



Development of Coastal Resources Restoration Plan for the Koh Sukorn Area, Trang Province through Community Participation

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Abstract

The objective of this study was to formulate a coastal resources restoration plan for the Koh Sukorn area. Stakeholders comprised of three sectors: 1) community sector including community leaders, community organization (resource conservation groups, occupation groups, female groups, elderly groups, saving groups) and religion leaders, 2) public sector including local administration, Sub-district Administrative Organization, school, and sub-district health promoting hospital, and 3) private sector including aquatic local middle traders, shop, and homestay business. Participatory Action Research (PAR) was used in this study by conducting with participatory process of all sectors in the Koh Sukorn sub-district through three forums. In Forum I, status of problems, community needs and community potential were analyzed by using need assessment together with sustainable livelihood technique and SWOT analysis, respectively. In Forum II, details of coastal resources restoration plan in the Koh Sukorn area were prepared and the coastal resources restoration plan was examined in Forum III. From the aforementioned participatory process, the resulting coastal resources restoration plan in Koh Sukorn area consisted of 5 work plans: 1) infrastructure development, 2) increase of coastal resources value and community economy, 3) knowledge management, 4) coastal resources and environmental management, and 5) promotion of social capital. Each work plan contained 5, 5, 1, 6, and 2 projects, respectively. The plan was submitted to the Koh Sukorn sub-district Administrative Organization which would be the main agency in driving the plan to implementation. The important issues of this coastal resources restoration plan will be added into the main Koh Sukorn local development plan when the community forums organized for plan revision in the future.

Keywords: Plan Development, Restoration, Coastal Resource, Trang Province

Introduction

Deteriorated and misused of natural resources and environment have been important problems in Thailand. A large number of natural resources has been utilized for development and this has caused continuous degeneration of natural resources. There have been utilization conflicts between the public sector and people, and between people from different groups. Moreover, the country's management of resources and environment has been centralized with a lack of connection with the areas. This has led to various problems such as reduced forest areas, degenerated soil resources that have threatened biodiversity, and destroyed coastal ecosystems. The 12th National Economic and Social Development Plan 2017–2021 specified the fourth strategy on green growth for sustainable development. The goals were to protect and rehabilitate natural resources, increase forest areas for conserving the economy of the forests and mangrove forests, reduce the loss of biodiversity, resolve the problem of the state's land invasion, and provide arable land to the poor by providing joint rights (Office of the National Economic and Social Development Council, 2016, pp. 11–12, 107).

Trang province has a marine coast that covers a coastal area in four districts—Sikao, Kantang, Palian, and Had Sumran—which consist of 45 coastal villages in 15 sub-districts. Moreover, it has an abundance of marine and coastal resources such as the largest sea grass area in Thailand at 53.76 square kilometers, a mangrove forest area



of 240 square kilometers, and rare resources such as dugong. Trang was the first province that had developed marine management by coastal community participation in the form of a marine and coastal resource management committee of Trang province in 2007. In addition, the 2015 Marine and Coastal Resources Management Promotion Act of the Department of Marine and Coastal Resources (2015) is a major instrument in managing marine and coastal resources. It requires the community owners of the resources to participate in defining directions and policy. Trang was the first province to create a marine and coastal resources management plan in 2016, which consists of the following: 5 strategies: 1) conserving and rehabilitating marine and coastal resources, 2) enhancing the strength of network partners' potentials, 3) creating a knowledge management system, 4) promoting the participation of network partners, and 5) promoting green businesses (Songrak et al., 2017, p. 1, 96).

Koh Sukorn is in Palian district, governed by a Sub-district Administrative Organization (SAO) located on an island that consists of four villages. The strength of the area is the diversity of coastal resources such as mangrove resources, seagrass, coral reefs, beaches, and various kinds of aquatic animals. The conservation activities are participated by folk philosophers in various field as well as the volunteer of local leaders and members of the villages. However, the coastal resources mentioned above have begun to degrade due to prolonged exploitation (Songrak et al., 2017, pp. 145–148). Hence, early resources restoration that emphasizes the participation of stakeholders in the area is essential for accelerating action before the deterioration becomes too difficult to correct. Therefore, the present action research was conducted in order to create guidelines for the restoration of Koh Sukorn's coastal resources, based on the strength of local participation and cooperation, in order to initiate conservation that will lead to sustainable utilization of the coastal resources.

Objective

The objective is to prepare a coastal resources restoration plan for Koh Sukorn area through community participation.

