



Assessing adaptation options for climate change:
A guide for coastal communities in the Coral Triangle of the Pacific
8. Implementation planning



Scoping



Identifying
options



Evaluation
of options



Planning
implementation

Introduction

Assessing options for adapting to climate change is an important part of building resilient fishing and farming communities.

This brochure is part of a series that collectively detail how a community-based assessment of climate change was used in partnership with coastal communities and provincial and national-level stakeholders in Timor-Leste and Solomon Islands. The assessment contains four distinct, but related, steps (Fig 1) focused on supporting community-level decision-making for adaptation through a series of participatory action research activities. Each brochure in this series details a specific activity in the four-step assessment.

This series of eight brochures is primarily aimed for use where resources are limited or where it is more appropriate to use a rapid, qualitative and non-data intensive method of assessment. Community leaders, local NGOs and regional and national-level government representatives in developing countries may find this series useful.

In this brochure we provide details of an activity relating to the 'Planning implementation' step of the assessment, namely a workshop held with community members to evaluate the usefulness of the material produced to date on climate change adaptation and how to begin planning the implementation of selected adaptation actions. More specifically, the following questions were posed:

- Were the outputs of the participatory workshops and multidisciplinary research relevant and/or useful to communities in making decisions about how and when to adapt to a changing climate (Fig 2)?
- Is there any further information needed to allow informed decisions to be made by the community about how they can adapt?
- What are the social, economic and environmental tipping points or thresholds that would trigger the need to implement adaptation actions (Fig 3)?
- Who are the key people or institutions that communities need to work with to ensure adaptation actions are implemented and maintained effectively?

