

## Appendix 2

This appendix presents the detailed protocol used to collect data in the communities. Additionally, it highlights which sections of the protocol informed the different components of the conceptual model.

### Protocol for data collection

#### Aim of the study

The aims of the study are to use participatory research methods to identify:

1. Drivers of vulnerability and resilience to climate hazards, perceived by local stakeholders in subsistence farming communities in remote island settings.
2. How current adaptations implemented in those systems are modifying vulnerability and resilience.

#### Data collection tools to be utilized

- Gendered focus groups: following culturally appropriate protocols, focus group discussions will be separated by gender to allow participants from both genders to express their opinions openly and freely.
- Transect walks: these will be conducted around the villages, farms and terrestrial and marine environments used by the local communities to support their livelihoods.
- Semi-structured interviews: these interviews will be conducted with key informants in the communities such as the village headmen, village nurses, teachers and community members in leadership roles such as women and youth groups and church groups.
- Participant observation: researchers will immerse themselves in village life and participate in community activities, allowing for researchers to observe how community members manage their resources and interact with natural resources and ecosystems.

#### Steps for the application of each one of the data collection tools

##### Prior and informed consent to participate in the research

Before any data collection is carried out, researchers will seek permission from the chief and/or village headman and explain to him/her the nature of our project and how it can benefit the community. This will be done at the moment of the presentation of kava in the community hall. Researchers will ask them if they have any instructions for us to follow or recommendations on how to appropriately approach members of the community for the interviews and organizing focus groups. Permission will also be obtained to record conversations and take photographs.

We will be conducting semi-structured interviews and focus groups with members of the community and households. These focused discussions are aimed to gain insights to reflect on the different elements of the conceptual framework in the following areas:

- Define the boundaries of the system and identify hazards, by providing responses to the questions resilience and vulnerability of what to what?

- Identify main socio-economic and environmental issues and interaction with ecosystem services provision to link social and ecological vulnerability.
- Use local knowledge and perspectives to identify livelihood strategies that enhance resilience and autonomous adaptation strategies.

For the focused discussions we will have butcher paper with the questions written in English and Fijian. We will write the main ideas in colour cards and use them to keep track of the discussions. At the end of the discussion, we will allow for community members to look at the main ideas collected in the butcher paper and ask them if they think those are the most important points or if we have missed anything. It is important to conclude the focus group by thanking everyone for their time and asking if they have any questions for us.

Highlighted in green we have identified the elements from the conceptual framework that are informed by each section of the data collection.

## Questions to guide semi-structured interviews and focus groups

### Section 1: Experienced climate hazards

1. Considering the past ten years, which have been climate hazards that have impacted the community the most?

Classify them by:

Sudden onset (example storms)

Slow onset (example droughts)

Transient (example weather extremes)

Effectively permanent (example sea level rise)

- 1.1 How often in the occurrence of this hazard?
- 1.2 When does this hazard usually occurs?
- 1.3 How has the hazard most affected your livelihood and the local environment?
- 1.4 Overall what is the level of impact of that climate hazard to your livelihood, measured as low, medium or high?

Explain the rating system to participants, before asking them to complete the table.

*Low= activities or ecosystems were disrupted momentarily but did not sustain damage that required interventions or repair.*

*Medium= activities or ecosystems were disrupted for a significant amount of time and required interventions to repair or continue.*

*High= activities or ecosystems were permanently or severely disrupted, and interventions were required to re-build or restore functions.*

*Example on how to structure output from questions*

Climate Hazard	Type of hazard	Frequency	Season or time of the year when it occurs	Aspects of livelihoods and ecosystems most affected by the hazard	Level of impact in livelihoods (low, medium, high)
Storms	Sudden onset	Every year	Rainy season (between April and July)	Roads flood, stopping products to reach market, crops die, animals die, can't go fishing)	High

2. Which climate hazards have posed the biggest challenge for agriculture production and or the environment?

*Classify by crop, resource use and type of impact*

*Link to previous questions about hazards*

*Post field work: Corroborate and triangulate with records from Bureau of Meteorology and or Ministry of Agriculture*

3. Discuss with communities results available on which of the climate hazards are expected to pose a significant higher threat in the future based on available climate change projections. Identify people's perception of this future risk.

*This information is used to characterize the hazards, exposure and sensitivity in the conceptual framework.*

## Section 2: Livelihoods

What are the main sources of livelihood in the community?

Have livelihoods changed in the past recent years? If yes, explain

What are the main assets you count with to support your livelihoods? Classify according to:

- Human Capital
- Social Capital
- Natural Capital
- Physical Capital
- Financial Capital

*Information collected in this section is used to characterize adaptive capacity of the system and define the boundaries of the system.*

## Section 3: Agricultural systems

What types of crops/ animals do you produce?

Which crops/ animals are for household consumption and which ones are for selling?

What are the main agricultural practices you use in your farm?

What are the biggest production challenges you encounter in your farm?

Who is involved in the production of crops/raising animals?

In the past years have you changed the farming techniques you use, if so, what motivated the change?

In the past years have you changed the crops/animals you produce if so, what motivated the change?

*Information collected in this section is used to characterize adaptive capacity of the system and define the boundaries of the system.*

#### Section 4: Fisheries

Which species of fish you get and what are your methods of fishing?

Who is involved in fishing?

Which fishing products are for household consumption and which ones for selling?

Have you had to change fishing techniques and or fishing spots in the past years?

*Information collected in this section is used to characterize adaptive capacity of the system and define the boundaries of the system.*

#### Section 5: Ecosystem services

What are the main direct and indirect uses of natural resources in the village for the different livelihoods and stakeholders?

Which drivers or factors appear to influence the provision of ecosystem services? Describe for every type of ecosystem service linked to the livelihoods identified in the community. Classify according to:

- Provisioning services
- Regulating services
- Cultural services
- Supporting services

*Information collected in this section is used to characterize linked vulnerability feedbacks between social and ecological sub-systems.*

#### Section 6: Vulnerability drivers

Describe per climate hazard identified in section 1

When a hazard occurs what elements you think are making you more susceptible to the hazard?

Currently what is your capacity to respond to the hazard? In terms of assets, agency and capacity to mobilize those assets.

*Information collected in this section is used to characterize vulnerability*

#### Section 7: Resilience drivers

Describe per climate Hazard

**Cope:** In the past when a hazard has occurred what has allowed you to recover, even if this meant you were worse than before, but you managed to sustain your household?

**Adapt:** In the past when a hazard has occurred what has allowed you to adapt and change your management practices to reduce impact from the hazard or to prepare for future hazards?

**Transform:** In the past when a hazard has occurred what has allowed you to bounce back better and transform your livelihood or what have you done to prepare for the future?

*Information collected in this section is used to characterize resilience*

### Section 8: Autonomous adaptation strategies

Which strategies have you implemented to prepare or anticipate to a specific hazard?

Which strategies have you implemented to recover from a hazard?

Which strategies you consider would be effective against specific hazards, but you haven't implemented?

What is stopping you from implementing such strategies?

*Information collected in this section is used to understand autonomous adaptations and how they have modified vulnerability and resilience*

### Section 9: Development goals and community aspirations

What goals are a priority for the community to achieve?

What aspects of the community would you like to see improved or maintained?

*Information collected in this section is used to understand autonomous adaptations and how they relate to the communities' goals and aspirations.*