A narrative report for Adaptation Research Alliance – Micro-grants

Project title
Engagement of vulnerable and marginalised coastal communities for empowerment and climate adaptation

Organisation
Songkhla Community Foundation (SCF)

Country
Thailand

Project duration
March 2023 – January 2024

The objectives
The overall objective of this project was to empower vulnerable and marginalised groups, particularly women, to develop actionable plans for adaptation and community-based solutions, responding to multiple risks and impacts of climate change, disasters, and social, environmental, and economic issues.

The specific objective of this project was to engage with diverse coastal communities to build adaptive capacity to climate change and identify solutions using ecosystem-based adaptation approaches for coastal zone management.

There is a growing recognition that coastal zones and local communities are faced with increasingly complex multiple stressors which stem from human activities, climate change, and environmental degradation. Identifying the root causes of social vulnerability and understanding the interaction between climate impacts and socio-economic problems of local communities in coastal areas are crucial for developing appropriate options for climate adaptation. However, there is limited local scientific and community data available. The project aimed to improve the understanding of climate vulnerabilities, socio-economic challenges and environmental problems faced by local communities in coastal areas through engagement and participatory approaches. Filling in knowledge gaps, the project planned to generate new evidence-based knowledge through participatory research and shared learning of local multi-stakeholders. The project involved interactive, practical exercises and capacity building activities through workshops as well as in the field.

The project case study
Coastal zones in Thailand and Songkhla province
Thailand has approximately 3,000 km of coastlines along the Gulf of Thailand which is connected to the South China Sea and along the Andaman Sea which is connected to the Indian Ocean. These shorelines are naturally risky and exposed to a range of hydro-meteorological hazards. With climate change, coastal areas are faced with increasing rates of sea level rise, changing shorelines, high-tide flooding, wind-generated waves, coastal erosion, and storm surges (Melet et al 2020). A study shows that between 1972 and 2011 sea level has risen at an average rate of 6.5mm per year along the Thai coasts (Ritphring et al

2021). As global temperatures continue to warm, additional sea level rise is inevitable. In 2019, the Department of Marine and Coastal Resources (DMCR) in Thailand reported that 794 km of Thailand's coastlines are faced with erosion problems. However, the coasts of Thailand are characterised by different coastal ocean dynamics, morphologies, and coastal processes leading to vast spatial variations across the different geographical locations (Saramul and Ezer 2014). Subsequently, there are variations in sea level change, land subsidence, coastal erosion, as well as seasonal variations in erosion and sea level. While there might be insufficient observed data and conflicting studies on sea level rise and coastal erosion issues, communities in coastal areas are increasingly faced with challenges related to climate change, extreme weather events, ecosystem and biodiversity losses, environmental degradation, and conflicts in accessing and utilising natural resources and ecosystem services. Furthermore, with limited coastal zone data and understanding of climate impacts, inappropriate approaches, such as hard infrastructure for coastal protection are often invested and implemented by government agencies, creating social conflicts, and new coastal process problems.

Songkhla province located in the South has a coastline of 160 km on the Gulf of Thailand side. Coastal zones in 6 districts of the province serve as important habitats and ecosystems, providing resources for socio-economic development and maintaining the livelihoods of local fishing communities. Songkhla province is an important regional hub for industrial, economic, and tourism development, linking to Malaysia and Singapore. As a result, coastal areas of Songkhla are experiencing varying degrees of human pressure, development activities, and environmental issues with impacts of climate change exacerbating existing problems. Studies show variations in magnitude and extent of shoreline erosion along the Songkhla coastline. Areas with severe erosion can retreat as high as 5 metres per year (Chusrinuan et al 2009). However, there is limited scientific data and evidence to support arguments and debates whether coastal areas are experiencing seasonal or suffering from permanent erosion. Similar to other coastal zones across the country, several coastal areas in Songkhla are subjected to different coastal protection plans and implementation of a range of hard structures without public consultation, environmental impact assessments and participation of local coastal communities. Local administrations and subnational agencies have limited understanding of climate risks and vulnerabilities faced by coastal communities and consequential social and environmental impacts of coastal hard structures. Local communities in coastal zones are diverse in terms of livelihoods and socio-economic background. There are knowledge and research gaps in understanding differential social vulnerabilities to climate change of different social groups in coastal areas. Small-scale fishers and informal residents are often overlooked and left out of coastal management planning and decision-making processes.