Research Methodology

Area of Study

The study areas include four villages of the Koh Sukorn sub-district: Ban Siem Mai, Ban Laem, Ban Thung, and Ban Had Sai Thong.

Stakeholders

The stakeholders in Koh Sukorn sub-district consist of three sectors: 1) communities, such as community leaders, community organizations (resource conservation groups, occupation groups, female groups, elderly groups, saving groups), and religious leaders, 2) the public sector, such as the local administration, the Sub-district Administration Organization, and Koh Sukorn Health Promoting Hospital, and 3) the private sector (local middle traders, shops, and home stay owners). The snowball technique was used to search for leaders of various sectors to prepare a list of stakeholders. The number of stakeholders participating in the forums on coastal resource plans for the Koh Sukorn area are 111, 73, and 46 persons, respectively as in Table 1.

Table 1 Number of Stakeholders Participating in the Coastal Resources Restoration Plan for Koh Sukorn Area

Items	Number of People Attending the Forum					
	Forum I		Forum II		Forum III	
	No. of People	%	No. of People	%	No. of People	%
Community	69	62.16	45	61.64	30	65.22
Community Members	67		42		27	
Religion Leaders	0		1		0	
Council of Community Organizations	2		2		3	
Public Sector	16	14.41	11	15.07	6	13.04
Sub-district Administration Organization	5		4		3	
Local Administration	8		5		2	
Koh Sukorn Health Promoting Hospital	1		1		1	
School	2		1		0	
Private Sector	4	3.60	6	8.22	0	0
Aquatic Animal Shop	2		2		0	
Shop	0		2		0	
Homestay	2		2		0	
Lecturers	8	7.21	6	8.22	6	13.04
Independent Academic	0		1		1	
SAN Officers	3		0		0	
Research Assistants	5		5		5	
Forum Participants	10	9.01	1	1.37	1	2.17
Academics	5		0		0	
A Publicist	1		1		1	
Students	4		0		0	
Researchers	4	3.60	4	5.48	3	6.52
Total	111	100.00	73	100.00	46	100.00

Steps of Study

Participatory action research (PAR) was used in this study in three steps, as follows:

Step I: Community Preparation

1.1 Explaining the Research Project to the Sub-district Administration Organization

The research plan leader and the researchers went to Koh Sukorn to meet and explain the overall features of the research project to the president of the Koh Sukorn sub-district Administration Organization, the working team, and community leaders.

1.2 Examining Community Needs

After the briefing on the research project, the researchers had a sub-group meeting with selected community leaders from four villages, 2 to 3 persons each, in order to explain the research objective and research method with an emphasis on the forums of stakeholder participation. In addition, the researchers inquired community leaders about their interest in jointly restoring coastal resources in the Koh Sukorn area, in which they responded to attend in the project.



1.3 Recruiting Project Participants through Community Leaders

The community leaders recruited community members to join this research project for 30 persons per village, for a total of 120 persons.

1.4 Selecting Villagers of the Target Group

From a list of 120 applicants to join the project, however, in order to include stakeholders from all sectors, the researchers also made additional specific contacts with 10 more people to participate in the project; hence, a total of 130 people.

1.5 Analyzing the Proportion of Stakeholders

The stakeholders in the Koh Sukorn area consisted of three sectors: 1) the community, 2) the public sector, and 3) the private business sector. The community sector accounted for the highest proportion at 79.38 percent, followed by the public sector and private business sector at 13.13 and 7.50 percent, respectively. Among the community sectors, community organizations accounted for the highest proportion at 61.25 percent, comprising the occupation group and the resource and environment conservation group at 21.25 and 16.88 percent, respectively.

Step II: Plan Formulation

The formulation of the plan focuses on the following three stakeholder forums.

Forum I: Analyzing the Situation and Community Potential

1.1 In Table 1, a total of 89 stakeholders from four villages were divided into four operation groups (separated by village), with four to five assigned researchers and a team per group as facilitators to organize the learning within each group. They brainstormed about problem situations and community needs in various issues according to the sustainable livelihood framework, which consisted of human capital, social capital, natural capital, economic capital, cultural capital, and physical capital, by utilizing the needs assessment technique. Moreover, a SWOT analysis was also used to analyze the community's potential in terms of strengths, weaknesses, opportunities, and threats. Word cards were used to elicit opinions from all stakeholders.

1.2 The researchers analyzed data from each community about the problem situations, community needs, community potential and synthesized data from 4 villages into Koh Sukorn sub-district data.

1.3 The researchers met to draft the plan by examining the strategic plans of the Sub-district Administration Organization and Trang province, including the projects related to the conservation of coastal resources. This and data from Forum I were jointly considered to draft the coastal resources restoration plan for Koh Sukorn (Draft 1).

