, academics, and business sector. Additionally, the related sectors should support for collaboration of the networks, which is the principle of co-management. Because the social structure is complex, there are various stakeholders and the cooperation between NGOs and villagers alone will not be adequate.

9.3.1.4 Co-management will become effective when there is network strength; therefore, there should be the promotion to establish strength of the network as follows.

1) From the study results, it is found that the forming of the networks is not derived from one factor, but most of the networks are previously formed naturally, and later there is the support from NGOs and government sector. To create network strength, there should be the support for the network that are formed from internal consciousness through continuous learning more than pushing the network formation to obtain funds or for some purposes. This is because when there is the lack of fund, the network will be collapsed. Furthermore, human development should be primarily emphasized through a continuous group process rather than focusing on budget management and follow up of activities.

2) From the research results, it is found that conditional factor in term of internal network system management related to the competency of the networks in which the networks that have the structure of working group coming from village representatives, and having sub-structures within each village, they are higher competency than the structure that has the working group coming from representatives of sub-groups or the structure that has core leaders, but is lack of clear division of roles and duties. In addition, in order to create the feeling of sharing in terms of experiences, knowledge and benefits from coastal resource management between the networks, there should be the support for the connection of the networks are nearby in order to cooperatively manage coastal resources in the

conservation zone/area by setting rules and measures into zones, and not only specifying in one particular village. In order to reduce conflict, there should be the setting of rules and measures through the method of survey or public hearing of the particular area and nearby areas.

9.3.2 Recommendations regarding policy

9.3.2.1 From the research findings, it is found that conditional factor in term of structure/ power relationship/ politics related to the competency of the network; therefore, there should be the formulation of specific policy for fishery co-management of government sector in the provincial level, district level, and the SAO level in order to maintain the policy even though there is the change of executive administrators. It also supports the implementation of co-management policy to continuous practice.

9.3.2.2 From the research findings, it is found that conditional factor in term of social relationship related to the competency of the network whereby in the era of “community fever” there were many departments including government sector and NGOs that aimed at the community at the same time, but it was done separately. Therefore, there should be the working group that integrates the works together in order to reduce the complexity and make the development to be in the same direction.

9.3.2.3 Co-management should be enhanced from the advisory level where the small-scale fisher networks report the decision making to the government sector and government sector agrees or certifies on the decision made by the small-scale fisher networks to co-management at the cooperative level where the networks and government sector mutually make a decision. Government sector and the community must reduce their own level of management and reduce the level of distrust on each other. Moreover, the mechanism for co-management at the smallest level in the area must be established into the bigger level, which is the incorporation of the networks and government sector at the level of village headman, sub-district headmen or the SAO or the district or the province by developing and expanding from mutual thinking and mutual activity to co-planning and mutual follow-up.

9.3.2.4 From the study results, it is found that condition factor in term of social relationship related to the competency of small-scale fishers. In order for fishery co-management to achieve the outcome of efficiency, equity, and sustainability of ecosystem, economy, community organization, the related government sector must build awareness and motivation to commercial fishery and local aquatic animal traders to participate in coastal resource management even though the concept of commercial fishery is to do fishery for business purpose rather than having the concept of sustainable coastal resource management.

9.3.2.5 The local government sector has the role based on the law. However, from the study results, it still has a little role. Therefore, the related government sector should develop formal leaders, who are village headman, sub-district headman and the SAO to have the positive attitudes towards fishery co-management, to build awareness in responsibilities, and to have knowledge of coastal resource management by changing the perception that the problem of coastal resources is only the problem of people having fishery occupation to the perception that it is the problem of food stability, which is the problem that involves everyone in the area as well as the country.

9.3.3 Recommendations on research methodology

In access to small-scale fishery community in order to collect the data from the target group, the researcher must know about social relationship within the village and have the methods in accessing to different communities based on appropriateness, through the core leaders, the SAO, NGOs, and small-scale fishers, especially the village that has village headman as the core leader in resource management will have social relationship of village headman and villagers in the high level and some small-scale fishers in the village have conflict; in this case, the researcher must be specially careful by approaching the target group through village headman. As a result, some of the target groups are willing to cooperate in the interview.

9.3.4 Recommendations for future research

9.3.4.1 In the analysis of the network in order to see characteristics of the relationship within the network and to study knowledge

management of the small-scale fisher networks that relates to the outcomes of fishery co-management, which are efficiency, equity, and sustainability, in order for fishery co-management to become sustainable, it must be knowledge-based management in which local knowledge or wisdom is the knowledge that supports scientific knowledge.

9.3.4.2 The development of the new competency model is the competency model of small-scale fishers in fishery co-management and ecotourism management by developing and improving from the existing competency model because small-scale fishers have many occupations (main occupation and secondary occupation) and many roles, which need to have interaction with people from many groups and contexts; therefore, they are unable to obtain the single competency in fishery management.

9.3.4.3 This research particularly studies the competency of small-scale fishers. In the next research, there should be the study of the competency in fishery co-management of government sector (including the SAO) because in order for co-management to be achieved in terms of efficiency, equity, and sustainability in ecosystem, economy, and community organization, stakeholders from all sectors must have the competency in co-management.

9.3.4.4 From the study results, it is found that in fishery co-management, the SAO still has a little role. Therefore, there should be the study of the outcomes of decentralization in resource management at the local level of the SAO concerning whether there are problems and obstacles that disable the SAO from being the mechanism of co-management at the local level. In addition, there should be the study of the attitudes of the SAO towards fishery co-management in order to be the lesson in the development of fishery co-management in the local administration organization in the future.

9.3.4.5 The case study of the network that has co-management with cooperation from many sectors tangibly by studying the development of co-management, the roles of stakeholders, management mechanism, participation, the level of co-management, problems, obstacles and outcomes of co-management as well as success or failure factors in fishery co-management in order to be the lesson that can be developed in co-management of the network in the future.

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APPENDIX A

เครื่องมือวิจัย

กรอบแนวคำถามในการสัมภาษณ์เชิงลึก

ส่วนที่ 1 สัมภาษณ์ ภาครัฐ (รวมถึง อบต.) แกนนำชาวประมงพื้นบ้าน NGOs นักวิชาการ และภาคธุรกิจ (แพนในชุมชน)

ชาวประมงพื้นบ้านได้รับผลกระทบจากความเสื่อมโทรมของทรัพยากรชายฝั่ง ประการหนึ่งที่สำคัญเกิดจากการทำประมงด้วยเครื่องมือทำลายล้าง หรือการทำประมงที่ผิดกฎหมาย เช่น การลुक้าของอวนรุน อวนลาก เรือปั่นไฟ เข้ามาทำประมงในเขต 3,000 เมตร จึงมีการแก้ปัญหากันมาหลายยุคหลายสมัยด้วยหลากหลายวิธีการ ตั้งแต่การใช้ความรุนแรง การประสานกับภาครัฐ การรวมกลุ่มกันเป็นเครือข่ายเพื่อให้มีอำนาจในการต่อรอง จนมาสู่การจัดการร่วมกับภาคส่วนต่างๆ นั้น

คำถาม 1 ภาครัฐได้ส่งเสริมการจัดการประมงร่วมหรือไม่อย่างไร มีขั้นตอนในการจัดการประมงร่วมอย่างไร (เช่น การเตรียมการ การวางแผน การนำแผนไปปฏิบัติ การติดตามประเมินผล) มีภาคส่วนใดบ้างที่เข้ามามีส่วนร่วม ชาวประมงพื้นบ้านเข้ามามีส่วนร่วมในขั้นตอนใด ภาครัฐได้ดำเนินการในเรื่องต่อไปนี้หรือไม่อย่างไร (1) การแจ้งข้อมูลข่าวสาร (2) การปรึกษาหารือ (3) การสร้างความร่วมมือ (4) การติดต่อสื่อสาร (5) การแลกเปลี่ยนข้อมูลระหว่างกัน (6) การให้คำปรึกษา (7) การปฏิบัติงานร่วมกัน (8) การสร้างระบบหุ้นส่วน

1.1 การจัดการทรัพยากรชายฝั่ง เครือข่ายชาวประมงพื้นบ้านมีการประสานกับภาคส่วนใดบ้าง (ภาครัฐ อบต. NGOs นักวิชาการ ภาคธุรกิจ) การประสานงานใช้วิธีใด ประสานกันในเรื่องใด มีกระบวนการทำงานในการจัดการทรัพยากรชายฝั่งร่วมกันอย่างไร มีการจัดการทรัพยากรชายฝั่งชนิดใด จัดการอย่างไร (ได้แก่ การกำหนดมาตรการ กฎระเบียบ กำหนดเขต บริหารแนวเขต การปรับเปลี่ยนเครื่องมือประมง MCS ปะการังเทียม ธนาคารปู ป่าชายเลน เป็นต้น)

1.2 การวิเคราะห์ปัญหาและจัดทำแผน มีการวิเคราะห์ปัญหา ประเมินสถานการณ์ และแนวทางแก้ไขในการจัดการทรัพยากรชายฝั่งหรือไม่อย่างไร มีกำหนดแผน กิจกรรม วิธีปฏิบัติงานในการจัดการทรัพยากรชายฝั่งร่วมกันหรือไม่อย่างไร มีประเด็นใดที่ต้องหามติร่วม และมีการตัดสินใจร่วมกัน

1.3 การเปลี่ยนแปลง มีช่องทางการสื่อสารของภาคีอย่างไร เครือข่ายได้วางระบบการสื่อสารทั้งภายในและภายนอกเครือข่ายหรือไม่อย่างไร มีการต่อยอดกันในเรื่องใดอย่างไร มีการจัดการความขัดแย้งในเรื่องใดอย่างไร มีการแลกเปลี่ยนเรียนรู้ในเรื่องใดอย่างไร

1.4 การจัดการข้อมูลข่าวสาร มีการเข้าถึงข้อมูลข่าวสารอย่างไร มีการส่งต่อข้อมูลข่าวสารหรือไม่ มีการเก็บรวบรวมข้อมูลหรือสำรวจข้อมูลพื้นฐานที่เกี่ยวข้องกับวิถีชีวิต และทรัพยากรชายฝั่งในพื้นที่หรือไม่อย่างไร มีการจัดทำฐานข้อมูลการจัดการทรัพยากรชายฝั่ง และนำข้อมูลไปใช้หรือไม่อย่างไร เครือข่ายชาวประมงพื้นบ้านได้วางระบบการจัดการข้อมูลข่าวสารหรือไม่อย่างไร

1.5 การติดตามผล มีการติดตามผลการจัดการทรัพยากรชายฝั่งร่วมกันหรือไม่อย่างไร ติดตามผลในรูปแบบใด ผลเป็นอย่างไร

