

ANNEX 1: Climate Risk Profile for Thailand and Project Target Areas

Location & Climate of Thailand

Thailand is located between 5°40' and 20°30' N latitudes and 97°20' and 105°45' E longitudes in South East Asia. The country borders Myanmar to the north and west, Laos to the northeast, Cambodia to the east and Malaysia to the south.

Thailand can be divided into four major natural geographic regions:

- the mountainous north
- the arid northeast, comprised mainly by the Korat Plateau
- the fertile central plains, which include the Chao Phraya River Basin, and
- the southern peninsula.



Thailand's 2,600 km coastline runs mainly along the Gulf of Thailand (1,660km), with a shorter stretch of coast along the Andaman Sea (950km) on the western side of the southern peninsula. The Gulf of Thailand is relatively shallow and has an area of 30,400km², while the Andaman Sea is much larger and deeper. There are altogether 23 provinces (including Bangkok) along the two coasts, with most bordering the Gulf of Thailand, a few along the Andaman Sea, and a few with borders along both coasts. The proposed project focuses on Thailand's narrow southern peninsula, which is flanked by the Gulf of Thailand to the east, the Andaman Sea to the west and Malaysia to the south.

Thailand's climate is classified as tropical savannah in the 'mainland' and tropical monsoon in the southern peninsula, which experiences a slightly different climate because of its geography and its close proximity to the sea. Across the country there are three main seasons; hot, wet and mild. However, the time at which these seasons occur varies slightly between mainland Thailand and peninsular Thailand (see Table1).

Mean annual temperatures range from 22 - 32°C, with the highest temperatures usually occurring in April. Average annual rainfall is 1,692mm. Compared to mainland Thailand, the south experiences fewer extremes in temperature due to its proximity to the ocean. However, peninsular Thailand is under the influence of both the northeast (December to March) and southwest monsoons (June to September) and thus receives greater rainfall on average than the mainland.

Table1 Seasons of Thailand

Location	Season	Months
Mainland Thailand	Hot	March to May
	Wet	June to October
	Mild	November to February
South (peninsula Thailand)	Hot	March to May
	Wet	May to November
	Mild	December to February

The southern peninsula receives rain three to six months of the year, with about 20 days per year of intense rainfall (i.e. over 35mm per day). There is some variation in climate between the Andaman and the Gulf of Thailand coasts, as well as between the northern and southern Andaman coasts. However, due to the close proximity of the three provinces chosen for this project, average annual rainfall is approximately 2000mm. Along the Andaman coast, rainfall is generally higher to the north compared to the south.

Thailand's Natural Disaster Risk Profile

Thailand's major natural disaster risks are summarized in Table 2 below.

Table 2 Natural disaster risk profile of Thailand

Type of Disaster	Intensity Level	Vulnerability Level	Managing competency Level	Risk Level
Tropical Cyclone	High	High	Moderate	Moderate
Flood	High	Moderate	Moderate	High
Drought	High	Moderate	Moderate	Moderate
Land Slide	Moderate	Low	Poor	Moderate
Fire	High	Moderate	Moderate	Moderate
Earthquake	Low	Low	Poor	Moderate
Agricultural Pests and Diseases	Moderate	Low	Poor	Moderate

Table modified from (Research and International Cooperation Bureau, 2006)

The Asian Disaster Preparedness Centre has identified flood, drought and tropical storms as being particularly serious (ADPC, 2007). The frequency and severity of these natural hazards over a four year period and the associated losses in terms of deaths, injuries and economic losses are detailed in Table 3. Thailand's mountainous north is especially prone to flash flooding and landslides. The northeastern Korat Plateau is also prone to flash flooding as well as freshwater inundation during the rainy season, drought and minimum temperature extremes. The central Chao Phraya River Basin experiences flooding and freshwater inundation during the rainy season. The southern peninsula, which is bisected by a

forested mountain range, is prone to mudslides and forest fires as well as tropical storms and rainfall and ocean-induced flooding in low-lying and/or coastal areas.

Table 3 Human and economic losses caused by natural disasters over a four year period (2001 - 2004)

Type of Disaster	Frequency	Injuries	Fatalities	Loss (million Thai baht ¹)
Storm	8,711	508	171	1,570.22
Flood	37	18	540	23,817.77
Drought	71	0	0	80,033.53
Total	8,819	526	711	105,421.52

Table modified from (Research and International Cooperation Bureau, 2006)

Current climate risks

Thailand has a diverse range of ecosystems and an economy that is highly reliant on primary industries, making it particularly susceptible to a wide range of climatic impacts. Currently, the most significant climate-related risks for Thailand are tropical cyclones, floods and droughts (see Table 2). According to Thailand's Initial Communication (2000) the occurrence and severity of tropical storms, floods and droughts have increased in recent decades causing loss of life, destruction of infrastructure and commodities and placing livelihoods at risk.

Tropical Storms

Between 1951 and 1991 Thailand experienced few tropical storms and cyclones, and was more commonly affected by milder tropical depressions. This has impacted communities mainly in the south and east of Thailand, which are affected by both the associated southwest and northeast monsoons. Tropical storms not only risk lives and damage infrastructure but also place increased pressure on the capacity of existing drainage systems and reservoirs to cope with the influx of water.

Floods

Floods are considered the highest disaster risk in Thailand. Despite Thailand's vulnerability to floods being categorized as moderate (see Table 2), the loss of life caused by flooding is high (see Table 3). Floods occur mainly during the southwest monsoon months of June to September (ONEP, 2009). The amount of damage caused by flood is greatest in the south, followed by the north and the northeast. The risk of flooding has been increased by widespread degradation of natural resources, industrialisation and tourism development. Land subsidence to the south of the Bangkok Metropolitan Area has exposed these areas to a greater risk of flooding.

Drought

Drought is most common in the drier agricultural areas of central and northeastern Thailand and occurs between the months of January to April. It has been reported that the incidence of drought has been

¹ US\$1= c. Thai baht 32 in April 2010

aggravated in recent years by El Nino and the El Nino Southern Oscillation (ENSO). In 2004-2005, a drought which affected 51 of Thailand's 76 provinces caused rice yields to drop by 85 percent.

Climate change risks

Climate change modelling

A number of climate change analyses for Thailand have been conducted using General Circulation Models (GCMs). The Initial National Communications (2000) uses four GCM's². While studies conducted after 2001 employ one or more of the IPCC's Special Report on Emissions Scenarios (SRES) A1B, A2 and B2³ and some also apply the Hadley Centre's PRECIS model to downscale data for regional impacts.

Projected climate change impacts

Based on these analyses the Thailand Government's National Strategy on Climate Change Management 2008 to 2012 outlines the following projected impacts of climate change on the country (ONEP 2009):

- National
 - Increased severity of flooding events due to changes in rainfall
 - Loss of ecological resources due to changes in climatic regimes and lack of environmental stewardship
 - Increased water shortages due to changes in rainfall and evaporation rates
- Predominantly Inland
 - Increased incidence and severity of drought impacting on the agricultural sector and water security
- Predominantly Coastal
 - An increase in aquatic and terrestrial pests and diseases
 - Increased severity of tropical storms
 - Increased coastal erosion caused by storms and sea level rise
 - Sea water inundation in low lying coastal areas
 - Salt water intrusion into aquifers and other freshwater resources
 - A reduction in mangrove forests due to sea level rise and its associated impacts on fish and bird species
 - Increased occurrence of Coral bleaching due to rises in sea surface temperatures

²The initial national communications (OEPP, 2000) used the following GCMs: The four models were (1) CSIRO global coupled ocean-atmosphere-sea-ice model (CSIRO coupled GCMs or CGCM), (2) HadCM2 model, (3) ECHAM4/OPYC3 model and (4) CCCMA's First Generation Couple General Circulation model (CGCM1). Scenarios from only one model (ECHAM4) were used in the analysis of impacts on water resources and health

³SRES scenarios incorporate future industrial growth into climate change models. A1 scenarios are characterised by rapid economic growth with A1B having a balanced emphasis on all energy sources. A2 scenarios represent a more heterogeneous world, with higher population growth and lower rates of economic and industrial growth. B2 scenarios represent a world with diverse technological growth, with a greater emphasis on environmental and social protection.

Many of these climate related problems are already occurring in Thailand and their extent and impacts are expected to be exacerbated by climate change. The analyses conducted to date highlight the high level of vulnerability to climate change of Thailand's coastal areas.

Projected Climate Risks for the Southern Peninsula

Observed and Projected Trends in Sea-Level Rise

Recent climate models project a rise in global sea level of 50cm by 2100. This is expected to place significant pressures on Thailand's 2,600km of shoreline. An assessment of the tidal range in the Gulf of Thailand indicated that if sea levels rose by 1 metre then the tidal range may also increase by 1 metre. In addition, the tidal speed may increase and is likely to amplify the impact of tidal changes on shoreline erosion. Coastal inundation of sea water will place pressure on existing drainage and flood control facilities and also impact on the availability of fresh water resources and degrade natural wetlands. Existing transport and tourism infrastructure is likely to increase the coastal erosion brought about by SLR, as these commonly replace natural buffers. Sea level rise is also likely to adversely impact Thailand's 240,000ha of mangrove forest, with associated impacts on fish and other organisms.

Observed and Projected Trends in Rainfall

Recent research has shown that the expected impact of climate change on rainfall in the southern peninsula is different for the Andaman coast and the Gulf of Thailand. It is projected that the Andaman coast will experience an overall decrease in the number of rainfall days and a reduction in intense rainfall events (Limsakul et al., in prep.). However, the Gulf of Thailand coastline is expected to experience an increase in the intensity of rainfall events coupled with a decrease in the total number of rainy days. Therefore, it is likely that the coastal areas of Thailand will be affected differently by climate change, and while the Andaman coastline may experience water shortages, the Gulf of Thailand may be more impacted by flash flooding and coastal erosion.

Observed and Projected Trends in Wind and Air Temperature

Wind speed is expected to increase for the Andaman coast of peninsula Thailand due to a strengthening of the southwest monsoon. It is expected that wind speed will strengthen by 35 percent in the next 30 years.

Analyses conducted by SEA-START show increases in temperature across most of Thailand. The southern peninsular is no different with projected average maximum temperature increases of up to 4°C in certain areas by the end of the century. Minimum temperatures are also set to rise, with some places seeing a jump of up to 4°C by the end of the century.

Nakhon Si Thammarat

SEA-START's (SDF & SEA-START 2009)⁴ analysis of climate change impacts in Nakhon Si Thammarat project an increase in average monthly rainfall of 100 to 200mm. Current average monthly rainfall is

⁴ SEA-START and SDF conducted a rapid analysis and assessment of the impact of climate change on Thailand's southern peninsula as part of the PPG.

slightly more than 400mm. Rainfall is expected to increase especially in the months of April and May. However, the number of rainy days is projected to remain the same, indicating an increase in the intensity of rainfall. The number of heavy rainfall days (more than 10mm) increase by 3 to 5 days per year. While the number of heavy rainfall days (over 35mm) is projected to double to 5 to 8 days per year.

The A2 scenario sees annual maximum temperatures increase in Nakhon Si Thammarat from 37°C to 39°C, with some months experiencing average temperatures of 41.5°C by the end of the century (SEA-START, 2010). Under the B2 scenario, temperature increases are slightly lower. However, under both scenarios the number of days with a maximum temperature of over 35°C increases substantially, from a baseline of 111 days per year to 236 (A2) and 204 (B2) by the end of the century.

The mean sea level of Nakhon Si Thammarat is projected to rise by 20cm in the next 30 years. In addition, a 5 percent increase in the strength of the northeast monsoonal winds, particularly in July and August is projected.

The combination of these projected climate change impacts shows that Nakhon Si Thammarat is likely to be significantly impacted by climate change in the coming decades. The province can expect to see an increase in the incidence and severity of flooding, higher temperatures, stronger monsoonal winds and sea level rise causing salt water inundation and erosion.

Phattalung

In Phattalung it is expected that with climate change, total annual rainfall would not change considerably. However, the pattern of rainfall throughout the year is expected to shift, with a 50 percent increase in rainfall from April to October and a 20 percent decrease from November through to March. The patterns of rainfall shift were less extreme for the B2 scenario. The number of days with rainfall above 35mm is expected to increase, particularly during April and May.

Under the A2 scenario, the maximum temperatures could reach 38°C in the second half of the century. This is an increase of 3°C from 35°C. Minimum temperatures are expected to rise by at least 2.5°C in both scenarios and throughout the year. Number of days over 35°C could increase substantially from 98 to 242(A2) to 205(B2) by the end of the century.

The combination of these projected climate change impacts indicate that Phattalung is likely to experience a wetter rainy season and a drier mild season, with the associated impacts of increased occurrence of flooding and water shortages respectively. Increased temperatures, particularly in the second half of the century, may exacerbate the impacts of water shortages and the survival of aquatic species in the shallowing Songkhla Lake.

Trang.

Under the A2 scenario, rainfall in Trang is expected to increase between April and October but decrease between November and March. In addition, a recent study of extreme weather events on Thailand's southern peninsula indicates that total rainfall for Trang will be lower with climate change under both

scenarios(Limsakul et al., In Prep.). Limsakul et al. also found that there will be a reduction of heavy rainfall events and storms for the Andaman coastline.

Maximum temperatures under the both A2 and B2 scenarios are likely to increase by approximately 2.5°C by the end of the century (37°C to 39°C).Both scenarios indicate a potential increase of minimum temperatures of up to 3°C. The number of days per year with temperatures above 35°C is expected to almost double, from 97 to between 197(A2) and 179(B2) by the end of the century.

Wind speed is expected to increase on the Andaman coast between June to September due to the strengthening of the southwest monsoon. It is estimated wind speed will increase in strength by around 35 percent over the next 30 years.

In summary, despite some seasonal changes, Trang can expect an overall reduction in rainfall and also a reduction in the severity and intensity of rainfall events. This may present problems with water shortages for the region. Projected temperature rise is also likely to affect agriculture, evaporation rates and possibly the tourism industry.

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ANNEX 2: Potential funding avenues for community-based adaptation in Thailand⁵

⁵ This annex should be read together with the relevant sections of Table 1 in Section 4 of the Project Document.

Decentralization in Thailand has resulted in two systems of local government, which can be broadly categorized as the 'elected' and the 'appointed' systems of government. The line of command for the appointed system runs from the Ministry of Interior at the national level down through the provincial governor, district chiefs, subdistrict heads (Kamnan) and village chiefs (Phu Yai Baan). A number of elected government bodies coexist with the appointed system of government, including the Provincial Administrative Organizations (PAOs), Tambon Administrative Organisations (TAOs) and Municipalities. The appointed and elected systems work together in complex and continually evolving ways. For example, the TAOs include elected councils and executives, but also civil servants who report to the provincial government via the appointed subdistrict heads and district chiefs. The main point of interest to this project, however, is the different options available to local communities to finance their Climate Risk Reduction Plans through public budgets. Potential funding avenues are discussed briefly below and summarized in Figure 1.

Local communities have a number of entry points for accessing government budgets at subdistrict and provincial levels. At the community level there are the official Village Development Plans supported by the Ministry of Interior, which are submitted for financing by the TAOs. Under the government's decentralization policies, 35% of national revenues are to be redistributed to elected government bodies. Additionally, elected government bodies can also generate their own revenues through various taxes and other receipts. Thus, in the first instance, Village Plans may be financed in their entirety through the TAO plans and budgets. TAOs can also submit budget requests to the PAOs and, also to the provincial government via their local appointed representatives (see Figure 1 below). Thus, communities can also potentially access PAO and provincial government financing via the TAOs.

Additionally, most line ministries have representation at provincial level, and some at district level as well. Provincial offices and staff of line ministries have budget allocations from their ministry and are responsible for implementing the development plans of their respective ministries. In theory, communities could also submit budget requests to line ministries for funding through their provincial plans and budgets. In practice, however, line ministries are increasingly integrating their development plans and budgets into the 4-year Provincial Development Plan. However, it is possible that communities could submit their plans and budget requests for inclusion in the Integrated Provincial Development Committee via the provincial plans of line ministries. For example, DDPM is currently in the process of developing provincial plans based on its national Master Plan.

All the above potential funding avenues for sustainably resourcing community Climate Risk Reduction Plans will be explored further during project implementation.

Figure 1: Funding Avenues for Financing Community Climate Risk Reduction Plans



ANNEX 3: Summary of PPG Stakeholder Consultations

A) Summary of Stakeholder and Project Development Meetings

Field level consultations

SDF carried out a series of consultations with key stakeholders at the field level in the project sites, conducting both small bilateral consultations and one large multi-stakeholder consultation in each area (see table below). Small consultation meetings were conducted with different stakeholder groups, particularly local coastal communities, sub-district administration organizations, local NGOs and DDPM Provincial Offices.

Project site multi-stakeholder meetings

Date	Location	Attended by representatives from:
3 November 2009	Tha Salah Sub-district Administration Organisation Office, Nakhon Si Thammarat	Local Government Agencies (12)
		Local Administration Authorities (17)
		Local non-governmental organizations (12)
		Local coastal communities (8)
		Academic sector (5)
		Miscellaneous organizations and agencies (7)
6 November 2009	Jong Thanon Sub-district Administration Office, Phattalung	Local Government Agencies (14)
		Local Administration Authorities (2)
		Local non-governmental organizations (15)
		Local coastal communities (19)
		Academic sector (6)
		Miscellaneous organizations and agencies (6)
9 November 2009	Mueng District Pattani Province	Local Government Agencies (10)
		Local Administration Authorities (5)
		Local coastal communities (11)
		Academic sector (4)
		Students (31)
10 November 2009	Kantang District Administration Organisation Office, Trang province	Local Government Agencies (16)
		Local Administration Authorities (4)
		Local non-governmental organizations (19)
		Local coastal communities (7)
		Academic sector (8)

In total, 52 representatives from local government agencies, 28 representatives from local administration authorities, 46 representatives from local NGOs, 45 representatives from local coastal communities and 23 representatives from the academic sector were consulted during the large multi-stakeholder meeting consultations. Many more individuals from these groups and others were consulted during the small bilateral meetings.

Each of the large multi-stakeholder consultations meetings followed the 8 step process outlined below:

1. A brief presentation to introduce the project by project consultant Dr. Vute.
2. Additional clarification of the project's objectives and approach by Mrs. Ravadee Prasertcharoensuk, the director of SDF.
3. Presentations about the impact of climate change on local coastal communities as well as approaches in promoting, supporting and developing climate change adaptation by project consultant Dr. Vute and representatives from the START climate change research institute.
4. Presentations about the environmental and socio-economic impacts of natural disasters and climate change on local coastal communities, efforts to prevent, mitigate and respond to natural disasters and climate change, and how communities, organizations and agencies are working together, by representatives from sub-district administration organizations and local coastal communities.
5. A broad and informal dialogue regarding the appropriateness of the project and how the project might best be implemented, with the discussion being led by local coastal community leaders together with representatives from sub-district administration organizations, DDPM Provincial Offices, Thai Red Cross Provincial Offices, local NGOs and civil society organizations and various local government agencies.
6. A participatory assessment and analysis of both internal and external strengths and weaknesses regarding natural resource management, natural disaster management and climate change adaptation as well as overall project implementation, followed by a question and answer session and a summary of the discussions by project consultant Dr. Srisompob.
7. A session to gather recommendations regarding appropriate approaches, methods, interventions and activities for implementation of the project, together with recommendations regarding the roles and responsibilities of local coastal communities and other key stakeholders at the local level, facilitated and summarized by project consultant Dr. Vute.
8. A session to on agree procedures and processes for working together on the project and to define concrete next steps facilitated and summarized by SDF director Mrs. Ravadee Prasertcharoensuk.

