



United Nations
Educational, Scientific and
Cultural Organization



Malaysia
Funds-in-Trust



PACIFIC CENTRE FOR
ENVIRONMENT AND
SUSTAINABLE DEVELOPMENT

COMMUNITY-BASED LOSS AND DAMAGE ASSESSMENT TOOLKIT FOR THE TOURISM AND AGRICULTURAL SECTORS

Prepared for UNESCO by: Viliamu Iese, Pajiliai Dobui, Helene Jacot Des Combes, Morgan Wairiu, John Walenenea Jr, Moses Asitarau, Tapulolou Tuaillemafua, Tessa Koppert, Taputu Mariri, Benjamin Delaivoni, Karen Chute

Pacific Centre for Environment and Sustainable Development (PaCE-SD), The University of the South Pacific, Suva, Fiji Islands



Acknowledgements

The toolkit development was funded by Malaysia Funds in Trust and UNESCO. The toolkit team is grateful to the donors for providing the financial support to complete this important task. We also acknowledged the support of the USP - EUGCCA Project team in security the sites for trialing the toolkit. Finally, we are grateful to the communities in Fiji, Cook Islands, Samoa, Solomon Islands and Timor Leste.

Disclaimer

The views and opinions expressed in this toolkit are those of the authors and do not necessarily reflect the official position of the United Nations Educational, Scientific and Cultural Organization (UNESCO), the Malaysia Funds in Trust and The University of the South Pacific, the Pacific Centre for Environment and Sustainable Development.



Table of Contents

1. Introduction	1
1.1. What not to expect	1
1.2. Principles.....	1
2. What is Loss and Damage (L&D)?	2
3. Getting Started – Who should initiate?	4
3.1. Planning the Actions	4
3.2. Free Prior and Informed Consent (FPIC)	5
4. Methodological framework for L&D assessment at the community level	6
4.1. Components of method.....	6
4.2. Toolkit overview and baseline data	8
4.3. Baseline and Loss and Damage indicators	9
5. Tools and Information.....	13
6. Tool box for community-level assessment to collect loss and damage data - Explanations and Examples	14
6.1. Seasonal Mapping/Calendar (T1).....	15
6.2. Historical Timeline (T2)	15
6.3. Hazard Mapping (T3).....	17
6.4. Rank Matrix (T4).....	18
6.5. Physical mapping (T5)	19
6.6. Vulnerability/Impacts mapping (T6)	20
6.7. Loss and Damage Matrix (T7).....	21
6.8. Root causes (Causal Analysis) of continuous impacts diagram (T8)	22
6.9. What is next? Feedback Session (T9).....	23



6.10. Household Questionnaires (T10) 24

7. Example of the Questionnaire 25

List of Figures

Figure 1: Conceptual framework for information needed to complete L&D assessments (drawn by the toolkit team) 3

Figure 2: Methodological framework for L&D assessment at the community level 8

List of Tables

Table 1: List of baseline data, indicators and types of slow and sudden onset events needed for the L&D assessment..... 10

Table 2: Methodological guidelines for the tourism and agricultural sectors..... 13

Box 1: Template for Seasonal Calendar 15

Box 2: An example of the historical timeline to be filled by the communities..... 16

Box 3: List of climatic stresses and impacts on tourism and agriculture experienced by a specific community 17

Box 4: An example of a template for climate stress/hazard ranking in communities..... 19

Box 5: An example of a template for development needs and coping and adaptive choices in communities 19

Box 6: An example of a physical map from Radeaekoa community, Solomon Islands 20

Box 7: An example of a vulnerability/impact map from Radeaekoa community, Solomon Islands..... 21

Box 8: An example of the template for loss and damage matrix 22

Box 9: An example of a root causes diagram (causal analysis)..... 23



1. Introduction

The purpose of this document is to provide a Loss and Damage (L&D) information toolkit that can be used by communities and local practitioners to collect data and information to carry out preliminary and credible climate change and climate extreme L&D assessments in the Agriculture and Tourism Sectors. In using this toolkit, communities, researchers and stakeholders can:

- collect relevant information and understanding of the depth and scope of vulnerability, exposure, impacts and existing adaptive capacity in order to generate better coping and adaptive lessons and applications. The measure or indicators of impacts are mostly qualitative with few quantitative ones.
- identify limitations in coping and adaptation and where certain critical decisions must be taken to avoid further L&D. Some of the key questions are: why do certain coping and adaptive strategies and activities fail; what are their limitations and how can they be improved.
- better understand the root causes for increasing, decreasing or stopping of L&D in order to make better decisions related to their coping and adaptive strategies and the activities that are needed to develop better community development plans for preventing, stop or reducing L&D.
- Use as leverage for further assessment, planning and development actions.

1.1. What not to expect

This toolkit is NOT:

- A stand-alone vulnerability assessment tool
- A stand-alone risk assessment tool
- An adaptation planning and implementation tool
- An attempt to completely collect and answer all questions regarding L&D including the attributions and contributions factors BUT it is a starting point to investigate the level of climate related loss and damage in agriculture and tourism sectors at the community level.