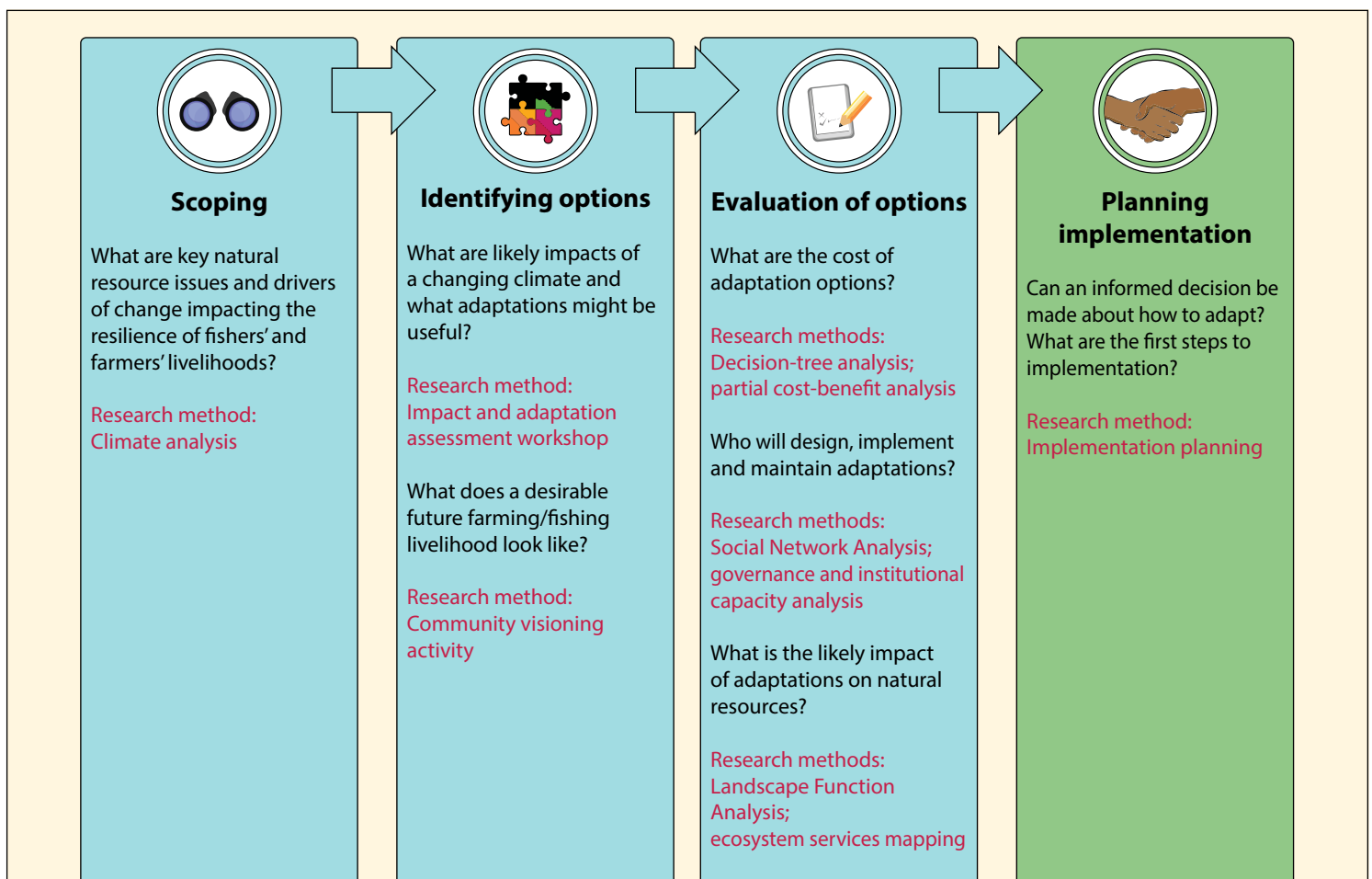


Fig 1: The four steps taken by community, local NGOs and regional and national government representatives in developing a plan to respond to climate change. Each step addresses specific questions likely to be asked by community members needing to adapt.



Fig 2: Adaptation actions relating to fishing identified through this research were presented back to communities so that they could assess their usefulness and determine how best to implement them.



Fig 3: A longer dry season may lead to critical water shortages that require water capture, storage and distribution technologies to be implemented.

What Is Implementation Planning?