Project planning meetings with key implementing parties

Date	Location (Bangkok)	Attended by representatives from:
17 November 2009	START climate change research institute office, Chulalongkorn University	SDF and START representatives
22 November 2009	Faculty of Economics, Kaesetsart University	SDF and National Project Development Consultants
4 December 2009	UNDP	SDF, UNDP Thailand, UNDP-GEF, Project Development Team
16 December 2009	TRCS/Relief & Community Health Bureau	SDF, TRCS, DDPM, UNDP, National Consultants
25 December 2009	TRCS/Relief & Community Health Bureau	SDF, UNDP, TRCS, National Consultants
19 January 2010	TRCS/Relief &	TRCS, SDF, SEA-START, UNDP, Project

	Community Health Bureau	Development Team
8 February 2010	UNDP	UNDP-GEF, Project Development Team
10 & 11 February 2010	UNDP	Project Development Team
15 February 2010	UNDP	UNDP Bureau of Crisis Prevention & Recovery; UNDP Thailand (E&E and Governance Programmes)
24 February 2010	TRCS/Relief & Community Health Bureau	TRCS, DDPM, SDF, UNDP, Project Development Team
4 March 2010	TRCS/Relief & Community Health Bureau	TRCS, DDPM, SDF, UNDP, Project Development Team
9 March 2010	Faculty of Economics, Kasetsart University	Project Development Team
10 March 2010	UNDP	UNDP Thailand, Project Development Team
22 March 2010	TRCS/Relief & Community Health Bureau	TRCS, DDPM, SDF, UNDP, Project Development Team
1 April 2010	UNDP	UNDP Thailand, UNDP-GEF, Project Development Team

B) Summary of the multi-stakeholder workshops

Strengthening the Capacity of Vulnerable Coastal Communities to Address the Risk of Climate Change and Extreme Weather Events

Introduction

This report provides a summary of the multi-stakeholder workshops conducted by SDF and national consultants during the PPG phase of the project.

Objectives of the workshops were as follows:

1. To create an opportunity to exchange views and ideas as on issues that occur in the community and along the coastline pertaining to natural resource management and coastal zone management and climate change.
2. To gather ideas, recommendations and suggestions from participants who attended the workshop and document work processes that adhere to the needs and issues of local communities. This information will be utilized to determine procedures for capacity building for communities along the Gulf of Thailand coastline to adapt to Climate change.

Workshop preparation

The Sustainable Development Foundation team visited the communities, local administration, local organizations, local NGOs as well as the office of the Disaster Prevention and Mitigation in each

province. The visit was not only to introduce the project but also to discuss preparation for the workshop in the Southern provinces with the related organizations. The criteria for the province to hold the workshop was as follows:

1. Areas previously affected by natural disasters or areas that might be at risk to natural disaster.
2. The local district expresses an interest to participate in this project.
3. The area targeted for community natural disaster management is the primary work of the office of Disaster Prevention and Mitigation.
4. The needs and interest of the local people and the need for this project in their community.
5. The community has commenced tangible action and is familiar with responding to natural disasters

The community has capacity to respond to the affects that may occur as a result of natural disasters. The recommendation of the project procedure is as follows:

1. Andaman Sea Coastline

The provinces of Trang and Satun were not main recipients of relief following the 2004 Tsunami compared to other provinces in the region. Since then, NGOs and academic institutions have been promoting the participation of communities along the coastline. However, the community preparedness to climate change has not yet been developed in post tsunami activities.

2. Gulf of Thailand Coastline

The project has been proposed in four provinces in the gulf of Thailand; Songkla, Nakhon Si Thammarat, Phatthalung and Narathiwat. All of these provinces have regularly faced disasters such as floods, erosion and landslides. Natural disaster management has been conducted in the past, including in coastal areas of the Andaman Sea. Government organizations, NGOs and academic institutions have all organized various activities but in the region but have not had a concrete procedure for unexpected climate impacts or climate change. The Sustainable Development Foundation considered a number of target areas for this project and many were considered suitable. However, community was selected in part, for this project because the Sustainable Development Foundation had previously done work in the province.

The Sustainable Development Foundation considered communities that had capacity and interest in participating in this project and also an active local administration

Study districts

After the study of the local community in the target area as well as discussions with the head of the provincial Office of Disaster Prevention and Mitigation, the Sustainable Development Foundation proposed to the advisory team for the target area to participate in this project:

- **Andaman Sea coastal** : Sub district Modtanoy, Sub district Baan Num Raab, Sub district Baagsak, Sub district Koh Libong, Kantang and Si kao District, Trang province.
- **Gulf of Thailand coastal**: Sub district Tasala, Amphur Tha Sala, Nakhon Si Thamarat province and Sub district Paseyawor, Amphur Saiburee and Amphur Parare, Pattani province.

- **Songkla Lake, River basin:** Sub district Jongthanon, Amphur Khaochaison, Phatthalung province.

The time line of the workshops was as follows:

1. **November 3, 2009** at the meeting room of the Tha Salah local administration office, Nakhon Si Thammarat province. The workshop was well attended with 12 participants of government organizations, 17 participants from the office of the local administration, 7 participants from local organizations, 12 NGOs, 8 participants of local community representatives and 5 academics.
2. **November 6, 2009** at the meeting room of Jong Thanon municipal district office, Khaochaison District, Phatthalung province. This workshop was well attended from the related organizations including, 14 participants from the government office, 2 representatives of Jongthanon local administration office, 6 participants from local organizations, 15 NGOs, 19 representatives from the local community and 6 academics.
3. **November 9, 2009** at the CS Hotel, Muang District, Pattani province. The workshop was well attended from the related organizations including: 10 participants from government organizations, 5 participants from the local administration office, 11 participants from the community representative, 4 academic participants and 31 students from Prince of Songkla University, Pattani campus.
4. **November 10, 2009** at the meeting room of Kantang District office, Kantang District, Trang province. The workshop was well attended by related organizations including 16 participants from government offices, 4 participants from Libong administration office, 19 NGOs representatives, 7 local community representatives, and 8 academics.

Nakhon Si Thammarat

General Information

“Tha Sala” is one of the Sub districts of Tha Sala District, Nakhon Si Thammarat province. Most of the area is set along the seashore, covering 12 kilometers. The north borders Takun Sub district, the south borders Pakpooon Sub district, the east borders the Gulf of Thailand and the west borders Thaiburee-Portong Sub district. This is an area of approximately 16,775 rai (6,632 acres). The land is generally flat with lowland plains. Along the coastline most of the area is sandy beaches and mangrove forest. The area includes Moo 10, Moo 4, Moo 5, Moo 6 and Moo 9. Moo 7, Moo 14 and Moo 8 is a mudflat area, while Moo 1 and Moo 3 are in the west, an area of low lying plain suitable for rice farming.

The area of Tha Sala Sub district is in a bay connected with Pakpanang Bay, Paknakorn, Pakpaying and Pakduad. Therefore, connecting Muang, Pak Panang, Tha Sala and Sichon (a bay wet land area rich in marine life). Currently people in Tha Sala bay are campaigning to plant mangrove forests and other plants that grow along the shore. The conservation of marine life in this area has created a sanctuary for many types of marine life.

Tha Sala Bay is an area rich in natural resources. People who live in the community practice conservation fishing methods. Natural resource management is also practiced by the community which utilizes social laws, rules and regulations to control and protect the area. The District of Kanom and Huasai has partnered to establish “The fisher folk network of Nakhon Si Thammarat”

Community members, totalling more than ten thousand households, rely on natural resources along the coastline and have practiced fishing for many years. Community members use environmentally friendly fishing equipment but still face the ongoing challenge of illegal fishing especially by boats that search for surf clams. This creates a huge impact on natural resources along the coastline.

Baan Tha Sala has changed rapidly from an area that was once a white sandy beach 1-2 kilometres wide. Currently there is very little sand left and only a bit of peat swamp forest remains. Most people who originally lived close to the coastline have moved nearer to roads and some near the foothills which is covered primarily with coconut trees, rubber plantations and rice fields.

There are erosion issues in the area caused by the breakwater built down to Songkla province. The geography of this area has changed especially along the shoreline which has become an area of mudflats. The environment and biology of natural resources along the coastline has also changed which creates a huge impact on the livelihood of the people who live in the area. Though there has been a significant change to natural resources and the environment the communication of information related to the topic is still lacking. A learning process for the people in the community should be created to provide awareness and to help them care for their homeland. Their wisdom and knowledge is useful and relevant and should be used to establish and adhere to a plan with long term sustainable development goals.

Discussion process

1. Project Introduction “**Strengthening the Capacity of Vulnerable Coastal Communities to Address the Risk of Climate Change and Extreme Weather Events**” By UNDP representative or Assistant Professor Dr. Vute Wangwacharakul.
2. Clarify objectives and programme by Mrs. Ravadee Prasertcharoensuk, Director, Sustainable Development Foundation (SDF)

3. Climate change and its affect on coastal areas and support, promotion, development and preparation for Climate change by Assistant Professor Dr. Vute Wangwacharakul and Miss Jariya Thatiwate
4. Geography, social and economic status of natural disaster areas and climate change and the preparation of communities to reduce risk and how to deal with disasters when they occur in local areas and how to work with related organizations, views and recommendations on related issues with the local administration offices and the community.
5. The dialogue on **“Strengthening the Capacity of Vulnerable Coastal Communities to Address the Risk of Climate Change and Extreme Weather Events”** by Mr. Apinant Chaowalit, President of Tha Sala Sub district local administration office, Mr. Pinjo Noochuan, representative of Tha Sala Sub district local administration office, Mr. Wuttichai Wangkahat, Director of Marine Fisheries Research and Development of the lower Gulf of Thailand, Ms. A-ngun Wongjaroen, Red Cross, Mr. Songwut Patkaew, Dabbaan Dabmuang project, Mrs. Jinda Jittanung, Dabbaan Dabmuang Project, Mr. Charoen Toa-itae, Vice President Network of fisher folk Tasala Bay (Fisheries conservation group, Ban Naikung), Mr. Anucha Ahlee, Mr. Ruomaan Pringthong, Mrs. Bulan Bungarath representatives of Tha Sala community, Mrs. Raimah Taewpamu, Fisheries conservation group, Baan Naitung, Mrs. Jirapa Benjasarn, Women fisher folk Network Tasala Bay
6. Gather recommendations; analyze the capacity and limitations in the local area and external factors related to the topics. Question and answer period, Summary by Assistant Professor Dr. Sisompop Jitpiomsri, Faculty of Political Science Prince of Songkla University, Pattani Campus
7. Gather recommendations for methods and activities as well as the role of the community and related organizations by Assistant Professor Dr. Vute Wangwacharakul.
8. Discussion on future work processes, summarized by Mrs. Ravadee Prasertcharoensuk, Director, Sustainable Development Foundation (SDF)

Workshop Summary

Impacts and Issues

Geographical changes to coastal areas and marine and coastal environmental change

- Visual changes include erosion along the coastline and geographical changes on the beach which has changed from a sandy beach to a mudflat. These issues have impacted the fisher folk community, especially shallow waterways that make transportation and travel to fishing grounds difficult and boat moorage scarce.
- Coordination in the community has led to assistance from local and government organizations. A proposed solution is to build a breakwater along the shore. Severe erosion has increased especially in the northern part of Sala Bay. With the erosion come issues of soil degradation, the deforestation of coconut and pine and the loss of sandy beach areas that have been transformed to mudflats. This newly eroded mud and clay area has been claimed by some people looking for land rights while some community members believe this new area should be public land. The construction of breakwaters along the coastline have impacted the environment and the ecosystem.
- Shallow water has created difficulties for fisherman. Most projects don't take into consideration long term effects and it is necessary to perform a study on the livelihood of people in the community and establish a long term plan for the future in response to climate change as well as a guarantee to the community for sustainable development.

- Some in the community have constructed breakwaters in front of their home which will increasingly impact the environment. Some areas are facing silt accumulation issues that create shallow water ways while other areas are faced with mudflats which change the way in which the water flows.
- In the area of Santisuk beach, erosion has affected an area more than three kilometers long. The important tourist attraction of Sabua which was well known to the local people and the public has been transformed from a sandy beach to a mudflat. This area received an accumulation of silt and mud from shrimp farms in the Klong Pakpaying area. Breakwaters have also impacted the environment in the area. In the past five years degradation of the beach has increased. All of these changes have had a huge impact on the people in the community.

Security of communities along the coastline, their occupations and livelihood of fisher folk

- With the onset of climate change, people in Tha Sala community have faced the deterioration of natural resources and the coastline. Illegal fishing, including boats collecting surf clams have a huge impact to theseabed and destroy marine plants and animals that play an important role in the food chain. People in the community have faced the threat of illegal surf clam collecting for more than twenty years now. These boats also often damage local fishing tools and equipment. The richness in biodiversity and natural resources and marine life has rapidly changed. Areas where illegal surf clam collecting has occurred have been destroyed and the changes in the soil and ecosystem make it impossible to utilize the area for fishing again. It will take as long as five to six years for the area to be restored. People in the community have found that if they reduce surf clam collecting the area will attract more marine life such as other shellfish, crabs, and fish as the surf clam is an important food source for other marine life.

Natural disaster

- Strong winds, waves and storms have caused severe erosion along the coastline and has rapidly impacted the ecosystem along the coastline by causing the transformation of sandy beaches to mudflats. Heavy rainfall has also increased the silt and led to an accelerated accumulation of silt. Any resolution to deal with all of the issues requires a clear understanding of the community and the livelihood of the people in the community. A clear focus and teamwork is required from all organizations that assist the community to tackle the problem. They must not work independently and be unaware of the efforts of others, as it has been in the past. A sustainable development plan must focus on the community and the ecosystem as a primary consideration. Tasks must be integrated and collaborated on and each organization involved must be responsible to set up participation, direction and procedures leading to the sustainability and security of the community.

Impact on community production and livelihood

- Changes in weather patterns and the unpredictability of the climate has affected productivity of people in the community especially those who rely on a seasonal rainfall such as rice farmers. Some farmers can no longer practice rice farming and have landscaped the area to produce palm oil and rubber plantations. Rice fields that used to produce a food source have now been changed for economic reasons. This has caused a food security issue because of the reduction of food production. People in the community must now rely on the market for the food sources when they used to produce their own.

- Fisherman must acquire new knowledge as traditional wisdom as knowledge to understand tidal systems is no longer adequate. They now require new information and knowledge in order to prosper in the changing environment around them. Assistance from related organizations in this area is still lacking. It is this line of work that requires the most assistance but instead has not had access to useful information and the locals have been left to face the unknown alone.
- Some communities have relocated in order to find more work and employment elsewhere because there is not enough income to support their families. Commercial fishing has taken work from people in the community.
- There are fresh water shortages and the quality of water has changed. Well water is contaminated with salt water.
- The dry season has become longer and there is less rain for extended periods of time which also impacts fresh water.

Climate change risks and community health

- An observation found that since the onset of climate change the mosquito population has increased.

Work process to deal with the issues and alternatives

The fisher folk community has been strong because of an interest in conservation, restoration of natural resources and the related development projects that strengthen their community. This community was named a pilot community in 2009. In the past the history and spirit as well as the strength of this community has led to a great unity of the people. Participation and collaboration of the people of Tha Sala community is shown in many concrete examples. For example, the community and local administration has proposed a four level policy including a community level, local level, provincial level, and national level to draft a “community coastal resource management” policy. Dialogue on the topic has been exchanged and views and ideas among community members and related organizations have been shared. The proposed policy has set as a Sub district code of law.

The 2009 conservation plan and the sustainable use of coastal resources of Tha Sala community is the result of collaboration work of the Tha Sala fisher folk network, the Health Assembly Committee, and Tha Sala local administration office. This project has focused on key principles including; 1) monitoring participation 2) establishing rules and regulations and a provincial declaration 3) a coastal natural resources management plan which includes a code of law set by the community to encourage participation from everyone in the community in natural resource management

Tha Sala community also utilizes traditional fishing tools and equipment which is more environmentally friendly than commercial fishing. A cooperative fund has been established and such things as a community convenience store. These activities reflect the capacity and strength of the community as well as community based development and support and assistance from related organizations.

Capacity and limitation in work process of the community and related organizations

Information, knowledge and interest in climate change: Changes in the environment have impacted the livelihood of people in the community. There are more challenges, especially in a community that totally relies on natural resources for their lives and occupations. The community will face a huge risk and challenge without an integrated plan to prepare for natural disaster response as well as a development plan and activities.

An increase in the frequency of natural disasters can be shown by the flash flooding in 1988 and a forest storm in Pak Panang and Huasai areas in 1992. The rise in sea level can be seen from the increase in salt water into the peat swamp forest and has impacted the ecosystem of the area.

Knowledge, understanding in technology and troubleshooting skills: Solving issues of erosion by constructing breakwaters has resulted in further environmental degradation and created erosion in other areas. It is necessary to study and understand technology to resolve the issues and find the right alternative to solve erosion issues.

Knowledge, interest and potential of communities to respond to problems and to resolve unknown situations

People in the community must collaborate and mobilize to resolve issues as well as establish a fisher folk community network to work on conservation and mangrove forest restoration. People in the community are eager to participate in conservation activities as well as setting up crab banks, planting mangroves, making bamboo fishing traps, a nursery area for marine life, preserve the coastal shallows. Commercial fishing that has come in to the community has continuously destroyed the natural resources in this area and even the rule of law can't stop illegal fishing. Commercial fishing must also must concern itself with preserving natural resources

Procedures

In the past government organizations such as Ministry of Natural Resources and Environment, Department of Disaster Prevention and Mitigation and Harbour Department have studied development and natural resource management by communities together with government organizations while academics from institutions of higher learning in Nakhon Si Thammarat province such as Walailak University and Nakhon Si Thammarat Rajabhat University have conducted research and studied the impacts that occur in the community. The community requires research, study and analysis on each project including possible pros and cons and likely resolutions. Participation from all sectors should be increased to learn about issues. Participation in determining the path to resolution can be coordinated by an NGO organization. The Dabbaan Dabmuang project has been playing more of a coordinating role with the community and local administration office. There is still a lack of integration consideration and analysis in responding to the concern of climate change

Still lacking a plan and policy benefitting the strengthening of the community in reducing risk and natural resource and environment management

Illegal surf clam collecting is an ongoing issue in this area. People in the community have collaborated to monitor illegal fishing and illegal fishing tools and equipment and have set up a designated fishing area and conservation area. To establish an effective policy and law to deal with illegal fishing the community will require assistance from government organizations and expertise to close legal loopholes. The community also requires assistance and support from government organizations for the monitoring process and disaster warning system which will give further security to the community and ensure an efficient response in facing climate change

Suggestions and Recommendations

Community natural resource management

- Before conducting any project, community members must be informed and have the opportunity to offer their knowledge and opinions and participate in the decision making processes

- There should be a designated fishing area and conservation area.. There should be mangrove forest management and waste and garbage management in the sea and along the coastline
- Need for a plan to utilize natural resources in the area, artificial reef creation, tree planting
- Waste management
- Restoration of the mangrove forest area to be a sanctuary for marine life, improve fishing method to be environmentally friendly, realization of the importance of natural resource conservation, a resolution to deal with illegal fishing tools and equipment as well as the support and promotion of ecotourism
- Established participation and conservation activities of Tha Sala fisher folk group, Fisher folk conservation group. The people in Baan Sabua have collaborated with the Tha Sala administration office on all projects

Knowledge Management and Capacity Building

- People in the community collaborate to form a group and network in dealing with fishery production
- Restoration of mangrove forest areas, create a sanctuary for marine life, raise awareness for the community members to realize the importance of natural resource conservation
- The fishing community is adapting their life in fishing, improve the efficiency of fishing tools
- The community is eager to participate in setting up a group for monitoring illegal fishing and monitoring disasters for the safety of the community along the coastline. To improve communication among the network and within the community

Procedures by government organizations

- The government organization need to conduct a study before pursuing projects
- Government organizations must study and research before performing any activity or project to determine pros and cons, impact to the community and encourage participation from people in the community to take part in the project and the resolution^{ssecorp}
- Promote the local administration office to work with community
- It should be dredging the water ways, constructing a warning tower. There should be a public shelter area for when disasters occur
- Ongoing coordination from related organizations with the community and assisting the community in the correct manner to the greatest benefit to the community and for sustainable development of the community
- Promote capacity building of the local organization in sustainable community natural resource management
- ^{ot}work as a network, develop the communication system, and ongoing monitoring
- Have the community propose more potential solutions to the government

Local community organization role

- Ongoing coordination among the related organizations including government organizations in order to assist the community in the correct method
- Strengthening the capacity of local community organizations in sustainable natural resource management
- Promote and support integration and collaboration
- Promote the local administration office to work with the community for a concrete outcome

Phatthalung

General information

The area of Jongtanon Sub district, Khaochaison district, Phatthalung province is a community situated along Songkla Lake and includes seven different villages namely: Moo 1 Baanlamjongtanon, Moo 2 Baankockkae, Moo 3 Baanjongkae, Moo 4 Baanarpat, Moo 5 Baantungsae, Moo 6 Baantrae, Moo 7 Baanpru. There are more than a thousand households situated along the lake. The general geography of the area includes rice fields (Na), foothills (Kuan), forests, orchards (Pa) and the sea (Lae). Most people in this community are employed in the Agricultural sector while those who live along the lake are employed in the fishing industry as well as agriculture. The majority of the Jongtanon area is engaged primarily in rice farming but has recently been involved in the support and promotion of palm oil and rubber plantations which have reduced the importance of rice fields in the area.