ส่วนที่ 2 สัมภาษณ์แกนนำชาวประมงพื้นบ้าน

คำถาม 2 อะไรเป็นแรงจูงใจที่สำคัญให้ชาวประมงพื้นบ้านรวมกลุ่มกันเป็นเครือข่ายในการจัดการทรัพยากรชายฝั่ง มีการก่อตัวของเครือข่ายอย่างไร โครงสร้างของเครือข่ายเป็นอย่างไร วัฒนธรรมเครือข่ายเป็นอย่างไร แกนนำเครือข่ายมีบทบาทอย่างไร มีสภาพการณ์ภายนอกใดบ้างที่ส่งผลหรือมีความเชื่อมโยงกับเครือข่าย สภาพปัจจุบันของเครือข่ายเป็นอย่างไร สร้างแผนรองรับอย่างไร ได้ผลอย่างไร เครือข่ายมีการเคลื่อนไหวในประเด็นใดหรือไม่อย่างไร นำบทเรียนจากในอดีตมาปรับปรุงการทำงานของเครือข่ายหรือไม่อย่างไร มีการบังคับใช้กฎหมายการประมงหรือไม่อย่างไร มีการขยายเครือข่ายหรือไม่อย่างไร อะไรสนับสนุนให้เครือข่ายคงอยู่อย่างยั่งยืนและต่อเนื่อง

คำถาม 3 ชาวประมงพื้นบ้านมีวิธีคิดหรือความเข้าใจในความสัมพันธ์เชื่อมโยงของทรัพยากรชายฝั่งกับตัวชาวประมงพื้นบ้านเอง หรือกับชุมชนท้องถิ่นอย่างไร มีทัศนคติในเรื่องการจัดการประมงร่วมอย่างไร มีภูมิปัญญาใดบ้างที่เกี่ยวข้องกับการจัดการทรัพยากรชายฝั่ง มีการเรียนรู้ในทักษะใหม่ๆ หรือไม่อย่างไร ในการจัดการประมงร่วมให้บรรลุผลสมรรถนะใดเป็นสมรรถนะที่สำคัญของเครือข่าย แกนนำ ปัจเจก และปัจเจกใดที่ส่งผลต่อระดับสมรรถนะของชาวประมงพื้นบ้านในการจัดการประมงร่วม

แบบสอบถาม ระดับบุคคล

แบบสอบถามชุดที่.....
เครือข่าย.....
จังหวัด.....

เรื่อง การพัฒนาตัวแบบสมรรถนะของชาวประมงพื้นบ้านในการจัดการประมงร่วม

คำชี้แจง

แบบสอบถามชุดนี้ เป็นแบบสอบถามที่ต้องการศึกษาถึงระดับสมรรถนะของชาวประมงพื้นบ้านในการจัดการประมงร่วม (ระดับบุคคล) ทั้งนี้เพื่อนำข้อมูลที่ได้มาจัดทำเป็นข้อเสนอแนะในการพัฒนาสมรรถนะของชาวประมงพื้นบ้านในการจัดการประมงร่วมโดยอิงสมรรถนะให้มีประสิทธิภาพยิ่งขึ้น ดังนั้น คำตอบของท่านจะเป็นประโยชน์อย่างยิ่งต่อการนำไปใช้เป็นแนวทางในการพัฒนาสมรรถนะของชาวประมงพื้นบ้านในการจัดการประมงร่วมแบบอิงสมรรถนะที่มีประสิทธิภาพต่อไป

ตอนที่ ๑ ข้อมูลพื้นฐานเกี่ยวกับผู้ตอบแบบสอบถาม

ชาวประมงพื้นบ้านกรุณาเติมข้อความ หรือ ใส่เครื่องหมาย ✓ ลงใน □ หน้าข้อความที่ตรงกับความเป็นจริงมากที่สุด ข้อละหนึ่งคำตอบ และกรุณาตอบให้ครบทุกข้อ

1. เพศ

ชาย หญิง

2. อายุ.....ปี

3. ศาสนา

พุทธ อิสลาม อื่นๆ (ระบุ).....

4. ระดับการศึกษา

ไม่มีการศึกษา จบประถมศึกษาตอนต้นหรือต่ำกว่า (ป.4)
 จบประถมศึกษาตอนปลาย จบมัธยมศึกษาตอนต้น
 จบมัธยมศึกษาตอนปลาย /เทียบเท่า จบ ปวส. /อนุปริญญา /เทียบเท่า
 จบปริญญาตรี อื่นๆ.....

5. สถานภาพสมรส

โสด สมรส หม้าย หย่า แยกกันอยู่

6. จำนวนบุตร.....คน รวมจำนวนสมาชิกในครัวเรือน.....คน
7. รายได้ของครอบครัวรวมกันคิดเป็นจำนวนเงินประมาณเท่าใดต่อเดือน.....บาท
8. ครอบครัวของท่านมีหนี้สินหรือไม่
- ไม่มีหนี้สิน มีหนี้สิน ประมาณ.....บาท
9. ท่านคิดว่าสถานภาพทางการเงินของครอบครัวเป็นอย่างไร
- รายได้มากกว่ารายจ่าย (มีเหลือเก็บ)
- รายจ่ายมากกว่ารายได้ (ไม่พอใช้)
- รายได้พอๆ กับรายจ่าย (พอมีพอกิน)
10. ระยะเวลาที่ท่านอาศัยอยู่ในชุมชน..... ปี
11. ท่านประกอบอาชีพประมงมาแล้วเป็นเวลา.....ปี
12. ปัจจุบันท่านทำการประมงประเภทใด (ระบุชนิดเครื่องมือ หรือชนิดสัตว์น้ำที่เพาะเลี้ยง)
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13. ท่านเข้ามามีส่วนร่วมในดูแลรักษาทรัพยากรชายฝั่งมาแล้วเป็นเวลา.....ปี
14. ท่านมีบทบาทใดในชุมชน (ตอบได้มากกว่า 1 ข้อ)
- สมาชิกกลุ่ม (ได้แก่ กลุ่มอนุรักษ์ เฉพาะกิจ กลุ่มออมทรัพย์ กลุ่มอาชีพ).....
- คณะกรรมการกลุ่ม ได้แก่ หัวหน้ากลุ่ม รองหัวหน้ากลุ่ม เลขากลุ่ม กรรมการ
- แกนนำเครือข่าย ผู้ใหญ่บ้าน/กำนัน
- นายก อบต./ สมาชิก อบต. ผู้นำทางศาสนา (ได้แก่ คอเต็บ)
- อื่นๆ.....
15. ท่านมีการเข้าร่วมกิจกรรมการจัดการทรัพยากรชายฝั่งในระดับใด
- ไม่เคยเข้าร่วม เข้าร่วม (ระบุจำนวนครั้งต่อปี).....
16. การที่ท่านเข้าร่วมในการดูแลรักษาทรัพยากรชายฝั่งของชุมชนนั้น ท่านได้รับการยอมรับจากชุมชนหรือไม่
- ไม่ได้รับการยอมรับเลย บางคนให้การยอมรับ
- เกือบทุกคนให้การยอมรับ ทุกคนให้การยอมรับ
17. ท่านคิดว่าเกิดผลสำเร็จของงานจากการที่ท่านมีส่วนร่วมในการดูแลรักษาทรัพยากรชายฝั่งหรือไม่
- ไม่สำเร็จเลย สำเร็จเป็นบางเรื่อง สำเร็จทุกเรื่อง

ตอนที่ ๒ คำถามเกี่ยวกับสมรรถนะของชาวประมงพื้นบ้านในการจัดการประมงร่วม
คำชี้แจง กรุณาเล่าเรื่อง (Story telling) ที่เป็นความคิดของท่านในประเด็นต่อไปนี้อย่างละเอียด

2.1 วิธีคิดแบบองค์รวม

1. สัตว์น้ำในทะเลมีความสำคัญต่อวิถีชีวิตของท่านอย่างไร.....

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2. ขอให้เล่าถึงความสัมพันธ์ของสิ่งมีชีวิตในระบบนิเวศ (ได้แก่ สัตว์น้ำในป่าชายเลนหรือหญ้า
ทะเล เป็นต้น)

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3. ความเป็นอยู่ หรือการกระทำของคนที่อยู่บนบก ได้แก่ คนทำสวนยาง คนทำนา กุ้ง มีความ
เกี่ยวข้องหรือส่งผลกระทบต่อความเป็นอยู่ของคนที่อยู่ชายฝั่งทะเล อย่างไร.....

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4. ท่านคาดหวังที่จะเห็นทรัพยากรสัตว์น้ำในอนาคตเป็นอย่างไร และตัวท่านมีส่วนในด้านการใช้
ประโยชน์จากสัตว์น้ำ หรือการดูแลรักษาอย่างไรจึงจะทำให้เป็นไปตามที่คาดหวัง ท่านทำเพื่อใคร

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2.2 ความรู้และประสบการณ์ในวิถีประมงพื้นบ้าน

1. ในการประกอบอาชีพประมงพื้นบ้านท่านรู้และเข้าใจถึงธรรมชาติของสัตว์น้ำแต่ละชนิดหรือไม่อย่างไร (ยกตัวอย่าง)

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2. ท่านเข้าใจถึงความสัมพันธ์ของเงื่อนใจทางธรรมชาติ (ได้แก่ ทิศทางลม) กับสัตว์น้ำหรือไม่อย่างไร.....

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3. ท่านหรือคนรุ่นอาวุโสในชุมชนได้มีการประดิษฐ์คิดค้นสิ่งใด หรือวิธีการใดบ้างที่ถือว่าเป็นภูมิปัญญาที่เอื้อต่อการประกอบอาชีพประมง หรือเอื้อต่อการดูแลรักษาทรัพยากรชายฝั่ง (ยกตัวอย่าง)

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4. มีการถ่ายทอดภูมิปัญญาที่เกี่ยวข้องกับวิถีประมงพื้นบ้านจากคนรุ่นอาวุโสไปยังคนรุ่นใหม่ในชุมชนโดยผ่านครอบครัว เครือญาติ เพื่อน และผู้นำทางศาสนา หรือไม่

- ไม่มีการถ่ายทอดเลย มีการถ่ายทอด

คำชี้แจง กรุณาใส่เครื่องหมาย ✓ ลงใน หน้าข้อความที่ตรงกับความเป็นจริงมากที่สุด และ
 กรุณาเล่าเรื่อง (Story telling) เพื่อสนับสนุนหรืออธิบายในประเด็นดังกล่าวอย่างละเอียด

2.3 บุคคลเรียนรู้

การเรียนรู้จากการรับรู้อาวสาร

1. ท่านมีการติดตามข้อมูลข่าวสารที่เกี่ยวข้องกับทรัพยากรชายฝั่งทางสื่อ ได้แก่ โทรทัศน์ วิทยุ วิทยุ
 สื่อสารหรือไม่

- ไม่เคย ติดตามเป็นบางครั้ง ติดตามเป็นประจำ

2. ท่านได้รับข้อมูลข่าวสารที่เกี่ยวข้องกับทรัพยากรชายฝั่งจากบุคคล ได้แก่ แกนนำ ผู้ใหญ่บ้าน
 NGOs เจ้าหน้าที่ของรัฐ หรือไม่

- ไม่เคย ได้รับเป็นบางครั้ง ได้รับเป็นประจำ

การเรียนรู้จากการปฏิบัติจริง

3. ท่านได้มีการลงมือทำจริง หรือมีการทำแบบลองผิดลองถูกในกิจกรรมที่เกี่ยวข้องกับการจัดการ
 ทรัพยากรชายฝั่งหรือไม่ (ได้แก่ การปลูกหญ้าทะเล ปลูกป่าชายเลน การทำธนาคารปู การหล่อ
 ปะการังเทียม เป็นต้น)

- ไม่มี
 มี (ระบุกิจกรรมและวิธีการที่ใช้).....