1.2. Principles

There are four main Principles for the successful implementation of this toolkit

1. **Ownership:** The community should own the processes of this assessment. Their involvement is important from the beginning to the end. They should provide consent at all level of data collection, analysis and usage of data and information produced from the application of this toolkit.



2. **Respect:** All rights and practices (cultural, beliefs, social) of the community should be respected at all times. Facilitators should understand the community's ways before engaging the community and respect them at all times.

3. **Flexibility:** This toolkit is written in a way that gives the facilitator flexibility to apply the tools as he or she sees fit. This toolkit is also flexible enough to be applied in any form of community (rural, urban, formal and informal communities). It is crucial for the facilitators to read and familiar with not only the tools but the type of community this toolkit is applied in.

4. **Relevance:** The arrangements of tools in this toolkit can be varied including the wording of questions and their applications and the purpose why the assessment is done. The facilitator may also skip tools if they see the information is already available and add questions to the tools when they feel they are relevant to the purpose of the assessment. After all, this is a toolkit, how a tool is used or applied depends entirely on the experiences, awareness and expertise of the facilitator.

2. What is Loss and Damage (L&D)?

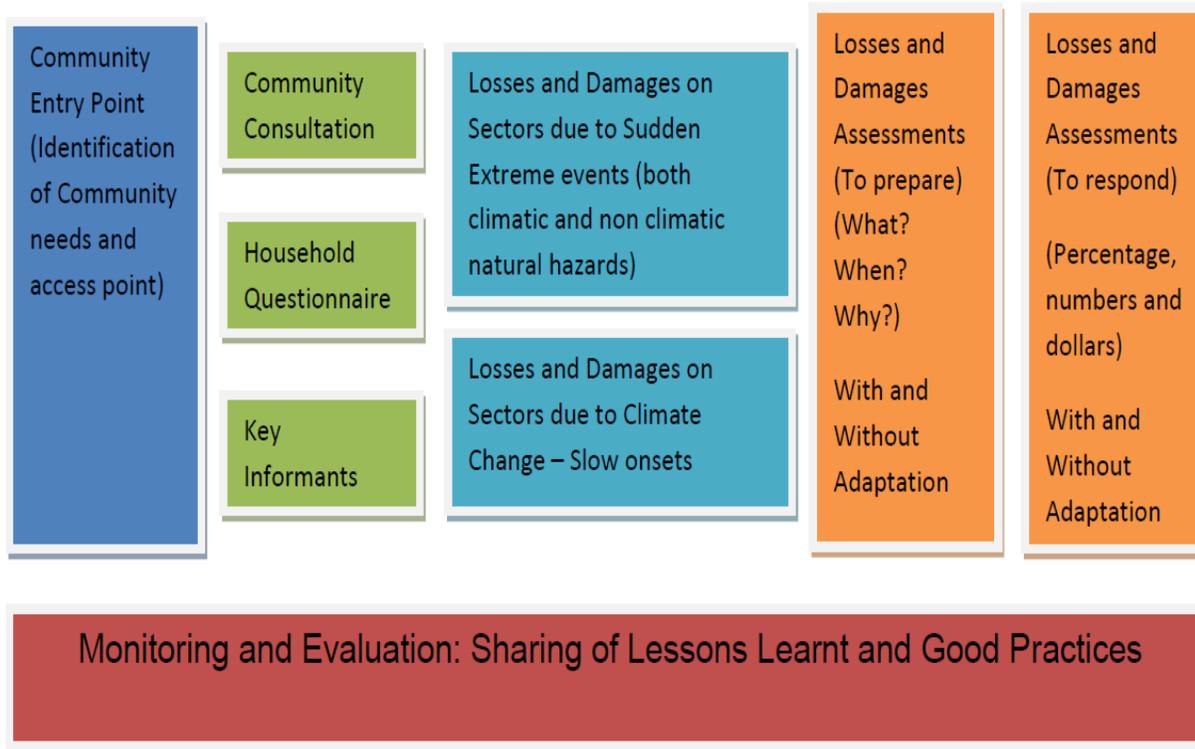
Loss and Damage (L&D) is perhaps the best indicator of how exposed, sensitive and adaptive a community is to climatic stresses, whether it be climate change or extreme events. It is the expected end result of climatic stresses when coping and adaptive measures are not enough. That is when vulnerability, sensitivity and adaptive capacity show the gaps that remain which must be filled somehow. L&D is also a testament to the success or failure of the coping and adaptive systems that are already in place. Where the risks and the exposures to extreme events and climate change impacts are high, continuous and gradually changing, whatever coping and adaptive measures in place are constantly being stretched and challenged. Every now and again L&D results indicate the many dimensions of vulnerabilities and exposures and adaptive requirements that must be taken into account and dealt with. These many dimensions demand better research assessment tools and methods for informed considerations and better decision-making for coping and adaptive measures and strategies. L&D has to be expected and communities should be prepared to learn and adjust where needed as opportunities arise to prevent or reduce L&D.