This area receives water from Bantad Mountain which collects in the low land area before being released to the lake. It is also the end of line of the irrigation system due to the generally low lying land and its proximity to the lake and ocean. Three main canals flow through the area including Klong Pakpaniet, Klong Bangkaew and Klong Traue.

As the geography of the area makes it susceptible to annual floods a dam project was created to stop the flow of the water before it is release to the ocean. This greatly impacts the risk of floods in this community and other communities in low lying areas. Another challenge is the promotion of palm oil and rubber plantation as farmers must landscape the land in a different manner than rice farming methods. They also must protect the land from the flow of water which has caused more severe flooding and introduced the problem of standing water. The area along the lakeshore is also shallower.

As mentioned the area is susceptible to annual flooding, but the most severe flooding was in 2005 when the water rose three meters in the area of Moo 3, 4 and 5. People in the community had to be relocated to higher ground from their month. During the crisis the community received aid from the Red Cross office.

There was another severe flood in 2008 but the community still had made no preparations to deal with the flooding. There are now local and government organizations working to resolve these issues but there is no data or information related to the community flooding that is useful to assist in future contingency planning.

The community has been trying to help itself by communicating flood warnings and relocation preparations by word of mouth. Most people in this community are in the agricultural and fishing industries and flooding has had a severe impact to them.

Though the area is vulnerable and has continuously faced natural disaster, it has received limited assistance from outsiders. The community has only received aid from outside sources when a disaster has been declared. The community still lacks assistance from government organizations. There is the lack of a community database and other information that could be utilized for long term planning and preparation to deal with natural disasters by the community.

Discussion process

- Project introduction “**Strengthening the capacity of vulnerable coastal communities**” “**Addressing the risk of climate change and extreme weather events**” By UNDP representative Assistant Professor Dr. Vute Wangwacharakul.
- Clarification of objectives and programme by Mrs. Ravadee Prasertcharoensuk, Director, Sustainable Development Foundation (SDF)
- Climate change and its affect on coastal areas and support, promotion, development and preparation for climate change by Assistant Professor Dr. Vute Wangwacharakul, Faculty of Economics, Kasetsart University and Miss Jariya Thitiwate, Project Staff of START,
- Geographic, social and economic status of natural disaster areas and climate change and the preparation of communities to reduce risk and how to deal with disasters when they occur in local areas and how to work with related organizations, views and recommendations on related issues with the local administration offices and the community.
- The dialogue on “**Strengthening the Capacity of Vulnerable Coastal Communities to Address the Risk of Climate Change and Extreme Weather Events**” by Mr. Weera Sunsaeng, Community Development Staff of Jongtanon local administration office, Mr. Bunjong Nasae, Thai Sea Watch Association, the representative of Phatthalung Red Cross office, representative from the Office of Disaster Prevention and Mitigation and a representative of Jongtanon community.
- Gather recommendations; analyze the capacity and limitations in the local area and external factors related to the topics. Question and answer period, Summary by Assistant Professor Dr. Sisompop Jipiromsri, Faculty of Political Science, Prince of Songkla University, Pattani Campus.
- Gather recommendations of methods and activities as well as the role of the community and related organizations by Assistant Professor Dr. Vute Wangwacharakul.
- Discussion on future work processes, summarized by Mrs. Ravadee Prasertcharoensuk, Director, Sustainable Development Foundation

Workshop summary

Impact and issues

Geographical changes to coastal areas and marine and coastal environmental change

- **Severe natural disasters:** due to weather changes, seasonal fluctuations in rainfall, high rainfall, strong storms and wind, erosion, severe flooding, the vulnerability of Jongtanon Sub district areas such as Moo 2, 4, and 5 faces annual flooding, Moo 4 has more severe flooding and also faces the problem of stagnant water
- **Changes in agricultural production** due to stagnant water from flooding has impacted large areas of the community and prompted a change from rice fields to palm oil production and rubber plantations. This change in production means the farmer must landscape the land with different techniques to create a channel to stop the flow of water to prevent further flooding
- **A shallower lakeshore** creates more water flow along the shoreline and impacts the community around the lake

Impact on community production and livelihood

- **More competition for natural resources** from people in other communities, illegal fishing which rapidly reduces natural resources, chemicals released into the lake kills fish
- **Environmental development and infrastructure** includes road construction, lack of building and construction site planning in response to flooding and climate change. Houses are still being built in areas of high risk to natural disaster, often too close to the lakeshore without realizing the risk from strong wind and storm or erosion. Areas that are not considered vulnerable should be considered in settlement plans.
- **Severe flooding has increased annually** impacting the livelihood and productivity of the community. It impacts food security and results in job losses. Rice production has not been enough for household consumption. People have had to search for employment in other communities or work in factories or search for other sources of employment to generate income to support their families
- **Water scarcity impacts agriculture** because the area of Jongtanon Sub district is at the end of the irrigation line there are agricultural industry challenges that have changed the approach to a monocrop methodology. The majority of the area that was once rice field has turned to palm oil production and rubber plantations in response to the threat of severe flooding. The community has had to adapt to the environment and changes in weather.

Climate change risks and community health

- **The increased use of chemicals in the agricultural sector of palm oil and rubber plantations** has impacted the soil and water which then damages the environment along the lakes and kills fish. This community then faces food security issues as well.

Work process to deal with the issues and alternatives

- In the past during flood crisis, the community has had to rely on themselves and people lending their hand. People in the community gathered to relocate parts of the community and to move their personal belongings and other necessary things in response to the flooding before searching for help from outside sources. Though government organizations assisted during the flood by providing equipment to build a small shelter it has been only short term assistance. The community requires further assistance from government organization especially prior to and after disasters occur.
- Government organizations also assisted the community with dam construction to reserve water for the dry season. This has had both positive and negative results as though the community can count on water in the dry season there is often too much causing flooding during the rainy season
- The community has been gathering more knowledge of late, with community leaders trying to disseminate this knowledge to other community members. Community members are eager to learn and receive news on climate change and global warming that may impact their or any other community
- There is a lake conservation area that has a nursery area for marine life. The community also plants pine trees along the lakeshore to reduce the strong winds that can cause erosion along the lakeshore

Capacity and limitation in work process of the community and related organizations

Climate change and natural disaster becoming stronger and more frequent

Geographically, Jongtanon Sub district is an area that receives water before it is released to the lake. When the sea level rises there is an issue of still water. Strong winds also cause erosion and destroy natural resources along the lakeshore. The shallow water along the lakeshore also impacts the livelihood of the people in the community who live along the lakeshore

Knowledge, interest and potential of communities to respond to problems and to resolve unknown situations

People in the community are eager to prevent potential natural disasters. The community had tried to build their homes in a modern style, low to the ground which was not suitable to the weather or climate in the area. Eventually the community reverted back to the more traditional building styles that had been practiced by their ancestors and now build homes raised higher off the ground in response to the potential of natural disasters

Procedures

It is necessary to raise awareness by creating a special guarantee to the community by establishing an information center for victims in the Sub district as well establishing a disaster prevention team working to prepare the community for natural. The importance of such things as monitoring weather reports and promoting and supporting the learning process in schools and the community to prepare to respond to natural disaster should be stressed. Participation should be encouraged which also creates unity in the community

Issues and challenges

- Government projects that promote and support the community must include suitability in their objective. In the community such things as environmental development and infrastructure projects including road construction and settlement plans are important. There is no current structure, plan, rules or regulations in place and no impact analysis has been done.
- The community still lacks a conservation plan and lacks knowledge in natural resource management. Lack of facts and support from government organizations to protect natural resources by the community base effects the livelihood of people in the community
- People in the community must rely on themselves more before requesting assistance from outside sources. Each community in this area must monitor and look out for each other as well as gathering together to respond to disaster. This includes communities that still need support from government organizations especially disasters and crises are occurring
- A conservation group has been established and a conservation area for marine life nursery has been set up. A pine tree planting project along the lakeshore to protect from strong winds that cause erosion damage has also been established

Suggestions and recommendations for community based natural resource management

Community natural resources management

- Government organizations, the private sector, NGOs and the community must collaborate to work to resolve issues causing the deterioration of Songkhla Lake. Protection, conservation and restoration of mangrove forests are important for the sustainability of the area. Conservation areas are being set up as marine life nurseries. Participation in the pine tree planting project along the lakeshore to protect from erosion due to strong winds is also being encouraged which still continuously create a damage/impact to the community

Knowledge management and capacity building

- Prevention of potential natural disasters must be done by doing things such as changing the housing styles constructed in the community. Originally, homes were built raised above the ground and only in the past twenty years modern housing styles changed with homes being built on the ground. This is not suitable to the climate in the area due to the frequent floods. It is necessary to determine a suitable house plan that works in the environment and climate of the area and is not susceptible to flood damage
- A requirement for a cooperative fund in the community as well as training in various areas in response to seasonal employment needs in order for people in the community to generate income to support their families and for the community to become fully self sufficient, independent and to create unity in the community as well

Procedure by government organization

- There should be a clear policy drafted for the area to have government organization support and promote knowledge as well as funding to improve knowledge in the community
- Government organizations should collaborate and coordinate to provide support in the community in various areas including: providing equipment such as tents, fishing boats and medicine during and after flooding and at the same time raise awareness on prevention and preparation in responding to natural disasters and to resolve issues related to natural disaster
- Integration plan among government organizations, the private sector, NGOs and the community to resolve the issue of the deterioration of the Songkla Lake area

Local community organization role

- The community must allow related organizations to establish a plan and method to resolve natural disaster issues
- The support and promote the saving cooperative in the community, suitable seasonal occupations in order for people in the community to generate an income to support their families
- Acceleration of a community plan as part of local community administration office to resolve issues that occur. Other related organizations to promote and support related activities to raise awareness in protection, conservation and restoration for the sustainability of natural resources such as rice farming, mangrove planting, tree planting along the lakeshore, creation of artificial reefs as well as a project to release spawning marine life in conservation areas

Pattani

General information

Pattani province encompasses an area of 3,940 km². The north and east of the province borders the Gulf of Thailand, the south borders Muang district and Raman District of Yala province and Bajor district of Narathiwat province, the west border with Tapa district, and Sabayoi district of Songkla province. Generally the land is flat along the coastline and covers an area of 116.4 km. Two rivers run through the central and the southern part of the province with some hilly area known as Saikhao. The rivers originate in Sankalakiri Mountain and become two important rivers to this province, namely the Pattani, and Saiburee.

Panare District: located on the east side of Pattani province, the north and east side borders Gulf of Thailand, the west border is shared with Yaring district and the south border with Saiburee district

Saiburee District: located on the east side of Pattani province, the east border is Gulf of Thailand, the north border with Panare district, the South border with Maikan and Kapor district and some parts of Narathiwat province, the west border with Tungyandang district.

Panare and Saiburee districts include various agricultural products including evergreen trees, rice farming and a variety of dry crops. These two districts are also rich in culture, local wisdom and knowledge related to Malay and Muslim culture. The agricultural area has been facing floods from heavy rainfall which has damaged crops, especially near irrigation area that must release water in the flood season. Water overflow from irrigation flooded farm land and rice fields. In some cases dams have caused floods because they have been built against the flow of rivers.

The most important issues that people in these areas face are flooding and erosion which occurs along the coastal areas of Saiburee and Panare district to Songkla province. There has been continuous and severe erosion of marine resources along the coastline and deterioration of the river basin. Moreover, these areas also face a lack of opportunity in development and also issues of unrest. Though the province has received funding, local communities are still limited due to security issues. All of these issues made this area attractive and interesting to be selected as one of the target areas to work in.

Discussion process

- Project Introduction “ Strengthening the Capacity of Vulnerable Coastal Communities to Address the Risk of Climate Change and Extreme Weather Events ” By UNDP representative or Assistant Professor Dr. Vute Wangwacharakul.
- Clarify objectives and programme by Mrs. Ravadee Prasertcharoensuk, Director, Sustainable Development Foundation (SDF)
- Climate change and its affect on coastal areas and support, promotion, development and preparation for Climate change by Assistant Professor Dr. Vute Wangwacharakul and Dr. Arnont Sanitwong na ayuddhaya
- Geographic, social and economic status of natural disaster areas and climate change and the preparation of communities to reduce risk and how to deal with disasters when they occur in local areas and how to work with related organizations, views and recommendations on related issues with the local administration offices and the community.
- The dialogue on “ Strengthening the Capacity of Vulnerable Coastal Communities

to Address the Risk of Climate Change and Extreme Weather Events” by Mr. Mapawatee Jeh-are, President Administration of Sub district Paseyawor/Mr. Treeya Waesameh, President Administration of Sub district Paseyawor/ Mr. Samhan Yuda, President Administration of Sub district Bangteng/ Mr. Yatha Yamah, President Administration of Sub district Nambor/Mr. Bimamah Waemamah, President Administration of Sub district Banklang/ Mr. Oussaman Abdulloh, President Administration of Sub district Bannok/Mr. Panyasak Sophonwasu, Head of Pattani Provincial Disaster Prevention and Mitigation Office/ Mr. Sekchai Chuawanichakorn, Director of Irrigation 17 Narathiwat/ Mr. Winai Samphantar, Irrigation Engineers of Pattani province.

- Gather recommendations, analyze the capacity and limitations in the local area and external factors related to the topics. Question and answer period, Summary by Assistant Professor Dr. Sisompop Jitpiromsri, Faculty of Political Science Prince of Songkla University, Pattani Campus.
- Gather recommendations of methods and activities as well as the role of the community and related organizations by Assistant Professor Dr. Vute Wangwacharakul.
- Discussion on future work processes, summarized by Mrs. Ravadee Prasertcharoensuk.

Workshop Summary

Impact and Issues

Geographical changes to coastal areas and marine and coastal environmental change

- **Erosion:** Saiburee, Paseyawor, Panare district and the area of Lampor in Yaring district to the Songkla border has faced continuous and severe erosion since 1995. Government organizations have built a breakwater to protect the coast and to reduce the surge but the current breakwater has been destroyed by strong storm surge.
The area of sub district Bangkao, Saiburee district has faced severe erosion since 1987 and the issue has become progressively worse. Villages close to the coastline have been forced to relocate further inland. Most of these severe impacts are believed to be caused by dam construction on the Saiburee River. Coastal areas are at risk to wind storms. In the past there has been training for communities on preparation to deal with natural disasters but there has not been tangible work done. In the past, strong storms have left people in the community face the problems to the best of their ability with little outside help or assistance.
- Accumulation of silt which causes rivers to be more shallow every year has given way to a proposal to dismantle dams on the canal and also to dredge the estuary and canal to increase water flow. Dredging canals in each community would increase the water flow and at the same time restore tree growth by reducing the accumulation of silt
- The sea level has risen annually which has caused damage to coastal areas and has rapidly increased in recent years. Strong storms and unpredictable weather has caused damage to coastal areas which also increases the threat of floods in some lowland areas. It has been proposed to build the temporary shelters for victims of natural disaster.
- Climate change has impacted the rainy season which has created a huge impact on agriculture production. Strong storms have prevented fishermen from fishing which has impacted their livelihood as well.
- **Pattani Bay** is well known as an area that is full of natural resources and rich in biodiversity. The ecosystem and natural resources of Pattani Bay has deteriorated rapidly and is in crisis. Issues have been caused by the expansion of urban communities and industry. Along the banks and estuary of

Pattani River there has been an increase in shrimp farms which has caused the loss of mangrove forest which is the home to marine life. Illegal fishing also destroys marine plants in the area which causes the fisherman to lose their food source and has caused some to relocate their home.

In 2009 it was discovered that due to deterioration of the ecosystem in the Ao Pattani area, a seaweed type of marine plant called Pom Nang has been affected. Currently people in the community are farming the seaweed together with shrimp farms to replace the reduction of the natural seaweed.

Environmental change has impacted communities who rely on natural resources as it is an important part of their livelihood. There has been the establishment of a fisherfolk association in Pattani province which conciliates fisherfolk in Panare District. This association has formed to campaign on natural resource conservation which will be an activity done together to reduce issues in the community.

Impact on community production and livelihood

- Climate change, strong storms and the frequency in which they occur prevent fisherman from fishing and causes a food security issue for communities and those in the fishing industry. Shortages of fresh water in the community and foretell that this will be a big issue in the future.

Climate change risks and community health

- Lowland communities face new diseases and health concerns in the community due to standing water.

Work process to deal with the issues and alternatives

- In 1995 the estuary of Saiburee River was dredged due to an accumulation of silt which prevented fisherfolk and commercial fishing operations from getting their boats through. The dredging has been done annually by the Harbour Department.
- A breakwater to prevent beach area erosion has been built by the government by laying rocks. This helps to some degree but has not solved all the issues. Important areas such as temples, mosques and hospitals have to be protected but it is a slow process because of lack of funding as well as the situation of unrest in the deep south. Rock to build breakwaters is expensive in the deep south provinces as the rock business is controlled which creates a scarcity and high expense. Disaster prevention in this area is very costly. In the short term it is not worthwhile economically in comparison and other factors must be considered.
- Campaigns on conservation and restoration of the coastal area including artificial reef projects utilizing local wisdom are happening in the area of Pattani Bay in Panare district to create a nursery area for marine life. There is also a campaign to promote traditional fishing by organizing a fishing competition using only rods. This event also reflects the traditional livelihood of this area which has conservation efforts greater than other area because of the spirit of the community to mobilize and form a fisherfolk association since 1993. The association has been working with government organizations and the private sector to resolve poverty issues of people in the local community.
- Baan number Sub district, Panare district has been improving the landscape by building roads, establishing parks and tourist attractions and promoting tourism which generates income for the local community and at present also has running water. All of these changes have improved living conditions of the people in the community.
- There is an experiment in hydrography featuring cooperation with a geographic GIS system which can identify waterfall flow to warn of disasters reducing potential damage. A disaster warning system for the community to prepare for floods could be created.

- The deterioration of Pattani Bay from environmental and the ecosystem changes caused a reduction of the marine plant seaweed call Pom Nang. Pom Nang is now farmed in shrimp farms to replace the natural Pom Nang seaweed and will be an alternative occupation for people in the community.

Capacity and limitation in work process of the community and related organizations

Climate change and natural disaster becoming stronger and more frequent

Projections indicate that sea level rise is already a risk north of Pattani province in the area of Tan Yong Pao Village, Nongjik district. The community is located about one hundred meters away from the coastline and wood has been used in an attempt to block the rising water. The area of Baannumbor, Panare district also faces similar issues with people in the village utilizing coconut trees to reduce the wind. People in the community also try to plant tree along the coastline. As for the erosion issues, people in the community use sand bags for protecting but these do not last long as they too are eroded away.

Severe erosion

Not only does Saiburee district face the issue of erosion but this problem occurs all the way to the Songkla province border. The other areas of Pattani province that have faced this issue since 1991 are: Paseyawor district, Nambor district and Panare district. Erosion is most severe on the Saiburee estuary as about 20 meters of land is in danger of disappearing which would cause a community to relocate and change their occupation.

People in Baannumbor Sub district, Panare district learned from their experience not to build houses too close to the coastline because of the waves and erosion. While in Paseyawor Sub district people settle in the location long ago and some have no place to move to and still live there and face these issues. On the way to the community there used to be a lot of coconut tree plantations standing tall along Saiburee District but now all of them are long gone because of erosion.

After the breakwater project to protect the beach that the Harbour Department completed in 1991, local people experienced the severe erosion the following year due to strong waves and wind. Although this didn't affect the area protected by the breakwater it impacted other areas due to the accumulation of silt. In Paseyawor, Bangkao has faced a severe impact. In Nambor the issues are less severe because the geographic location of Kaekae beach offers some protection from the wind.

In the past this community never experienced floods though it often had heavy rain because the water was dispersed naturally in to the ocean. Construction of roads and dams has prevented water flow. The community wants research done at potential locations to build this project to determine whether water flow will be disrupted to understand if there could be potential to affect the community in the future.