Forum II: Examining the Community Situation and Creating the Details of the Plan

1.1 The researchers returned the Forum I data on the problem situations, the community needs, and community potentials, as well as examined the vision and mission of the plan.

1.2 The stakeholders were divided into four groups (separated by villages) in order to brainstorm about various issues, such as the priority of work plans and projects, setting a time frame for action (short-term, medium-term, long-term), responsible persons, goals, key success indicators, and a guideline for putting the plan into action.

1.3 The researchers met to synthesize the data from the four villages into data of Koh Sukorn sub-district. The results became Draft II of coastal resources restoration plan for Koh Sukorn sub-district in 2023–2027.

Forum III: Returning Data to Communities and Verifying the Plan

1.1 The researchers gave back the data from Forum II in various forms, including vision, goal, mission, the priority of work plans, projects (activities, time frame, responsible persons, goals, indicators), and a guideline for putting the plan into action.

1.2 The stakeholders jointly verified the plan and gave suggestions for improving the details of the plan.

1.3 The researchers adjusted the plan as suggested by the community. The results were the coastal resources restoration plan for Koh Sukorn area 2023–2027 and a guideline for putting the plan into action.

Step III: Plan Utilization

The researchers submitted the coastal resources restoration plan for the Koh Sukorn area 2023–2027 to the Sub-district Administrative Organization for utilization. The information or projects in this plan could be added into the main Koh Sukorn local development plan when the community forums are organized for plan revision in the future.

Results

The coastal resources restoration plan for the Koh Sukorn area consists of visions, goals, shared values, work plans, and projects as follows.

Vision

Koh Sukorn has a stable foundation economy, self-reliant communities, and sustainable coastal resources.

Goal

The management of coastal resources is efficient for strengthening the community's society and economy.

Mission

1. To promote the strong potential of social capital.
2. To manage coastal resources efficiently.
3. To increase community economy value.

Community Shared Values

1. Participation.
2. Upholding community rules.
3. Public consciousness.

Plans/Projects

The coastal resources restoration plan for the Koh Sukorn area consists of five work plans with 19 projects, as in Table 2.

Table 2 Detailed Work Plans/Projects


Work Plans/Projects	Time Frame			Personnel	Outcomes	Indicators
	Short-term (2023-2024)	Medium-term (2025-2026)	Long-term (2027)			
Work Plan 1: Infrastructure Development (5 Projects)						
Project 1.1 Development of Water Supply Infrastructure				- Sub-district Administrative Organization (SAO)	- Adequate access to clean water	Quality and adequacy
				- Provincial Waterworks Authority	- One more reservoir	of water supplies
				- Royal Irrigation Department		
				- Department of Water Resources		



Table 2 (Cont.)

Work Plans/Projects	Time Frame			Personnel	Outcomes	Indicators
	Short-term (2023-2024)	Medium-term (2025-2026)	Long-term (2027)			
Project 1.2 Development of Infrastructure for Coastal Erosion Protection				- Communities - Division of Provincial Affairs - Sub-district Administrative Organization (SAO) - District Office - Provincial Administrative Organization - Provincial Office of Public Works and Town & Country Planning - Marine Department - Department of Marine and Coastal Resources - Educational Institutions	- Annual maintenance of breakwaters - Building more breakwaters	Decrease in the number of erosion
Project 1.3 Development of Water Transportation Infrastructure				- Sub-district Administrative Organization (SAO) - District Office - Provincial Administrative Organisation - Marine Department	- Annual maintenance of ports - Building 4 safe pontoons - A rescue boat in every port	- Decrease in the number of water related accidents - Passenger satisfaction
Project 1.4 Development of Telecommunications Infrastructure				- State-owned/Private Telecommunications Networks, i.e. TOT, CAT, DTAC - Sub-district Administrative Organization (SAO) - Provincial Electricity Authority	Mobile network/Internet stability and coverage in every area	User satisfaction
Project 1.5 Development of Energy Infrastructure				- Provincial Electricity Authority - Sub-district Administrative Organization (SAO) - Provincial Energy Office - Educational Institutions	- Adequacy of electrical energy for households and agriculture - Street lights in every village around the island - 5% increase per year in the number of households using renewable energy	- Decrease in the number of crime risk areas - Lower expenses/electricity bill



Table 2 (Cont.)