The concept of loss and damage (L&D) is relatively new and a universal definition is yet to be reached (see UNFCCC 2012, UNFCCC 2013 for further discussion of this issue). It is important to note there are many misunderstandings and disagreements on what is or should be referred to as loss and damage at the community and household level. Furthermore, there is confusion on the differences between L&D and Damage and Loss Assessment (DaLA) that are usually carried out after disasters. For the purposes of this toolkit L&D is defined as "the negative effects of climate variability and climate change that people have not been able to cope with or adapt to."¹ To further understand the differences between L&D and DaLA, damage in the L&D is referred to as "something that can be repaired for example a damaged bridge or a house etc." while damage in DaLA is referred to as "physical destruction of an asset

for example a damaged house, destroyed habitat”¹. Loss in L&D is referred to as “complete disappearance of something such as human lives, habitats, or even species that are gone forever – irretrievable while loss in DaLA is “reduction or variation of a flow due to a disaster for example, loss of earnings”². All in all, the Loss and Damage due to climate change (slow onset hazards) and Damage and Loss due to disasters (due to sudden onset hazards) are needed to be estimated qualitatively and quantitatively.

Figure 1: Conceptual framework for information needed to complete L&D assessments (drawn by the toolkit team)

Loss and Damage Framework (Extreme events and Climate Change (Slow and Sudden Onset events)



¹ Warner, K., van der Geest, K., Kreft, S., Huq, S., Harmeling, S., Kusters, K., De Sherbinin, A., 2012. Evidence from the frontlines of climate change: Loss and damage to communities despite coping and adaptation Loss and Damage in Vulnerable Countries Initiative. Policy Report. Report No. 9. United Nations University Institute for Environment and Human Security (UNU-EHS), Bonn. <http://www.ehs.unu.edu/>

² Holland, P. 2015. Presentation at the UNESCO – USP Loss and Damage Workshop in Apia, May, 2016

3. Getting Started – Who should initiate?

The main purpose of this assessment tool is for communities to assess their own loss and damage incurred by sudden and slow onset climate related hazards. It is crucial for the community to own and determine the directions of the assessment. Therefore the community or subsector (youth, elders, religious group etc.) in the community should initiate the assessment. Upon making a decision to start the assessment, the community should discuss:

1. What is the purpose of doing the assessment? Do we have the capacity to carry out the assessment? Can we apply the toolkit on our own? Do we have the resources to bring every member of the community for focus group discussions and carry out the household surveys? Can we analyze the information after collecting them? If the community is confident and answer YES to all the questions above they can organize themselves and conduct the assessment, analyze the information and present the findings to themselves and relevant stakeholders.
2. If the community does have a need to do the assessment but does not have the capacity to carry it out they can conduct their development partners such as relevant government departments, NGOs, CSOs and neighboring communities.

It is often the relevant partners that initiate the assessment based on the need to fulfill project objectives or sustainable development objectives for the development partners.

3.1. Planning the Actions

The key principle here is to work with existing information that are available and add on the tools to complete the assessment rather than starting from “no information” every time the assessment is conducted at community level. This avoids the duplication of results, saves time and resources and limits the “consultation fatigue” of communities.

Once the communities are selected, the facilitator(s) should develop a budget or allocate resources based on the time, access and needs of the assessment. It is important to note that facilitators should be aware of all traditional, social and religious protocols associated with the chosen communities. The entry point to the community whether it will be through the government, other partners or the community themselves is crucial for the success of the assessment. Proper communication and coordination are important at all levels to ensure everyone involved (community, facilitators, partners) are aware of all steps of the processes and timeframes of actions.

The important information to plan and collect before visiting the community includes:

- Existing community profiles
- Baseline data and sources. Some of the baseline data to collect for this assessment are given in Table 1



- What are climate change activities done or carried out in the target community (by the community themselves, NGOs, Government etc.) and which tools did they use
- Level of awareness of the community on climate change

3.2. Free Prior and Informed Consent (FPIC)

The facilitators must obtain free prior and informed consent of communities, including approval and participation of women. The facilitators should prepare a FPIC form for participants (each member of the focus group and member of the household interviewed) to sign before any information is gathered from the community level. These forms should include the name of the participant, statement of agreement to share information and for what purpose and the right of the participant to cease his/her participation whenever he/she wants. The facilitators should clearly state the purpose of the assessment including the type of data/information collected, how they will be collected, how they will be analyzed and how they will be used.

4. Methodological framework for L&D assessment at the community level

The flow chart below (Figure 2) should guide the formulation of the methodology and methods, including the formulation of the questionnaire. It also indicates how L&D assessments could be an integrated part of vulnerability assessments, adaptation planning and monitoring and evaluation of adaptation actions. It is important for the facilitators to read the flow chart carefully and familiarize themselves with the flow of tools and information needed to complete the assessment.