People from the community participated to resolve issues and were interested in the rapid change occurring in their community. Local organizations also willingly participated in resolving community issues but participation is still lacking from some sectors.

Knowledge, interest and potential of communities to respond to problems and to resolve unknown situations

In the area of Bantawa Sub district, Nongjik district the cape that protrudes into the ocean has disappeared by about three meters. The Harbour Department has tried to solve this issue by building a breakwater to reduce the wave flow and erosion.

taht nwohs sah yduts Aprojects to solve the issues in one area often impact other areas. For example, the accumulation of silt has built up in the Pattani River because of airborne silt.

Procedures

In the past government projects have been pursued without input or discussion from the people in the community. Projects have then impacted people's lives in the community such as the seaway project that created a flood in the community located near the project. People in the community had to relocate because of the floods. Under the assumption that the project might block the water flow and change the way the water flows this kind of problem occurs and it very difficult to solve this problem because of complexities and lack of budget.

The office of National Human Rights Commission ordered the dam dismantled but the Harbour Department wanted to keep it. In this case there is a possibility to dismantle the dam because the project would impact people in the community. The community can request an EIA and file a law suit to protect their rights. At present, the office of National Human Rights Commission has filed a law suit against this project on behalf of the people in the community.

Issues and challenges

In the past government have had projects to resolve issues such as these but in this case have not had success as impacts still occur from projects such as the breakwater project to reduce erosion. It has not been a complete success as severe erosion still occurs in the area of Saiburee and Yaring with strong winds having the same effect as waves.

Suggestion and recommendations

Community natural resources management

- In the past there has been a gathering of people in the community to form a fisherfolk association in Panare Sub district to campaign on natural resource conservation and promote participation of the community in natural resource management. The people in the community participate in monitoring and set up regulations.
- A big issue in the Pattani Bay area is the need to raise awareness in people in the community so they can see the importance of natural resources and at the same time also become interested in environmental issues. This should encourage them to participate in restoration and conservation such as tree planting and using wisdom and knowledge to make artificial reefs etc.
- There is a requirement for training programs on preparation and how to respond to disasters in the local community and to prevent damage. There is also a requirement for a study on community issues and alternatives for people in the community.

Knowledge Management and Capacity Building

- The community requires academics to study the area of erosion and come up with solutions rather now than later. The government has to survey areas affected by the rise in sea levels and needs a study to prevent the damage and reduce impact. The government needs to accelerate the breakwater project and also promote and support the tree planting project along the coastline to reduce the effects of wind. The government has to survey and study before initiating projects and it is necessary to take recommendations and suggestions from people in the community to participate in the project to reduce future impacts, such as the dam construction project. If there more lost than is gained then these kinds of projects should not be pursued. The government needs to consider the benefits to the people in the community as the first priority. The construction of infrastructure or bridges also requires studies as this is lacking in this area. The project has to reduce the impact on the environment and it people.

Procedure by government organizations

- Government organizations must lend a hand in this line of work. The government should see the importance of the issues of the people who live along the coastal areas. An academic role or other related body should inspect the area that faces the issues and participate in the resolution or alternative actions and also respond to problems sooner. At the same time the government should also assist on funding and budget to resolve the issues that people are currently facing and also take recommendations and suggestions of people in the community.
- The government sector needs to be an expert on dam construction to reduce erosion and other issues and also to guarantee the water flow into the ocean. The government has to complete the breakwater project because in some areas it is still postponed because of lack of funding. There should be an integrated plan including participation from all sectors to resolve the issue of water flow and to dredge the canals of each community.
- The government must agree with the issues and the impacts that occur and to act upon those issues and impacts. All sectors including government, private sector and civil society need to lend a hand and create a concrete policy for the prosperity and peace of the community. All of these sectors need to establish a system that is suitable for the community. The government also must control the release of green house gases into the atmosphere of the industries as well
- All procedures still lack participation from all sectors such as in the area of preparation and response. For example in the case of Bangkok Sub district and some are of Pasesawor the river and the canal are very shallow and in the past canal has been dredged but there is no long term or community plan. There is not yet an integration plan and it still lacks participation from related sectors to resolve the issue. Funding is also lacking.

Local community organization role

- The local administration of each community and sub district has to rush to solve the issues problem when they occur. The realization and awareness of climate change and global warming is very important and impacts the environment and people in the community. The community needs to participate with government organizations and other related organization to resolve the problem and focus on the most benefit to the people in the community. All sectors must truly lend a hand in study and education in solving the issues and finding suitable alternatives.
- Establish an organization or volunteer group, project and media tools. Government or related organizations must support environmental conservation projects and educate people in the community to have a realization and a positive attitude and to improve the life of the people in the community.

Trang

General information

The area surrounding Koh Mook, Libong Sub district, Kantang District is an area that is rich in natural marine resources for Trang province. The local people who harvest and utilize the natural resources from this area are from four villages including Moo 4 Baan Numrab, Moo 3 Baan Kuantungku Bangsak Sub district, Moo 2 Baan Koh Mook, Koh Libong Sub district Kantung District, Moo 5 Baan Changlang and Maifad Sub district, Sikao District. This includes 415 households from a total of 1,273 households which is 32.6 per cent of the total households. Besides people from those four villages, other people from the nearby area often come to utilize natural resources around this area as well. These people are from Koh Libong Sub district community, Maifad Sub district and Naklua Sub district. This area comes under the responsibility of various related government offices including Jaomai Natural Park, the Department of Marine and Coastal Resources and the Provincial Fishery Office.

During the tsunami of 2004, these four villages were devastated losing their homes and property including fishing tools and equipment. Without this equipment fishermen were unable to fish and earn a livelihood. Other challenges fishermen faced were due to changes in the geography and biology including the diversion of water ways, mangrove forests and marine plants.

Baan Modtanoy Moo 3 Koh Libong Sub district, Kantang District, Trang is an area of dunes surrounded with mangrove forests, canals and the sea. People in this community are unable to expand their village because it borders a National Protected Forest area. The community also face various issues related to land such as land title and land rights. Most people in this village are in the fishing industry which has been practiced for many years up until the present.

Village member houses are located in the in lowland regions near the mangrove forest. Houses are built above the ground as the community has experienced some land and soil erosion. Since 2004 this erosion has increased.

The area from Koh Mook, Baan Numrab, to Baan Modtanoy is on the coast and shares the common problem of erosion in the estuaries and accumulation of silt in canals that link the mangrove forests and the sea. This creates transportation issues to get to the fishing areas.

Geography changes along the coastline are still a very important issue and require immediate attention because they impact to the people in the communities, their occupations, livelihoods and their homes. To resolve these issues all related organizations must collaborate to set up a plan and procedures.

Discussion process

- Project Introduction “**Strengthening the capacity of vulnerable coastal communities to address the risk of climate change and extreme weather events**” By UNDP representative or Assistant Professor Dr. Vute Wangwacharakul.
- Clarify objectives and programme by Mrs. Ravadee Prasertcharoensuk, Director, Sustainable Development Foundation (SDF)
- Climate change and its affect on coastal areas and support, promotion, development and preparation for climate change by Assistant Professor Dr. Vute Wangwacharakul and Miss Jariya Thitiwate
- Geographic, social and economic status of natural disaster areas and climate change and the preparation of communities to reduce risk and how to deal with disasters when they occur in local areas and how to work with related organizations, views and recommendations on related issues with the local administration offices and the community

- The dialogue on “**Strengthening the capacity of vulnerable coastal communities to address the risk of climate change and extreme weather events**” by Mr. Wichoksak Ronnarongpairee, Secretary of The Federation of Southern Fisherfolk, Mr. Sakkamol Sangdara, Save Andaman Foundation, Mr. Ukkrit Satapumintr, officer of Research and Development resources, coastal and mangrove forest (Phuket), Mr. Nipon Tongyou, Center of Marine and Coastal Conservation 6, Mr. Sumphan Dullayaporn, Director of The management of the South West River Basin, Water resources Regional Office, Unit 8, Mr. Govit Ponganant, Yadfon Association, Mr. Aren Prakong, President of Trang Fisherfolk club, Koh Mook community, Mr. Samroung Sangseejan, Vice President, Administration of Sub Maifad, Baan Kuantungku, Mr. Anurak Plummutha, Vice President, Administration of Sub district Koh Libong, Mr. Sa-ard Taleluk, Committee of Trang Fisherfolk club, Modtanoy community
- Gather recommendations and analyze the capacity and limitations in the local area and external factors related to the topics. Question and answer period, Summary by Assistant Professor Dr. Sisompop Jitpiromsri, Faculty of Political Science Prince of Songkla University, Pattani Campus.
- Gather recommendations of methods and activities as well as the role of the community and related organizations by Assistant Professor Dr. Vute Wangwacharakul.
- Discussion on future work processes, summarized by Mrs. Ravadee Prasertcharoensuk, Director, Sustainable Development Foundation (SDF)

Workshop summary

Issues and Impacts

Geographical changes to coastal areas and marine and coastal environmental changes

- **Change and shallow estuaries and waterways** Silt has shifted and accumulated in the estuary and the canal areas that link the mangrove forests and the sea. The shifting silt has created transportation issues as it has made travel impossible at low tide. This has created a challenge for people in the community utilizing the waterway for fishing. If people in the community utilize alternate routes more gas will be used which raises production costs and wastes time.
- **Erosion** : Libong Sub district, Koh Mook is facing a huge challenge due to the impact of erosion that covers a large area. Winds have been getting stronger and the beach area itself has been changed. Erosion is more severe in the beach area and is also occurring in the mangrove forests as well.
- A severe erosion issue has been occurring in the Koh Mook area over the last ten years and has been more severe in the past few years. The issue has forced a settlement near the seashore to be relocated. There should be a search for an immediate resolution as the impact to the community will only increase. Each year an additional 4 to 5 meters is eroded. The stronger winds will also increase erosion.
- As for the area of Modtanoy community, it also faces severe erosion. The accumulation of silt impacts the waterway which is used by community members to go fishing. Community members have tried to deal with this issue by dredging the waterway to clear a path for boats to go through but this issue still requires a permanent resolution.
- **Shallow areas along the mangrove forest shore**: The big picture of the change in geography, erosion, accumulation of silt, strong winds and the increase in frequency has been experienced by community members but they are unaware of the causes.
- It is illegal to cut mangrove trees along the shore but the deterioration of the mangrove forest continues to be an ongoing problem. Mangrove forest areas have been cleared to make way for shrimp farms without an understanding of its impact. Some areas are left alone without care. There has been an increase in the number of investors who lease mangrove forest areas for shrimp farming or for palm oil plantations in response to economic development of the area.

- Some of the community share local wisdom and knowledge about storms, winds, tide systems and other knowledge related to the sea. It must improve and education must be stressed because of all the changes in order to manage their livelihood, occupations and safety to live in the area.
- **Land issue:**Government policy and economic development such as the promotion of a monocrop policy (palm oil, rubber) impacts the environment. The people in the community are facing other issues such as being left landless and with no land rights. These issues happen in every community of Koh Mook and Baan Modtanoy. Although the people settled in this area along time ago, land titles and land rights were never been issued to them. Some of the areas have been identified as protected areas without the knowledge of community members. This is a conflict between the community and government organizations which has not yet been resolved. Moreover, some settled areas belong to investors, which is currently a problem because they want to develop their land and remove those who have settled there.
- Some of the community is landless so they build homes along the shore by the mangrove forest which borders the Natural Mangrove Forest Protection area. All of these issues have left community members with no guarantees of their home and settlement. This has caused some families to relocate elsewhere.

Impact on community production and livelihood

- One aspect of climate change is a change in reliable wind direction and strength. This impacts the livelihood of people in the community, both those who live along the shoreline and those who live on an island. It directly and indirectly impacts all of them as community members used to know how to read the wind direction and were able to use traditional knowledge to predict tides. Traditional knowledge however, can no longer cope with the change in weather and the environment. The community must seek new knowledge by educating themselves to cope and live with the changes.
- Illegal fishing is still a big issue around this area. Illegal fishing tools and equipment are being used such as an illegal crab traps which trap animals that are too small preventing them from growing to maturity. This impacts the environment in the area, reduces fishing production and reduces marine life.

Work process to deal with the issues and alternatives

- In the past the community has been working together to focus on conservation work and the ocean
- An agreement banning illegal fishing equipment in the conservation area and a conservation area to protect marine plants (which is food for the dugong) and a nursery protection area
- Prohibit illegal fishing equipment for 3000 meters from Koh Mook, Koh Kradan, Koh Chuak, Koh Wan
- Seasonal fishing prohibited in some area during spawning time
- Monitoring and inspection for illegal fishing in conservation areas of the four villages by a special volunteer group to protect the sea. This volunteer group is recruited from the people in the four communities and has the responsibility to monitor the sea and shoreline together with government officials, Provincial office of Marine and Coastal Resources of Phuket, Trang Provincial Police, Prevention and Protection of illegal fishing. Marine Fisheries Suppression and Prevention Center, and Department of Fisheries. The four sets of volunteers rotate monitoring duty every week
- Campaign of information dissemination and public relations: The set up of the conservation nursery area in the four communities must be communicated to the people and the public should focus on raising awareness related to conservation and the creation of signs for conservation areas. As well as public relations activities an organized travelling exhibition to raise awareness on the topic related should be created
- Develop and encourage the participation of youth in the community in conservation work by

organizing a conservation camp in the four village to raise awareness and educate youth as well as a campaign with outsiders who utilize the natural resources in this area including commercial fisherman

- The four communities have established an administrative committee to manage protect and restore the conservation area as well as a campaign to disseminate information and communicate with the public. Communities have set a meeting time to evaluate needs
- Study and research on marine life especially horse shoe crabs along the conservation area of the four villages, crab bank, set up a fund to replace illegal fishing equipment. The activity of creating artificial reefs and releasing marine life in the conservation area and nearby areas
The work procedure of these four villages is supported by government organizations including Provincial Phuket office of Marine and Coastal Resources Marine Taskforce, Tran Provincial Police, restoration along Andaman Sea network, Andaman Foundation, Trang provincial office, Sustainable Development Foundation (SDF) and Department of Environmental Quality Promotion, Ministry of Natural Resources and Environment. It a necessary for collaboration and participation from related organizations and the community to work with natural resource management along the coastline as well as create a network in the community to share their views and experience on this subject
- Foundation work to prepare and respond to natural disaster has been done primarily by Save Andaman Foundation, Red Cross, Provincial Office of Disaster Prevention and Mitigation and has been promoted and supported in the community. Natural disaster response planning and strengthening the capacity of volunteers as well as establishing a training curriculum for the network of volunteers, the community and school in the area that has faced natural disaster is important. The curriculum has been applied in schools to raise awareness and realization and to create knowledge and understanding related to natural disaster response planning as these situations may occur in the community. There is also support work in preparation and readiness to respond to natural disasters. This project is well received and supported by community members

Capacity and limitation in work process of the community and related organizations

Climate change and natural disaster becoming stronger and more frequent

Though work in the past has mostly focused on conservation and restoration of the environment and natural resources along the coastline, improvement and integration in order to prepare, respond and reduce risk as well as adapt possible change is needed

House construction which is not suitable to environmental conditions and weather has increased in the community due to lack of planning. There is no guarantee that these houses will be safe when natural disasters occur. There is a trend to build houses on the ground which is a change from the traditional house structure that was built raised above the ground

Knowledge and understanding of the community and local administration office to resolve issues of severe erosion

The issue of erosion is far less serious on the Andaman Sea coastline in comparison to the Gulf of Thailand coastline. In some areas there is support work being done by the local administration office which is a sensitive topic. Alternative solutions for erosion in the past have often solved the issue only in the short term but have also created more erosion in the future. The community and local organizations lack a true understanding of the issue. It is necessary to promote and support the learning process to build a capacity for the community and related organizations to tackle the problem

Knowledge, interest and potential of communities to respond to problems and resolve unknown situations

One solution to deal with erosion issues in the area of Koh Mook was attempted by relocating affected community members to higher ground. The community also created an artificial reef to restore the ecosystem and engage the community natural resource management by utilizing their knowledge and wisdom to accelerate the work. Improving the livelihood will go the same way as change but the still lack an understanding of global warming and its impact

As to their awareness of the impacts caused by natural disaster the community has requested the Harbour Department dredge the canal and estuary but because of the rapid accumulation of silt the community lacks the knowledge and budget to deal with this issue. The community hopes to receive assistance from government organizations to search for methods to reduce the accumulation of silt and to reduce their issues and risks

Procedure

There is natural disaster training for volunteers on the issue of global warming and the link to the changes happening in the local area. There was a campaign against global warming which was foundation work that needs improvement and integration

There is work on a campaign for local natural resource management which encourages local participation in marine and natural resource management along the coastline. It still lacks a law to guarantee community rights and the lack of participation from the community for the responsibility of natural resource management is in the hand of government organizations. Though the constitution of Thailand includes community participation up until now there has been a lack of action

Issues and Challenges

Information has not been disseminated and there is a lack of the knowledge on climate change

Planned objectives that government organizations, the private sector and local organizations have collaborated on often lack participation and interaction between related organization that will lead to the desired resolution

Government development policy and legal loopholes still do not serve the needs of the majority but often focus on the needs of certain individuals

Natural resource management especially for marine area and the coastline still lacks true knowledge. It's necessary to have knowledge as well as awareness related to natural disasters

Though several sea grass research projects have been completed, people in the community still don't realize the importance of the sea grasses and how it is interconnected with other marine life. There is a recommendation to community members to become educated about this information which will lead to primary work in knowledge management on the ecosystem and a pilot project and area research project in the region. At this time there is still a lack of interest from the people in the community

Suggestions and Recommendations

Community natural resource management

- The community must improve their living conditions in tune with all the other changes. The community still lacks knowledge and general information on the impact of global warming
- Volunteer training related to natural disasters in each area
- Utilize local wisdom and knowledge in natural resource management
- Monitor and analyze issues and summarize each project in order to use or apply to future work

- There should be a continuous platform to exchange and share views and ideas and to create positive relations among the network
- Community response preparation to natural disaster that occur or may occur in each community in order to work with the Red Cross response teams
- Establish a community organization and network with the following roles:
 - link all the fisherfolk networks
 - with responsibility for the care and protection of marine and natural resources along Thalay Trang (Trang Sea) by collaborating with government and private organizations
- Research projects with participation from the community
- Support the work on community response preparation to natural disaster
- Monitor marine and natural resources along the coastline by collaborating with government organizations

Knowledge management and capacity building

- Lack of true knowledge on natural resource management
- Contribute: government organizations and the private sector support funding, academic work, information gathering to promote knowledge
Local people participate in education and impact studies that may occur according to traditional wisdom, knowledge and observations
- Rainfall fluctuations create a challenge and impact data gathering and research in the sea
- Gasoline shortages for volunteers when performing their monitoring duties
- Support and campaign on promoting the importance of the eco system to the local community. It's still lacking in some communities
- Conflict in the community, lack of participation from the community
- Support and promotion to grow mangrove forests in the community
- Promote the participation of the community in natural resource management as well as conservation and restoration in every area

Procedure by government organizations

- Government organizations and the private sector has more concern on their involvement in management but often forgets about the goal to work with the community and other related organizations
- Lack of development plan that concerning the local livelihoods
- Lack of government policy or a policy that does not benefit the majority

ANNEX 4: Project Target Areas

A) Criteria for selecting project target provinces and subdistricts

The sites for this project were chosen using the following criteria:

1. One potential site should be chosen in each of the Andaman Coastline, the Songkhla Lake River Basin and the Gulf of Thailand
2. Potential project sites should overlap or adjoin with existing Mangroves for the Future project sites in Nakhon Si Thammarat and Trang Provinces and ideally be located in areas where all project partners have previously implemented projects
3. The site must be at risk from natural disasters, evidenced by current or previous natural disasters and/or future risks to natural disasters
4. There should be clear signs that climate change is having tangible impacts on the local communities in potential project sites
5. The local district must express an interest in participating in the project. They must demonstrate clear capacity to address local problems
6. DDPM should be active in the area, in particular as part of the Department's CBDRM program
7. The community has capacity and has been active in responding to natural disasters in their area
8. Local NGOs and Civil Society Organizations can actively support local communities to participate in natural resource management, natural disaster management and climate change adaptation in potential project sites

Based on the above criteria, a series of stakeholder consultations (see Annex 3) and further discussions among the main project implementing partners, three target provinces (Nakhon si Thammarat, Phattalung and Trang) and four subdistricts (Tha Salah, Koh Libong, Bangk Sak and Jong Thanon) were finally selected for project implementation (see Table 1). Two of the provinces border the Gulf of Thailand (Nakhon Si Thammarat and Phattalung) and the other is on the Andaman coast (Trang). A fifth target subdistrict, Laem Talum Phuk in Nakhon si Thammarat will likely be included because of major complementary TRCS programmes in this subdistrict.