The selected coastal communities – Ban Muang Ngam and Balasoh Kaosaen

The project selected two coastal communities based on selection criteria which included clear climate impacts and coastal erosion problems, existing engagement and working relationship with local civil society organisations, and level of interest from communities and administration in working on climate and social development issues. The two coastal communities were 1) Ban Muang Ngam community located in the administrative area of Muang Ngam Town Municipality, Muang Ngam sub-district, Singha Nakorn district, and 2) Balasoh Kaosaen community located in the administrative area of Songkhla City

Municipality, Boyang sub-district, Muang Songkhla district. Although both communities were faced with coastal erosion problems, they were characterised by different socio-economic conditions and governance challenges. The issues of climate risks and vulnerabilities were relatively new to both communities and local administrations. The project engaged with community members, including women and youth, of both communities in participatory research to assess climate impacts, understand coastal dynamics, and identify options for increasing adaptive capacity. The aims were to build the capacity of local communities to better understand the linkages between climate change and coastal erosion and generate new knowledge and evidence to inform decisions. Due to the differences of the two communities and in coastal and social problems, research objectives and approaches were slightly adjusted to support local engagement, ownership and collaboration.

Ban Muang Ngam Community

The community of Ban Muang Ngam is one of the 10 villages under the jurisdiction of the Muang Ngam municipality. Ban Muang Ngam is on Muang Ngam beach which is approximately 7.2 km long. The beach provides access for small-scale fishers from the village to launch and shelter their boats. In 2015, the Department of Public Works, Town and Country Planning (DPT), Ministry of Interior, reported that coastal erosion along Muang Ngam beach was serious, losing 0.56-1.49 metres of beach per year, or 9-24 metres in the past 16 years (Komchadluek 2020). The municipality then requested a budget for a seawall project to protect the beach from erosion. In May 2020, the DPT, initiated a 710-metre seawall construction project without public consultation and environmental impact assessment. The construction was contested by local community members who later led a protest to stop the project. On the 30th of June 2020 the Songkhla Administrative Court issued an order to suspend the construction after the community residents filed a lawsuit against the DPT for the unconstitutional and illegitimate seawall project (Prachatai 2020).

The villagers along the Muang Ngam beach including Ban Muang Ngam community were faced with not only risks and impacts associated with coastal erosion and climate change, but also challenges in institutional capacity and governance. There was limited scientific data to determine whether coastal erosion was a seasonal problem due to dynamic coastal processes or a long-term permanent threat due to sea level rise. There was also a critical evidence-based knowledge gap in understanding the impacts of climate change on coastal processes such as changes in winds and intensity and frequency of storm surge. State led approaches and investment in coastal protection primarily focused on construction of hard structures with little understanding of consequent social and environmental impacts. In addition, there was limited or lack of meaningful public participation and consultation in planning and decision-making processes in coastal protection and management. For coastal communities, options for protection, mitigation or prevention of coastal erosion must be debated based on scientific evidence and knowledge. Therefore, research in Muang Ngam aimed to inform and support bottom-up decision-making process based on scientific evidence. Participatory research would bring together community members, academics and local authorities to collaborate on coastal and community needs assessments and identification of appropriate measures to address coastal erosion. With an aim for capacity development and empowerment, the project engaged with local communities and administrations to better understand climate change and coastal processes and gain the ability to regularly monitor and assess changes and identify solutions themselves.