4.1. Components of method

There are three main components of the assessment method. These are:

Climate Hazards and their impacts

This part focuses on mapping out the types of climate hazards (stressors) that were experienced by communities. These include the types of hazard (cyclone, drought, sea level rise etc.), time of occurrence (daily, seasonal or annual etc.), time between warning and impacts (slow or sudden onset) and their adverse impacts on the communities. The Participatory Tools for this component are Tools 1 to 6 in the tool box List. For the household level, the Questionnaires will collect information on hazards (Tool 10).

Coping and Adaptation Interventions

This part focuses on what are the coping and adaptation activities the communities or households apply to withstand the impacts of sudden and slow onset hazards. These actions ranged from large scale activities such as sea wall to low scale ones such as shifting of crop or delay of planting time. This component also assesses the effectiveness of the coping and adaptation interventions at community and household level. This part is the monitoring and evaluation (M&E) component of the toolkit. The questions on effectiveness and efficiency of the intervention are not only measured straight after the establishment but most importantly when the next slow or sudden onset event takes place. For example, if the coping or adaptation was established because of the drought, the real measure of effectiveness and efficiency will be against the next drought spell; hence the losses and damages after coping and adaptation (residual loss and damage). The key focus in this part is whether the intervention stopped, increase or decrease loss and damages. The Tool 7 is the main tool for this component in the tool box. At the household level, the Questionnaire contains relevant questions to assess this component (Tool 10).

Attribution versus Contribution and next step

This is the most difficult component for the toolkit. This is because of the grey area between what is caused by climate change, natural hazards and local human impacts. Furthermore, there is lack of quantitative information on how climate change directly contributes to frequency, intensity and distribution/occurrence of extreme events (sudden onset). This component focuses on the root causes