The project's 3 target provinces have overall HAI rankings of 25, 38 and 46 out of 76 (total provinces), with Trang having the highest HAI (25) and Nakhon si Thammarat the lowest (46). General administrative, socio-economic and major environmental and climate-related problems are summarized in Tables 2 – 5. This is followed by a brief narrative summary of the main development priorities and climate and other natural disaster risks of each proposed target subdistrict.

Table 4 Significance of initial four proposed target subdistricts

<p>Tha Salah subdistrict, Tha Salah district, Nakhon Si Thammarat province</p>	<ul style="list-style-type: none"> • Representative of the coastal ecosystems found along the Gulf of Thailand Coastline • Representative of coastal areas affected by major industrialization • Overlaps or adjoin existing Mangrove for the Future project site • Severely affected by coastal erosion, described by the World Bank as the most urgent problem facing Thailand’s marine and coastal ecosystems
<p>Jong Thanon subdistrict, Kao Chai Son district, Phattalung province</p>	<ul style="list-style-type: none"> • Representative of the coastal ecosystems found within the Songkhla Lake River Basin • Representative of coastal areas used for agricultural practices • Representative of coastal areas affected by rapid urbanization • Severely affected by heavy and prolonged annual flooding, drought, and poor soil quality, subject to a previous Department of Irrigation and Royal Project to alleviate annual flooding, water shortage and saltwater intrusion problems
<p>Koh Libong subdistrict and Bang Sak subdistrict, Kantang district, Trang province</p>	<ul style="list-style-type: none"> • Representative of the coastal ecosystems found along the Andaman coastline • Representative of coastal areas used for tourism practices • Overlaps or adjoins existing Mangrove for the Future project site • All 4 of the project’s implementing partners have previously implemented projects in or near this project site • Previously affected by the 2004 Indian Ocean Tsunami • Severely affected by ongoing changes to the coastal ecosystem, including coastal erosion, shallowing of watercourses, accumulation of sediment, and flooding of housing and settlement areas.

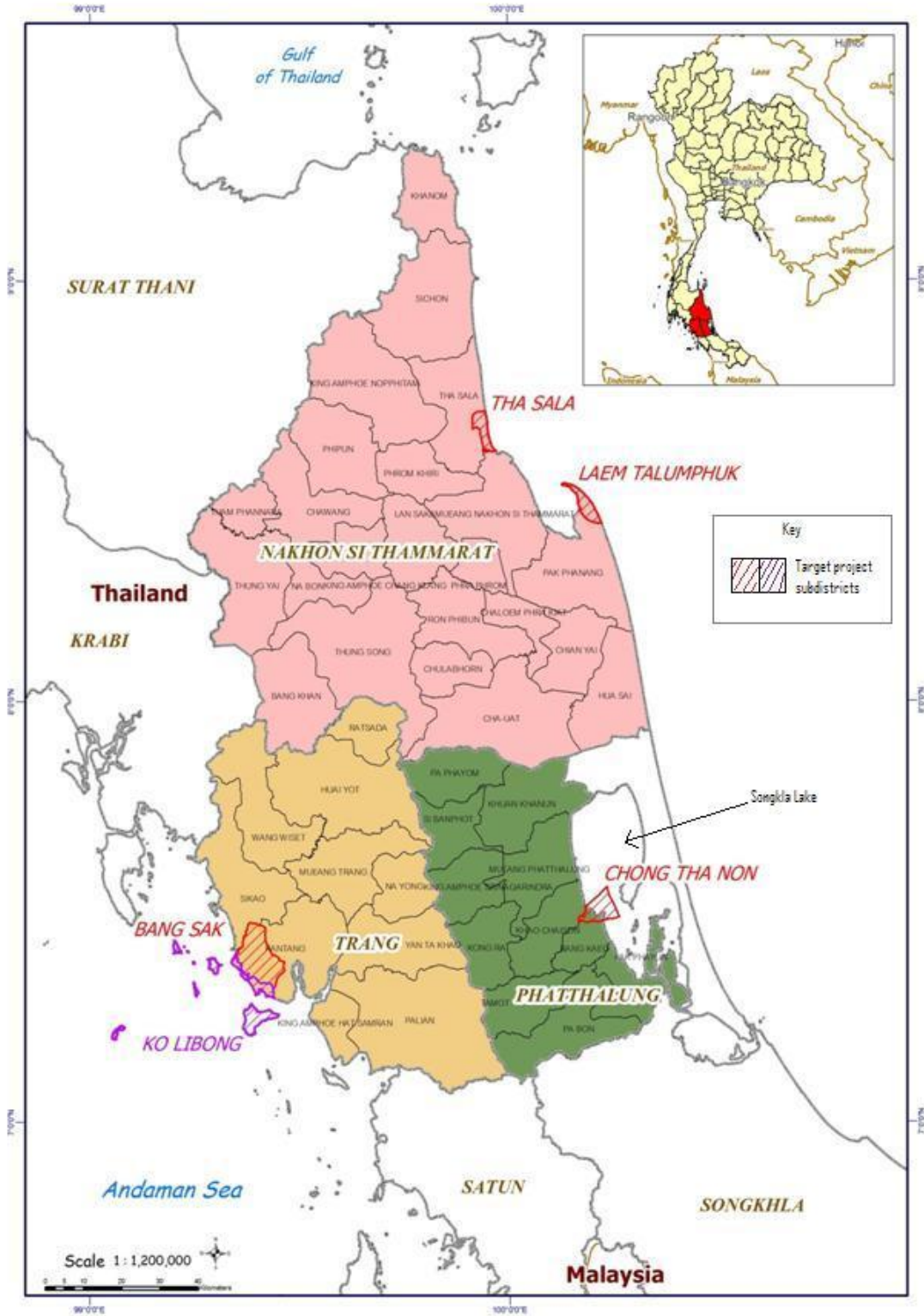


Figure 1 Map of proposed project sites

B) Information Tables

Table 5 Administrative and population data of target provinces

Nakhon Si Thammarat	9,942.5	Total 1,519,811 152.9/km ²	- 23 districts - 165 subdistricts (6 coastal) - 1,428 villages
Trang	4,917.5	Total 595,110 121/km ²	- 10 districts - 87 subdistricts - (5 coastal) - 697 villages
Phattalung	3,424.5	Total 498,471 145.6/km ²	- 11 districts - 65 subdistricts - (0 coastal) - 626 villages

Table 6 Target subdistrict population data

Nakhon Si Thammarat	Tha Salah	15	28,700
	Laem Talumpuk	3	2,282
Trang	Koh Libong	8	998
	Bang Sak	6	5,636
Phattalung	Jong Thanon	7	3,627

Table 3 Economic data for agriculture, fishing and all sectors in Thailand

	National GDP	Southern GRP*	Provincial GPP+		
			Nakhon Si Thammarat	Trang	Phattalung
Agriculture	950.861	283.799	28.569	27.303	13.599
Fishing	105.977	59.014	7.042	4.900	1.018
All sectors	9,075.493	902.853	129.724	66.064	35.614

*GRP = Gross Regional Product; +GPP = Gross Provincial Product; US\$1 = approximately 32 Thai baht

Table 4 Major climate and development risks by province

Nakhon Si Thammarat	Tropical Hot: February to June. Wet: July to January Monsoon: northeast	Coastal erosion and changes in coastal morphology
		Illegal and destructive fishing methods
		Water shortages
		Changes in land suitability
		Flash flooding and sea surges
Trang	Tropical Hot: mid February to mid May Wet: mid May to mid February Monsoon: southwest and northeast	Coastal land and marine degradation
		Destructive fishing methods
		Coastal erosion and siltation of estuaries
		Sea water inundation in low lying areas
		Ecosystem destruction from aquaculture
		Land shortages and uncertainty about land ownership
Phattalung	Tropical Wet: June to January Hot: February to May Monsoon: northeast	Overfishing, pollution, salination and shallowing of the Songkhla lake
		Illegal and destructive fishing methods
		Prolonged annual flooding
		Changing seasonal weather patterns
		Ecosystem destruction from aquaculture

Table 5 Major industries and economic activities by province

Nakhon Si Thammarat	Crops: rubber, rice, fruit, vegetables , coconut
	Fisheries, aquaculture
	Livestock and poultry
	Small scale industrial: mineral processing, brick making, saw mills, ice manufacturing, boatyards
	Tourism
Trang	Crops: rubber, rice, coconut, palm oil, durian, cashew nut, bitter bean, cocoa, watermelon, peanuts and vegetables.
	Fisheries including processing into frozen and tinned seafood
	Mining - tin ore, fluoride, coal and barite
	Agricultural processing plants: rubber smoking, palm oil extraction
	Tourism
Phattalung	Crops: rubber, rice, fruit, vegetables , coconut
	Fisheries, aquaculture
	Tourism

C) Brief descriptions of project target provinces and subdistricts

1. Province: Nakhon Si Thammarat

Nakhon Si Thammarat is located on the Gulf of Thailand. The terrain is mostly mountainous, with the province being home to Thailand's highest peak Kao Luang (1,835m). It also contains the Nakhon Si Thammarat mountain range, which splits the province into three distinct areas; coastal plains, inland plains and the central mountainous region. The western part of the province is influenced by the monsoon winds from the Indian Ocean, while the eastern coastal areas are subject to tropical storms which develop in the South China Sea.

The economy of Nakhon Si Thammarat relies heavily on its natural resources for timber, agriculture, fisheries and associated secondary industries.

It is reported to have 10,278ha of mangrove forest, some 4.4 percent of Thailand's total mangrove area. The largest mangrove forest is found in Pak Panung district, Nakhon Si Thammarat where SDF is currently working with IUCN on a Mangroves for the Future project. Mangroves present an important resource for the community for their ability to prevent coastal erosion and provide timber and food as well as habitat for many aquatic and bird species.

Projected impacts of climate change

Climate change projections for Nakhon Si Thammarat show an expected increase in intense rainfall events and temperatures. The province can expect to see an increase in the incidence and severity of flooding, higher temperatures, stronger monsoonal winds and sea level rise causing salt water inundation and erosion.

This project will be working in two subdistricts of Nakhon Si Thammarat, Tha Salah and Pak Panung.

1a) Subdistrict: Tha Salah

The Tha Salah subdistrict is one of ten subdistricts in the Tha Salah district. It has 12km of coastline and an area of about 27sq km. The flat landscape is a mixture of sandy beaches and mangrove forests. To the west of the subdistrict are lowland plains, suitable for agriculture and rice. The subdistrict is comprised of 15 villages, with a total population of 28,700 people in 4,474 households.

The majority of the population in Tha Salah subdistrict conducts small scale traditional fishing and some also raise livestock and poultry. The number of people employed in crop agriculture is relatively few; while those employed in secondary occupations including mineral processing and trading are greater.

There are a total of 31 different livelihood and occupation groups in Tha Salah subdistrict, indicating strong community networks and local resources. One prominent organization is the Nakhon Si Thammarat Traditional Fisher-folk Network, which is active on issues such as coastal erosion and development projects.

Some communities in the Tha Salah subdistrict have set up community funds to support initiatives aimed at protecting, conserving and rehabilitating marine and coastal resources and ecosystems.

The development priorities under the 3 year development plan (2010 – 2012) of the subdistrict include

- Development strategies to promote quality of life:
 - Increase the number of members of the public who have an occupation
 - Increase household incomes
- Strengthened local administration organizations
 - Increase meetings between officials and members of the public
 - Increase the number of subdistrict administration organization officials and other related individuals who receive training to increase their knowledge
- Development activities relating to infrastructure:
 - Increase the number of households with sufficient access to public utilities
 - Repair and maintain roads

- Increase the number of villages that receive protection under the flooding and water storage system
- Increase the number of infrastructure information systems

Tha Salah Subdistrict climate, disaster and development risks

Current disaster risks in Tha Salah include flash flooding and sea surges. However, the subdistrict is also facing increasing problems with other climate-related hazards, including, coastal erosion and changes in coastal morphology, water shortages and changes in land suitability for various applications (e.g. housing, agriculture).

Salination of soil and fresh water is a major issue for Tha Salah, and villagers report that fruit trees have been lost due to salinity while households frequently have freshwater resources contaminated.

Villagers believe that the construction of a dam in nearby Pak Panang district has caused severe coastal erosion in the Tha Salah subdistrict. In response, a large number of seawalls were constructed. However, these have brought benefits as well as problems and the coastal morphology of the subdistrict has now been altered considerably. Newly formed land is becoming a source of community disputes, due to uncertainty of ownership and land use suitability. There are concerns that the developments planned on newly formed land are not well planned and sustainability issues have not been considered.

Villagers report that the amount of mangrove cover is decreasing in Tha Salah due to overuse and aquaculture encroachment.

1b) Subdistrict: Laem Tulumpuk

Laem Tulumpuk borders the Andaman Ocean to the east and a mangrove forest and Pak Panang Bay to the west. The majority of the 593 households practice fishing (485). Other occupations include tiger prawn farming, small retail businesses and laboring. Previous disasters that have affected the subdistrict include tropical storm Harriet in 1962 that killed 1,030 people and storm surges in November 2009 which damaged coastal property. Every year, the annual monsoon, from October to March causes some damage to homes and property.

The development priorities of the subdistrict include

- Infrastructure development for housing and income generation
- Building sea walls to prevent further coastal erosion
- Conserving marine animals and other natural resources
- Rehabilitating watershed areas and improve management of catchment
- Restoring traditional livelihoods and knowledge to promote tourism
- Ensuring adequate and equitable access of water supply for agricultural activities
- Dredging navigation channels (of Pak Panang Bay)

Laem Tulumpuk climate, disaster and development risks

The major current disaster risk in Laem Tulumpuk is sea surges and associated coastal erosion and changes in coastal morphology. As a result, communities have migrated further inland into the national forest reserve for land and resources. Nearby swamp and mangrove areas have been degraded and are expected to release acidic water into major local water catchments.

Projected increases in monsoonal storms are likely to increase the rates of coastal erosion in the subdistrict, placing more stress on already disputed land resources. Salt water inundation from storm surges and higher temperatures will also increase the likelihood of freshwater shortages throughout the subdistrict.

Community activities

The Laem Tulumpuk TAO is currently supporting projects on mangrove rehabilitation and provides a budget for supporting the development of artificial coral reefs. The TAO worked with the PAO, World Vision and the regional environmental office on the Conservation of Marine Lives by supporting artificial coral reefs between 2001 and 2006. This project then formed the basis for a similar project in the subdistrict, which is currently being administered by the Department of Marine and Coastal resources.

2. Province: Trang

Trang is situated on the Andaman coastline and was badly impacted by the 2004 Indian Ocean tsunami. The province is mainly mountainous forest interspersed with plains used for rice cultivation. Toward the east, the Ban-tad mountain range stretches from the north to the south. This mountain range serves as a border between Trang and Phattalung province. The soil is comprised of sandy loams and the forests are tropical rainforests. There are also mangroves in the areas adjacent to the sea.

Tourism is a major industry in Trang, which has 46 islands including the world famous island of Phuket. Other important industries in Trang include the agricultural crops of rubber, rice, coconut, palm oil, durian, cashew nut, cocoa, watermelon, peanut and vegetables. Rubber and palm oil feed into local processing plants for processing.

Two subdistricts in Trang have been chosen for this project: Koh Libong and Bang Sak. Both subdistricts were affected by the 2004 Tsunami, which caused damage, especially to the fishing communities. The tourism industry is minor on Koh Libong, with only 3 resorts on the island. Several villages of Koh Libong have been working with the Andaman Foundation on disaster prevention and preparedness while managing marine and coastal resources. The major problems that affect fisher people in this area are coastal erosion and degradation of marine and coastal resources.

Projected impacts from climate change

Despite some seasonal changes, Trang can expect an overall reduction in rainfall and also a reduction in the severity and intensity of rainfall events. This is likely to present problems with water shortages for the region. Projected temperature rise is also likely to affect agriculture, evaporation rates and possibly the tourism industry.

2a) Subdistrict: Koh Libong

Koh Libong is comprised of a mountainous island and a hilly plain connected to the mainland. The total area is 4000sq km and has been declared a wildlife sanctuary as it is home to numerous species of birds. Mangroves served as a major protection during the 2004 Tsunami and the island is well forested. Tambon Koh Libong is divided into 2 parts. The first part is a plain linked with the mainland with hilly areas and includes 3 villages. The second part is an island located right in the middle of the sea with high mountains in the middle of the island. There are 5 villages on the island.

Koh Libong's inhabitants practice coastal fishing, rubber cultivation and laboring. In addition, some fisher people of Koh Libong have been working with the forum of fisher folks of Trang province in conserving plants and marine life and other natural and coastal resources.

The development priorities from the 3 year development plan (2010 – 2012) of the subdistrict include

- Development strategies for infrastructure:
 - Repair and maintain roads
 - Construct a bridge and pier for mooring boats

- Reclaim existing roads
- Construct reinforced roads
- Construct waterways for boats along with lighting
- Construct and improve village public water systems
- Dig shallow water wells
- Provide budget for finding water sources

- Economic and tourism strategies:
 - Arrange training for the public on additional livelihoods that are appropriate for the area
 - Construct a centre for goods and products from the subdistrict (One Tambon One Product – OTOP)

- Environment and Natural Resource Management
 - Purchase survey boats
 - Place buoys along coral reefs
 - Arrange training camps and concrete action so people realize that value of natural resources and the environment
 - Processes for treating and managing refuse and waste
 - Produce signs to advocate maintaining cleanliness and caring for natural resources

- Developing quality of life and society
 - Arrange training of civil defense volunteers
 - Purchase equipment and tools for use in firefighting
 - Purchase rescue vehicles
 - Purchase water trucks

Koh Libong climate, disaster and development risks

The communities of Koh Libong are most affected by coastal erosion and the degradation of marine and coastal resources. Future sea level rise is likely to have a significant effect on the island especially in areas which are already facing salt water inundation during high tide. Sea level rise combined with a steady rate of subsidence on the Andaman coastline is likely to exacerbate coastal erosion and land availability, which is already a point of tension within some communities.

Communities have already reported a change in weather patterns and a reduction in the availability of freshwater

2b) Subdistrict: Bang Sak

Bang Sak subdistrict is a largely lowland area dotted with small highland areas and small mountains. Most of the area is used for agriculture. Other than that, there are water source and mangrove forest areas. Some parts of Bang Sak subdistrict lie within the boundary of Had Chao Mai National Park while other parts of the village adjoin mangrove forest areas. The total population within the boundary of Bang Sak subdistrict is 5,636, of which 2,766 are men and 2,870 are women. There are a total of 1,091 households.

The development priorities from the 3 year development plan (2009 -2011) of the subdistrict include

- Development strategies for infrastructure:
 - Construct, reclaim, improve and repair roads, bridges, drainage pipes and piers for mooring boats
- Development strategies for promoting public participation:
 - Promote and encourage disaster prevention and mitigation systems
- Conservation of natural resources and the environment in parallel with tourism promotion
 - Conduct training to raise awareness about natural resources and the environment
 - Demarcate and survey publicly used land
 - Source: construct and improve materials, equipment, tools and appliances for refuse and waste disposal within the communities
 - Improve drainage channels within the communities
- Strategies for the conservation and promotion of local knowledge
 - Promote and conserve local traditions, customs and culture, as well as the activities carried out on various important days
- Development strategies for public wellbeing:
 - Support and encourage the strength and resilience of local small scale agriculture by applying the sufficiency economy philosophy

Bang Sak climate, disaster and development risks

The current risks that are faced by the Bang Sak subdistrict are those of changing coastal ecosystems and coastal erosion. The area was affected by the 2004 Tsunami, and since then has experienced shallowing waterways and changes in coastal currents. Changes in land use patterns has seen increased degradation of marine and coastal resources resulting in the reduction and degradation of marine animals, mangrove forests, beach forests and sea grass.

Although the severity and frequency of rainfall events is projected to decrease in Trang, the communities of Bang Sak are likely to experience the increased impacts of water shortages and sea level rise.