Work Plans/Projects	Time Frame			Personnel	Outcomes	Indicators
	Short-term (2023-2024)	Medium-term (2025-2026)	Long-term (2027)			
Work Plan 2: Value Added of Coastal Resources and Community Economy (5 Projects)						
Project 2.1 Training in Professional Skill Development to develop and add value to Koh Sukon's local products				<ul style="list-style-type: none">- Sub-district Administrative Organization (SAO)- Community Development Office- Provincial Skilled Labor Development Center- Educational Institutions- Office of the Non-formal and Informal Education (NFE)- District Agriculture Office- District Livestock Office- Department of Fisheries- Bank for Agriculture and Agricultural Cooperatives (BAAC)	One group-training per annum	<ul style="list-style-type: none">- Advancement of professional skills- Higher household income
Project 2.2 Management of Passenger Boat Standard				<ul style="list-style-type: none">- Passenger Boat Operators- Sub-district Administrative Organization (SAO)- Division of Provincial Affairs- Marine Department	<ul style="list-style-type: none">- Having a list of passenger boat operators- Having Safety standards- Having service standards- 50% of trained passenger boat operators- One duty officer appointed by Marine Department per port	<ul style="list-style-type: none">- Decrease in the number of water-related accidents- Passenger satisfaction
Project 2.3 Development of Community Products for an Upgrade to Community Souvenirs				<ul style="list-style-type: none">- Sub-district Administrative Organization (SAO)- Community Development Office- Provincial Skilled Labor Development Center- Educational Institutions- Provincial Commerce Office- Provincial Agriculture Office- Office of SMEs Promotion (OSMEP)	<ul style="list-style-type: none">- Upgrading one existing product per annum- Creating one new product per annum- One promotion center- Increasing various promotional channels	<ul style="list-style-type: none">- Higher household income



Table 2 (Cont.)

Work Plans/Projects	Time Frame			Personnel	Outcomes	Indicators
	Short-term (2023-2024)	Medium-term (2025-2026)	Long-term (2027)			
					(mainstream media, social media) - One community sales center with different channels to sell the products (on consignment, at the expo, online) - One entrepreneurship training per group per annum	
Project 2.4 Implementation of Agricultural Ecosystem to Generate Community Income	↔			<ul style="list-style-type: none"> - Communities - Sub-district Administrative Organization (SAO) - Division of Provincial Affairs - District/Provincial Agriculture Office - District/Provincial Livestock Office - Provincial Tourism and Sports Office - National Park - Department of Marine and Coastal Resources - Department of Fisheries - Educational Institutions - Bank for Agriculture and Agricultural Cooperatives (BAAC) 	<ul style="list-style-type: none"> - 80 participants in Developing Understanding of Agricultural Ecosystem Project per annum - A dual-route model of community-based agricultural ecosystem (sufficient agriculture tourism route and maritime tourism route) 	A model of community-based agricultural ecosystem
Project 2.5 Feasibility Study into Developing Community Sea Product Market	↔			<ul style="list-style-type: none"> - Educational Institutions 	Feasibility study report with suggestions	Feasibility study report



Table 2 (Cont.)

Work Plans/Projects	Time Frame			Personnel	Outcomes	Indicators
	Short-term (2023-2024)	Medium-term (2025-2026)	Long-term (2027)			
Work Plan 3: Community Knowledge Management (1 Project)						
Project 3.1 Community Knowledge Management of Resources, Local Occupations Culture and Wisdom	↔			<ul style="list-style-type: none">- Village Sages in Every Field- Group Leaders- Religious Leaders- Sub-district Administrative Organization (SAO)- Division of Provincial Affairs- Provincial Culture Office- Educational Institutions	<ul style="list-style-type: none">- Two sets of knowledge kits in every filed per annum (6 sets a year)- Knowledge distribution or usage of the knowledge kits	<ul style="list-style-type: none">- Number of knowledge kits- Knowledge distribution
Work Plan 4: Management of Coastal Resources and Environment (6 Projects)						
Project 4.1 Production of Koh Sukon Sub-district Coastal Resource Charter	↔			<ul style="list-style-type: none">- Communities- Public Health Volunteers- Division of Provincial Affairs- Sub-district Administrative Organization (SAO)- Schools- Sub-district Health Promotion Hospital- Private Sector (Fish Dealers)- Mangrove Forest Development Station 33- Marine Department- National Parks- Networks of National Health Commission Office (NH)	<ul style="list-style-type: none">- Having a charter of Tambon Koh Sukon Sub-district Coastal Resources	<ul style="list-style-type: none">- Enforcement of Koh Sukon Sub-district Coastal Resource Charter
Project 4.2 Community Garbage and Wastewater Disposals	↔			<ul style="list-style-type: none">- Communities- Sub-district Health Promotion Hospital- Community Organisation Council- Sub-district Administrative Organization (SAO)- Division of Provincial Affairs- Pollution Control Department- Educational Institutions- Thai Health Promotion Foundation	<ul style="list-style-type: none">- 80 participants in Garbage Management Training per annum- Assigning responsible areas- Having one incinerator and waste compaction system- 50% of households with domestic wastewater disposal	<ul style="list-style-type: none">- Increasing knowledge about garbage and wastewater management- Lower amount of garbage and wastewater







Table 2 (Cont.)