Balasoh Kaosaen Community

Balasoh Kaosaen community is an informal settlement of largely Muslim, poor and low-income households. The community is faced with a range of social, political, environmental and climate change problems as well as eviction and relocation threats. Although the community is in the administrative boundary of Songkhla City Municipality, the land belongs to the Marine Department, Ministry of Transport. The settlement situated on the corner of Kao Seng beach which is part of Chalathat beach is naturally risky and exposed to strong winds and waves. On one side of the community is the sea on the Gulf of Thailand. On the other side of the settlement is a 5km canal that links the sea to Songkhla Lake. The settlement is blocked off by a road. Without basic infrastructure and service provision such as drainage and wastewater treatment, health impacts of the flood-prone community are exacerbated by climate change. The community of 184 households is diverse in terms of socio-economic conditions with different sources of income. Although the informal settlement cannot expand spatially as it is restricted by the road, canal and sea, households can continue to extend in family members. An average household has 2-6 family members. Several households have up to 10 family members living together.

Research in Balasoh Kaosaen aimed to unpack and understand socio-economic and political challenges faced by the community that are driving social vulnerability to climate change. The aims were to build the capacity of the community through participatory research and empower different social groups to identify appropriate strategies to improve their livelihoods, adaptive capacity and resilience. This research would fill in critical knowledge gaps in understanding climate vulnerability of urban marginalised community group, root causes of social vulnerability stemming from structural and governance issues as well as understanding of differential vulnerability of different social groups within the community. Climate vulnerability assessment is important to identify local priorities and inform policies and measures that will reduce the risks associated with climate and adapt to climate impacts (Füssel 2007). However, climate vulnerability assessments commonly identify ‘who’ is vulnerable rather than ‘why’ (Ribot 2011). To reduce vulnerability, understanding the underlying causes is a vital element of response, thus, the need to go beyond identifying ‘who’ is vulnerable. While it is evident that poorer people are disproportionally affected by shocks and crises, investigation of the various factors that make poorer people more vulnerable is critical for more effective responses and better prioritisation of actions (Leichenko and Silva 2014).

Project implementation and outputs

In each of the locations, community members, including women, youth and vulnerable groups such as elderly were engaged and participated in a range of activities under four work packages.

i) Capacity building to assess and understand climate vulnerabilities,
ii) Participatory research, data collection and analysis using the citizen science approach,
iii) Participatory development of community-based options for climate adaptation, and
iv) Multi-stakeholder engagement for policy dialogue.

Work Package 1 – capacity building to assess and understand climate vulnerabilities
In this work package, community engagement and capacity building activities through a series of small-group meetings and workshops were carried out in both locations. Introduction to the project objectives, discussions to identify key climatic and non-climatic problems faced by community members, and planning for participatory research were made.

- *Ban Muang Ngam Community*

35 community members and government officials of Muang Ngam municipality were engaged in meetings and workshops using the Shared Learning Dialogue approach (SLD). In addition, three academics and junior researchers participated in the discussion. Focusing on coastal environmental and erosion issues, the local stakeholders discussed social impacts of coastal physical and environmental problems, shared experiences in dealing with erosion issues, and exchanged ideas for potential solutions and options to reduce risks and vulnerabilities. Scientific weather and coastal data were provided by the academic team to discuss changes over time and future scenarios of climate and coastal changes. Community members also participated in focus group meetings to unpack specific issues faced by different social groups. The focus group meetings involved 15 persons who were directly impacted by coastal erosion, shoreline retreats, and strong waves and winds, 5 youth, 5 elderly, 5 women and 5 fishermen.

- *Balasoh Kaosaen Community*

In the first meeting, 32 people participated in the discussions focusing on identifying socio-economic, environmental and coastal issues. They were members of the community and grassroot organisations who were involved in community development and support. In the second meeting, 10 community members came together to prepare and support participatory research activities and map out the community. 15 community members were engaged in training exercises to prepare for field data collection, learn how to use research tools, and assess climate vulnerabilities of the community.

Work Package 2 – participatory research using the citizen science approach
In this work package, local community members including youth and women were engaged in field research activities, development of questionnaires, and collaboration with academics and local government officials in data analysis. Field data collection included assessments of coastal physical data such as beach profile, sea level, and wave height, interviews with key informants and surveys of community-based information at the household level. Using the citizen science approach, youth groups were engaged in coastal physical data collection through collaboration with a team of university academics and junior researchers. Coastal and community data analyses were also carried out using participatory approaches through SLD workshops.