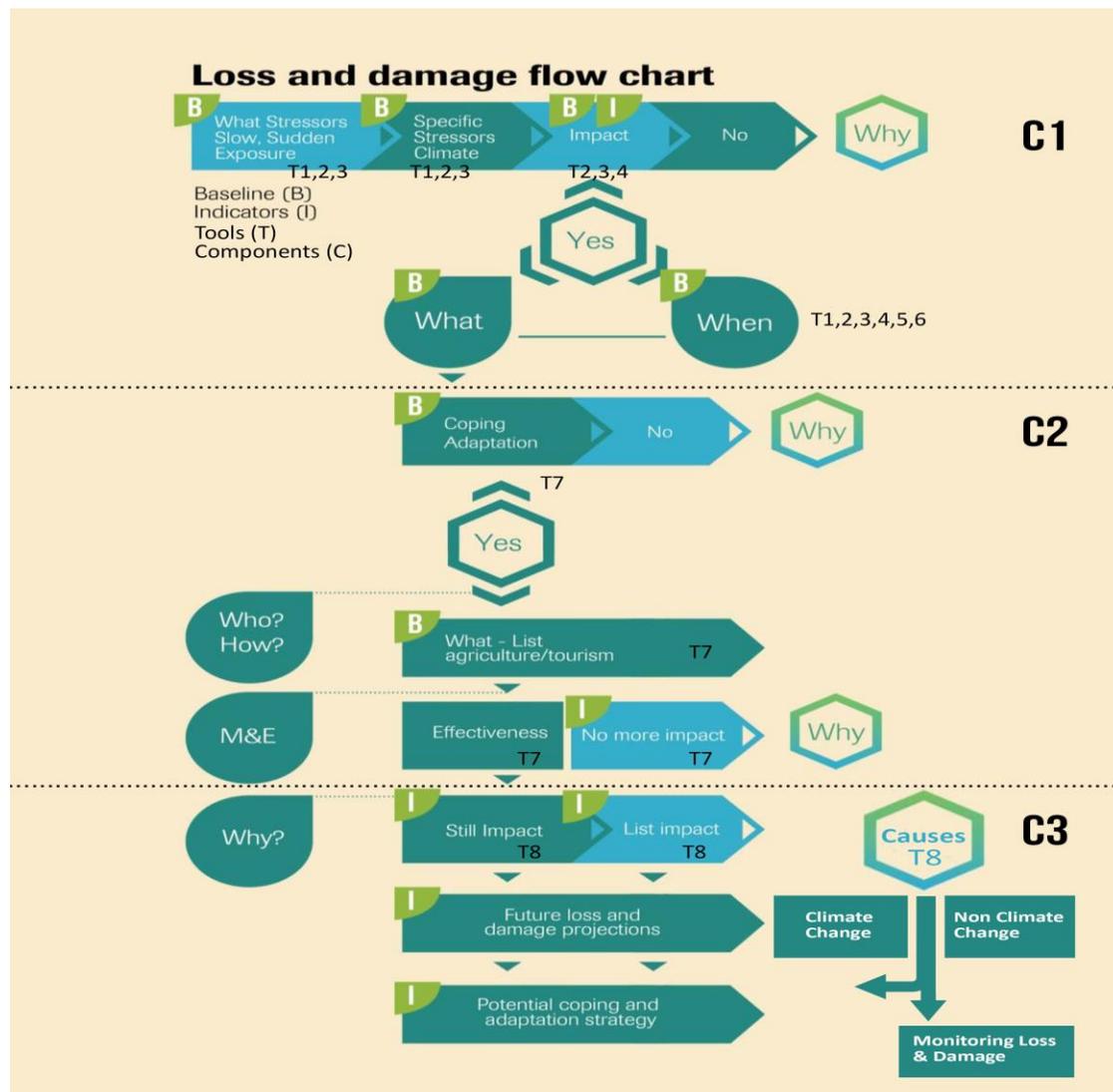


of residual loss and damages. This is whether the increase or decrease of loss and damages are attributed to the climate change (for example, increase frequency, intensity of hazards) or due to contribution of people (mal-adaptation, poor planning and other human activities). Although this toolkit will not cover the attribution factors with high certainty it is a good starting point to separate the local community contribution from climate induced factors to residual loss and damage. First the outcomes of this component will inform and improve local planning and practices (community, sub-national, national) to reduce loss and damage. Second, it will encourage more research and monitoring of climate change impacts at the community level to increase the knowledge on relationship between climate change impacts and loss and damages. Third, these finding will also assist the national and regional level with their negotiations with the international communities to support the Framework on Loss and Damage. Tool 8 in the tool box is the main one for this component.

At the end of this component, the facilitator(s) should sum up the findings and present them back to the community (feedback session). This is important to confirm the findings, discuss the next step and identify what the community can do to reduce their loss and damage. This is covered in Tool 9.

NB: If your community already collected information on any of the component, you may find these information before the assessment and proceed to the tools that cover the components that are missing. This will save time and resources for both the community and facilitators.

Figure 2: Methodological framework for L&D assessment at the community level



4.2. Toolkit overview and baseline data

This section outlines the overall methodology of this toolkit. It includes the methodological framework that integrates the data derived from the diverse tools and methods into one overarching analytical framework. It also includes an overview of indicators and research questions. The facilitators should study the tools properly and have a good understanding of how the data are collected in each tool before engaging with the community.



4.3. Baseline and Loss and Damage indicators

In order to complete a good L& D assessment at the community level, different types of information are required. The facilitators should conduct a research prior to the site visit to collect as much information as possible from several partners who worked with the communities. For this toolkit baseline data, some data could be obtained from government department (agriculture department, tourism department, bureau of statistics, GIS departments, disasters and meteorological departments, NGOs, farmers and hotel owners associations). In some countries, these data are also freely available online. The indicators of loss and damages can vary depending on the sector and type of assets and resources available to the community. However, it is important that some of the indicators and baseline data are the same for both sudden and slow onset events and they are recognized indicators used by national governments during post disaster damage and loss assessments. It may be possible to source some of the indicators and baseline data from national household income and expenditures surveys, national census, national tourism or agriculture surveys, national and international disaster databases and community members themselves. Table 1 summarises the information that might be useful as baseline information.

Table 1: List of baseline data, indicators and types of slow and sudden onset events needed for the L&D assessment

Information Type	Tourism	Agriculture
Baseline	<ul style="list-style-type: none"> • Number, size, location of all tourist assets/Resort/hotel/backpack/tours/transportation/handicraft/restaurants • Location by division, province and district or Tourism district i.e.; Coral Coast, Nadi, Suva, Rakiraki, Mamanucas, Yasawa, Northern Division • Furniture, equipment etc. • Hotel beds available and occupancy rate • Tourist arrivals by month • Length of stay • Average expenditure • Tourism taxes - Departure tax, HTT • Number of Households that depend on Tourism directly and indirectly as main sources of livelihood 	<p><i>Subsistence Farm</i></p> <ul style="list-style-type: none"> • Food Crops • livestock • Size of the farm (land size) • Topography of the farm • Farmer households • Farm hands households • Location by division, province and district • Farming equipment • Water requirements and irrigation systems <p><i>Semi commercial farm</i></p> <ul style="list-style-type: none"> • Food Crops • Cash crops • livestock • Size of the farm (land size) • Topography of the farm • Farmer households • Farm hands households • Location by division, province and district • Farming equipment • Water requirements and irrigation systems <p><i>Commercial Farm</i></p> <ul style="list-style-type: none"> • Food Crops • Cash crops • Livestock • Size of the farm (land size) • Topography of the farm • Farmer households • Farm hands households • Location by division, province and district • Farming equipment • Water requirements and irrigation systems
Coping/Adaptation	<ul style="list-style-type: none"> • DRM/CCA Policies 	<ul style="list-style-type: none"> • DRM/CCA Policies