Work Plans/Projects	Time Frame			Personnel	Outcomes	Indicators
	Short-term (2023-2024)	Medium-term (2025-2026)	Long-term (2027)			
Project 4.3 Restoration of Coastal Resource Abundance				- Communities - Sub-district Administrative Organization (SAO) - Division of Provincial Affairs	- Planting 2,000 mangroves per annum - Planting 5,000 seagrasses per annum - Release of 10-million baby shrimps per annum - Release of 100-million baby crabs per annum - Release of 500,000 fishes per annum - Release of 2-million baby squids per annum - Release of 1-million shells (cockles, wing shells) per annum - Release of 100 sea cucumbers per annum - Building 3 artificial reefs/fish aggregating devices per annum	Increasing number of coastal resources
Project 4.4 Establishment of Community Resource Watch Center				- Trained Marine Specific Unit - Division of Provincial Affairs - Sub-district Administrative Organization (SAO) - Highway Patrol - Marine Fisheries Patrol Center - District/Provincial Fisheries Office	A center for Sub-district Central Administration with central, Sub-district and sub-center administration structure	A center for sub-district central administration



Table 2 (Cont.)

Work Plans/Projects	Time Frame			Personnel	Outcomes	Indicators
	Short-term (2023-2024)	Medium-term (2025-2026)	Long-term (2027)			
Project 4.5 Awareness Creation of Community Resource Conservation and Restoration				<ul style="list-style-type: none">- Communities- Entrepreneurs in the communities- Division of Provincial Affairs- Sub-district Administrative Organization (SAO)- Educational Institutions- Mangrove Forest Development Station 33	<ul style="list-style-type: none">- Biannual training, 80 participants a time- Biannually organising resource survey camp, 80 participants a time- Biannually organising a forum for discussion, 80 participants a time	<ul style="list-style-type: none">- Knowledge enhancement- Number of participants
Project 4.6 Survey and Creating a Database of Community Resources				<ul style="list-style-type: none">- Communities- Division of Provincial Affairs- Sub-district Administrative Organization (SAO)- Mangrove Forest Development Station 33	<ul style="list-style-type: none">- Conducting a community resource survey once a year- Surveying at least 5 resources a time	<ul style="list-style-type: none">- One database of at least 5 resources
Work Plan 5: Promoting Social Capital (2 Projects)						
Project 5.1 Organising Dress Right Campaign among Youths				<ul style="list-style-type: none">- Families- Communities- Educational Institutions- Religious Leaders- Sub-district Administrative Organization (SAO)- Division of Provincial Affairs	<ul style="list-style-type: none">- Organising Dress Right Campaign among the descendants once a year- 100 participants in a dress code awareness promotional campaign	<ul style="list-style-type: none">- Higher number of youths dress appropriately to local culture
Project 5.2 Developing Potentiality to Manage Groups				<ul style="list-style-type: none">- Groups and Communities- Sub-district Administrative Organization (SAO)- Community Organisation Council- Community Development Office- Agriculture Office- Educational Institutions- Private Companies- Bank for Agriculture and Agricultural Cooperatives (BAAC)	<ul style="list-style-type: none">- One annual training per group on establishment and management of groups- One annual field study per group	<ul style="list-style-type: none">- Increasing knowledge and skills- Strengths (Groups established with structure, activities, and auditable accounting system)



Conclusion

This study used the participatory action research technique with the aim to create a coastal resources restoration plan with the participation of the community in the Koh Sukon sub-district. The stakeholders consisted of communities, the public sector, and the private sector. The preparation of the plan was based on a process of three main forums resulting in the coastal resources restoration plan with five work plans and 19 projects. Koh Sukorn community has benefited a lot from the coastal resource restoration in terms of local food supply, occupation and residential stability. The community members have gained knowledge and experience in rehabilitating coastal resources in their communal area, such as mangrove forests and seagrass, and benefited from the increase of mangrove forests, seagrass, and aquatic animals. Moreover, the community members become more aware and prouder of the result of their participations in the coastal resource restoration which led to their full support of such action. As a local organization, the Koh Sukorn Sub-district Administrative Organization benefits from contributing to the integration of coastal resource restoration plan and Koh Sukorn sub-district development plan to operate and build connections between government, community, and private sectors to drive the plans. Likewise, the administrator (village and sub-district headman) and community leaders come to realize the process and tools of coastal resource restoration in Koh Sukorn area and its process in working closely and effectively with the Koh Sukon Sub-district Administrative Organization