Community organizations in Koh Libong and Bang Sak

The Trang province Traditional Fisher-folk Society implements activities and monitors policies related to the management of marine and coastal resources in Trang province.

The Taskforce for Marine Monitoring and Preservation (known in Thai by the two-letter acronym ‘chor-gor’) is currently working in the subdistricts.

The ‘4 Village Marine Zone (known in Thai as ‘Khet Lay See Ban’) is a coastal resource management initiative developed around 4 communities, namely Ban Chang Lang Community, Mai Fat subdistrict, Sikao district; Ban Koh Muk Community, Koh Libong subdistrict, Ban Nam Rab Community and Ban Kuan Tung Koo Community, Bang Sak subdistrict, Kantang district. This initiative has led to the established of the ‘4 Village Juvenile Marine Animal Species Conservation Zone’, Trang province. The conservation zone

covers an area of approximately 44.02 square kilometers (27,518 rai), and runs for approximately 15.62 kilometers along the mainland coastline from Ban Chang Lang Village to Yong Ling Beach, and also covers approximately 8.44 kilometers of the coastline of Koh Muk Island.

3. Province: Phattalung

Phattalung is situated on the eastern side of Thailand's southern peninsular. It does not border the ocean directly but rather the western shore of the shallow Songkhla lake, the largest natural lake in Thailand. To the west, Phattalung is covered by mountains of the Nakhon Si Thammarat chain and borders Trang province. To the north, the province borders Nakhon Si Thammarat, while to the south it borders Satun and Songkhla provinces. The Khao Pu - Khao Ya National Park is located in the mountains at the border with Trang.

Phattalung is largely mountainous, except for the flood plains around Songkhla Lake. Many small rivers in the province many drain into the Songkhla Lake, which is separated from the ocean by a 75km long spit. The lake eventually opens into the sea in Songkhla province.

Projected climate change impacts

Phattalung is likely to experience a wetter rainy season and a drier mild season, with the associated impacts of increased occurrence of flooding and water shortages respectively. Increased temperatures, particularly in the second half of the century, may exacerbate the impacts of water shortages and the survival of aquatic species in the shallowing Songkhla Lake.

3a) Jong Thanon subdistrict

The Jong Thanon subdistrict is an area of lowland plains with three main waterways (Bak Paniat, Bang Kaew and Truh waterways). Its area is 18 sq km, consisting of 1,028 households with 3,627 residents. Approximately three quarters of the land is covered in agriculture and this serves as the main income for the subdistrict.

The villagers of Jong Thanon have formed a number of community groups, namely village fund groups, farming groups, housewives groups, savings groups, and fisherman groups.

Jong Thanon climate, disaster and development risks

The emphasis on agriculture in the subdistrict means that water use and management are a prominent issue. Villagers report that rainfall events are commonly very brief and are seldom enough for agricultural crops. Occasional storms that last several days are useful for replenishing reservoirs in the subdistrict but also trigger localized flooding and environmental degradation. Such rainfall patterns mean that the Jong Thanon subdistrict alternates between water shortages and water inundation. Flooding can last many months and villagers have shifted their occupations and adapted their housing to cope. In addition, salinisation of water and soils is an increasing problem.

Current climate projections show that rainfall will increase during the wet season and decrease during the hot season over the next 50 years. Projected increases in the intensity of rainfall events during the

wet season is likely to place increased pressure on water management and increase the likelihood of flooding events, while a drier dry season may see more community members reconsidering agricultural livelihoods.

Sources of information

The main source of information for this section was the community study report completed as part of the PPG phase.

JITPIROMSRI, S. (2009) Community Study Report. Faculty of Political Sciences. Prince of Songkla University. Pattani, Thailand

Additional information on subdistrict development priorities was supplied by SDF and TRCS in collaboration with the subdistrict administration organizations (TAO).

ANNEX 5: Stakeholder Involvement Plan

Stakeholders	Contact Information	Mandate and Interest in the Project	Involvement in the project
Key Implementing Partners			
Thai Red Cross Society (TRCS)	<p>Dr. Pichit Siriwan, Deputy Director, Relief and Community Health Bureau, Thai Red Cross Society, 1873 Rajadamri Road, Pathumwan, Bangkok 10330</p> <p>Tel: 66-2-256-4427 to 9</p> <p>Fax: 66-2-251-0385</p> <p>drpichit@yahoo.com</p>	<p>The Thai Red Cross Society (TRCS) was founded in 1893 under the patronage of the Royal Family. TRCS is the largest humanitarian organization in Thailand today with 12 Health Stations, 75 Provincial Chapters and 216 District Branches. TRCS operates under the governing principles of the International Red Cross and Red Crescent Movement and. The Society's work is carried out through TRCS has four core areas of work: medical and health care services; disaster preparedness and response; blood transfusion services; and improving the quality of life and providing social welfare services to vulnerable groups. TRCS is a pioneer in the field of Community Based Disaster Risk Management (CBDRM), with particular experience from the southern provinces that were hardest hit by the 2004 Tsunami. The Society's core competencies include disaster risk assessment and management, including preparedness and emergency response, and developing community capacity for DRM in risk prone areas. TRCS works closely with DDPM and with local government and communities, CBOs, NGOs and CSOs.</p>	<p>PPG</p> <p>Participated in the strategic development of the project and hosted project discussions at TRCS headquarters in Bangkok</p> <p>MSP</p> <p>TRCS is the Executing Agency for the project and will host the PMU at its headquarters in Bangkok. TRCS is a major project cofinancier and will play a key role in project implementation through its baseline programmes and field staff and volunteers in the project target areas. TRCS, together with DDPM and SDF will be a part of the local project Technical Support Teams. TRCS will be trained in conducting climate VCAs and will integrate climate risk considerations into their existing VCA training (Output 1.4). They will also be involved in conducting VCA's at the community level (Output 1.1). Existing TRCS networks will be used to disseminate project knowledge (Output 4.2) and replicate project results. TRCS will host the project website and</p>

			showcase project lessons at annual events (Output 4.3)
<p>Department of Disaster Prevention and Mitigation (DDPM), Ministry of Interior (MOI)</p>	<p>Mr. Atthaporn Singhavichai, Office of Research and International Cooperation, Department of Disaster Prevention and Mitigation, 3/12 U-Thong Nok Road, Dusit, Bangkok 1030 Tel: 66-2-2430020 Fax: 66-2-2435279 foreign_dpm@yahoo.com</p>	<p>DDPM is the principal government agency that formulates and implements policies and activities on disaster prevention and mitigation in Thailand. In coordination with other key government stakeholders and the private sector, DDPM leads the development of a cabinet-approved National Disaster Prevention and Mitigation Master Plan. The current Masterplan covers four years from 2008-2012. DDPM also coordinates relief and compensation efforts for those affected by disasters as well as conducting training on DPM in both the public and private sectors. Additionally, DDPM works closely with TRCS at the community level to develop capacity, knowledge and skills to prepare and plan for emergencies. DDPM also funds and helps train the Ao Pho Po Ro and Mr Warning volunteers in disaster risk reduction and relief efforts (see Annex 5). DDPM has 18 regional offices across Thailand, including four in the south, two of which cover the provinces targeted in this project: Zone 11/Surat Thani covers Nakhon Si Thammarat and Phattalung and Zone 18/Phuket covers Trang. DDPM also has a training academy for DDPM staff with 3 campuses, including its main campus at Pathumthani in Bangkok. Since 2009, each province has started to develop a Provincial Disaster Prevention and Mitigation Plan. Annual budget requests can be made to the provincial government to finance activities under the plan.</p>	<p>PPG Participated in the development of the project through stakeholder meetings and provided information about current DDPM programs.</p> <p>MSP As Co-Chair of the Project Board and a major project cofinancier, DDPM will play a significant role in the project, both in guiding and supporting implementation and in policy advocacy to achieve the project's objectives. DDPM, together with TRCS and SDF will also be a part of the local project Technical Support Teams. DDPM will be directly involved in conducting the climate VCAs, (Output 1.1). DDPM staff will also be trained in conducting climate VCAs. Options for integrating climate risk analysis and adaptation into the DDPM training curriculum will be explored (Output 1.4). Provincial DDPM staff will be trained in climate risk analysis and coastal adaptation planning and will attend demonstration activities in project sites (Output 3.2). DDPM will participate in discussions about major project lessons/recommendations with other key policy makers at the national level (Output 4.1). Existing DDPM networks will be used to disseminate project knowledge (Output 4.2) and DDPM will showcase</p>

			<p>project lessons at annual events (Output 4.3). TRCS will also play an important role in scaling up and replicating project results through its programmes and trainings after the end of the project.</p>
<p>Sustainable Development Foundation (SDF)</p>	<p>Ms. Ravadee Prasertcharoensuk The Sustainable Development Foundation (SDF) - Secretariat Office 86 Ladpraw 110 (Yeak 2) Ladpraw Road Wangtonglang Bangkok 10310 Thailand Tel: +66 2 819125725 Fax: +66 2 9352721 Ravadee.prasertcharoensuk@gmail.com Sdfthai@gmail.com</p>	<p>The Sustainable Development Foundation (SDF) is a Bangkok-based organization. Originally established in 2000 to support a sustainable natural resource management program funded by the Danish Cooperation for Environment and Development (DANCED), SDF has continued to focus on promoting environmental sustainability and supporting the development of community capacity for sustainable development and ecosystem-based NRM. SDF has been involved in a number of nationally and internationally supported projects, including ones in Tsunami-affected areas. SDF has a particular interest in community empowerment, particularly of women and other vulnerable groups. SDF works through and by developing and/or strengthening various NGO and CBO networks that share their overall vision and goals. For example, SDF was one of the founding members of the Save Andaman Network (SAN), which was established to support Tsunami recovery activities in Thailand (see Annex 5). SDF acts as the Secretariat for SAN and is also the National Coordinating Organization for the Global Network of Civil Society Organizations (CSOs) for Disaster Reduction. Additionally, SDF is currently implementing a Mangroves for the Future (MFF) project to improve coastal zone management in selected subdistricts of Southern Thailand, some of which are also target sites for this project.</p>	<p>PPG SDF coordinated the field studies during the PPG phase. They assisted in identifying potential project sites, summarized site information and conducting field and national level consultations with key stakeholders. SDF were also involved in the strategic development of the project.</p> <p>MSP SDF is also an important project implementing partner and cofinancier to the project. SDF will support project implementation on the through the local project Technical Support Team and through its extensive community-based and other networks. SDF will work closely with TRCS and DDPM to achieve planned project outcomes. SDF will especially support all project components that relate to direct community engagement. Notably, they will assist with the Climate VCA's conducted under Output 1.1 and the development of the Community Climate Risk Reduction Action Plans (Output 1.1). SDF will also support the design and implementation of community-based adaptation measures under Output 2.1, ensuring that these</p>

			<p>build on existing knowledge and lessons learned from SDF's work on social mobilization, women's empowerment and ecosystem-based sustainable development. SDF will also support policy advocacy components of the project at provincial and national level as well as the dissemination of project knowledge and lessons learned (Outcome 4) and replication of results. DDPM will play a major in upscaling and replicating successful project approaches.</p>
<p>Key Stakeholders within Target Provinces, Subdistricts and Villages (also see Annexes 2 & 5)</p>			
<p>The Office of the Provincial Governor & Provincial Administration Heads at different levels</p>	<p>Mr. Sayan Intrapakdi, Head, Provincial Office, Trang City Hall, Patthalung road, Amphoe Muang, Changwat Trang 92000 Tel: 66- (0)75-21 6018 Fax: 66 (0) 7521 1478</p> <p>Mr. Somboon Orankitcharearn, Head, Provincial Office, Nakhonsrithammarat City Hall, Rajadamnern road, Amphoe Muang, Changwat Nakhonsithammarat Tel: 66 (0)75-356553 Fax: 66 (0)75-356531</p> <p>Mr. Somchai Banyacharoen, Head, Provincial Office,</p>	<p>The provincial administration is headed by the Provincial Governor and is an appointee of the Ministry of Interior (MOI). The Provincial Governor's Office prepares 4 year provincial development plans consistent with national and sectoral development policies and strategies, taking into account provincial resource endowment and development priorities. The governor oversees the coordination of line ministry plans and programmes to ensure horizontal integration at the provincial level. District Chiefs (Nai Amphoe) appointed by the Provincial Governor are responsible for ensuring similar horizontal integration at the district level. District Chiefs also supervise the appointed Subdistrict Heads (Kamnam) and Village Chiefs (Phu Yai Baan), who are responsible for overseeing development planning and delivery within their respective subdistricts (Tambon) and villages (Mooban).</p>	<p>MSP</p> <p>Relevant officials from the Provincial Governor's Office and the Provincial Administration will participate in project training workshops (Output 3.2), policy discussions (Output 3.3) and in discussions on supporting Community Climate Risk Reduction proposals through provincial plans and budgets (Output 3.1).</p>

	Patthalung City Hall, Ramesh road, Amphoe Muang, Changwat Patthalung ,93000 Tel/Fax: 66 (0)7461-3409 email : phatthalung@moi.go.th		
Kor Bor Jor / Integrated Provincial Administrative Committee (IPAC)	As above	The IPAC, (also sometimes referred to as the provincial development committee), is a key decision-making body at the provincial level with representation from both elected and appointed streams of government (see Annex 2). The IPAC is chaired by the provincial governor and includes deputy governors, the provincial representatives of line ministries representatives, members of the elected Provincial Administrative Organization (see below), representatives of public enterprises, local government administrators, chairs of the provincial chamber of commerce and the provincial industry association as well as civil society representatives. The IPAC guides and oversees the integrated administration and development of the province and is responsible for approving the four-year Integrated Provincial Development Plan as well as the annual Provincial Action Plan which contains the annual budget requests	MSP In order to generate interest and understanding of the development value of community-based adaptation, selected IPAC members will be invited to training workshops (Output 3.2) and periodically engaged in policy discussions as well as invited to visit demonstration sites. The Project Technical Advisory Group and the Technical Support Teams will periodically communicate with the IPAC to brief them about project progress and seek their views and support.
Provincial Administration Organisation (PAO)	Mr. Kij Leekpai, President, Trang PAO, Rama 6 road, Amphoe Muang, Changwat Trang 92000, Tel: 66 (0) 7521 5540 Mr. Phichai Boonyakiat, President, Nakhonsithammarat PAO, #71, Muh 7, Devaburi road, Tambon Phosadet, Amphoe Muang, Changwat Nakhonsithammarat, 80000 Tel: 66 (0) 75-356253 e-mail: office@nakhonsi.go.t	The PAO is an elected body that is also responsible for certain aspects of local administration at the provincial level. PAOs have their own sources of revenue and development plans and budgets. Although PAOs are the higher tier of elected local administration, they have limited authority over TAOs. However, they may provide policy and financial support to TAOs and other local government offices to carry out development activities at the subdistrict level. They also play a useful role in supporting TAOs over issues that cross subdistrict boundaries. For example, PAOs are responsible for protecting and maintaining the natural resources and environment of the province.	MSP Officials at the PAO level will be involved in integrating community Climate Risk Reduction Action Plans into the provincial development plans (Output 3.1). PAO staff will be trained in climate change risks and how to integrate climate risk reduction measures into development planning in coastal areas (Outputs 3.2)

	<p>Mr. Sanan Suphanchanaburi, President, Patthalung PAO, Surin Road, Amphoe Muang, Changwat Patthalung 93000, Tel: 66 (0)74 611603</p>		
<p>Or Bor Tor / Tambon Administration Organization (TAO)</p>	<p>Ms. Auy-Pornthip Srichareern, Thasala TAO, Tambon Tha sala, Amphoe Pak Panang, Changwat Nakhonsithammarat, 80160 Tel: 075-330-474 Fax: 0-7533-0474</p> <p>Mr. Song-Rit Thanawattana, Laem Talumpuk TAO, Tambon Laem Talumpuk, Amphoe Pak Panang, Changwat Nakhonsithammarat, 80140 Tel: 0-7534-9254 Fax 0-7534-9254 ext. 16</p> <p>Mr. Boonlert ChonglakBang Sak TAO, Tambon Bang Sak, Amphoe Kan Tang, Changwat Trang, Tel: 0-7529-2067 Fax. 0-7529-2067</p> <p>Mr. Arthorn Lek-kerd-pon Kor Libong TAO, Tambon Libong,</p>	<p>The Or Bor Tor or TAO is the smallest unit of local government administration and includes both an elected executive and council as well as government civil servants. They are the most relevant local government body at the community level. TAOs are responsible for the preparation and execution of local development plans that cover the needs of the villages within a TAO i.e. a subdistrict. TAOs have responsibilities in most government sectors, including disaster prevention and mitigation, environmental management, health and education. As well as receiving funds from the national government, TAOs also generate their own revenues from taxes and other sources to finance their development schemes. TAOs prepare three-year development plans with annual action plans. Proposed expenditure is outlined in each fiscal year's budget and must be approved by the TAO council, the Provincial governor and MOI. They also play an important role in coordinating and integrating local development needs into upstream provincial development planning processes.</p>	<p>PPG</p> <p>TAO officials were involved in multi-stakeholder meetings conducted by SDF during the PPG phase. Participants were briefed on project objectives and provided feedback on implementation arrangements and project activities.</p> <p>MSP</p> <p>In this project, TAO will play a key role in integrating climate related risks and adaptation priorities into the sub-district and provincial development process. TAO officials will be involved in conducting climate VCA's (Output 1.1.) receive training on integrating climate risk reduction and community based adaptation into coastal development planning (Output 1.2). The TAO will integrate Community Climate Risk Reduction Plans into its planning process with committed budget activities (Output 1.3)</p>

	<p>Amphoe Kan Tang, Changwat Trang, Tel: 0-7520-7529 Fax: 0-7520-7529</p> <p>Mr. Peera Suthironnaritprakarn Chong Tanon TAO, Tambon Chong Tanon, Amphoe Khaw Chai Son, Changwat Patthalung, 93130 Tel: 0-7461-4265</p>		
<p>Samakom Or Bor Tor / Association of Subdistrict Administration</p>	<p>Association of Tambon Administration Organization, 99/1150, Muh 16, Soi 21 Khor, Saphansung, Bangkok 10250 Tel: (081)4327741</p>	<p>The Association of Sub-district Administration was established to provide mutual support among the TAO executives and council members. It provides a forum for discussion of Tambon priorities and needs and is an influential body.</p>	<p>MSP</p> <p>The Association has the potential to generate greater support for project objectives among subdistrict government officials and other important bodies. The Association can also play a role in supporting replication. Association meetings represent an opportunity to build the knowledge and capacity of its members on climate change adaptation and climate risk reduction (Output 1.2)</p>
<p>Communities, Community Leaders and Community Groups</p>	<p>NA</p>	<p>Up to ten communities/villages will be actively involved in implementing project activities. The selection of target communities will be finalized during the project inception phase. Apart from the communities themselves, important stakeholders at the village level include the community leaders, such as the Kamnan or Subdistrict Heads and Village Chiefs as well as other community leaders, representatives and various community organizations (such Fishing Groups, Womens' Groups and various volunteer groups) all of whom play important roles in local decision-making and/or the provision of community services, including policing, natural resource management and disaster risk management. Individual communities prepare annual</p>	<p>PPG</p> <p>Key community leaders and groups were involved in project development consultations conducted by SDF. Participants were briefed on project objectives and provided feedback on implementation arrangements and project activities.</p> <p>MSP</p>

		<p>Village Plans, which are submitted to TAOs for financing. TAOs can also support communities obtain funding from other government sources within the province via the District Chiefs.</p>	<p>Community leaders will play an important role in mobilizing and maintaining community interest in the project. Community leaders and groups will be involved in all project components relating directly to local communities. Representatives of community leaders and groups will participate in the Climate Change VCA's (Output 1.1) and producing the Climate Risk Reduction Action Plans which will be submitted to the TAO for funding (Output 1.3). They will also be involved in supporting the implementing demonstration activities in their community (Output 2.1) and showcasing promising adaptation measures. They will also be involved in analyzing project knowledge and lessons learned and sharing these with other coastal communities (output 4.2).</p>
<p>Government Bodies, Line Ministries and Departments</p>			
<p>The Prime Minister's (PM's) Office</p>	<p>Office of the Permanent Secretary Government House, 1 Nakorn Pathom Road, Bangkok 10300 www.opm.go.th Tel: 66-2-2819621</p>	<p>The PM's Office includes various high-level committees who undertake the highest level of national policy consultation and development. The committees of particular relevance to this project include the national committees on climate change and on disaster prevention as well as the National Environment Board (NEB).</p>	<p>PPG The proposed project has been informally discussed with members of the National Climate Change Committee . SDF also coordinates and consults with the PM Office under other programs of work related to acute natural resource management issues.</p> <p>MSP The project will engage closely with the</p>