strategies, policies and activities in place	<ul style="list-style-type: none"> • Land use planning strategies • Building code • DRM Plans • Evacuation Procedures • Traditional/ Local knowledge • Early warning systems/Weather forecasts 	<ul style="list-style-type: none"> • Land use planning strategies • Types of disaster resilient crops • Food security programme • Seasonal planting calendar • Early recovery crops • Disaster foods/crops • Traditional/local knowledge • Early warning systems/Weather forecasts
Climate Stresses <i>Sudden onset</i>	<ul style="list-style-type: none"> • Cyclones • Extreme Storms • Thunder and lightning • Floods • Land slides • Storm surges • Drought* • Heat wave • Cold wave 	<ul style="list-style-type: none"> • Cyclones • Extreme Storms • Thunder and lightning • Floods • Land slides • Storm surges • Drought* • Heat wave • Cold wave
Sudden Onset (non climate)	<ul style="list-style-type: none"> • Volcano • Earthquake • Tsunami 	<ul style="list-style-type: none"> • Volcano • Earthquake • Tsunami
Climate Stresses <i>Slow onset</i>	<ul style="list-style-type: none"> • Sea level rise • Increase in salinity of waterways and estuaries • Salt water intrusion • Shifting Precipitation patterns • Increasing temperature • Coral bleaching • Ocean acidification 	<ul style="list-style-type: none"> • Increase in salinity of waterways and estuaries • Salt water intrusion • Salt water inundation • Shifting Precipitation patterns • Sinking islands • Increase in temperature • desertification
Loss and Damage sudden onset (These are the indicators used during the post disaster damage and loss assessments. These damages and losses will be added in the existing database to monitor the damages and also for disaster risk reduction actions pre-disaster conditions)	<ul style="list-style-type: none"> • Value of assets destroyed • Value of assets damaged • Cost of clean up • Additional operational costs - e.g. generator • Number of hotel beds not available • Number of hotel bed not occupied • Estimate revised occupancy rate • Revised arrivals by month • Additional promotion costs • Households affected directly /indirectly 	<ul style="list-style-type: none"> • Range of crops and livestock lost • Percentage of crops livestock lost • Percentage of income and livestock lost • Loss/Damage of farming equipment • Acreage lost • Number and percentage of farmers affected • Households affected directly and indirectly • Coping and Adaptation Actions • Recovery Needs



	<ul style="list-style-type: none">• Coping and Adaptation Actions Recovery Needs	
--	----------------------------------------------------------------------------------------------------	--

5. Tools and Information

The methodology for this toolkit has been developed from several key sources, including Warner and van der Geest’s study on loss and damage in 9 vulnerable countries³. It has also been adapted to ensure that the specificities of the tourism and agriculture sectors are taken into account. Table 2 provides the details relevant research questions, research tools and focus groups that are most relevant for each sector.

Table 2: Methodological guidelines for the tourism and agricultural sectors

Information type	Tourism	Agriculture
<p>Research questions</p> <ul style="list-style-type: none"> • <i>Central research question</i> • <i>Sub-questions, to focus on</i> 	<p>How does the impact of [climate stress] on [societal impact] lead to loss and damage among households in [location]?</p> <ul style="list-style-type: none"> • local changes in weather variability and climate patterns • societal impacts of these climate stressors • household vulnerability • existing coping and adaptation measures • residual losses and damage, defined as impacts that could not be avoided through coping and adaptation <ul style="list-style-type: none"> • measures to cope or adapt are <i>not enough</i> to avoid loss and damage • measures have <i>costs</i> (economic, social, cultural, health, etc.) that are not regained • <i>Loss and damage from climate change</i> • measures are <i>erosive</i> and make people more vulnerable • <i>no measures</i> are adopted, due to: 	<p>How does the impact of [climate stress] on [societal impact] lead to loss and damage among households in [location]?</p> <ul style="list-style-type: none"> • local changes in weather variability and climate patterns • societal impacts of these climate stressors • household vulnerability • existing coping and adaptation measures • residual losses and damage, defined as impacts that could not be avoided through coping and adaptation (Adapted from Warner Koko 2013) • measures to cope or adapt are <i>not enough</i> to avoid loss and damage • measures have <i>costs</i> (economic, social, cultural, health, etc.) that are not regained • <i>Loss and damage from climate change</i> • measures are <i>erosive</i> and make people more vulnerable • <i>no measures</i> are adopted, due to: <ul style="list-style-type: none"> ○ <i>lack of capacity</i> to respond to climate threat (constraint)

³ Warner, K., and van der Geest, K., 2013. Loss and damage from climate change: Local-level evidence from nine vulnerable countries. International Journal of Global Warming 5(4), 1-20.