Discussion

1. Koh Sukorn Site Planning

A “Community Plan” or “Community Development Plan” is a tool to create a learning process that enables people in the local community to know and to understand their own community. Moreover, they will also know their problems and needs, which will lead to co-thinking and co-establishment of solutions to problems, actions to solve the problems, and various developments under the existing potentials and capitals in their own local communities (Narat et al., 2016, p. 9).

The Ministry of Interior in Thailand and related agencies, including representatives from the Office of the Permanent Secretary for the Interior (Office of the Permanent Secretary, Ministry of Natural Resources and Environment, n.d.), the Department of Provincial Administration, the Department of Community Development, and the Department of Local Government promotion have planned for connection and integration in the area. This plan highlights the following: 1) community-level mechanism—the village committee must propose a village development plan to the local administration organization and conduct a public hearing for the local development plan, 2) district-level mechanism—the local administrative organization submits the development plan to the district and the district reviews the strategic development framework for their respective district, 3) provincial-level mechanism—the district submits the district development plan to the province and the province reviews the strategic development framework for their respective province/provincial cluster, and 4) a national-level mechanism—the province submits the provincial cluster/the provincial development plan to the national mechanism as policy/directions for the national/regional development plan (Narat et al., 2016, p. 36).

The coastal resources restoration plan for the Koh Sukorn area is established under the project of participatory action research for coastal resources restoration of Koh Sukorn, Trang Province towards sustainability. This plan is an area-based development plan for the Koh Sukorn area, Trang province, with diverse coastal



resources, such as mangrove forests, sea grass, beach forests and beaches, coral reefs, aquatic animals, and rare sea creatures. However, the plan also includes resources on the land, such as the agricultural ecosystem (sea buffalos, rice fields, and watermelon gardens). This is consistent with the Center for Coastal Resources Management, Virginia Institute of Marine Science (2011, p. 1), which states that coastal marine management may relate to changes in coastal and adjacent uplands. On the other hand, Gilman (2002, p. 391) indicates that an area-based development plan for a more specific type of resources refers to a management plan that could be developed for a more specific geographical area, for example, protected areas or migratory bird habitats, wetlands or coral reefs, etc. This area-based development plan for Koh Sukon would be linked and integrated with a community-level mechanism, which would be a local development plan in the future. As Narat et al. (2016, p. 36) state, there are several layers of mechanisms for the connection and integration of plans in the area at the community level, the provincial/provincial cluster level, and the national level.

2. Creating a Plan for Solving Problems

The Center for Coastal Resources Management, Virginia Institute of Marine Science (2011, p. 1) has made a plan for coastal resource management from changes that are driven by climate and development. The Environmental Law Institute (2014, p. 4) has developed a gulf resources restoration plan to compensate people for damage to natural resources incurred by oil spills. On the other hand, the Koh Sukorn coastal resources restoration plan or the Koh Sukorn area-based development plan is made primarily for coastal resource reasons; namely, conflicts from exploitation and degradation of resources, such as the use of illegal fishing gear in the area. In addition, frequent monsoon climate changes also cause coastal erosion and affect biodiversity, property, and the villagers' arable land. However, whether or not community members will participate in the conservation and restoration of coastal resources depends on well-being in economic, social, and cultural aspects. The development in three dimensions—coastal resources, economic, social and culture—will lead to the sustainability of the Koh Sukorn community.

3. Stakeholder Analysis

The stakeholders focus on local people in the community, who have different roles in the three sectors: communities, the public sector, and the private sector. The synthesis of stakeholders during the recruitment to join the research project revealed that the community that accounted for the highest proportion was at 79.38 percent, followed by the public sector and private business sector at 13.13 and 7.50 percent, respectively. Concerning the community, it was found that community organizations were the highest at 61.25 percent, with occupation groups and coastal resources and environment groups at 21.25 and 16.88 percent, respectively. As Gilman (2002, p. 382) emphasized, the direct participation of all interest groups in the earliest stage of the project would help identify the activities and project outcomes that would benefit the local community. Encouraging stakeholder support and a sense of ownership in the results of the management. This provided credibility to resultant recommendations and decisions. The identification of problems and conflicts that might arise in advance allows them to be resolved and lets managers take advantage of the knowledge and wisdom—management system.