			NCCC and the committee on disaster management to share project knowledge and lessons learned and advocate for the integration of climate change risks into DRM policy as well as stronger policy support for community-based adaptation
<p>MONRE: ONEP, DMCR, DMR, DNP, Provincial Natural Resource & Environmental Offices</p>	<p>Office of Permanent Secretary of Natural Resources and Environment Ministry of Natural Resources and Environment 92 Soi Phohol Yothin 7, Phohol Yothin Road, Sam San Nai, Phayathai, Bangkok 10400 Thailand, Tel. 0 2298 2789 cict@monre.go.th</p> <p>Ms. Araya Nantphothidej, Deputy Secretary General, Office of Natural Resource and Environmental Policy and Planning, 60/1 Soi Piboonwattana 7, Rama 6 Road, Samsaennai, Payathai, Bangkok 10400 Tel: 0-2265-6507, Fax: 02-265-6508</p> <p>Department of Environmental Quality Promotion, 49, Rama 6 Soi 30, Rama 6 Road, Payathai, Bangkok10400, Tel: 02-2788400-19</p>	<p>MONRE is responsible for natural resources and environmental policy and management in Thailand. MONRE is the operational arm of several national committees chaired by the Prime Minister, particularly the National Environmental Board and the National Committee on Climate Change. The Ministry is also the focal point for several multilateral environmental agreements including UNFCCC and the Convention on Biological Diversity (CBD). Within MONRE, the Office of Natural Resources and Environment Policy and Planning (ONEP) is the national focal point for the UNFCCC. ONEP led the preparation of Thailand's Initial National Communications (INC) to UNFCCC and the development of the National Strategy on Climate Change Management. ONEP is currently coordinating activities under the Second National Communications and leading the preparation of the National Master Plan on Climate Change and works with other key sectors, such as Ministry of Agriculture and Cooperatives, Ministry of Energy and Ministry of Public Health to help them prepare sectoral climate change related policies and plans.</p> <p>MONRE's Department of Marine and Coastal Resources (DMCR) is responsible for the sustainable management of the country's marine and coastal resources. DMCR is also mandated to formulate coastal and marine policy and strategies, conduct research and development, and oversee the utilization of marine and coastal resources. The Director-General (DG) of DMCR is the chairman of the national committee of Mangroves for the Future (MFF). Additionally, MONRE has established a committee and developed an MOU between DMCR and the Department of Mineral Resources (see below) to address the problem of coastal erosion.</p>	<p>PPG Provincial representatives of DMCR and DNP were consulted during the field level consultations conducted by SDF.</p> <p>MSP The project will coordinate closely with MONRE on specific issues, particularly with ONEP, DMCR, DNP, DMR and MONRE's regional and provincial offices. PONRE and DMCR staff will be included in the project's training programmes (Output 3.2). Technical inputs and support will be obtained from DMCR, DMR, DNP and MONRE as needed. At the national level, the project will work closely with ONEP to strengthen policy support for community-based adaptation in Thailand and to disseminate project knowledge and lessons learned nationally and internationally (Outcome 4).</p> <p>Community volunteers from MONRE's line Departments are likely to be involved in the development of Community Climate Risk Reduction Action Plans and the Climate Change VCAs (Output 2.1 and Output 1.1 respectively). They will also participate in knowledge sharing activities under outcome 4.</p>

	<p>Department of Marine and Coastal Resources, Building B, The Government Complex Commemorating His Majesty Chaeng Wattana Road, Laksi Bangkok Thailand 10210 Tel/fax: 66-2-141-1246</p> <p>Department of National Park, Wildlife and Plant Conservation, 61 Pholyothin Road, Ladyao, Chatuchak, Bangkok 10900 Tel: 66-2 561-0777, 66-2- 579-6666</p> <p>Central Administration Office, Department of Mineral Resources, 75/10 Rama 6 Road, Payathai, Rachadevee, Bangkok,10400 Tel: 66-2-621-9529; 66-2-621-9530 Fax: 66-2-621-9531</p>	<p>The main objective of MONRE’s Department of Mineral Resources (DMR) is to monitor Thailand’s geological resources and to manage the use of such resources as well as activities related to their exploration. However, DMR also has a land disaster operations centre and has established an Early Warning System for landslides through the centre along with a disaster volunteer network. Nakhon Si Thammarat, one of this project’s target areas, is also one of the DMR’s focal areas.</p> <p>MONRE’s Department of National Parks (DNP) is responsible for the management of Thailand’s national parks, including coastal and marine resources that fall within national park boundaries. Some of the land in the target project subdistricts falls within national parks.</p> <p>MONRE also has 16 Regional Environmental Offices (REOs) and individual Provincial Offices for Natural Resources and Environment (PONRE). PONRE’s responsibilities include the formulation of provincial environmental management plans and the maintenance of water resources, including groundwater resources.</p>	
<p>Royal Irrigation Department (RID), Ministry of Agriculture and Cooperatives</p>	<p>Royal Irrigation Department, 811, Sam saen road, Dusit, Bangkok10300 Tel: 02-241-0020 to29</p> <p>Office of the Permanent</p>	<p>The RID is responsible for the conservation, regulation, distribution, release and allocation of water for agriculture, energy, domestic consumption and industry. It is also responsible for the prevention of damage caused by water and the inland navigation of irrigation areas. The RID thus plays an important role in managing flood and drought disaster risks. RID has established an Operations Centre at national and regional level to provide early warning information and direction in order to prevent and mitigate flooding. At the national level, RID</p>	<p>MSP</p> <p>RID will be involved in the project as needed in relation to addressing flood and drought risks in the demonstration sites. (Output 2.1). RID will also engaged in broader apacity development and policy-related discussions.</p>

	<p>Secretary, Ministry of Agriculture and Cooperatives, 3, Rajadamnern Nork Road, Bangkok 10200 tel. 0-2281-5955, 0-2281-5884</p>	<p>has launched a disaster risk reduction program including sustainable water use and forecasting and water storage planning.</p>	
<p>Department of Harbour, Ministry of Transport</p>	<p>Marine Department, 1278, Yatha Road, Taladnoi, Samphanthawong, Bangkok 10100 Tel: 66-2-233-1311-8 Fax: 66-2-236-7248 e-mail: marine@md.go.th</p>	<p>The Department of Harbour is responsible for managing waterways for marine transport. Coastal management responsibilities include dredging and preserving the condition of waterways, building dykes to protect river banks from eroding, authorising the construction of ports and imposing tough measures against dumping of waste. In Tha Salah sub-district, one of this project's target areas, DoH has implemented projects to construct seawalls and other types of physical barriers to address problems of coastal erosion and keep major waterways clear for transport purposes.</p>	<p>MSP Representatives of this department at the provincial level represent an avenue to institutionalise climate change adaptation into the provincial planning process (Outcome 3). They may also be involved in community based adaptation activities under Outcome 2.</p>
<p>Ministry of Interior: Provincial Community Development Office (CDO) Community Development Department Department of Local Administration (DLA) Department of Public Works and Town and Country Planning (DPWTCP)</p>	<p>Thanon Atsadang, Khwaeng Ratchabophit, Khet Phra Nakhon, Bangkok 10200 Tel. 0 2222 1141-55 Website : www.minister.moi.go.th Department of Local Administration Wang Suansunantha, Thanon Rajasima, Dusit, Bangkok 10300 Tel. 66 2 241 9000 Fax 66 2 243 2281 Website :</p>	<p>Ministry of Interior is the agency that oversees the provincial governor's office, DDPM and indirectly, the TAO. MOI ensures the development process of the province is consistent with national policies and strategies. The Provincial Community Development Office (CDO) is responsible for the preparation of the community development strategy for the province. They conduct operations related to community development in the province, establish, oversee, supervise and support the operation of the District Community Development Office and jointly operate or support the operation of other related offices. The Department of Local Administration operates under the Ministry of Interior and is responsible for developing policies related to the system and structure of local government organisations. They promote public participation in administration and assess the operation of local government organisations. This Department governs the functions of the PAO and the TAO. This DPWTCP is responsible for assignments on town and country planning including public works, building design and building construction control. It carries out and supports local administrative</p>	<p>MSP Representatives of CDO, DLA and DPWTCP at the provincial level represent an avenue to institutionalise climate change adaptation into the provincial planning process (Outcome 3). Project knowledge and lessons learned (Outcome 4) will be actively shared with these departments, whose advice and inputs will also be sought as needed.</p>

	<p>http://www.thailocaladmin.go.th</p> <p>Department of Public Works and Town & Country Planning</p> <p>218/1 Rama VI Road, Samsennai, Phrayathai, Bangkok 10400</p> <p>Tel. 662 299 4000, 66 2 273 0860-78, 66 2 273 0061 Fax 66 2 273 0895</p>	<p>authorities on town, area and rural development by formulating and supervising land use policies, relocation systems and infrastructure. It also prepares construction quality and standards on Architecture, Engineering and Town and Country Planning.</p>	
<p>Ministry of Public Health (MoPH)</p>	<p>Department of Health, Ministry of Public Health,</p> <p>88/22.Village number4, Tambon Talakwan, Tiwanont road, Changwat Nontburi</p> <p>Tel:0-2590-4000</p>	<p>The ministry of Public Health is responsible for the prevention and control of disease and the support of an effective health system in Thailand. They conduct health research to develop knowledge and new technologies for the health industry, promote general health and well being among the population to control and prevent disease and operate health service units which are responsible for enhancing the quality of health products in Thailand.</p>	<p>PPG</p> <p>Not yet consulted regarding this project at the national level. But Village Public Health Volunteers were consulted during the field level consultations conducted by SDF.</p> <p>MSP</p> <p>Representatives of MoPH at the provincial level represent an avenue to institutionalise climate change adaptation into the provincial planning process (Outcome 3).</p>
<p>Port Authority</p>	<p>Port Authority of Thailand, 444 Tarua Road, Klongtoey, Bangkok 10110 Thailand</p> <p>Tel: 66-2-269-3000</p> <p>Fax:66-2-672-7156</p>	<p>The Port Authority of Thailand is responsible for the management of existing ports for efficiency and fairness, promoting the use of ports for trade and developing new ports when required.</p>	<p>PPG</p> <p>Provincial representatives of the Port Authority were consulted during the field level consultations conducted by SDF.</p> <p>MSP</p> <p>This Authority may be involved with</p>

			project activities where port construction and maintenance affects the management of coastal land for erosion, deposition and flooding.
Ministry of Social Development and Human Security	<p>Office of the Permanent Secretary, Ministry of Social Development and Human Security, 1034, Building 3, Krung Kasem road, Mahanak, Pomprab, Bangkok 10100</p> <p>Tel: 66 2 659 6443, 66 2 659 2526-7</p> <p>Fax. 66 2 659 6529</p>	<p>MSDHS is responsible for promoting social development, creating public equity and enhancing social justice. Its operations aim to encourage quality of life, social security and communications institutes. The MSDHS has Provincial Social Development and Human Security Offices in each of the 75 provinces. These are responsible for social development policies and plans at the provincial level, coordinating with NGOs and other provincial government bodies on the provision of services to people with social service requirements.</p> <p>This ministry also manages the Community Organisations Development Institute (CODI) which supports community organisations and assists in the development of loan systems for communities.</p>	<p>MSP</p> <p>Representatives of MSDHS at the provincial level represent an avenue to institutionalise climate change adaptation into the provincial planning process. Advice and inputs will be sought from MSDHS as needed. The project will learn from the experiences of CODI in particular. Project knowledge and lessons learned (Outcome 4) will also be actively shared with MSDHS, who may also support wider replication of project results.</p>
Academic & Research Institutions			
Southeast Asia START (SEA START)	<p>Ms. Jariya Thitiwate</p> <p>Southeast Asia START Regional Center</p> <p>Chulawich1 Building, 5th Floor, Chulalongkorn University Henry Dunant, Bangkok, 10330</p> <p>662 218 9464-67 Fax:662 251 9416</p> <p>e-mail: admin@start.or.th</p>	<p>The Southeast Asia System for Analysis, Research and Training (START) Regional Center is one of eight regional centres that form the Global Change START network. START conducts multidisciplinary research on the interactions between humans and the environment. SEA START's work involves developing integrated scientific and socio-economic approaches to improve the assessment and forecasting of environmental change in the Southeast Asia region. It provides expert advice to governments and the private sector on how to cope with long-term environmental changes, encourages exchange of environmental data and information between regions and promotes public awareness on global environmental issues. Researchers at SEA START have conducted the bulk of Thailand's downscaled climate change projections and have been researching climate change impacts, vulnerability and adaptation since 1997. In addition, SEA START develops, modifies and tests various tools and methodologies in climate change modeling.</p>	<p>PPG</p> <p>SEA START conducted the climate change projections for 4 of the proposed project sites. Analysis covered seasonal and annual precipitation, tropical storms, mean sea level rise and monsoons.</p> <p>MSP</p> <p>SEA-START will assist in the trainings on climate risk analysis and management (Outputs 1.2, 3.2) and will also participate in the proposed climate change VCAs (output 1.1) More generally, SEA-START will provide technical advice to the project</p>

			as needed, as a member of the Project's Technical Advisory Group.
The Climate Change Knowledge Management Centre (CCKMC)	To be confirmed	The CCKMC is a collaborative centre of excellence between the National Science and Technology Development Agency (NSTDA) of the Ministry of Science and Technology and Chulalongkorn University. CCKMC is a unit within the National Electronics and Computer Technology Centre of NSTDA. CCKMC's goal is to be the national node of knowledge on climate change and vulnerability of development systems and sectors at different spatial and temporal scales. To this end, CCKMC will collect, synthesize and disseminate knowledge on climate change to support strategic planning by government agencies, private sector as well as local communities to increase adaptive capacity. CCKMC is a partner of START and the Regional Climate Change Adaptation Platform for Asia, which has been established through a partnership of the Stockholm Environment Institute (SEI), the Swedish Environment Secretariat for Asia (SENSA), UNEP and the UNEP/AIT Regional Resource Centre for Asia and the Pacific.	CCKMC will help source and/or provide technical advice to the project as a member of the project's Technical Advisory Group. The project will also enlist CCKMC's assistance to disseminate project knowledge and experiences as well as to learn from the experiences and knowledge of others working on climate change adaptation both in Thailand and regionally.
Volunteer Organisations			
Village Police (Chor Ror Bo) Village security maintenance unit	Contact TAO	These are trained by the sub-district and provincial administrations in early warning skills, search and rescue, evacuation, first-aid and disaster relief for a range of potential disasters including flood, drought, landslide, road accident and fire. The stakeholder analysis during the PPG phase indicated that there is still need for capacity building with CDV's in disaster preparedness. Specific training needs are disaster risk assessment, early warning and emergency response systems (tools and methodology), disaster mitigation, and disaster response and recovery. Activities for training of village police are outlined in the TAOs annual and 3 year plans.	PPG Not yet directly consulted regarding this project. However, under the Mangroves for the Future project, Village Police are coordinated and consulted at the field level. MSP Community volunteers will be involved as appropriate in project field-based activities, including project activities to generate awareness about climate change risks and adaptation options. They will also participate in knowledge sharing activities under outcome 4 and potentially

			help in replication of project results.
Thai Red Cross Volunteers	Contact TRCS	<p>The TRCS has approximately 24,000 volunteers. This volunteer base is predominantly female (90%) and volunteers are involved mainly in relief work and social services.</p> <p>The TRCS has provincial chapters in each of the 75 provinces. Each provincial chapter sets up district branches, of which, there are now 216 in Thailand. Both the Provincial Chapters and the District Branches are made up to volunteers. Each chapter is run by a committee of 25 members. Chairpersons of the Provincial Chapters also attend regional Red Cross Council meetings.</p> <p>These volunteer Chapters and Branches carry out TRCS work in four main areas: disaster relief, blood donation services, quality of life promotion and social welfare services.</p> <p>The TRCS Volunteer Bureau is responsible for training volunteers across the country.</p>	<p>MSP</p> <p>TRCS volunteers will be actively engaged in field-based project activities under Outcomes 1 and 2 in particular, but also in the dissemination of project knowledge and lessons learned. The will also be recipients of project awareness generation and targeted capacity development on climate change adaptation. TRCS volunteers will also play a role in scaling up and replicating project results.</p>
DDPM Volunteers Civil Defence Volunteers (Ao Pho Po Ro)	Contact DDPM and TAO	<p>DDPM volunteers are governed by a unit established at the Tambon level. The president of the TAO is the chairman of the unit. Their responsibility is to prevent and mitigate disasters, to maintain peace and stability and to conduct social welfare and relief efforts.</p> <p>Volunteers are trained by the sub-district and provincial administrations in early warning skills, search and rescue, evacuation, first-aid and disaster relief for a range of potential disasters including flood, drought, landslide, road accident and fire. The stakeholder analysis during the PPG phase indicated that there is still need for capacity building with these volunteers in disaster preparedness. Specific training needs are disaster risk assessment, early warning and emergency response systems (tools and methodology), disaster mitigation, and disaster response and recovery.</p>	<p>PPG</p> <p>Civil Defence Volunteers were consulted during the field level consultations conducted by SDF.</p> <p>MSP</p> <p>DDPM volunteers will be actively engaged in field-based project activities under Outcomes 1 and 2 in particular, but also in the dissemination of project knowledge and lessons learned. DDPM volunteers will also play a role in scaling up and replicating project results.</p>
Community Based Emergency	Contact DDPM and TRCS	As part of the CBDRR program, each community has its own Community Based Emergency Response Team. This team is managed	<p>PPG</p> <p>One-Tambon-One-Search-and-Rescue-</p>

<p>Response Team/One Tambon – One Search and Rescue Team</p>		<p>by the Community Disaster Management Committee (CDMC). It is headed by an operational chairman and consists of various sub-committees including; early warning committee, public relations committee, evacuation committee, relief and health committee, search and rescue committee, first aid and trauma committee, guard and security committee and the recovery committee.</p>	<p>Team (OTOS) volunteers were consulted during the field level consultations conducted by SDF.</p> <p>MSP</p> <p>As community volunteers working on DRM, the project will include these groups in awareness generation exercises on climate change adaptation and the linkages with DRM. They will also help to disseminate project knowledge and lessons learned.</p>
<p>Mr Warning</p>	<p>Contact DDPM</p>	<p>Mr Warning is part of the CBDRR program. It is a community based volunteer training program implemented by DDPM in conjunction with various government agencies and NGOs (including the TRCS). The program aims at creating a disaster warning network in villages prone to flash flooding and mudslides. Trained villagers are assigned the title of Mr Warning and are responsible for coordinating emergency responses in their community.</p> <p>Mr Warning has been established in almost all provinces in the south of Thailand. However, Mr Warning is not present in all communities and is especially few in Krabi, Pattani and Pthalung and absent in Phuket. Approximately 10 per cent of ‘at risk’ communities have installed associated meteorological equipment (e.g. rain gauges) and less than 5 per cent have warning siren installed. In conjunction, only 20 per cent of total risk communities have completed CBDRR while another 10 per cent is in the developing stage.</p>	<p>PPG</p> <p>Mr. Warning volunteers were consulted during the field level consultations conducted by SDF. (Although only in some of the target sites, as other target sites did not have Mr. Warning volunteers.)</p> <p>MSP</p> <p>As DDPM community volunteers working on DRM, the project will include these groups in awareness generation exercises on climate change adaptation and the linkages with DRM. They will also participate in knowledge sharing activities under outcome 4 and potentially help in replication of project results.</p>
<p>MONRE Volunteers</p>	<p>Contact MONRE</p>	<p>MONRE volunteers include forest protection volunteers and natural resource and environmental village volunteers.</p>	<p>PPG</p> <p>MONRE Volunteers were consulted during the field level consultations conducted by SDF.</p>