การเรียนรู้จากคำสอนทางศาสนา

4. มีหลักคำสอนทางศาสนาที่นำมาใช้ในการจัดการทรัพยากรชายฝั่งซึ่งเป็นทรัพยากรของ
 ส่วนรวมหรือไม่

- ไม่มี
 มี (ระบุ).....

5. หลักคำสอนนั้นได้ส่งผลต่อการใช้ประโยชน์จากสัตว์น้ำหรือการทำประมงของท่านหรือไม่

- ไม่ส่งผล ส่งผลเล็กน้อย ส่งผลมาก

การเรียนรู้จากการฝึกอบรม ศึกษาน

6. ท่านเคยได้รับการเข้าฝึกอบรมหรือศึกษานในประเด็นที่เกี่ยวข้องกับการจัดการทรัพยากรชายฝั่ง
 หรือไม่

- ไม่เคย เคยเข้าอบรม หรือศึกษาน จำนวน.....ครั้ง

คำชี้แจง กรุณาใส่เครื่องหมาย ✓ ลงในช่องว่างที่ตรงกับความคิดเห็นของท่านที่เป็นจริงมากที่สุด และกรุณาตอบให้ครบทุกข้อ ข้อละหนึ่งระดับ ตามเกณฑ์ดังนี้

หมายเลข 5 หมายถึง	เป็นจริงกับตัวท่านมากที่สุด
หมายเลข 4 หมายถึง	เป็นจริงกับตัวท่านมาก
หมายเลข 3 หมายถึง	เป็นจริงกับตัวท่านปานกลาง
หมายเลข 2 หมายถึง	เป็นจริงกับตัวท่านน้อย
หมายเลข 1 หมายถึง	เป็นจริงกับตัวท่านน้อยที่สุด

2.4 จิตอาสา

ข้อความ	ระดับความคิดเห็น				
	5	4	3	2	1
1. ท่านได้เสียสละเวลา กำลังกาย กำลังความคิด บางครั้งก็กำลังทรัพย์ เพื่อดูแลทรัพยากรชายฝั่งให้คนรุ่นนี้มีกินมีใช้และมีเหลือไปจนถึงลูกหลาน					
2. ท่านต้องการที่จะทำงานเพื่อส่วนรวมต่อไป ถึงแม้ไม่มีค่าตอบแทน การไปประชุมไม่มีเงินเดือน					
3. ท่านยังยืนยันที่จะทำงานเพื่อส่วนรวม ถึงแม้ว่าบางครั้งทำให้คนอื่นโกรธ มีแรงเสียดทานมาถึงตัวเองและครอบครัว					
4. ท่านทุ่มเททำงานเพื่อส่วนรวมเพราะคิดว่าเป็นงานของตัวเอง งานของชุมชน ทำเพื่อลูกหลาน					
5. ท่านทำงานเพื่อส่วนรวมแล้วทำให้คนสามัคคีกัน เสียสละต่อกัน ไม่เอาเปรียบกันอยู่ด้วยกันได้					

หมายเลข 5 หมายถึง	เป็นจริงกับตัวท่านมากที่สุด
หมายเลข 4 หมายถึง	เป็นจริงกับตัวท่านมาก
หมายเลข 3 หมายถึง	เป็นจริงกับตัวท่านปานกลาง
หมายเลข 2 หมายถึง	เป็นจริงกับตัวท่านน้อย
หมายเลข 1 หมายถึง	เป็นจริงกับตัวท่านน้อยที่สุด

2.5 ภาวะผู้นำ

ข้อความ	ระดับความคิดเห็น				
	5	4	3	2	1
<u>การตระหนักในตนเอง</u>					
1. ท่านเป็นคนใจกว้าง เปิดรับความคิดใหม่ๆ					
2. ท่านเป็นคนทุ่มเทต่องานของส่วนรวม					
3. ท่านได้รับความเชื่อใจและความไว้วางใจจากผู้อื่น					
4. ท่านสามารถจัดลำดับความสำคัญก่อนหลังของงาน					
<u>การแก้ไขปัญหาอย่างสร้างสรรค์</u>					
4. ท่านสามารถนำเสนอปัญหาที่เกี่ยวข้องกับทรัพยากรชายฝั่งในพื้นที่					
5. ท่านสามารถเสนอแนะหรือหาแนวทางในการแก้ปัญหา					
<u>การจูงใจคนอื่น</u>					
6. ท่านสามารถพิจารณา ตัดสิน กรณีมีผู้ฝ่าฝืนข้อตกลงเรื่องทรัพยากรชายฝั่ง					
7. ท่านสามารถชักชวนคนอื่นให้เข้าร่วมในดูแลรักษาทรัพยากรชายฝั่งได้					
<u>การจัดการความขัดแย้ง</u>					
8. ท่านสามารถไกล่เกลี่ยความขัดแย้งที่เกิดจากการใช้ทรัพยากรชายฝั่ง					

หมายเลข 5 หมายถึง	เป็นจริงกับตัวท่านมากที่สุด
หมายเลข 4 หมายถึง	เป็นจริงกับตัวท่านมาก
หมายเลข 3 หมายถึง	เป็นจริงกับตัวท่านปานกลาง
หมายเลข 2 หมายถึง	เป็นจริงกับตัวท่านน้อย
หมายเลข 1 หมายถึง	เป็นจริงกับตัวท่านน้อยที่สุด

2.6 ทศนคติต่อการจัดการประมงร่วม

ข้อความ	ระดับความคิดเห็น				
	5	4	3	2	1
<u>แนวคิดการจัดการร่วม</u> 1. การที่ภาครัฐและชาวประมงตลอดถึงภาคส่วนอื่นเข้าร่วมกันจัดการทรัพยากรนั้น เป็นการแบ่งบทบาทหน้าที่ความรับผิดชอบดีกว่าที่จะจัดการเพียงฝ่ายเดียว					
<u>ระดับการจัดการร่วม</u> 2. การจัดการร่วมกันนั้น ทั้งภาครัฐและชาวประมงต้องร่วมกันตัดสินใจในการกำหนดรูปแบบการจัดการเพื่อให้สอดคล้องกับสภาพท้องถิ่นในพื้นที่นั้นๆ					
<u>กระบวนการจัดการร่วม</u> 3. การจัดการร่วมกันของภาครัฐและชาวประมงนั้น ชาวประมงจะต้องเข้ามามีส่วนร่วมคิด ร่วมวางแผน ปฏิบัติ รวมถึงการติดตามผล					
4. การจัดการร่วมกันของหลายภาคส่วนนั้น เป็นการจัดการเพื่อเอื้อประโยชน์ให้แก่บุคคลใดบุคคลหนึ่งเท่านั้น					
<u>ผลลัพธ์การจัดการร่วม</u> 5. การจัดการร่วมกันของหลายภาคส่วน ทำให้ต้นทุนในการทำประมงลดลงชาวประมงไม่ต้องออกไปหาปลาไกลๆ					
6. การจัดการร่วมกันของหลายภาคส่วน ทำให้ลดความขัดแย้งที่เกิดจากการแย่งชิงทรัพยากรของชาวประมงได้					
7. การจัดการร่วมกันของหลายภาคส่วน ทำให้เกิดความยั่งยืนของทรัพยากรชายฝั่งได้					

คำชี้แจง กรุณาเติมข้อความ หรือ ใส่เครื่องหมาย ✓ ลงใน หน้าข้อความที่ตรงกับความเป็นจริงมากที่สุด และกรุณาตอบให้ครบทุกข้อ

2.7 การสื่อสาร

1. ท่านพูดคุยถึงปัญหาส่วนตัวน้ำเสื่อมโทรม หรือป่าชายเลนเสื่อมโทรมกับคนอื่นๆ ในชุมชน (ได้แก่พูดคุยในสภากาแฟ พูดคุยกันหลังละหมาด พูดคุยในงานกินบุญ)

- ไม่เคย พูดคุยเป็นบางครั้ง พูดคุยเป็นประจำ

2. เมื่อฟังผู้อื่นพูดท่านสามารถจับใจความได้

- ไม่ได้เลย ได้เป็นบางครั้ง ได้ทุกครั้ง

3. ท่านสามารถพูดให้คนอื่นเข้าใจความหมายที่ต้องการจะบอกได้

- ไม่ได้เลย ได้เป็นบางครั้ง ได้ทุกครั้ง

4. ท่านสามารถพูดตอบโต้กับผู้อื่นได้

- ไม่ได้เลย ได้เป็นบางครั้ง ได้ทุกครั้ง

5. เมื่อท่านไปรับรู้ข้อมูลข่าวสารที่เกี่ยวกับทรัพยากรชายฝั่งจากภายนอกแล้วนำมาแจ้งคนในกลุ่มหรือไม่

- ไม่เคย ทำเป็นบางครั้ง ทำเป็นประจำ

6. ท่านเคยให้คำปรึกษาหารือกับคนในชุมชนในประเด็นที่เกี่ยวข้องกับทรัพยากรชายฝั่งหรือไม่

- ไม่เคย ทำเป็นบางครั้ง ทำเป็นประจำ

7. ท่านมีการปรึกษาหารือกับ ภาครัฐ หรือ NGOs หรือนักวิชาการถึงประเด็นที่เกี่ยวข้องกับทรัพยากรชายฝั่งหรือไม่

- ไม่เคย ทำเป็นบางครั้ง ทำเป็นประจำ

8. ท่านสามารถเขียนเพื่อสื่อความหมายให้ภาครัฐ หรือ NGOs หรือนักวิชาการทราบได้หรือไม่

- เขียนไม่ได้ เขียนได้แต่ไม่เคยเขียน เขียนได้และเคยเขียน

9. ท่านต้องทำอะไรเมื่อเกิดกรณีอันตราย วนลาก บุกรุกเข้ามาทำประมงในเขต 3,000 เมตร หรือมีผู้เข้ามาลักลอบตัดไม้ในป่าชายเลนชุมชน (ถ้าแจ้งตอบได้มากกว่า 1 ข้อ)

- ไม่ทราบ
- แจ้งชุดเฉพาะกิจ หรือแกนนำ
- แจ้งหน่วยงานราชการที่เกี่ยวข้อง (ระบุ).....