Furthermore, Gilman (2002, p. 382) also views that an integrated management approach should be used to arrange all of the related elements (natural resources, the environmental process, human activities, socioeconomic factors, and political factors) that affect the regions or natural resources within a specific single group through collaboration of all management units and stakeholders to conserve bio-diversity and protecting the integrity of ecosystems in order to preserve the valued services and products. The principle of an integrated



management approach is that ecosystem functions, human forces, and the sustainability of human society are linked and should be a holistic management through the collaboration of all groups.

Although the researchers acted as facilitators in the planning forums of the stakeholders, they have specific specialization in assisting with plan making and driving the plan to achieve the goals. As Wates (2000, p. 20) states, there are several general principles utilized in most situations that could be guidelines for making community plans, including using experts appropriately; that is, the best results would occur if local people work closely with all experts in relevant disciplines. In addition, the use of local talent—local skills and professionalism within the community before supplementing it with outside help—will help increase capacity within the community and create long-term sustainability.

4. Plan and Implementation

The coastal resources restoration plan for the Koh Sukorn area was submitted to the Koh Sukorn Sub-district Administrative Organization which will be the main agency in implementing the plan. The important issues of this coastal resources restoration plan will be added into the main Koh Sukorn Local Development Plan when the community organize the plan revision forums in the future.

However, there are several levels of plan implementation, including obstacles to the implementation of the plan as follows.

The integrated coastal resources management plan was sent to the provincial meeting. Chotthong et al. (2014, pp. 22–23) said that development of the participatory coastal resource management plan had selected two study areas: Kapur Bay area in Kapur district, Ranong province and Koh Kor Khao in Takua Pa Sub-district, Phang Nga province. All five Sub-district Organization Administrations had met to discuss and brainstorm with government officials in agencies related to resources in a workshop on community development, direction and integrated natural resource management. The highlight of this integrated coastal resource management plan was data collection and analysis, including organization of a joint forum to acknowledge local problems and needs of various communities. A draft integrated coastal resource management plan was first presented to the committee of each community. After that, the villagers' revised drafted plan would be sent to the provincial meeting.

Moreover, the study of Carlozo (2014, p. 6) found that the Coastal and Marine Spatial Planning (CMSP) was implemented by integrating with the state and local management plan. This plan was comprehensive and covered planning, adapting, and integrating according to the ecology system and the process of transparent scientific spatial planning principles.

Wakita & Yagi (2013) mentioned that a guideline for the Integrated Coastal Management plan (ICM) in Japan was issued in 2020 to promote planning and implementation of integrated coastal management. However, until now, no local government had developed an ICM plan with this guideline because the national government has no plan to subsidize the local government after approval of the ICM plan. The districts in coastal areas that could not implement because they exceed administrative boundaries of the local governments. Important factors that hinder the plan implementation were an overlapping of a marine coastal conservation plan with ICM plan and a reduced position of the national coordinating agency.

Norton et al. (2018) evaluated local effort in marine coastal management in Great Lakes through the master plan that emphasized Michigan areas. It was found that most marine coastal areas of Michigan failed to consider coastal areas in planning or use of a plan policy in management. There were four reasons for this: 1) Damage from erosion and storms was infrequent, 2) The local areas relied on the government in managing



coastal problems, 3) Insurance programs would effectively indemnify in the event of storms, and 4) The coastal landowners resisted a proactive management in the area to some degree. Having knowledge about coastal dynamics was important to explain local planning, but the ability to act on that knowledge and the commitment to do so were far more important.

Coates & Tapsell (2019) said that the decision of spatial planning in England by considering the development of coastal area that are risky of flood or coastal erosion were mostly negotiated at the local level. Such development was discouraged, but may be permitted as long as the benefits for a wider sustainability aspect outweighs the risks. Stakeholders who represent organizations must come together to try to resolve the tension between new developments and risk reduction. Participants must navigate an evolving, complex, multiscale risk governance network to achieve an effective risk dialogue. Examination of local collaborative approaches will lead to understanding of outcomes and challenges involved. As well as providing advices to support this process.