			<p>MSP</p> <p>MONRE volunteers will be invited to participate in awareness generation exercises on climate change adaptation and community-based adaptation. The project will also tap into MONRE volunteers experience of working with communities to manage their environment more sustainably. They will also participate in knowledge sharing activities under outcome 4 and potentially help in replication of project results.</p>
Public Health Volunteers	Contact TAO	Public health volunteers work with and are trained by the Tambon health centre particularly in the area of widespread disease.	<p>PPG</p> <p>Public Health Volunteers were consulted during the field level consultations conducted by SDF.</p> <p>MSP</p> <p>Public Health volunteers will be invited to participate in awareness generation exercises on climate change adaptation and community-based adaptation. They will also participate in knowledge sharing activities under outcome 4 and potentially help in replication and institutionalization of project results.</p>
Non Government Organisations			
Thai Sea Watch Association (TSWA)		The Thai Sea Watch Association is an NGO that was born out of a World Conference on Agrarian Reform and Rural Development (WCAARD) Project for the 'Development of Ban Pak Bang Nathab, (Small Fishing Community) in Tambon Nathab, Songkhla Province'.	<p>PPG</p> <p>SDF has held consultations directly with TSWA regarding the project. However, further consultations will be required</p>

		<p>When it began operation in 1981, the TSWA was the first rural development NGO to operate in the South of Thailand. Later, the target area of the organization was extended to cover areas around Songkhla Lake and fishing communities all along the Gulf of Thailand coastline in Songkhla Province from Thaepha District to Ranoad District.</p> <p>The TSWA Association was formally registered with the governor of Songkhla Province on 9th July 2007. The association has objectives to cooperate and coordinate with the state and other non-governmental organizations in order to promote the development of the quality of life of fisher-folk, to promote the conservation and restoration of marine and coastal resources, and to promote study, research and knowledge development related to sustainable resource management.</p>	<p>during the inception phase of the project in order to finalize exact roles and responsibilities.</p> <p>MSP</p> <p>The Thai Sea Watch Association will be involved in facilitating field level and provincial level implementation and coordination in the Gulf of Thailand.</p>
<p>Save Andaman Network Foundation</p>		<p>The Save Andaman Network Foundation (SANF) was registered as a federation by the Thai Government in 2009 following its involvement in Tsunami recovery. Originally titled the 'Coalition Network for Andaman Community Support', SANF is an extensive network of government agencies and Non-profit organisations.</p> <p>Following the Tsunami, SANF provided fishing tools and funds for boat repairs to 418 communities in 6 tsunami-affected provinces. After completing the relief and recovery phase, SANF went on to supervise the establishment of community enterprises with a strong focus on environmental and natural resource management.</p> <p>Presently, SANF has field staff stationed in a number of provinces along Thailand's Andaman Sea coastline. The majority of these field staff are working closely with local traditional small-scale fisher-folk communities and have therefore developed a strong rapport with the communities.</p> <p>Save Andaman Network Foundation works with local traditional small-scale fisher-folk communities on environmental and natural resource management, disaster risk reduction, climate change adaptation and</p>	<p>PPG</p> <p>SDF has held consultations directly with the Save Andaman Network Foundation regarding the project. However, further consultations will be required during the inception phase of the project in order to finalize exact roles and responsibilities.</p> <p>MSP</p> <p>The Save Andaman Network Foundation will be involved in facilitating field level and provincial level implementation and coordination along the Andaman Coastline.</p>

		livelihood improvement.	
Federation of Southern Fisherfolk		<p>The Federation of Southern Fisher-folk represents the interests of local small-scale fisher-folk from a total of 13 southern provinces. In 1993 the network established itself as a federation following the successful cooperation of local small-scale fisher-folk leaders and the staff of non-governmental organizations over a period of several years.</p> <p>Since then, the federation has worked for the improvement of policies and laws related to local small-scale fisher-folk livelihoods, supported the issuance of the community forestry bill, and promoted and supported the establishment of marine and coastal management and conservation zones. It has also promoted the decentralization of authority and power regarding the management of natural resources and the environment, as well as people participation in the formulation of policies and measures related to the sea, the coast and the way of life of local small-scale fisher-folk.</p>	<p>PPG</p> <p>SDF has held consultations directly with the Federation of Southern Fisher-folk regarding the project. However, further consultations will be required during the inception phase of the project in order to finalize exact roles and responsibilities.</p> <p>MSP</p> <p>The Federation of Southern Fisherfolk will be involved in developing awareness about the project's key messages and recommendations under Outcome 4. This will encourage replication of project activities across the federation's broad community networks.</p>

ANNEX 6: Project Risks and Potential Mitigation Strategies

RISK	ATLAS RISK CATEGORY	RISK LEVEL (L=Low; M=Medium; H=High)	MITIGATION STRATEGY
Project target communities and community leaders do not perceive sufficient value in climate risk planning to invest time and other resources needed to obtain provincial government support and financing for community-based adaptation	Political	L	A series of consultations and dialogues were conducted with key stakeholders during project preparation to involve stakeholders in project formulation. This risk will be further mitigated through the targeted awareness raising and capacity development, including the participatory, gender-sensitive climate change VCAs conducted at the start of the project. The post-Tsunami experience also revealed the critical role of women in post-disaster recovery and rehabilitation in Thailand. Recognizing the importance of women as drivers of change, the project will work especially closely with local women's groups, building on their experiences of coping with disasters (particularly on the Andaman coast) to increase interest in more anticipatory disaster risk planning.
Government planners and policy-makers at different levels, including provincial and subdistrict authorities do not see climate risk management or community-based adaptation as a development priority or as an important part of DRM and therefore do not approve budgetary allocations for community-based adaptation in their development plans	Political	M	This risk will be mitigated by the project's awareness raising, capacity development and policy advocacy components targeted at government planners, policy and decision-makers at different levels. The risk is also mitigated by the active engagement of DDPM in project design, implementation and oversight. A key project strategy is to showcase successful examples of community-based adaptation and to demonstrate their development benefits to high-level decision-makers. The project will have a strong communication strategy to keep key government planners and decision-makers informed about major project activities and achievements. Planners and decision-makers will be invited to visit project demonstration sites and be engaged in consultations to discuss project recommendations and seek their advice.
Successful project implementation requires good coordination and communication between a diverse range of actors and stakeholders at within and between different levels from villages to	Organizational	L	Strong coordination between different actors will be ensured through the project's implementation arrangements including the composition of the Project Board, the Technical Advisory Group and the local project Technical Support Teams, who's TORs include a requirement for ensuring good coordination and

the national level.			communication between all key project actors and stakeholders. The project will also make use of existing institutional structures and fora for multisectoral coordination such as the Integrated Provincial Administrative Committee, the Samakhom Or Bor Tor and the National Committee on Climate Change.
Changes in national government may result in new policies and re-structuring of government departments and operations that may have adverse implications for the delivery of planned project results	Political	M	No radical restructuring of government administration is expected even with a change in government. Most of the baseline government programmes related to this project, such as DRM programmes are unlikely to be affected. TRCS and SDF will also continue their programmes. There may be some disruption and delays, however if there is much instability. However, the project will manage and adapt the project strategy to changes in implementation context.
DDPM does not endorse project recommendations for integrating climate change risks into its next Master Plan by the end of the project	Political	L	DDPM has been closely involved in project design and development. This risk will be further minimized by continued close coordination with DDPM during project implementation. DDPM also co-chairs the Project Board. Potential mismatch between the project timeframe and government planning cycles have already been anticipated. The current DDPM Master Plan is for 2008-2012. The project will already be half way through implementation when preparations for the next Master Plan will begin in 2011. By then there should be sufficient project knowledge and lessons learned to advocate for the integration of climate change risks into DDPM's next Master Plan, where appropriate, in line with IFRC policy.
Communities are unable to work cooperatively to prioritize adaptation interventions for implementation with project support	Operational	L	Target communities have been partly selected on the basis of their history of working with project implementing partners and proven interest and ability to work together effectively to achieve shared goals. The Technical Support Teams on the ground will be in regular contact with target communities to facilitate and backstop project interventions. Potential or actual conflicts will be quickly detected by the Technical Support Teams and appropriate conflict resolution strategies implemented.
Small-scale investments in community-based adaptation are not able to generate demonstrable climate risk reduction benefits within project timeframe	Financial	M	Likelihood of generating demonstrable benefits within 2-3 years will be a criterion for providing adaptation grants to local communities. This risk will be further minimized by ensuring that adaptation measures are properly designed, implemented and monitored by combining community knowledge with technical guidance from the Technical Advisory Group and other experts as appropriate.
Meaningful scientific and technical analysis of demonstrated adaptation	Operational	L	The project will work with communities to put in place a community-based monitoring system to complement scientific and technical

measures is possible within the available timeframe and budget.			assessments conducted towards the end of the project. The project will also seek to leverage additional cofinancing for the technical and scientific assessments with support from the Technical Advisory Group. Even small-scale assessments will yield useful information on the quality of design and implementation of selected community-based adaptation measures and provide useful recommendations for strengthening these.
Communities lose confidence and interest in small-scale community based adaptation as a result of extreme weather events or other natural disasters and prefer more immediate interventions by government to safeguard them against climate and other disaster risks	Environmental	L	Given that the project is working in 10 communities in 5 subdistricts in 3 provinces, it is unlikely that all target communities will be severely impacted by natural disasters during the life of the project. Appropriate action will be taken to adapt project design should this occur in any of the project intervention sites.
Knowledge and lessons are not systematically captured, analyzed or documented throughout project implementation	Operational	L	The project will develop and put in place an M&E system during the project inception phase to ensure the project knowledge and lessons are systematically captured and documented and periodically analyzed. The NPM, TRCS, UNDP, the Technical Advisory Group and the Project Board will ensure that the project M&E system is properly implemented.

ANNEX 7: Terms of Reference for Project Board and Key Project Staff

Project Board

The Project Board (PB) is the strategic decision-making body of the project. The PB will be co-chaired by a senior official of DDPM and the Executive Director of TRCS. The PB will provide overall guidance and direction to the project, and also be responsible for making decisions on a consensus basis, when high-level strategic guidance is required, including the approval of major revisions in project strategy or implementation approach. Key PB responsibilities include the following:

1. Direct and supervise project implementation
2. Mitigate risks, monitor project progress and solve problems
3. Approve major changes of the project document, work plan, budget, and duration
4. Additional responsibilities assigned by Co-Chairs

Proposed PB Members and roles include the following:

- | | |
|---|---------------------|
| 1. TRCS Executive Director, DDPM senior official | Co-Chairs |
| 2. UNDP representative | Project Assurance |
| 3. Department of Local Administration (MOI) | Member |
| 4. Department of Meteorology | Member |
| 5. Ministry of Natural Resources and Environment | Member |
| 6. Ministry of Agriculture and Cooperatives | Member |
| 7. Sustainable Development Foundation | Member |
| 8. Asian Disasters Preparedness Center | Member |
| 9. Director of Red Cross College of Nursing | Member |
| 10. SEA-START/ CCKM Centre | Member |
| 11. Director, Relief and Community Health Bureau, TRCS | Secretary |
| 12. Director, Research and International Cooperation Bureau, DDPM | Assistant Secretary |
| 13. TRCS staff member | Assistant Secretary |

National Project Manager

The NPM is a full time project-funded staff. The NPM will report to the NPD and receive guidance from the PB. The NPM has the authority to run the project on a day-to-day basis on behalf of TRCS, within the parameters laid down by the PB. The NPM's primary responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified time and budget. The NPM will work closely with the Technical Support Teams and provide management oversight to the field coordinators and assistants hired through the project. The NPM will be supported by a full-time Finance & Administrative Assistant

Key Responsibilities

- Ensure the overall efficient day-to-day project management of human and financial resources to achieve results in line with the approved Project Results Framework and the approved budget in the manner envisaged in the project document.
- Seek guidance from, and share project knowledge and lessons with and the Technical Advisory Group
- Identify and request technical inputs from the Technical Advisor as needed to support project implementation
- Guide and oversee implementation of project activities on the ground by Technical Support Teams
- Prepare TORs and ensure the delivery of high quality products in line with TORS from consultants and contracts funded from the project budget
- Monitor project implementation and progress and financial expenditure according to the Annual Workplan and project M&E plan
- Manage and monitor the project risks
- Ensure timely and accurate financial and progress reporting as per the M&E plan and other requirements of the project document, to TRCS, UNDP, GEF and the Project Board
- Work with cofinancing partners to ensure complementarity and synergy between parallel activities and the SCCF project as envisaged in the project design.
- Manage relationships with project stakeholders including donors, NGOs, government agencies, and others as required and ensure strong buy-in and engagement by stakeholders through good coordination and communication

Finance & Administrative Assistant

The Finance & Administration (F&A) Assistant is a full-time project funded staff. The F&A Assistant will be responsible for day-to-day administration and financial management of the project. The F&A Assistant will report to the NPM.

Key Responsibilities

- Ensure timely and efficient organization and management of project information and records both electronically and in hard copies.
- Assist with all project communications under the supervision of National Project Manager
- Compile, copy and distribute all project reports
- Provide logistical support to National Project Manager, particularly in connection with organizing training events, workshops, exposure visits, and consultancy inputs, including providing support to short-term consultants, including the Technical Advisor and evaluation teams
- Provide support in the use of Atlas for monitoring and reporting & reviewing progress and other reports
- Standardize project financial and accounting systems ensuring compatibility with UNDP financial and accounting procedures
- Prepare budget revisions of the projects based on the Combined Delivery Reports (CDRs)
- Assist in the preparation of the Annual Work Plan (AWP)
- Comply and verify budget and accounting data
- Prepare financial status reports, progress reports and other required financial reports
- Assist in the timely issuance of contracts and assurance of other eligible entitlements of the projects personnel, experts, and consultants by preparing annual recruitment plans & process payment requests
- Prepare and update inventories of expendable and non-expendable project equipment

Field Coordinators & Facilitators

Key Responsibilities

- Work as part of local Technical Support Teams under guidance of the NPM and local TRCS and DDPM staff to coordinate and implement day-to-day project activities on the ground in target subdistricts
- Receive systematic guidance from the project Technical Advisor, and the Technical Advisory Group where needed, on all technical aspects of the project
- Engage actively in conduct of climate change VCAs, local capacity development, supporting target communities in preparing Climate Risk Reduction Plans and implementing adaptation measures
- Provide logistical support for training workshops in targets sites and for visiting consultants
- Assist with project monitoring and documentation of community knowledge, experiences and lessons learned
- Coordinate closely with local government authorities and keep them informed of project activities and progress

Technical Advisor

A project technical advisor (TA) will be hired on a part-time basis from the project budget to provide regular support to the project over its lifetime. The TA is expected to allocate five days per month on average to providing technical assistance to the project as determined by the NPM. The TA will report to the NPM.

Key Responsibilities

- Provides regular technical backstopping to the project (5 days/month) over life of the project
- Supports planning and oversight of all major technical inputs such as climate change VCAs, preparation of Climate Risk Reduction Plans, technical and scientific assessments of community-based adaptation measures.
- Liaises closely with the Technical Advisory Group
- Sources any additional technical inputs needed in consultation with NPM, project Technical Support Team and Technical Advisory Group
- Assists NPM in preparation of TORs for other consultant inputs for technical assistance
- Develops project M&E plan in consultation with NPM, Technical Support Teams and Technical Advisory Group
- Ensures strong working relationship with key government technical counterparts and the project technical advisory committee
- Reviews all technical reports produced by national and international consultants
- Ensures systematic documentation of project knowledge and lessons learned and prepares brief annual analyses of key lessons learned and knowledge generated

ANNEX 8: REFERENCES

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- World Bank. 2006. *Thailand Environment Monitor*. Available online at <http://www.worldbank.or.th>. Washington DC, United States.

ANNEX 9: Co-financing

United Nations Development Programme



Ref. Env/022/2010

16 April 2010

Dear Mr. Glemarec,

**Subject: Co-financing Commitment to the SCCF-funded Project
"Strengthening the Capacity of Vulnerable Coastal Communities to Address
Risk of Climate Change and Extreme Weather Events"**

I am pleased to note that the Special Climate Change Fund (SCCF) has approved the project preparation grant of US\$ 40,000 for the above-mentioned project and an indicative SCCF grant of US\$ 1 million once this project document is approved in the middle of this year.

In support of the project's objectives and outcomes, and in accordance with the UNDP-Thailand Environment Partnership framework (2007-2011), UNDP Thailand commits to co-finance in the amount of US\$ 552,822 as parallel project financing comprised of the following contributions:

1. Mangroves For The Future (Small Grant Programme)	US\$ 149,822
2. Poverty and Environment Initiative – Mainstreaming climate change into provincial development plan	US\$ 83,000
3. Southern Thailand Empowerment and Participation – Strengthening capacity of local resources and disasters risk management	US\$ 300,000
4. TRAC resources 2010 - Climate resilience and risk reduction	US\$ 20,000
Total	US\$ 552,822

This commitment will support project implementation during the project's entire lifetime (2010-2013).

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Yuxue Xue'.

Yuxue Xue
Resident Representative, a.i.

Mr. Yannick Glemarec
GEF Executive Coordinator
United Nations Development Programme
One United Nations Plaza
304 East 45th St. - FF Bldg., 10th floor
New York, NY 10017



สมาคมกาชาดไทย
The Thai Red Cross Society

No. 4000 /2010

Relief and Community Health Bureau

Thai Red Cross Society

Henry Dunant road, Phatumwan, Bkk.10330

12 April 2010

Dear Ms. Son,

Subject: Confirmation of Co-financing for the Project "Strengthening the Capacity of Vulnerable Coastal Communities to Address Risk of Climate Change and Extreme Weather Events"

Reference is made to the UNDP letter dated 31 March 2010 requesting confirmation from the Thai Red Cross Society (TRCS) of the budget which is defined as "co-financing" to the above-mentioned project.

As agreed with the government Department of Disaster Prevention and Mitigation (DDPM) under the Ministry of Interior, TRCS will serve as the Executing Agency of this project. The project idea has been endorsed by the GEF Operational Focal Point at the Ministry of Natural Resources and Environment. With an extensive network of provincial chapters, TRCS is well positioned to integrate Thailand's national climate change Adaptation strategy into the provincial and local development process.

The project will be complementary to the TRCS work plan on Community-based Disaster Risk Management (CBDRM), which is now operating in 48 vulnerable communities throughout the country. In this regard, we are pleased to inform you of the following committed budget and resources of TRCS that will provide co-financing to this project

1. TRCS budget for CBDRM in 2009-2013 (parallel)	1,700,000	USD
2. Contribution of staff time, office space and communication devices (in kind)	92,950	USD
Total	1,792,950	USD



สมาคมอาสา
The Thai Red Cross Society

This commitment will support project implementation during the project's entire lifetime (2010-2012).

Yours Sincerely,

A handwritten signature in black ink, reading "Amnat Barlee".

(Lt.Gen.Dr. Amnat Barlee)

Director of Relief and Community Health Bureau

Thai Red Cross Society



มูลนิธิเพื่อการพัฒนาที่ยั่งยืน
Sustainable Development Foundation

SDF 006/2010

Friday 9th April 2010

To: Ms. Gwi-Yeop Son, UNDP Resident Representative, UN Building, Bangkok, Thailand
Subject: Confirmation of Co-financing for the Project "Strengthening the Capacity of Vulnerable Coastal Communities to Address the Risk of Climate Change and Extreme Weather Events"

Dear Ms. Son,

The purpose of this letter is to confirm the amount of budget which will be contributed on the part of Sustainable Development Foundation (SDF) as 'co-financing' to the above-mentioned project.

SDF will leverage its knowledge and networks in southern Thailand, as well as its expertise in community capacity development for disaster risk management, sustainable environmental management and development, working closely with the Thai Red Cross Society and the Department of Disaster Prevention and Mitigation as a key project partner. SDF's networks will also be used for public awareness generation, dissemination of knowledge and for wider replication of project results.

The project will be complementary to a project which SDF is currently implementing under the regional Mangroves for the Future initiative, which aims to improve coastal zone management in selected sub-districts of Southern Thailand, since some of the target sites overlap. In this regard, we are pleased to inform you of the following committed budget and resources that SDF will contribute as co-financing for this project:

Source (Type) of Co-financing	Amount	Period
1. SDF budget for implementation of Mangroves for the Future project (parallel financing)	300,000 USD	September 2009 – August 2011
2. SDF budget for implementation of Service Center for Development Cooperation (KEPA) project (parallel financing)	39,000 USD	April 2010 – December 2011
3. Partial contribution of office space and communication devices (in kind)	20,000 USD	Entire project lifetime
Total	359,000 USD	

Kind regards,

Ravadee Prasertcharoensuk

Director

Sustainable Development Foundation

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