2.8 ความรู้ในภูมิภาคและทรัพยากรในท้องถิ่น

1. ท่านทราบถึงแหล่งทรัพยากรชายฝั่งในชุมชนหรือไม่ ได้แก่ แหล่งปะการัง แหล่งหญ้าทะเล ป่าชายเลน

ไม่ทราบเลย ทราบบางแหล่งในชุมชน ทราบทุกแหล่งในชุมชน

2. ท่านทราบหรือไม่ว่าในป่าชายเลนในชุมชนมีพืชกี่ชนิด พืชใดที่เป็นประโยชน์ พืชใดที่ควรอนุรักษ์ พืชใดที่ใช้สอย

ไม่ทราบเลย ทราบบางชนิด ทราบทุกชนิด

3. ท่านทราบหรือไม่ว่าในพื้นที่มีสัตว์น้ำชนิดใดบ้าง แต่ละชนิดชุกชุมบริเวณใด

ไม่ทราบเลย ทราบบางชนิด ทราบทุกชนิด

4. ท่านทราบหรือไม่ว่าในท้องถิ่น บริเวณใดใช้ประโยชน์ทรัพยากรชายฝั่งชนิดใดอยู่บ้าง

ไม่ทราบเลย ทราบบางแห่ง ทราบทุกแห่ง

5. ท่านทราบสภาพพื้นที่ในท้องถิ่นหรือไม่ว่าจุดใดควรจะปล่อยพันธุ์สัตว์น้ำชนิดใดจึงจะมีอัตราการรอดสูง

ไม่ทราบเลย ทราบบางจุด ทราบทุกจุด

6. ท่านทราบสภาพพื้นที่ในท้องถิ่นหรือไม่ว่าจุดใดเหมาะสมที่จะทิ้งปะการังเทียม

ไม่ทราบเลย ทราบบางจุด ทราบทุกจุด

2.9 ความรู้และการบังคับใช้กฎหมายประมง

ข้อความ	ถูก กฎหมาย	ผิด กฎหมาย
ต่อไปนี้เป็นกรกระทำที่ถูกต้อง หรือ ผิดกฎหมาย		
1. เรืออวนรุน หรืออวนลาก เข้ามาทำประมงในเขตชายฝั่ง 3,000 เมตร		
2. เรือยนต์คราดหอย เข้ามาทำประมงในเขตชายฝั่ง 3,000 เมตร		
3. ผู้ครอบครองเครื่องมือประมงทำลาย ได้แก่ อวนรุน อวนลาก		
4. เครื่องมือโพงพาง ไม่จำเป็นต้องขออนุญาตก็สามารถทำการประมงได้		
5. การทำการประมงโดยใช้เครื่องมืออวนซิ่ง ขนาดตาอวนมากกว่า 2 นิ้ว		
6. การทำประมงโดยใช้กระแสไฟฟ้า วัตถุระเบิด ยาเบื่อ		
7. การจับสัตว์น้ำ ได้แก่ เต่าทะเล กระ ปะยูน โลมา ปะการัง		
8. เรืออวนรุน หรืออวนลาก เข้ามาทำประมงในเขตชายฝั่ง 3,000 เมตร เจ้าหน้าที่ทำการจับกุมขณะจับกุมเรือ ได้ออกมาอยู่นอกเขต 3,000 เมตร เป็นการกระทำที่ถูกต้องหรือไม่		
9. ชาวบ้านต้องไปพร้อมกับเจ้าหน้าที่ตามกฎหมาย ได้แก่ ผู้ใหญ่บ้าน กำนัน จึงจะสามารถจับกุมผู้กระทำผิดที่ลักลอบเข้าทำประมงในเขต 3,000 เมตร ได้		

10. ท่านร่วมบังคับใช้หรือปฏิบัติตามกฎหมายประมงหรือไม่

 ปฏิบัติตามเป็นบางครั้ง ปฏิบัติตามเป็นประจำ

แบบสอบถาม ระดับเครือข่าย

แบบสอบถามชุดที่.....

จังหวัด.....

เรื่อง การพัฒนาตัวแบบสมรรถนะของชาวประมงพื้นบ้านในการจัดการประมงร่วม

คำชี้แจง

แบบสอบถามชุดนี้ เป็นแบบสอบถามที่ต้องการศึกษาถึงระดับสมรรถนะของชาวประมงพื้นบ้านในการจัดการประมงร่วม (ระดับเครือข่าย) ทั้งนี้เพื่อนำข้อมูลที่ได้มาจัดทำเป็นข้อเสนอแนะในการพัฒนาสมรรถนะของชาวประมงพื้นบ้านในการจัดการประมงร่วมโดยอิงสมรรถนะให้มีประสิทธิภาพยิ่งขึ้น ดังนั้น คำตอบของท่านจะเป็นประโยชน์อย่างยิ่งต่อการนำไปใช้เป็นแนวทางในการพัฒนาสมรรถนะของชาวประมงพื้นบ้านในการจัดการประมงร่วมแบบอิงสมรรถนะที่มีประสิทธิภาพต่อไป

ตอนที่ ๑ ข้อมูลพื้นฐานเกี่ยวกับเครือข่าย

คำชี้แจง แก่นนำหรือตัวแทนเครือข่ายชาวประมงพื้นบ้านกรุณาเติมข้อความ หรือ ใส่เครื่องหมาย ✓

ลงใน หน้าข้อความที่ตรงกับความเป็นจริงมากที่สุด และกรุณาตอบให้ครบทุกข้อ

1. ชื่อเครือข่าย.....
2. เครือข่ายก่อตั้งเมื่อปี พ.ศ.
3. สาเหตุของการก่อตั้งเครือข่าย.....
4. จำนวนสมาชิกของเครือข่าย.....คน
5. ภายในเครือข่ายมีการจัดเป็นกลุ่มย่อยอะไรบ้าง (ถ้ามีตอบได้มากกว่า 1 ข้อ)

- ไม่มีกลุ่มย่อย
- มีกลุ่มอนุรักษ์ (ได้แก่ อนุรักษ์ป่าชายเลน สัตว์น้ำ หล้าทะเล ปะการัง)
- มีชุดเฉพาะกิจ หรือ MCS มีกลุ่มธนาคารปู
- มีกลุ่มออมทรัพย์ มีกลุ่มกองทุนหมุนเวียนเครื่องมือประมง
- มีกลุ่มอาชีพ (ได้แก่ ทำประมง เพาะเลี้ยงสัตว์น้ำ แปรรูปสัตว์น้ำ)
- มีกลุ่มอยู่ซ่อมสร้างเรือชุมชน มีกลุ่มเยาวชน
- มีกลุ่มสตรี อื่นๆ (ระบุ).....

6. ภาคส่วนใดส่งเสริมสนับสนุนหรือกระตุ้นให้เกิดการก่อตัวของเครือข่าย

- ไม่มีภาคส่วนใด แต่เกิดจากการรวมตัวกันเอง
- รวมตัวเองกันก่อน NGOs หรือภาครัฐเข้ามาภายหลัง
- ก่อตัวจาก NGOs ก่อตัวจากภาครัฐ (รวมถึง อบต.) คือ.....
- ก่อตัวจากนักวิชาการ อื่นๆ (ระบุ).....

7. โครงสร้างของเครือข่ายมีลักษณะเป็นแบบใด

- มีแกนนำหลัก แต่ไม่มีการแบ่งบทบาทหน้าที่ที่ชัดเจน
- เป็นคณะทำงาน ที่มีตัวแทนมาจากกลุ่มย่อย
- เป็นคณะทำงาน ที่มีตัวแทนมาจากแต่ละหมู่บ้าน และภายในหมู่บ้านมีโครงสร้างย่อย
- อื่นๆ.....

8. ผู้นำเครือข่ายเป็นผู้นำแบบใด (ตอบได้มากกว่า 1 ข้อ)

- ผู้นำธรรมชาติ ผู้นำที่เป็นทางการ ได้แก่ ผู้ใหญ่บ้าน /กำนัน /อบต.
- ผู้นำทางศาสนา อื่นๆ.....

9. ผู้นำมีความสามารถทำให้สมาชิกของเครือข่ายเกิดความเชื่อใจและความไว้วางใจต่อผู้นำหรือไม่

- สมาชิกบางส่วนเชื่อใจ สมาชิกเกือบทั้งหมดเชื่อใจ สมาชิกทั้งหมดเชื่อใจ

10. สมาชิกเครือข่ายมีบทบาทหน้าที่ในงานของเครือข่ายหรือไม่

- สมาชิกบางคนมีบทบาท สมาชิกเกือบทุกคนมีบทบาท สมาชิกทุกคนมีบทบาท

11. เมื่อเครือข่ายจัดกิจกรรมที่เกี่ยวข้องกับการจัดการทรัพยากรชายฝั่ง สมาชิกของเครือข่ายเข้าร่วมกิจกรรม หรือไม่

- สมาชิกบางคนเข้าร่วม สมาชิกเกือบทุกคนเข้าร่วม สมาชิกทุกคนเข้าร่วม

12. เมื่อมีการประชุมเครือข่าย สมาชิกของเครือข่ายได้เข้าร่วมประชุมหรือไม่

- สมาชิกบางคนเข้าร่วม สมาชิกเกือบทุกคนเข้าร่วม สมาชิกทุกคนเข้าร่วม

13. เมื่อมีการประชุมเครือข่ายได้มีการชี้แจงเรื่องการรับจ่ายเงิน หรือเรื่องผลการทำงาน หรือไม่

- ไม่แจ้งเลย แจ้งบางเรื่อง แจ้งทุกเรื่อง

14. เมื่อต้องมีการตัดสินใจเกี่ยวกับทิศทางของโครงการ เครือข่ายมีการประชุมปรึกษาหารือกันหรือไม่

- ไม่มี ปรึกษาหารือเป็นบางครั้ง ปรึกษาหารือทุกครั้ง

ตอนที่ ๒ คำถามเกี่ยวกับสมรรถนะของเครือข่ายชาวประมงพื้นบ้านในการจัดการประมงร่วม

คำชี้แจง กรุณาใส่เครื่องหมาย ✓ ลงใน หน้าข้อความที่ตรงกับความเป็นจริงมากที่สุด และ
 กรุณาเล่าเรื่อง (Story telling) เพื่อสนับสนุนหรืออธิบายในประเด็นดังกล่าวอย่างละเอียด

2.1 การมีเป้าหมายร่วม

1. ในการดูแลรักษาทรัพยากรชายฝั่งเครือข่ายมีการกำหนดเป้าหมายหรือไม่ และมีวิธีการในการ
 กำหนดเป้าหมายอย่างไร

ไม่มี

มี (ระบุเป้าหมาย และวิธีการ)

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2. เครือข่ายมีการแจ้งให้สมาชิกทราบเป้าหมายของเครือข่ายเพื่อให้เข้าใจไปในทิศทางเดียวกัน
 หรือไม่

ไม่มี

มี (ตอบได้มากกว่า 1 ข้อ)

พูดคุยกันในกลุ่มเล็กๆ

แจ้งทราบในที่ประชุม

ระดมความคิดเห็นจากที่ประชุม

3. สมาชิกมีการยอมรับเป้าหมายของเครือข่ายร่วมกันหรือไม่

สมาชิกบางคนยอมรับ สมาชิกเกือบทุกคนยอมรับ สมาชิกทั้งหมดยอมรับ

2.2 การกำหนดกติกามาตรการ

1. เครือข่ายมีการกำหนดกติกาหรือมาตรการในการจัดการทรัพยากรชายฝั่งในพื้นที่หรือไม่ (ได้แก่ การกำหนดพื้นที่อนุรักษ์ กติกาป่าชายเลน กติกาชนิดเครื่องมือประมง ขนาดตาอวน เป็นต้น) การกำหนดกติกาทำด้วยวิธีการใด

ไม่มี

มี (ระบุกติกา).....