5. Driving the Coastal Resources Restoration Plan in the Area of the Koh Sukorn into the Form of a Committee

In driving the coastal resources restoration plan for the Koh Sukorn area, the Koh Sukorn Sub-district Administrative Organization (2018) will act as the main organization to coordinate the implementation of the plan by establishing a committee or a work group with representatives from all sectors. This committee will coordinate and follow up on driving the plan into implementation in order to achieve concrete results. The guidelines for driving the plan into action are: 1) creating knowledge and understanding about the plan, 2) implementing the plan, and 3) monitoring and evaluating the plan. This is consistent with Gilman (2002, p. 383), who emphasizes that a site planning board is required to be established to represent all stakeholder groups of coastal and marine resource management in the area. This board is directly related with coordinating, planning, and all management activities. It is extremely important that all interest groups be represented on the board, including representatives of government agencies and traditional leaders involved.

Moreover, Afonso et al. (2012, p. 17) also state that the plan is a political issue. Therefore, the plan implementation is defined in the plan process. There are important dimensions regarding strategies, which are designed to achieve internal changes in terms of legal restrictions and smooth executions. Politic operations a serious exercise of power as a key element in planning.

Suggestions

1. Suggestions for Research

1.1 Formulating a development plan should take into account the local context—social, economic, and environmental. Therefore, the factors affecting the participation in the planning of each area should be studied in order to enable people to participate in the formulation of community plans more effectively.

1.2 The initial aim emphasizes plan formulation for coastal resources restoration in the Koh Sukorn area. However, the community will not be able to manage resources efficiently if there are insufficient finances and there are various social problems in the community. Therefore, preparation of the plan should look at three dimensions: resources, economic, and social, in a broader dimension. This would lead to more extensive community participation in the process. These three dimensions also would improve the quality of life of the community members, leading to sustainability.



1.3 The formulation of a plan needs to utilize knowledge in two parts: experiential knowledge, which is tacit, together with the academic knowledge of researchers in specialized fields. Therefore, there should be tools to collect data that could really access community experience and knowledge, such as community planning forums, needs assessment, SWOT analysis, post-it boards, hand-raising or sticky dot display votes, etc.

1.4 There should be a definite time frame for community planning forums that is consistent with the way of life and occupation of the community members in order to receive full cooperation from all villages in the community.

1.5 The key factors that encourage people to take part in making plans are mutual learning, local leaders, and community leaders. Therefore, there should be the development of process director skills for community leaders before entering the participatory planning process and an opportunity to join as part of a team of lecturers. This may help local leaders carry out activities in the forum more efficiently. Moreover, people that have developed such skills could also help support the establishment of a community forum if community plans will be reviewed in the future.

2. Suggestions for Creating and Utilizing a Plan

2.1 Many factors help in the effective formulation of local plans and long-term success. Seeing the importance and benefits of the participatory plan making of people in all villages is a factor that supports the success of local development that is consistent with the problem and needs of the community. Similarly, important are the vision of local leaders and the effort of the Koh Sukorn Sub-district Administrative Organization in preparing or reviewing local plans regularly. Providing equal opportunities for the stakeholders of all groups to participate in the planning, including the provision of academic assistance, information support, and the organization of creative community forums, is also a factor that will help with the effective formulation of local plans and long-term success.

2.2 There should be a joint meeting between the researcher team and the Koh Sukorn Sub-district Administrative Organization, which is the main driver of the plan, in order to submit the coastal resources restoration plan for the Koh Sukorn area. It is also important to communicate the plan to the president of the Koh Sukorn Sub-district Administrative Organization and all team members to have knowledge and understanding of the process of making plans and various details of the plan to enable them to carry out the plan more efficiently.

2.3 The Koh Sukorn Sub-district Administrative Organization should hold meetings to communicate the coastal resources restoration plan for the Koh Sukon area with the local administration (village chiefs, village headsmen) and community leaders in order to have knowledge and understanding of the details of the plan and create cooperation in driving the plan.

2.4 The Koh Sukorn Sub-district Administrative Organization should be able to utilize the information of the resources restoration plan for the Koh Sukon area by organizing a community forum to review the plan and integrate information about the coastal resources restoration plan with the Koh Sukorn sub-district development plan.

2.5 The Koh Sukorn Sub-district Administrative Organization should seek academic support, academic services, and research from educational institutes, as well as integrate cooperation with relevant agencies in order to make the plan effective.



3. Suggestions for the Community

The coastal resources restoration plan for the Koh Sukorn area was carried out using a participatory process of all parties in the Koh Sukon sub-district. In brainstorming, the forum platform was used mainly for the empowerment of the community and community learning. At some point, the needs gained from the forum, in some respects the communities can act on its own. Therefore, the community should hold meetings with representatives from all four villages to consult on the issues that the communities can resolve by themselves.

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