- *Muang Ngam Community*

Community members including youth were engaged in research design and planning for coastal physical data collection, led by a scientific team of academics and junior researchers. Through practical exercises, community members and youth groups learned how to use different tools to collect different types of data. Coastal physical data collection, beach profiling and mapping were carried out along the whole length of Muang Ngam beach.

Monthly monitoring of physical and environmental conditions was also carried out at 5 designated spots, using the citizen science approach. Beach monitoring will continue beyond the life of this project. Simple, user-friendly tools for beach monitoring were invented for the community to use.

- *Balasoh Kaosaen Community*

Community data was collected in two stages. Preliminary data was collected from 40 households to identify key social, economic and environmental issues. Questionnaire was designed to collect household level information. Led by community members with technical support from graduate students from a local academic institution, community survey was carried out. The preliminary data analysis was carried out through SLD discussions involving 35 persons from the community and grassroot organisations. In the second stage, in-depth data collection using questionnaires was carried out. Data was collected from 134 out of 184 households. Community engagement and interviews with socially vulnerable groups, including low-income households, women, elderly, children and disabled were also carried out. For coastal physical data collection and analysis, a workshop was organised involving 35 participants from the community and grassroot organisations. Led by a scientific team of academics and junior researchers, physical data was collected, analysed and discussed with the community.

Work Package 3 – participatory development of adaptation options and solutions

In this work package, the two communities, municipality officials, and grassroot organisations were engaged to assess climate risks and vulnerability and identify adaptation options based on coastal physical, weather, climate and community-based data collected. Through a series of small-group meetings, local multi-stakeholders discussed research findings and on the ground experience of socio-economic and coastal-related problems to identify strategic approaches to increase climate adaptive capacity.

- *Muang Ngam Community*

Community members participated in a series of small-group meetings to review temporal and permanent changes of Muang Ngam Beach to better understand coastal dynamics based on historic and current physical data. The activity served as a fact-finding exercise based on scientific evidence. The issue of coastal erosion at Muang Ngam beach has been a controversial topic. The state-led investment to construct a hard structure coastal defence was contested by the local community, particularly households on the beachfront. By providing and presenting scientific evidence, the local multi-stakeholders, particularly at risk and vulnerable households, community leaders, and municipality officials, were able to debate options and decide on appropriate approaches to address seasonal beach erosion and strong waves. Coastal assessments and monitoring showed that seasonal changes in winds, waves and currents would influence temporal shoreline retreats and erosion along the Muang Ngam beach. Hard structures, such as seawalls, would further exacerbate coastal erosion issues. Four houses situated on the beachfront would experience higher impacts of shoreline erosion and waves. Instead of expensive hard structures, more environmentally friendly and ecosystem-based options such as regeneration of sand dunes, and temporary sandbags during the monsoon season would be appropriate solutions for Muang Ngam communities and municipality.

- *Balasoh Kaosaen Community*

A series of small group meetings involving community members and grassroot organisations were conducted to unpack household data. In-depth community information at the household level, including socio-economic, health and wellbeing characteristics of households and medical needs of lowest-income families, was crucial for planning and decision-making to prioritise support. Community members participated in discussions were able to reflect on both climatic and non-climatic issues driving social vulnerability of the community and households. Without land tenure, the informal settlement was faced with challenges in accessing basic services, such as water, sanitation and electricity. Different households were impacted unevenly from floods, strong winds and coastal erosion.

Work Package 4 – multi-stakeholder engagement for policy dialogue

In this work package, local multi-stakeholders, including vulnerable and marginalised community groups, local governments, and relevant government agencies were engaged in dialogues using the SLD approach. Workshops were organised, structured and facilitated to present research findings and enable local community members to discuss options and solutions to address key coastal and community issues. Recommendations for local administrations and different government agencies to respond to climate risks, coastal erosion, and social vulnerability issues were also discussed.

- *Muang Ngam Community*

A final workshop brought together local authorities, scientists and community members, particularly households at risk and vulnerable to the impacts associated with climate-induced storm surge, strong winds, and coastal erosion, to review research findings and coastal assessments and discuss coastal disaster and erosion preparedness and management plans. Disaster preparedness plans were also made not only for at risk households but also for households with elderly and disability. The local multi-stakeholders also discussed integrated coastal and urban land use planning and incorporation of ecosystem-based approaches into coastal protection and management.