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วิธีการกำหนดกติกา

การปรึกษาในวงเล็กๆ ของแกนนำ

ใจมติที่ประชุมกรรมการเครือข่าย

ทำประชาพิจารณ์ หรือสำรวจความคิดเห็น

เครือข่ายกำหนดโดยปรึกษากับภาครัฐ หรือ NGOs

2. เครือข่ายมีการประชาสัมพันธ์เขตพื้นที่อนุรักษ์ กติกาหรือมาตรการที่กำหนดให้แก่ชุมชนใกล้เคียงที่ใช้พื้นที่เดียวกันทราบหรือไม่ (ถ้ามีตอบได้มากกว่า 1 ข้อ)

ไม่มีการประชาสัมพันธ์

มีการแจกใบปลิว

มีการจัดทำหนังสือหรือเอกสารเผยแพร่ในชุมชน

แจงหนังสือผ่าน อบต.

ทำป้ายประกาศกติกา

แจงไปยังเครือข่ายอื่นที่ใกล้เคียง

ประชาสัมพันธ์ทางรายการวิทยุ

มีการแจงผ่านที่ประชุมผู้ใหญ่บ้านหรือแจงผ่านที่ประชุม อบต.

มีการเชิญนายอำเภอ หรือผู้ว่าราชการจังหวัดมาเป็นประธานในพิธีเปิดเขตอนุรักษ์

3. เครือข่ายมีปัญหาจากการใช้กติกาหรือมาตรการที่กำหนดหรือไม่ (ถ้ามีปัญหาตอบได้มากกว่า 1 ข้อ)

ไม่มีเลย

คนในหมู่บ้านบางคนไม่ยอมรับแต่สามารถทำความเข้าใจได้

คนในหมู่บ้านบางคนไม่ยอมรับและไม่ทำตามกติกา

คนนอกหมู่บ้านบางคนไม่ยอมรับและไม่ทำตามกติกาของเครือข่าย

2.3 ภาวะผู้นำ

1. เครื่องข่ายริเริ่มนำวิธีการหรือรูปแบบใหม่ๆ ที่ไม่ซ้ำกับเครือข่ายอื่นมาใช้เพื่อการจัดการทรัพยากรชายฝั่งของเครือข่าย โดยวิธีการนั้นเป็นต้นแบบให้เครือข่ายอื่นได้ทำตามหรือไม่

ไม่มี

มี (ระบุ).....

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2. วิธีการหรือรูปแบบที่ริเริ่มนั้นนำไปใช้ภายในเครือข่ายได้ผลดีหรือไม่

ไม่ได้ผลเลย

ใช้ได้ผลบางส่วน

ใช้ได้ผลดีทั้งหมด

3. วิธีการหรือรูปแบบที่ริเริ่มนั้นเป็นที่สนใจของบุคคลในพื้นที่อื่นหรือเครือข่ายอื่นหรือไม่ (ได้แก่ การสอบถามรายละเอียด การเข้ามาดูงาน เป็นต้น)

ไม่มีเลย

มีเครือข่ายอื่นเข้ามาศึกษาดูงาน (ระบุ).....

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4. ในการจัดการทรัพยากรชายฝั่งเครือข่ายเคยได้รับรางวัลหรือประกาศเกียรติคุณบ้างหรือไม่

ไม่เคยได้รับ

ได้รับ (ระบุ).....

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2.4 การเชื่อมประสานกับภาคส่วนอื่น

1. ในการจัดการทรัพยากรชายฝั่งเครือข่ายได้ประสานความร่วมมือกับภาคส่วนใดบ้าง ประสานในเรื่องใด (ถ้าประสานตอบได้มากกว่า 1 ข้อ และแต่ละข้อตอบได้มากกว่า 1 หน่วยงาน)

ไม่ประสานเลย

ประสานภาครัฐ (รวมถึง อบต.) (ระบุหน่วยงาน และวัตถุประสงค์).....

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ประสาน NGOs (ระบุหน่วยงาน และวัตถุประสงค์).....

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ประสานนักวิชาการ (ระบุหน่วยงาน และวัตถุประสงค์).....

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ประสานภาคธุรกิจ (ระบุหน่วยงาน และวัตถุประสงค์).....

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2.5 การจัดการความขัดแย้ง

1. ในการจัดการทรัพยากรชายฝั่งมีความขัดแย้งในกรณีต่อไปนี้เกิดขึ้นหรือไม่ ความขัดแย้งนี้
 เครือข่ายจัดการอย่างไร ผลเป็นอย่างไร (ถ้ามีตอบได้มากกว่า 1 ข้อ)

ไม่เคยมีข้อขัดแย้ง

มีความขัดแย้งที่เกิดจากคนในชุมชนเดียวกัน (ได้แก่ บางคนที่ใช้เครื่องมือประมงที่ผิด
 กฎหมายหรือผิดกติกาของชุมชน หรือบางคนลักลอบตัดไม้ในป่าชายเลน)

1) วิธีการจัดการความขัดแย้ง (ระบุ).....

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2) ผลการจัดการ

ไม่มีข้อขัดแย้งแล้ว

ข้อขัดแย้งยังคงอยู่ แต่เมื่อเวลาผ่านไปข้อขัดแย้งเบาบางลง

ข้อขัดแย้งหายไปแล้วกลับมาอีก

ข้อขัดแย้งยังคงอยู่

มีความขัดแย้งที่เกิดจากชาวบ้านในหมู่บ้านอื่นเข้ามาทำประมงด้วยเครื่องมือประมงที่ผิด
 กฎหมายหรือผิดกติกาของชุมชน หรือเข้ามาลักลอบตัดไม้ในป่าชายเลน

1) วิธีการจัดการความขัดแย้ง (ระบุ).....

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2) ผลการจัดการ

ไม่มีข้อขัดแย้งแล้ว

ข้อขัดแย้งยังคงอยู่ แต่เมื่อเวลาผ่านไปข้อขัดแย้งเบาบางลง

ข้อขัดแย้งหายไปแล้วกลับมาอีก

ข้อขัดแย้งยังคงอยู่

- มีความขัดแย้งที่เกิดจากนายทุน (ได้แก่ เรืออวนรุน อวนลาก เรือปั่นไฟปลากะตัก
เข้ามาในเขต 3,000 เมตร หรือนายทุนบุกรุกพื้นที่ป่าชายเลน ป่าต้นน้ำของ
ชุมชน)

1) วิธีการจัดการความขัดแย้ง (ระบุ).....

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2) ผลการจัดการ

- ไม่มีข้อขัดแย้งแล้ว
- ข้อขัดแย้งยังคงอยู่ แต่เมื่อเวลาผ่านไปข้อขัดแย้งเบาบางลง
- ข้อขัดแย้งหายไปแล้วกลับมาอีก
- ข้อขัดแย้งยังคงอยู่

- มีความขัดแย้งที่เกิดจากภาครัฐ (ได้แก่ เจ้าหน้าที่ละเว้นการปฏิบัติหน้าที่ไม่ออกจับอวนลาก
ที่เข้ามา หรือเจ้าหน้าที่บางคนไม่ค่อยโปร่งใส ข้าราชการ จับเรือของนายทุนแล้วปล่อย
หรือเจ้าหน้าที่ใช้ช่องโหว่ทางกฎหมายเพื่อเอื้อประโยชน์ต่ออวนลาก อวนรุนที่กระทำ
ผิด)

1) วิธีการจัดการความขัดแย้ง (ระบุ).....

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2) ผลการจัดการ

- ไม่มีข้อขัดแย้งแล้ว
- ข้อขัดแย้งยังคงอยู่ แต่เมื่อเวลาผ่านไปข้อขัดแย้งเบาบางลง
- ข้อขัดแย้งหายไปแล้วกลับมาอีก
- ข้อขัดแย้งยังคงอยู่

2.6 การต่อรอง

1. ในการจัดการทรัพยากรชายฝั่งหรือชายฝั่งมีการต่อรองกับภาคส่วนต่างๆ หรือไม่ ต่อรองเรื่องอะไร (ถ้ามีตอบได้มากกว่า 1 ข้อ)

- ไม่มีการต่อรอง
- มีการต่อรองกันภายในเรือข่ายและระหว่างเรือข่าย (ได้แก่ ต่อรองเรื่องเครื่องมือประมง ขนาดตาอวน การแบ่งเขตการทำประมง การรื้อถอนหลัก หอยกับการปรับเปลี่ยนอาชีพ เป็นต้น)
 - 1) วิธีการต่อรอง (ระบุ).....
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 - 2) ผลการต่อรอง
 - ไม่บรรลุข้อตกลง บรรลุข้อตกลงบางส่วน บรรลุข้อตกลงทั้งหมด
- มีการต่อรองระหว่างเรือข่ายกับภาครัฐ (ได้แก่ การต่อรองเรื่องเครื่องมื่อประมง เรื่องการขยายเขต)
 - 1) วิธีการต่อรอง (ระบุ).....
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 - 2) ผลการต่อรอง
 - ไม่บรรลุข้อตกลง บรรลุข้อตกลงบางส่วน บรรลุข้อตกลงทั้งหมด
- มีการต่อรองระหว่างเรือข่ายกับนายทุน (ได้แก่ ต่อรองเรื่องอวนลาก อวนรุน เรือคราดหอย เรือปั่นไฟปลากะตัก ที่เข้ามาในเขต 3,000 เมตร ต่อรองเรื่องการขยายเขต)
 - 1) วิธีการต่อรอง (ระบุ).....
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 - 2) ผลการต่อรอง
 - ไม่บรรลุข้อตกลง บรรลุข้อตกลงบางส่วน บรรลุข้อตกลงทั้งหมด

2.7 การรู้ทันสถานการณ์ภายนอก

1. มีนโยบายหรือโครงการพัฒนาของรัฐ โครงการใดบ้าง ที่ส่งผลกระทบต่อชาวประมงพื้นบ้าน หรือต่อทรัพยากรชายฝั่ง โดยนโยบายหรือโครงการดังกล่าวมีข้อดีข้อเสียอย่างไร

ไม่มีนโยบายหรือโครงการใดส่งผลกระทบ

มีนโยบายหรือโครงการที่ส่งผลกระทบ (ตอบได้มากกว่า 1 ประเด็น)

1) นโยบายหรือโครงการ (ระบุ).....

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ข้อดี.....

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ข้อเสีย.....

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2) นโยบายหรือโครงการ (ระบุ).....

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ข้อดี.....

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ข้อเสีย.....

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3) นโยบายหรือโครงการ (ระบุ).....

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ข้อดี.....

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ข้อเสีย.....

