



# TOOL 6

## CLIMATE VULNERABILITY ASSESSMENT



Forest rangers of the Babatana Rainforest project, Solomon Islands.  
Credit: Nakau



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### What is the **purpose** of climate vulnerability assessment?

- To identify and map climate vulnerable households/groups in the project area.
- To identify potential project interventions for climate vulnerability mitigation and adaptation.

### Plan Vivo Carbon Standard (PV Climate) **requirement?**

- There is no specific PV Climate requirement to assess and/or map climate vulnerability. However, households or stakeholder groups in a community that are most vulnerable to the negative effects of climate change are usually amongst the most disadvantaged because (a) they are highly dependent on natural resources, (b) they lack livelihood alternatives (c) have few resources to fall back on at times of stress. They are therefore least able to adapt to external changes in the local climate (they lack resilience).
- Identification of the most vulnerable households is therefore highly recommended for all PV Climate projects.

### **Definitions relating to climate change**

**Resilience:** The ability of a community or household to resist, absorb, and recover from the effects of climate hazards in a timely and efficient manner, preserving or restoring their essential basic structures, functions and identity.

**Vulnerability:** The degree to which a natural resource, community or household is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity.

**Adaptation:** Actions or interventions taken by a community or household to reduce the vulnerability of a natural system, community or household to actual or expected effects of climate change. These actions will lead to their enhanced resilience.

**Climate Hazard:** The harmful effects of climate change on households, communities or natural ecosystems. Climate hazards can be gradual e.g. gradual changes in temperature or rainfall, or sudden such as floods, fires and landslides.

**Climate Risk:** The likelihood that harmful effects will happen as a result of climate changes (this usually means effects that risk harm or losses to life, property or the environment).

## When to use this tool?

- Climate Vulnerability Assessment should be used during project development (PDD stage) to develop ideas for relevant project interventions and actions that will have benefits for those people, and sometimes ecosystems, subject to the negative effects of climate change. In particular, this tool identifies those who are most climate vulnerable in the community and helps identify how to support them.
- As a project develops, Climate Vulnerability Assessment can also form part of the annual planning cycle where activities are included in the plan that will improve the ability of vulnerable households to adapt to climate change e.g. changes to agricultural systems, access to water, house construction materials etc. or simply the provision of community-based contingency funds that can be used in the event that households suffer severe losses as a result of floods, fires etc.

## Why is this tool required?

Smallholders and rural households that depend heavily on natural resources of all kinds are always amongst the most vulnerable to climate change. Such households usually lack resources to adapt effectively and as a result they are the first to suffer from the effects of climate change, whatever these are, in the local situation. This tool will help to focus attention on climate vulnerable households and on climate vulnerable natural resources, so that projects can take appropriate actions to address these vulnerabilities.

There are many possible participatory tools that could be used to explore the implications of climate change. As a minimum, it is suggested that projects focus on the following 2 aspects:

- Identification and mapping of climate hazards and risks.
- Assessment and mapping of household and resource vulnerability.

## Who should participate?

Participants for Climate Vulnerability Assessment should include a group of local people from the community (up to 12 people) selected for their local knowledge and covering a selection of occupations. Use the Well-being Assessment tool in different hamlets/wards of a village if the whole community population is very large. The Climate Vulnerability Assessment should be facilitated by a facilitator with some knowledge and experience of climate change issues in the local context, since it could involve some 'technical' aspects with which local people may not always be aware.