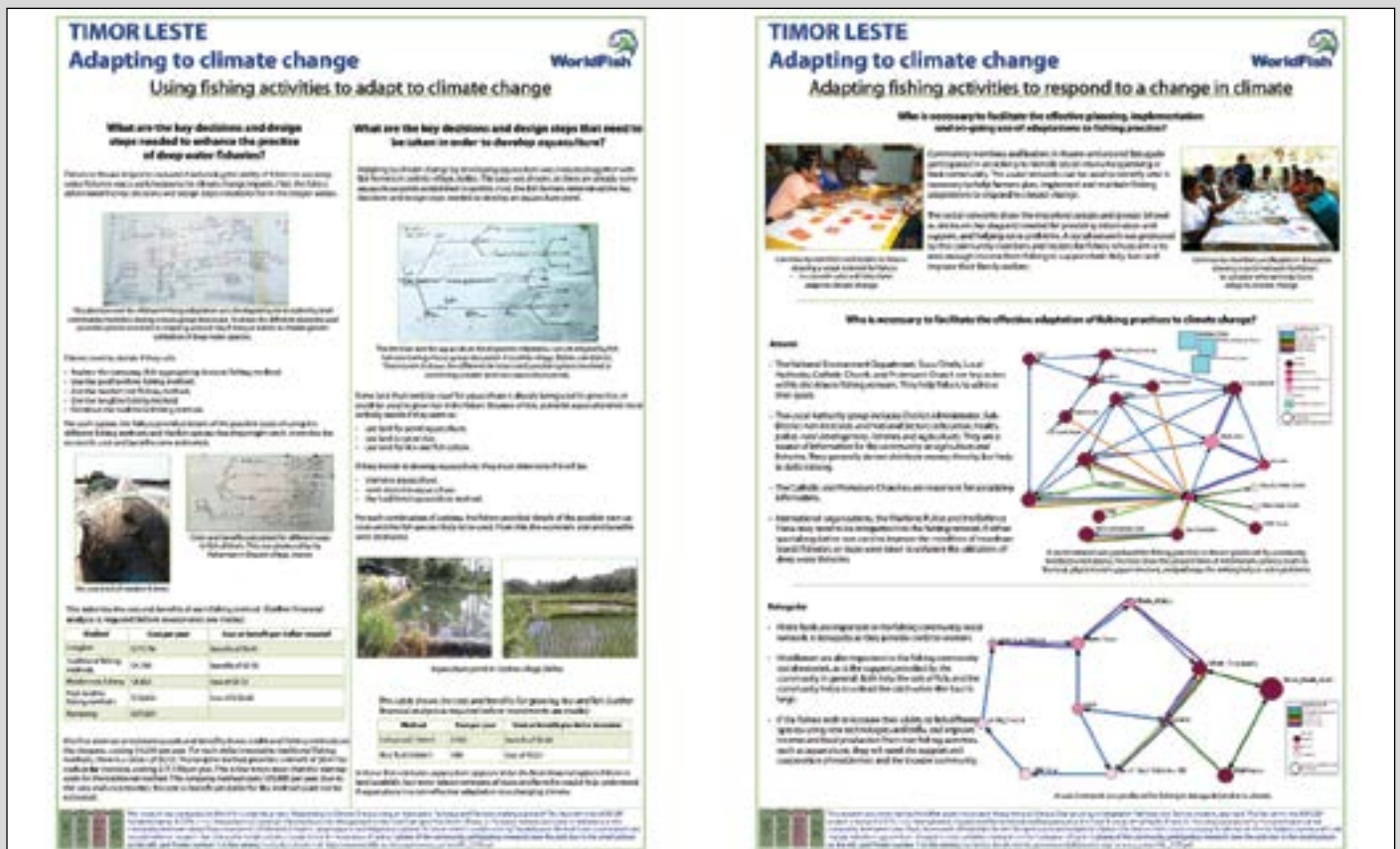
- Implementation planning involves deciding which adaptation actions will be taken, making a schedule of when they will be implemented, determining the steps involved in implementation and identifying who will need to help make all this happen.
- Making a plan for adaptation is an important step for a community. It will help to ensure that those adaptation actions likely to benefit their livelihoods are put into action at the best time to be effective. Reviewing the outputs from the economic, environmental and social analyses will help determine if there is sufficient information to decide on what adaptations are most appropriate for families and the community.
- Deciding when to take action is a key part of implementation planning. This can be determined by considering when existing practices and infrastructure will no longer be effective; it will also help to decide the feasibility of new adaptations being successfully implemented and maintained.
- Considering if adaptation needs to be made in two, three, or five years' time may be difficult. Alternatively, it may be useful to consider whether there are economic, environmental, or social thresholds (tipping points) that, if crossed, would require adaptive actions. For example, a minimum income from fish sales, the loss of several crop harvests from pests or diseases, or the onset of human health conditions caused by nutritional deficiencies may be some of the thresholds/tipping points that indicate an adaptation needs to be implemented.
- Thinking about whether there are 'quick wins' that can be gained is also useful in planning when to implement actions.
- In both Timor-Leste and Solomon Islands, implementation planning was done by having participants work in small groups to obtain their feedback and discuss their perspectives on the participatory research and its outputs (Fig 4). This information was then shared with all the groups.



Fig 4: Evaluation workshop participants in Batugade, Timor-Leste, discussed climate change adaptation assessment workshop results with a researcher.

Implementation Planning Method

- Posters and brochures were prepared in advance on the research results of the adaptation action evaluation (e.g., Social Network Analysis). Each poster or brochure contained the main results and the possible implications of the results for community livelihoods (Figs 5 & 6 for Timor-Leste and Fig 7 for Solomon Islands).
- Workshops were held in each location, with community members who had attended the impact and adaptation workshops invited. The workshops were also attended by local NGO partners and government representatives in relevant fields (e.g., fisheries, agriculture, NRM).