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2.8 การเคลื่อนไหวกองกำลัง

1. เครือข่ายมีการรวมกลุ่มเพื่อเคลื่อนไหวในประเด็นที่เกี่ยวข้องกับการจัดการทรัพยากรชายฝั่งหรือไม่ (ได้แก่ การรณรงค์ให้เลิกเครื่องมืออวนลาก อวนรุน การเคลื่อนไหวเรื่องเรือปั่นไฟปลากะตัก การขยายเขต การสร้างท่าเทียบเรือมาริน่า นายทุนบุกรุกป่าชายเลน สัมปทานพื้นที่เพาะเลี้ยงสัตว์น้ำ เป็นต้น) การเคลื่อนไหวนั้นเครือข่ายใดเป็นแกนหลัก และผลเป็นอย่างไร (ถ้ามีตอบได้มากกว่า 1 ประเด็น)

- ไม่มีการเคลื่อนไหวเลย
- มีการเคลื่อนไหว โดยเคลื่อนไหวร่วมทุกพื้นที่ (ระบุประเด็น และวิธีการ).....

ผลการเคลื่อนไหว ไม่สำเร็จ มีผลคืบหน้าบางส่วน บรรลุผลแล้ว

- มีการเคลื่อนไหว โดยตัวเครือข่ายเองเป็นแกนหลัก (ระบุประเด็น และวิธีการ).....

ผลการเคลื่อนไหว ไม่สำเร็จ มีผลคืบหน้าบางส่วน บรรลุผลแล้ว

- มีการเคลื่อนไหว โดยเครือข่ายอื่นเป็นแกนหลัก (ระบุประเด็น และวิธีการ).....

ผลการเคลื่อนไหว ไม่สำเร็จ มีผลคืบหน้าบางส่วน บรรลุผลแล้ว

2.9 การจัดการความรู้

การแสวงหาความรู้

1. เครื่องข่ายเข้าถึงข้อมูลข่าวสารในการจัดการทรัพยากรชายฝั่งด้วยวิธีใด (ตอบได้มากกว่า 1 ข้อ)

- สื่อต่างๆ ได้แก่ โทรทัศน์ วิทยุ
- การพบปะกับเครือข่ายอื่น
- จาก NGOs ที่ฝังตัวอยู่ในหมู่บ้าน
- จากนักวิชาการ
- จากภาครัฐที่ประมงอำเภอแจ้งผ่านที่ประชุมผู้ใหญ่บ้าน ผ่าน อบต. หรือการปิดประกาศ หรือการเข้าร่วมเวทีต่างๆ

2. เครื่องข่ายได้รับความรู้ที่เกี่ยวข้องกับทรัพยากรชายฝั่งจากการฝึกอบรมหรือการศึกษาดูงานในพื้นที่อื่นหรือไม่

- ไม่มี
- มีการฝึกอบรมหรือดูงาน จำนวน.....ครั้งต่อปี

การสร้างความรู้

3. เครื่องข่ายมีการลงมือทำจริง หรือมีการทดลองผิดลองถูกในกิจกรรมต่างๆ จนกระทั่งได้เทคนิควิธีการที่เป็นของเครือข่ายเองหรือไม่ (ได้แก่ การทำธนาคารปู การหล่อปะการังเทียม การปลูกป่าชายเลน ปลูกหญ้าทะเล การตรวจการณ์เฝ้าระวังชายฝั่ง เป็นต้น)

- ไม่มี
- มี (ระบุกิจกรรมและวิธีการที่ใช้).....

4. เครื่องข่ายมีชุดความรู้ที่เป็นของเครือข่ายเองที่ได้จากการวิจัย โดยมีนักวิชาการ หรือสกว. หรือ NGOs เป็นพี่เลี้ยง หรือได้จากการเก็บรวบรวมข้อมูล หรือการสำรวจหรือไม่

- ไม่มี
- มีการทำวิจัย หรือเก็บรวบรวมข้อมูล หรือการสำรวจ (ระบุประเด็น และข้อค้นพบ)..

5. เทคนิคและวิธีการที่ได้จากการลองผิดลองถูก หรือผลที่ได้จากการวิจัย ได้มีการสรุปเป็นรายงานหรือไม่

- ไม่มีการสรุปเป็นรูปเล่ม
- มีเป็นข้อมูลดิบยังไม่สรุป
- สรุปเป็นแผนภูมิไว้ในแผ่นป้ายในที่ทำการ
- มีการสรุปรายงานเป็นรูปเล่ม

การแบ่งปันความรู้

6. มีการแลกเปลี่ยนเรียนรู้ของสมาชิกเครือข่ายหรือไม่ (ตอบได้มากกว่า 1 ข้อ)

- การพบปะ พูดคุยในกลุ่มเล็กๆ นั่งคุยกันร้านน้ำชา นั่งคุยกันหลังระฆังคด คุยกันในงานกินบุญ
- ผ่านการประชุม เช่น การประชุมประจำเดือน การสรุปบทเรียนสิ้นปี
- มีการแลกเปลี่ยนเรียนรู้กับเครือข่ายอื่น
- ร่วมเวทีกับภาครัฐ หรือนักวิชาการ หรือNGOs
- เครือข่ายจัดเวที เชิญภาครัฐ หรือนักวิชาการ หรือ NGOs เข้าร่วม

7. มีการเผยแพร่ชุดความรู้หรือกิจกรรมของเครือข่ายหรือไม่ (หากเผยแพร่ตอบได้มากกว่า 1 ข้อ)

- ไม่เผยแพร่
- เผยแพร่ด้วยแผ่นพับ
- เผยแพร่ในศูนย์เรียนรู้ชุมชน
- นำเสนอในเวที
- แคนนำได้รับเชิญเป็นวิทยากร
- ลงในเว็บไซต์ของ สกว.

การถ่ายทอดความรู้และการใช้ประโยชน์

8. มีการถ่ายทอดความรู้ในเรื่องวิถีประมงพื้นบ้านจากคนรุ่นอาวุโสไปยังคนรุ่นใหม่ในชุมชน โดยผ่านครอบครัว เครือญาติ เพื่อน และผู้นำทางศาสนาหรือไม่

- ไม่มีถ่ายทอด
- มีการถ่ายทอดเป็นบางเรื่อง
- มีการถ่ายทอดทุกเรื่อง

9. เครือข่ายมีการถ่ายทอดความรู้ที่เกี่ยวกับการจัดการทรัพยากรชายฝั่งไปยังเยาวชน โดยผ่านหลักสูตรท้องถิ่นหรือไม่

- ไม่มี
- มี (ระบุ).....

10. เครือข่ายนำความรู้ดั้งเดิมจากประสบการณ์ (ภูมิปัญญา) และชุดความรู้ใหม่ที่ได้จากการลองผิดลองถูกหรือข้อค้นพบจากการวิจัยของเครือข่ายมาใช้ในการจัดการทรัพยากรฝั่งหรือไม่ (ได้แก่ การปลูกป่าชายเลน หญ้าทะเล การดูแลปะการัง การทำเขตอนุรักษ์ การตรวจการณ์เฝ้าระวังชายฝั่ง เป็นต้น)

- ไม่ใช้เลย
- ใช้กับบางกิจกรรม
- ใช้กับทุกกิจกรรม

2.10 การพัฒนาคนรุ่นใหม่

1. เครือข่ายมีการพัฒนาคนรุ่นใหม่หรือไม่ด้วยวิธีการใด (คนรุ่นใหม่หมายถึง คนกลุ่มใหม่ที่ไม่ใช่คนกลุ่มเดิม ได้แก่ กลุ่มเยาวชน กลุ่มสตรี) (ถ้ามีตอบได้มากกว่า 1 ข้อ)

ไม่มี

มี (ระบุกลุ่ม).....

วิธีการพัฒนา เข้าค่าย จำนวน.....คน

เข้ารับการอบรม หรือดูงาน จำนวน.....คน

ร่วมทำกิจกรรมของเครือข่าย จำนวน.....คน

2. เครือข่ายมีการพัฒนาแกนนำรุ่นใหม่เพื่อทดแทนแกนนำรุ่นเก่าหรือไม่ (ถ้ามีตอบได้มากกว่า 1 ข้อ)

ไม่มี

มี (ระบุ).....

วิธีการพัฒนา เข้ารับการอบรม หรือดูงาน จำนวน.....คน

เข้าร่วมประชุม จำนวน.....คน

ประสานหรือเข้าพบส่วนราชการ จำนวน.....คน

มอบหมายหน้าที่ และให้ร่วมกิจกรรมของเครือข่าย

คำชี้แจง กรุณาเติมข้อความ หรือ ใส่เครื่องหมาย ✓ ลงใน หน้าข้อความที่ตรงกับความเป็นจริงมากที่สุด และกรุณาตอบให้ครบทุกข้อ

2.11 การบริหาร

การวิเคราะห์ปัญหา

1. เครือข่ายสามารถแยกแยะ จำแนก ระบุปัญหา ระบุสาเหตุของปัญหา และจัดลำดับความสำคัญของปัญหาได้หรือไม่

- ไม่ได้เลย ได้เป็นบางประเด็น ได้ทุกประเด็น

การวางแผน

2. เครือข่ายมีการวางแผนการจัดการของเครือข่ายว่าจะทำอะไร เมื่อไร อย่างไร

- ไม่มีแผนเลย มีแผนเป็นบางเรื่อง มีแผนทุกเรื่อง

3. แผนของเครือข่ายได้จากการร่วมวางแผนกับภาคส่วนใด

- ร่วมวางแผนกันเองภายในเครือข่าย
 ร่วมวางแผนกับ NGO หรือภาครัฐ
 ร่วมวางแผนกับ ภาครัฐ และ NGO

การปฏิบัติ

4. เครือข่ายได้ทำกิจกรรมตามแผนที่กำหนดไว้หรือไม่ (ได้แก่ การปลูกป่าชายเลน ปลูกหญ้าทะเล การปล่อยพันธ์สัตว์น้ำ การตรวจการณ์เฝ้าระวังชายฝั่ง การวางปะการังเทียม เป็นต้น)

- ไม่ได้ทำ ทำตามแผนเป็นบางเรื่อง ทำตามแผนทุกเรื่อง

การติดตามผล

5. เครือข่ายมีการติดตามผลโดยสังเกตดูการเปลี่ยนแปลง ปัญหาที่เกิดขึ้นเรื่องป่าชายเลน เรื่องประมง หรือไม่ (ได้แก่ จำนวนอวนรุน อวนลากที่เข้ามาในเขต 3,000 เมตร หรือชนิดและจำนวนสัตว์น้ำเพิ่มขึ้นหรือลดลง)

- ไม่มีการติดตามผล มีการติดตามผลเป็นครั้งคราว มีการติดตามผลทุกครั้ง

6. การติดตามผลข้างต้นมีการบันทึกข้อมูลหรือไม่

- ไม่บันทึกอะไรเลย ไม่มีการบันทึกแต่นำมาพูดคุยในที่ประชุม
 มีการบันทึกข้อมูลเก็บไว้ในเครือข่าย มีการบันทึกข้อมูลและรายงานผลต่อภาครัฐ

7. เครือข่ายมีการสรุปทเรียน เพื่อสะท้อนว่า ที่ผ่านมำทำอะไรกันบ้าง ล้มเหลวตรงไหน มีปัญหาอะไร ต้องการทำอะไรต่อไปในปีหน้า หรือไม่

- ไม่มีการสรุปทเรียน
- มีการสรุปทเรียนกันเองภายในเครือข่าย
- มีการสรุปทเรียนร่วมกับ NGO
- มีการสรุปทเรียนร่วมกับ นักวิชาการ
- การประชุมเครือข่ายจะเชิญภาครัฐเข้าร่วม
- การสรุปทเรียนร่วมกับ ชาวบ้าน NGOs ภาครัฐ และรายงานผลต่อผู้ว่าฯ

การปรับปรุง

8. จากการติดตามผล หรือบทเรียนจากการปฏิบัตินั้น เครือข่ายได้นำบทเรียนนั้นมาปรับปรุงแผนปรับปรุงกิจกรรม หรือปรับปรุงวิธีการทำงานหรือไม่

- ไม่มีการปรับปรุง
- มีการปรับปรุงวิธีการปฏิบัติงาน (ระบุ).....
.....
.....
- มีการปรับปรุงแผน หรือกิจกรรม (ระบุ).....
.....
.....