	<ul style="list-style-type: none"> ○ <i>lack of capacity</i> to respond to climate threat (constraints) • coping/adaptation <i>not possible</i> (limits.) 	
Research Tools	<ul style="list-style-type: none"> • Seasonal mapping calendar • Historical timeline • Hazard mapping • Rank matrix • Physical mapping • Vulnerability mapping • Vision mapping • Data sheets (Forms) – Initial Damage Assessment forms • Data sheets (Forms) – Detailed damage assessment forms • Questionnaires • Observation • Discussions (Structured with Targeted data/Information) • Participation Action Research 	<ul style="list-style-type: none"> • Seasonal mapping calendar • Historical timeline • Hazard mapping • Rank matrix • Physical mapping • Vulnerability mapping • Vision mapping • Data sheets (Forms) – Initial Damage Assessment forms • Data sheet (Form) – Detailed damage assessment forms • Questionnaires • Observation • Discussions (Structured with Targeted data/Information) • Participation Action Research
Target Groups	<ul style="list-style-type: none"> • Tourist asset owners • Tourists • Households/direct and indirect • Focus Groups/stakeholders • Key informants <p>National and Regional Tourism Department or Organization</p>	<ul style="list-style-type: none"> • Households /Farmers and farm hands • Market vendors depending on the farms • Households that depends on the market • Focus Groups/Stakeholders • Key informants • National economy

- Note: Depending on the type of drought it may be either a sudden onset event or a slow onset event. Therefore the strategy to deal with droughts varies depending on the type and related impacts.

6. Tool box for community-level assessment to collect loss and damage data - Explanations and Examples

Based on the overview and methodology described in Section 2, the following tools may be useful for data collection at the community level.

also list major coping and adaptation strategies or form of major development established and relevant changes incurred due to the impacts of the events. In Box 2 the first column shows the year the event occurred, column two shows the type of climatic stress (hazard) that caused the impact(s) and the last column includes the major developments, coping and adaptations and changes observed by the community after the event. If the community only remembers the event but not the year, it is important to list the event and the year can be confirmed later.

The objectives of this tool are:

- To list the historical trend of climatic stresses and occurrences; the recovery and reconstruction coping and adaptive development that the community went through; and their timeline.
- To list the time particular changes begin to be noticed by the community e.g. declining precipitation, sea water intrusion into farm lands, changes in flowering and fruiting of certain fruit trees.
- To identify the climatic stresses associated with the community and study site and the likely return period.

Box 2: An example of the historical timeline to be filled by the communities

NB: If the communities only remember the climate stressor (Hazard) or the event but not the year they can just leave the timeline empty to be filled later from other sources while they focus on recording the severity of the stressor and the developments.

Historical Timeline	Climate stress	Impacts	Development/coping/adaptation
1972	Hurricane Bebe	<ul style="list-style-type: none"> • Damaged houses, roads, jetty • No water • Loss of crops – cassava, bananas, taro 	<ul style="list-style-type: none"> • Housing • Road • Jetty • Water Tanks Construction • Introduction of disaster resilient and early recovery crops
1985	Tropical Cyclone (TC) Gavin		<ul style="list-style-type: none"> • Church Rebuilt • Additional House • School Quarters • Classroom Blocks
1997-1998	Drought		<ul style="list-style-type: none"> • Water Projects-Upgrading • Proper Sanitation • Ration Supplies • DRM Training/Adoption of a DRM Plan • DRM Building code

Dec 2012	TC Evans		<ul style="list-style-type: none"> • Category 5 cyclone resistant housing Projects • Jetty Upgrade • Road • New Fishing Vessel/Repairs • Renovations of School Buildings under new building code
----------	----------	--	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

6.3. Hazard Mapping (T3)

Tool 3 helps the community to document the specific hazard and climate stresses and their observed impacts on the specific sectors in the community. Box 3 describes the climatic stress (i.e. the hazard), the impacted sector, and details of impacts. The list of impacts should be specific, for instance it could include types of crops, types of resorts, number of beds lost or damaged and using indicators and baseline data given in Table 1.

The purpose of this tool is:

- To document and record all the impacts of a disastrous climatic stress/hazard on agriculture and tourism sectors in the community. The practitioners/facilitators can prepare this list before the community consultation using local/national, regional and international databases and reports.

Box 3: List of climatic stresses and impacts on tourism and agriculture experienced by a specific community

Climatic Stress	Sector	Impacts
Eg. Cyclone	Agriculture	<ul style="list-style-type: none"> • Damage on crops • Loss of harvest of commercial crops • Loss of income Disruption of Electricity supplies • Affect agricultural produce supply chain • Breakdown of water access/supply • Affects food chain • Farmers and farm hands homeless

	Tourism	<ul style="list-style-type: none"> • Reduction in occupation rate • Temporary loss of employment • Temporary loss of water • Death and disruption of corals and marine life
Drought	Agriculture	<ul style="list-style-type: none"> • Loss of livestock • Loss of vegetables • Loss of income • Less food/
	Tourism	<ul style="list-style-type: none"> • Disruption of water supply • Reduction in occupancy rate • Temporary loss of employment
Sea level rise	Agriculture	<ul style="list-style-type: none"> • Loss of suitable agriculture land (arable land) • Loss of crops/trees • Reduction of yield
	Tourism	<ul style="list-style-type: none"> • Loss of recreational areas (Beaches) • Loss of land (coastal erosion) • Damages to infrastructures

6.4. Rank Matrix (T4)

Tool 4 can be used in two ways: i) to enable the community to rank the climatic stresses and hazards that affect the community most in terms of impacts and return period; and ii) to rank development needs in terms of the ones needed most and the forms of coping and adaptive strategies, designs and resource commitments that can be provided (Box 4 and 5).