## How to use the tool?

- Introduce the tool to participants. Explain that the purpose is to understand what the local climate hazards are and to find out which households are most vulnerable to these.
- Next, begin by asking open questions about climate change and allowing different participants to give their views. e.g. What sort of climate changes have they experienced over the past 10-20 years? What do they think are the causes of these changes? What are the effects?
- As they mention different aspects of climate change, especially climate hazards, write these on flash cards and post them where everyone can see them. e.g. floods, forest fires, drying of water sources, crop diseases, landslides, soil erosion, human and animal diseases, damage to infrastructure etc.
- When a number of climate hazards have been identified, the next step is to try to locate these (or the risks of these climate hazards) on a map drawn by participants. If you have already carried out Participatory Resource Mapping you can use this. Otherwise, you will need to prepare a participatory map of the village and the surrounding area and natural resources using the steps described in the Participatory Resource Mapping tool. The map should be drawn on a large sheet of flipchart paper displayed so that all participants can see it.
- Next, considering each of the various climate hazards identified in Step 3, ask a participant to mark on the map with a red cross, locations where these hazards are likely to take place or be most severe. These could be settlements/houses, natural features (e.g. forests, fields, wetlands, marine resources, barren land, valleys, rivers, lakes etc) or infrastructure (roads, bridges, buildings, water tanks, schools, communication structures, irrigation channels etc).
- Ask different people to give their opinions and suggestions. At the end, you should have a map showing the location of the various climate hazards that are already occurring or that could potentially occur.
- Explain that this is not intended as an accurate map, but a map which represents how participants view the climate hazards in the local context.
- If you have enough time, ask participants to rank the various climate hazards by arranging the flash cards in the order which they think shows the severity or likelihood of the various hazards. For example, if they think that drought is the most likely, this can be assigned as #1, then livestock diseases as #2 etc. Keep rearranging the cards until everyone is satisfied with the sequence.

- The next step is to find out which households or stakeholder groups are most vulnerable to the different climate hazards. This can be done by combining 2 methods:
  - Using a matrix (a grid made up of rows and columns that forms a cross tabulation of data between the variables). of climate hazards and stakeholder groups (especially disadvantaged groups)
  - Using the participatory map to identify vulnerable households/settlements
- For the first method, you will need to have the chart where Stakeholder Analysis was prepared. Using this chart, prepare flash cards each showing the name of the stakeholder group e.g. women, smallholders, herders, landless people, elderly people etc. It is important to focus more on the most disadvantaged stakeholders from the Stakeholder Analysis.
- On a large piece of flipchart paper or on the ground, arrange these stakeholder cards in a vertical column and arrange the climate hazards cards in a horizontal row creating a grid matrix where a stakeholder links to a climate hazard (see diagram). Then ask participants for their assessment of the score for each pairing of a stakeholder group and a hazard (see the suggested ranking on the diagram). Write the score on a coloured flash card and place it on the matrix.
- The final result is a climate vulnerability matrix. It can used in various ways:
  - First, using the matrix, ask “Which stakeholder group seems to be the most vulnerable to the various climate hazards identified?” (calculating a score for each stakeholder group is one way to do this)
  - Next, ask “Which climate hazard appears to be most serious (affecting most stakeholders)?”
- Focusing on the most vulnerable stakeholder groups (those most affected) and the most serious (or likely hazards) ask for suggestions about “How vulnerability can be reduced in the project?”. In the example below, hazards of malaria and drought seem to be the greatest for all stakeholders. Ways to reduce the vulnerability to these could be by the project providing sleeping nets, purchasing prophylactics (medicine) for malaria, by the project providing drought resistant crop varieties, and/or promoting agroforestry (tree-based) systems as an alternative to arable crops.
- There are other ways to develop this theme of vulnerability assessment/mapping further, but this simple participatory tool may be enough for the needs of most projects. The ideas identified in Step 12 can be included in the annual plan and budget for the project (if agreed), and a similar exercise can be carried out again from time to time to see what has changed.

## A. Example of climate vulnerability assessment/mapping - Climate Hazard and Stakeholder Matrix

		Climate Hazard				
		Flooding	Crop disease	Malaria	Forest Fire	Drought
Stakeholder Group	Women	2	2	3	1	3
	Smallholder farmers	1	4	2	0	4
	NTFP collectors	0	0	2	4	0
	Old People	2	2	4	0	2
	Landless households	4	2	4	1	1
	Livestock herders	2	2	4	1	4

### Ranking

**0** Not vulnerable to the hazard

**1** Low vulnerability to the hazard

**2** Medium vulnerability to the hazard

**3** High vulnerability to the hazard

**4** Very high vulnerability to the hazard