- *Balasoh Kaosaen Community*

A final meeting was organised with 100 participants representing the informal community, local administrations and relevant government agencies. Research findings were presented and discussed in the meeting to disseminate new evidence-based knowledge and identify policy recommendations. Relevant government agencies were represented by provincial offices including the Department of Social Development and Welfare under the Ministry of Social Development and Human Security, Department of Public Health, Department of Disaster Prevention and Mitigation under the Ministry of Interior, Department of Natural Resources and Environment, Meteorology Department, and Marine Department.

Key findings

The project engaged with two coastal communities to build the capacity and practical skills in community-based climate adaptation, socio-economic development, and coastal management planning. To support bottom-up approaches and knowledge co-production, the project team also coordinated with local administrations and relevant government agencies with an aim to improve institutional capacity and governance. Both coastal communities were faced with increasingly complex social, political and environmental

problems exacerbated by climate change and uneven development. Strengthening knowledge capacity and building scientific evidence were critical for effective plans and actions responding to needs and priorities of local communities, particularly vulnerable and marginalised groups.

- **Co-production of knowledge and scientific evidence**

In Muang Ngam, the project engaged with community members, particularly at risk and vulnerable households, and youth groups in capacity building, participatory research and policy dialogue. The project brought together academics, villagers and local authorities to collaborate on coastal assessments and identification of measures to address coastal issues. New forms of knowledge production were urgently needed to better understand the issues of coastal erosion and associated impacts of existing infrastructure along the shoreline, including an old pier and drainage pipe, faced by the community. New knowledge and scientific evidence were also needed to inform appropriate options, measures and investment for effective coastal protection and management and to avoid maladaptation. The project in Muang Ngam was context-driven and problem-focused to understand climate impacts and coastal dynamics. Community consultations and multi-stakeholder dialogues based on research findings enabled and empowered the community and municipality to debate options and collaborate on non-structural and ecosystem-based solutions for seasonal and permanent problems of shoreline retreats and erosion. The research result showed that 4 beachfront houses closest to the pier with little buffer zone were most impacted by strong waves and seasonal erosion. Subsequently, investment in sandbags would be more cost-effective than construction of a seawall as initially imposed by the DPT. The project also revealed that some of the households impacted by strong waves and seasonal beach erosion had elderly occupants. These households would require support from the municipality and community during the monsoon season, such as lifting and constructing defence using heavy sandbags.

- **Unpacking differential vulnerabilities of social groups within a community**

In Balasoh Kaosaen, the project unpacked differential vulnerabilities and root causes of social vulnerabilities of the community. As an informal settlement with most of the residents being Muslim, the community was overlooked and marginalised by local authorities and government agencies. It was therefore critical to understand the root causes of vulnerabilities of marginalised and disadvantaged groups as the issues of critical importance to vulnerability reduction were equity and social justice. To foster just, inclusive, and equitable responses to climate change, there was a pressing need to seek understandings of the climate crisis as embedded within lived experiences and cultural memories through local engagement and bottom-up approaches. Rethinking climate problems and solutions required the engagement of diverse social groups and multiple disciplines to capture socio-environmental dynamics and uncertainties. The project conducted surveys of the whole community consisting of 184 households, focus group meetings and interviews with key informants. Results revealed uneven impacts of coastal erosion and impacts associated with coastal protection imposed by the local authorities. Coastal erosion was not a priority problem for the community. A few households that were dependent on fishing as the main source of income suffered the most. But most of the informal residents relied on different sources of income primarily in the informal economy sector. However, the majority of the community were concerned by the lack of critical infrastructure and service provision.

Inadequate sanitation, the lack of wastewater treatment and drainage, poor housing conditions, and limited access to piped water and electricity were key root causes of climate vulnerability. Regular floods, strong winds, and storms would cause damage and health impacts. Households with elderly and disabled and without family networks were most vulnerable. The research results showed that differential plans, responses and actions would be required to reduce social vulnerability and build the adaptive capacity of the informal residents.

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