Figs 5 & 6: Two examples of posters that show the results of the evaluation analysis conducted in Timor-Leste. The first poster shows decision-tree and cost-benefit analysis for various fishing strategies; the second poster shows the Social Network Analysis maps produced by the fishing communities. The posters were used by the community members to discuss which adaptations they may implement, when, and who might provide help to make them happen.

Potential impacts of climate change on fishing and farming livelihoods in Malaita

A change in climate may:

- Reduce the health of corals and the number and size of fish and invertebrates they support.



Coral Fisheries

- Encourage tuna stocks to shift east across the Pacific, to follow cool pools of water and feeding grounds.
- Decrease the production of wild fisheries almost everywhere.



Tuna Fisheries

- Reduce the number of invertebrates that live on coral reefs, sea grasses, and mangroves.



Trachinotus

So there will be reduced fish protein available from the sea over time.

Agree there could be one of many useful adaptations.

- Increase in ground water temperatures, which will need to be managed.
- Increase flooding risk in some locations, and loss of fish, from more intense rainfall days.
- Increase growth rate of tilapia and other farmed fish.



Cause intrusion of saline water upstream due to sea level rise

- Cause soil to become salty when gardens are close to the coastline.
- Cause stress to crops and require managing (ag. sheds, new varieties) from higher temperatures.
- Increase soil erosion during heavy rainfall events.



Increased flooding



Increased flooding

- Reduce the number of baby fish for aquaculture (e.g. Malilaha) if habitat for coastal fisheries (e.g. mangroves and seagrass) are damaged by a rise in sea level, change in chemical condition of sea water, or more intense storms.



Coastal gardens and aquaculture

- Increase erosion of soils from upland areas and cause flooding that dumps sediments on lower areas from increases in rainfall intensity.



Increased flooding



Increased flooding

- Increase risk of storm damage and loss of stock due to rise of sea level and possible increase in storm intensity.

Fig 7: An example of the booklet produced for workshop participants in Solomon Islands. The booklet summarized the results of the workshop conducted with community members interested in aquaculture ponds as a way to respond to climate and other changes. This page shows how past recommendations for building an aquaculture pond are reviewed in light of potential changes in climate.

- Community members were divided into fishers and farmers, with each group having their own workshop day that focused on particular research findings and issues.
- In Timor-Leste, the posters were presented to community members and they were asked how useful each one was in helping them to adapt their fishing and farming activities. The usefulness of each participatory research component was scored from 1 to 10, with 10 being considered the most useful. Participants were encouraged to write notes and comments on the posters to help them decide if they had enough information to make a decision about how to adapt (Figs 8 & 9).



Figs 8 & 9: Workshop participants in both Timor-Leste and Solomon Islands were encouraged to record their thoughts on each aspect of the climate change adaptation assessment research outputs.

- For each poster, the following questions were posed:
 - Why did you score as you did, and in what way was the information useful or not useful?
 - How could this information have been more useful to you?
 - What other information do you need, or which questions do you need answered to help you adapt your fishing and farming activities?
 - Who are the three key people you will need to work with to allow your adaptation actions to happen?
 - What will trigger your taking action to make these adaptation actions happen?
- All these issues were then discussed with the community in order to find potential solutions and ways forward.

The workshops in Timor-Leste and Solomon Islands were tailored to the interests and issues relevant to each community.

Implementation Planning Method in Timor-Leste

The participants in Timor-Leste had requested that information be returned to them in poster form. Hence, for their evaluation we asked specific questions about the usefulness of the posters, how they could be improved and how participants may move forward in implementing the adaptation options they had identified.