9. เครือข่ายสามารถบริหารเครือข่ายจนบรรลุเป้าหมายที่วางไว้หรือไม่

- ไม่บรรลุเป้าหมายเลย
- บรรลุเป้าหมายบางส่วน
- บรรลุเป้าหมายทั้งหมด

2.12 การสื่อสาร

การค้นหาเครื่องมือการสื่อสาร

1. เครื่องข่ายมีการจัดหาเครื่องมือการสื่อสารหรือมีเครื่องมือสื่อสารที่มีอยู่แล้ว เพื่อใช้ในการสื่อสารกันภายในเครือข่าย หรือภายนอกเครือข่ายหรือไม่ (กรณีที่ไม่มีการให้ไปตอบข้อ 3 กรณีที่มีตอบได้มากกว่า 1 ข้อ)

- ไม่มี มีเสียงตามสายในหมู่บ้าน มีวิทยุสื่อสาร มีฐานวิทยุสื่อสาร

ช่องทางการสื่อสารภายในเครือข่าย

2. การแจ้งข่าวสารภายในเครือข่ายได้ใช้เสียงตามสายในหมู่บ้าน หรือใช้วิทยุสื่อสารหรือไม่

- ไม่เคยทำ ทำเป็นครั้งคราว ทำเป็นประจำ

3. เครื่องข่ายจะมีการกำหนดการประชุมที่แน่นอน

- ไม่มี ประชุมเดือนละ 1 ครั้ง
 ประชุมเดือนละ 2 ครั้ง ประชุม 6 เดือนต่อครั้ง
 ประชุมปีละ 1 ครั้ง อื่นๆ (ระบุ).....

4. การประชุมของเครือข่ายจะมีภาครัฐ หรือ NGOs เข้าร่วมประชุมด้วย

- ไม่มี ร่วมประชุมเป็นบางครั้ง ร่วมประชุมทุกครั้ง

5. เครื่องข่ายมีข้อกำหนดว่าผู้ที่ไปประชุมภายนอกต้องกลับมาเล่าให้สมาชิกฟัง

- ไม่มี มีและเล่าเป็นครั้งคราว มีและเล่าทุกครั้ง

ช่องทางการสื่อสารภายนอกเครือข่าย

6. เครื่องข่ายมีการสื่อสารกับเครือข่ายอื่นในประเด็นที่เกี่ยวข้องกับการจัดการทรัพยากรชายฝั่งด้วยวิทยุสื่อสารหรือไม่

- ไม่มี ทำเป็นบางครั้ง ทำเป็นประจำ

7. เครื่องข่ายมีการแจ้งข่าวสาร หรือรายงานกับภาครัฐในประเด็นที่เกี่ยวข้องกับการจัดการทรัพยากรชายฝั่งหรือไม่

- ไม่มี ทำเป็นบางครั้ง ทำเป็นประจำ

8. เครื่องข่ายใช้วิธีการสื่อสารกับภาครัฐด้วยวิธีการใด (ตอบได้มากกว่า 1 ข้อ)

- ขอเข้าพบด้วยตนเองใช้การพูดคุย ใช้โทรศัพท์คุยโดยตรง
 ใช้วิทยุสื่อสาร คุยผ่านเจ้าหน้าที่
 ทำหนังสือ ได้แก่ แจ้งสถานีพัฒนาทรัพยากรป่าชายเลน แจ้งผ่านศูนย์ดำรงธรรม ผู้ว่าฯ
 ผ่านการร่วมเวที หรือการร่วมประชุม

2.13 การได้รับการสนับสนุนจากภาคส่วนอื่น

การสนับสนุนด้านการเสริมสร้างความมั่นใจ

1. ภาคส่วนใดที่มีการเสริมสร้างความมั่นใจให้กับเครือข่ายจนทำให้เครือข่ายเกิดความเชื่อมั่นในการจัดการทรัพยากรชายฝั่ง (ถ้ามีตอบได้มากกว่า 1 ข้อ)

- ไม่มี NGOs
 ภาครัฐ (รวมถึง อบต.) คือ..... นักวิชาการ อื่นๆ.....

การสนับสนุนด้านข้อมูลข่าวสาร

2. เครือข่ายได้รับข้อมูลข่าวสารในการจัดการทรัพยากรชายฝั่งจากภาคส่วนใด (ถ้ามีตอบได้มากกว่า 1 ข้อ)

- ไม่มี NGOs
 ภาครัฐ (รวมถึง อบต.) คือ..... นักวิชาการ อื่นๆ.....

3. ภาคส่วนใดที่ให้คำปรึกษาแก่เครือข่ายในเรื่องการจัดการทรัพยากรชายฝั่ง (ถ้ามีตอบได้มากกว่า 1 ข้อ)

- ไม่มี NGOs
 ภาครัฐ (รวมถึง อบต.) คือ..... นักวิชาการ อื่นๆ.....

4. ภาคส่วนใดที่จัดเวทีทำให้เครือข่ายได้ร่วมแลกเปลี่ยนประสบการณ์ ร่วมวิเคราะห์ปัญหา (ถ้ามีตอบได้มากกว่า 1 ข้อ)

- ไม่มี NGOs
 ภาครัฐ (รวมถึง อบต.) คือ..... นักวิชาการ อื่นๆ.....

5. ภาคส่วนใดที่สนับสนุนให้เครือข่ายไปศึกษาดูงานและแลกเปลี่ยนประสบการณ์กับเครือข่ายอื่น (ถ้ามีตอบได้มากกว่า 1 ข้อ)

- ไม่มี NGOs
 ภาครัฐ (รวมถึง อบต.) คือ..... นักวิชาการ อื่นๆ.....

การสนับสนุนด้านเอกสาร

6. ภาคส่วนใดที่ช่วยงานด้านเอกสารของเครือข่าย ได้แก่ ร่างหนังสือ/จดหมาย ทำบันทึกการประชุม

- ไม่มี NGOs
 ภาครัฐ เครือข่ายทำเอง

การสนับสนุนด้านงบประมาณและเครื่องมือ

7. ภาคส่วนใดที่สนับสนุนด้านงบประมาณให้แก่เครือข่าย (ถ้ามีตอบได้มากกว่า 1 ข้อ)

- ไม่มี
- NGOs คือ..... ภาครัฐ (รวมถึง อบต.) คือ.....
- ภาคธุรกิจ คือ..... มูลนิธิ คือ.....
- CHARM อื่นๆ.....

8. ภาคส่วนใดที่สนับสนุนด้านวัสดุอุปกรณ์ให้แก่เครือข่าย ได้แก่ เรือ วิद्यุสื่อสาร วัสดุอื่น พันธุ์ไม้ พันธุ์ปลา (ถ้ามีตอบได้มากกว่า 1 ข้อ)

- ไม่มี
- NGOs คือ..... ภาครัฐ (รวมถึง อบต.) คือ.....
- ภาคธุรกิจ คือ..... มูลนิธิ คือ.....
- CHARM อื่นๆ.....

การสนับสนุนด้านวิชาการ

9. ภาคส่วนใดที่ให้ความรู้ทางวิชาการแก่เครือข่าย (ได้แก่ ความรู้ด้านการอนุรักษ์ ด้านกฎหมาย การจัดตั้งกลุ่ม การเขียน โครงการ การใช้เครื่องมือ GPS การใช้ตารางเก็บข้อมูลในการวัดต้นไม้ในป่าชายเลน การมาเป็นวิทยากรเมื่อมีคนมาดูงานของเครือข่าย การให้แผ่นพับ เป็นต้น)

- ไม่มี NGOs
- ภาครัฐ (รวมถึง อบต.) คือ..... นักวิชาการ
- CHARM อื่นๆ.....

การสนับสนุนด้านกฎหมาย

10. เครือข่ายได้รับการช่วยเหลือจากภาครัฐ หรืออบต. ในการชี้แนวเขตป่าชายเลน หรือการประกาศแนวเขตอนุรักษ์หรือไม่ (ถ้ามีตอบได้มากกว่า 1 ข้อ)

- ไม่มี
- สถานีพัฒนาทรัพยากรป่าชายเลน ที่.....
- อบต.
- ประกาศจังหวัด ผู้ว่าฯ ลงนาม

APPENDIX B

รายนามผู้ทรงคุณวุฒิ

รายชื่อผู้เชี่ยวชาญด้านการจัดการประมงร่วม ในการสัมภาษณ์เชิงลึก

ลำดับ	รายชื่อ	ประเภท	ตำแหน่ง/หน่วยงาน
1	นางสาววันทนา เจนกิจโกศล	ภาครัฐ	นักวิชาการ กรมประมง กระทรวงเกษตรและสหกรณ์
2	นายสัญชัย ตันทวนิช	ภาครัฐ	ผู้อำนวยการฝ่ายไทย โครงการจัดการทรัพยากรชายฝั่ง
3	นายเจต พิมลจินดา	ภาครัฐ	ผู้เชี่ยวชาญด้านการจัดการทรัพยากรชายฝั่ง
4	นายสุริยะ วิฑูรย์พันธ์	ภาครัฐ	ประมงจังหวัดตรัง สำนักงานประมงจังหวัด
5	นายพีระ อ่าวสมบูรณ์	ภาครัฐ	ประมงจังหวัดพังงา สำนักงานประมงจังหวัด
6	นายนพรัตน์ กายเพชร	ภาครัฐ	นักวิชาการ กรมทรัพยากรทางทะเลและชายฝั่ง
7	นายไพฑูล แพนชัยภูมิ	ภาครัฐ	หัวหน้าศูนย์อนุรักษ์ทรัพยากรทางทะเลและชายฝั่ง ที่ 5 (ภูเก็ต) กรมทรัพยากรทางทะเลและชายฝั่ง
8	นายสุพัฒน์ บุษบงก์ไพฑูรย์	ภาครัฐ	หัวหน้าสถานีพัฒนาทรัพยากรป่าชายเลนที่ 31 กรมทรัพยากรทางทะเลและชายฝั่ง
9	นายมนตรี เบ็ญอ้าหมาด	อบต.	นายก อบต. พรุโน
10	นายธรรมรักษ์ เขบาท	อบต.	นายก อบต. บ่อหิน
11	นายจรงค์ ใจสมุทร	อบต.	รองนายก อบต. ท่าข้าม
12	รศ. บำเพ็ญ เขียวหวาน	นักวิชาการ	สาขาวิชาส่งเสริมการเกษตรและสหกรณ์ มหาวิทยาลัยสุโขทัยธรรมมาธิราช
13	รศ. ดร.สุวลักษณ์ สาธมนัสพันธ์	นักวิชาการ	คณะสิ่งแวดล้อมและทรัพยากรศาสตร์ มหาวิทยาลัยมหิดล
14	รศ. แสงเทียน อัจจิมางกูร	นักวิชาการ	ผู้เชี่ยวชาญศูนย์พัฒนาชายฝั่ง มหาวิทยาลัยเกษตรศาสตร์

รายชื่อผู้เชี่ยวชาญด้านการจัดการประมงร่วม ในการสัมมนาเชิงลึก (ต่อ)

ลำดับ	รายชื่อ	ประเภท	ตำแหน่ง/หน่วยงาน
15	ผศ. ปิยะ กิจถาวร	นักวิชาการ	คณบดีคณะรัฐศาสตร์ มหาวิทยาลัยสงขลานครินทร์ วิทยาเขตปัตตานี
16	ผศ. อภิรักษ์ สงรักษ์	นักวิชาการ	คณะวิทยาศาสตร์และเทคโนโลยีการประมง มหาวิทยาลัยเทคโนโลยีราชมงคลศรีวิชัย
17	ผศ.จารุณี เชี่ยวชาญวาริสังจะ	นักวิชาการ	ภาควิชาวาริชศาสตร์ คณะทรัพยากรธรรมชาติ มหาวิทยาลัยสงขลานครินทร์ วิทยาเขตหาดใหญ่
18	นายสะมาแอ เจ๊ะมูดอ		แกนนำเครือข่าย
19	นายหลงเฟียะ บางลัก		แกนนำเครือข่าย
20	นายเกษม บุญญา และนายสมปอง ศรีใหม่พัทลุง		แกนนำเครือข่าย
21	นายอคุลย์ จิวตัน และนายสุเมธ นิลเลิศ		แกนนำเครือข่าย
22	นายยะเหล เหล่หมุด		แกนนำเครือข่าย
23	นายอิสมาแอน เบ็ญสะอาด		แกนนำเครือข่าย
24	นายเปลื้อง โต๊ะหะ		แกนนำเครือข่าย
25	นายปราโมทย์ มีลือ และนาย ยุทธิชัย กิจปกรณ์สันติ		แกนนำเครือข่าย
26	นายชยุต ประสานการ		แกนนำเครือข่าย
27	นายสมาน ทันยุกัก		แกนนำเครือข่าย
28	นายคำเริง ราเขต		แกนนำเครือข่าย
29	นายชำนาญ ราเขต และนายฮาโหรน ช่างเหล็ก		แกนนำเครือข่าย
30	นายเกษม หยั่งทะเล และนายกันยา มาตรศรี		แกนนำเครือข่าย
31	นายประชา คาวิจิตร		แกนนำเครือข่าย
32	นายบัณฑิต หลีบำรุง		แกนนำเครือข่าย
33	นายศุภศักดิ์ โภคบุตร		แกนนำเครือข่าย

รายชื่อผู้เชี่ยวชาญด้านการจัดการประมงร่วม ในการสัมภาษณ์เชิงลึก (ต่อ)

ลำดับ	รายชื่อ	ประเภท	ที่อยู่
34	นายภาคภูมิ วิชานติวัฒน์	NGOs	เครือข่ายความร่วมมือฟื้นฟูชุมชนชายฝั่ง อันดามัน (SAN)
35	นายธนู แนนเนียน	NGOs	โครงการความร่วมมือเพื่อการฟื้นฟู ทรัพยากรธรรมชาติอันดามัน (ARR)
36	นายพิศิษฐ์ ชาญเสนาะ	NGOs	สมาคมหยาดฝน
37	นายบรรจง นะแส	NGOs	สมาคมรักษ์ทะเลไทย
38	นายสมบุญ กิ่งเกาะยาว	ธุรกิจ	แพบ้านฉางกลาง อำเภอสิเกา จังหวัดตรัง

รายชื่อผู้เชี่ยวชาญในการจัดการประมงร่วมในการประชุมกลุ่มย่อย จังหวัดพังงาอันดามันตอนล่าง
วันอังคาร ที่ 21 กรกฎาคม 2552 เวลา 10.00-15.00 น.

ลำดับ	ชื่อ-สกุล	เครือข่าย/หน่วยงาน
1	นายเปลื้อง โต๊ะหะ	แกนนำชาวประมงพื้นบ้าน
2	นายสมปอง ศรีโหมพัทลุง	แกนนำชาวประมงพื้นบ้าน
3	นายหลงเฟียะ บางสัก	แกนนำชาวประมงพื้นบ้าน
4	นายปรีชา เมืองทวี	แกนนำชาวประมงพื้นบ้าน
5	นายอิสมาแอณ เบ็ญสะอาด	แกนนำชาวประมงพื้นบ้าน
6	นายอะเหรีน พระคง	ชมรมชาวประมงพื้นบ้านตรัง
7	นายบรรจง นฤพรเมธี	กลุ่มวิสาหกิจชุมชนเพาะเลี้ยงปลาในกระชังบ้านพรุจูด
8	นายเกษม บุญญา	ผู้ใหญ่บ้าน หมู่ 9 บ้านปากคลอง
9	นายเชล ทะเลลึก	ผู้ใหญ่บ้าน หมู่ 3 บ้านมดตะนอย
10	นายสมหมาย หมาดทิง	กำนันตำบลเขาไม้แก้ว อำเภอสิเกา จังหวัดตรัง
11	นายธรรมฤทธิ์ เขบาท	นายก อบต. บ่อหิน
12	นายบุญศรี พรเดชนันต์	ประมงอำเภอกันตัง

รายชื่อผู้เชี่ยวชาญในการจัดการประชุมร่วมในการประชุมกลุ่มย่อย จังหวัดฝั่งอันดามันตอนล่าง (ต่อ)

ลำดับ	ชื่อ-สกุล	เครือข่าย/หน่วยงาน
13	นายธีรภัทร สุภศิริพงษ์	ศูนย์อนุรักษ์ทรัพยากรทางทะเลและชายฝั่งที่ 6 (สตูล) กรมทรัพยากรทางทะเลและชายฝั่ง
14	นายชัยวัฒน์ เอียดเฉลิม	ศูนย์อนุรักษ์ทรัพยากรทางทะเลและชายฝั่งที่ 6 (สตูล) กรมทรัพยากรทางทะเลและชายฝั่ง
15	นางสาวศิริวรรณ นาคมุง	สมาคมหยาดฝน
16	นางสาวจรัญญา ชัมโร	สมาคมหยาดฝน
17	นายศรธรรม แก้วตาทิพย์	สมาคมหยาดฝน
18	นางสาวอาจารย์ ฉัตรมณี	สมาคมหยาดฝน
19	Miss Agnes Vildebrandt	สมาคมหยาดฝน (อาสาสมัครชาวฝรั่งเศส)
20	นายสมบุญ คำแหง	มูลนิธิอันดามัน
21	นายพนรินทร์ สุบินรัตน์	มูลนิธิอันดามัน
22	ศส. อภิรักษ์ สงรักษ์	มหาวิทยาลัยเทคโนโลยีราชมงคลศรีวิชัย วิทยาเขตตรัง
23	นายสมบุญ กิ่งเกาะยาว	แพในชุมชน
24	นางสาวสุนีย์รัตน์ ศิริรักษ์	นักศึกษา มหาวิทยาลัยทักษิณ
25	นายกฤษณ์ จลิกโท	นักศึกษา มหาวิทยาลัยทักษิณ
26	นายวราวุธ มูละ	นักศึกษา มหาวิทยาลัยทักษิณ
27	นางสาวรัตนภรณ์ ฤทธิพิรด	ผู้ช่วยนักวิจัย มหาวิทยาลัยเทคโนโลยีราชมงคลศรีวิชัย
28	นางสาวดวงกมล อาจเอี่ยม	นักศึกษา มหาวิทยาลัยเทคโนโลยีราชมงคลศรีวิชัย
29	นางสาวศรียา ฟุ้งเฟื่อง	นักศึกษา มหาวิทยาลัยเทคโนโลยีราชมงคลศรีวิชัย
30	นายยอดมนู แซ่ลิ่ม	นักศึกษา มหาวิทยาลัยเทคโนโลยีราชมงคลศรีวิชัย
31	นายศักดิ์วุธ เชาว์เจริญ	นักศึกษา มหาวิทยาลัยเทคโนโลยีราชมงคลศรีวิชัย

รายชื่อผู้เชี่ยวชาญในการจัดการประชุมร่วมในการประชุมกลุ่มย่อย จังหวัดฝั่งอันดามันตอนบน
วันจันทร์ ที่ 27 กรกฎาคม 2552 เวลา 10.00-15.00 น.

ลำดับ	ชื่อ-สกุล	เครือข่าย/หน่วยงาน
1	นายเกษม หยังทะเล	แกนนำชาวประมงพื้นบ้าน
2	นายต่อเหลบ สีหมอก	แกนนำชาวประมงพื้นบ้าน
3	นางศิริพร วิจิตรนาวิ	แกนนำ
4	นางสำหยา ช่วยการกล้า	แกนนำ
5	นายสำเร็จ ราเขต	ชมรมชาวประมงพื้นบ้านพังงา
6	นายธนู แนนเนียน	โครงการความร่วมมือเพื่อการฟื้นฟู ทรัพยากรธรรมชาติอันดามัน (ARR)
7	นายศรช ชาติวัลย์	ประมงอำเภอเกาะยาว
8	นายไพฑูรย์ แพนชัยภูมิ	ผู้อำนวยการศูนย์อนุรักษ์ทรัพยากรทางทะเล และชายฝั่งที่ 5 (ภูเก็ต)
9	นายประจวบ โมฆรัตน์	ศูนย์อนุรักษ์ทรัพยากรทางทะเลและชายฝั่งที่ 5
10	นางสาววัลลภา เกื้อด้วง	ศูนย์อนุรักษ์ทรัพยากรทางทะเลและชายฝั่งที่ 5
11	นางภัณฑรักษ์ บัวแก้ว	ศูนย์อนุรักษ์ทรัพยากรทางทะเลและชายฝั่งที่ 5
12	ดร. ประเสริฐ ทองหนู้ย	มหาวิทยาลัยเทคโนโลยีราชมงคลศรีวิชัย วิทยาเขตตรัง
13	นายสุพจน์ เพ็ชชะวา	แพในชุมชน

BIOGRAPHY

NAME	Natthita Rojchanapasart
DATE OF BIRTH	March 20,1956
PLACE OF BIRTH	Pattani Province, Thailand
INSTITUTE ATTENDED	Institute of Technology and Vocational Education, 1982 Bachelor of Arts (Business Education-Accounting) Chulalongkorn University, 1993 Master of Science (Statistics) Mahidol University, 2010 Doctor of Philosophy (Population Education)
POSITION &OFFICE	Assistance Professor Department of General Education Faculty of Science and Fisheries Technology, Rajamangala University of Technology Srivijaya, Trang 92150 Thailand.