Implementation Planning Method in Solomon Islands

In Solomon Islands, the workshop and analysis focused on aquaculture as an adaptation to climate and other changes. As most of the participants were already engaged, or interested, in aquaculture, the evaluation focused less on identifying a threshold for when they would start to implement aquaculture. Instead, the discussion focused more on the usefulness of the information presented back to them and what they would change about the workshops to help make them more effective.

Tips for Conducting Implementation Planning

- Divide participants into small groups and identify one person in each group to take notes or annotate the posters. Some participants may not be comfortable with writing, so have someone take notes for them.
- Provide translations of the questions into local language where needed.
- Allow time for each group to present their comments back to everybody – sharing information and feedback is an effective way to bring everybody into the decision-making process.
- When identifying social, economic, or environmental ‘thresholds’ or ‘tipping points,’ be aware that this concept may be difficult to grasp. It may be helpful to phrase it as “what would need to happen before you would do or implement the action/adaptation?”
- Not all of the participants’ feedback may fit neatly into the specific questions listed above, but that doesn’t mean it’s not important. Balance the need to get specific answers with the importance of listening to the community’s views and perspectives.
- Include a monitoring and evaluation process during implementation planning so that the usefulness of the adaptation actions can be assessed over time.

Results and Recommendations

Timor-Leste

- **Community answers given to the question:**
“What did the community like about the project and research?”
 - Community participants said they liked that the information was provided by the fishers and farmers themselves, and therefore was accurate and relevant to their situations.
 - Community members also responded positively to the economic analysis, as this provided information on the costs of activities such as aquaculture and rice farming.
 - Community members also said that the Social Network Analysis was particularly useful, as it provided a fresh perspective on their relationships with others in the region (Fig 10) and helped them visualize and understand connections they needed to develop in order to adapt to change.



Fig 10: Workshop participants in Batugade, Timor-Leste, conducting Social Network Analysis.

- **Feedback received from the community, when asked to use the Social Network Analysis to identify people or organizations to assist in implementing adaptation, included the following:**
 - Food and Agriculture Organization (FAO) may help with their equipment needs.
 - Ministry of Agriculture and Fisheries (MAP) may enforce good management of Marine Protected Areas to protect inshore fisheries and allow them to recover.
- **General comments received on the climate change adaptation process and engagement with the communities in Timor-Leste:**
 - Community stated that for the economic analysis it is important to distinguish between realistic and aspirational types of activities.
 - The community members expressed a need for specialized equipment, like echo-sounders and GPS, to improve their fishing activities, particularly in deeper waters.
 - Farmers identified that they would need technical and training assistance in new management techniques (e.g., pest control to replace burning of crop residues – Fig 11).

Solomon Islands

- **Participants expressed the following about the workshops and research posters:**
 - Community members found that information on using vetiver grass (*Chrysopogon zizanioides*) to manage soil erosion on pond edges was very useful.
 - The Social Network Analysis helped participants to visualize current and potential future relationships among different stakeholders.
 - The information was relevant to the participants' needs and livelihoods and was presented clearly and interactively.
 - The community expressed that the workshops and research were great opportunities to learn new skills and share ideas relating to tilapia farming.

Ultimately, communities in both Timor-Leste and Solomon Islands will need more resources, equipment, training, information and support to implement some of these adaptations to their full potential.



Fig 11: Burning off ground cover, such as crop residue, after harvest is often done to try and control pests. However, burning the ground cover can increase soil erosion, reduce soil nutrients and kill beneficial insects that live in the soil. Community members identified in the implementation workshop that they need to find other ways to control pests.



This research was conducted by WorldFish under the project “Responding to Climate Change Using an Adaptation Pathways and Decision-Making Approach”, pursuant to the Asian Development Bank and Global Environment Facility cofunded initiative R-CDTA 7753-Strengthening Coastal and Marine Resources Management in the Coral Triangle of the Pacific (Phase 2).

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For further details on this project, visit <http://www.ctknetwork.org/> and <http://www.worldfishcenter.org/ongoing-projects/adaptationpathways-responding-climate-change>

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