Each item is rated against the other items across the row and participants agree as to which ranks higher in terms of occurrence and impact or in terms of community need and against the coping and adaptive options available. The higher the number of occurrences on the table, the higher the importance of the item or occurrence rating of the climate stress or hazard.

The purpose of this exercise is to rank the occurrences of climatic stresses in terms of which occur most often and has the most profound impact and to prioritise the type of development needs that are most needed and the type of DRM/CCA coping and adaptive designs/choices they need to adopt in relation to the climatic stresses that impact the community most often. Specifically, the rank matrix is commonly used:

- To determine the frequency and extend of climatic stresses and hazards and their return period;

- To prioritize community needs so that the most important needs are identified;
- To give good reasons and justifications for choices being made;
- To help community look for alternative options.

Box 4: An example of a template for climate stress/hazard ranking in communities

	Cyclone	Flood	Drought	Fire	Sea level rise	Shifting rain patterns
Cyclone						
Flood						
Drought						
Fire						
Sea level rise						
Shifting rain pattern						

Box 5: An example of a template for development needs and coping and adaptive choices in communities

	Water	Power	Kindergarten	C/Hall	Sea wall	Relocation
Water						
Power						
Kindergarten						
C/Hall						
Sea wall						
Relocation						

6.5. Physical mapping (T5)

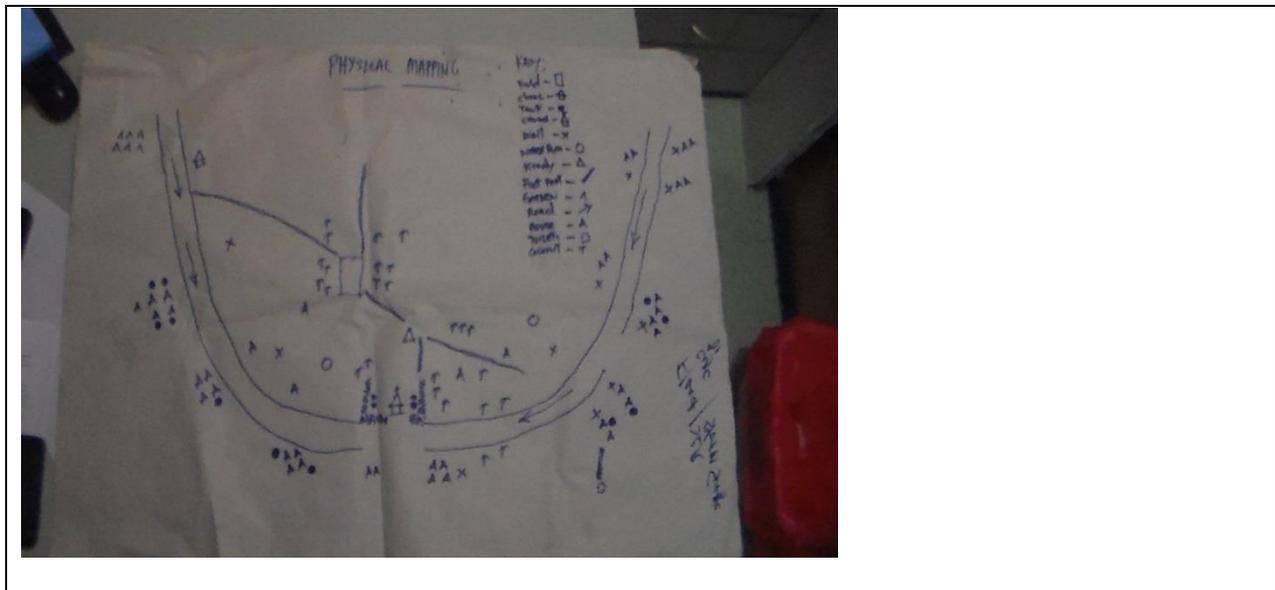
Tool 5 (Box 6), the physical map shows the geographical layout of the agricultural or the tourist community and its surroundings. It locates and identifies the important features in the community locality like the social and cultural sites, the households and their arrangements, the farms, the shops, school or health centre, evacuation centres, the sea, the river, the tourist resorts, etc. and their relative proximity to the community. It can be drawn freehand on vanguard sheets, which can also indicate how familiar the community is with their immediate surroundings and how closely related they are to these important features.

The map can be also drawn using GIS software by the community themselves or a GIS specialist. This map should be geo-referenced before it is used by the communities.

The purpose of Tool 5 is:

- To show the spatial view of a community setting and its surrounding areas;
- To visualize the overall appearance of the village/community;
- To identify potential sources of risks;
- To determine how to incorporate coping and adaptive development solutions;
- To determine future development choices.

Box 6: An example of a physical map from Radeaekoa community, Solomon Islands



6.6. Vulnerability/Impacts mapping (T6)

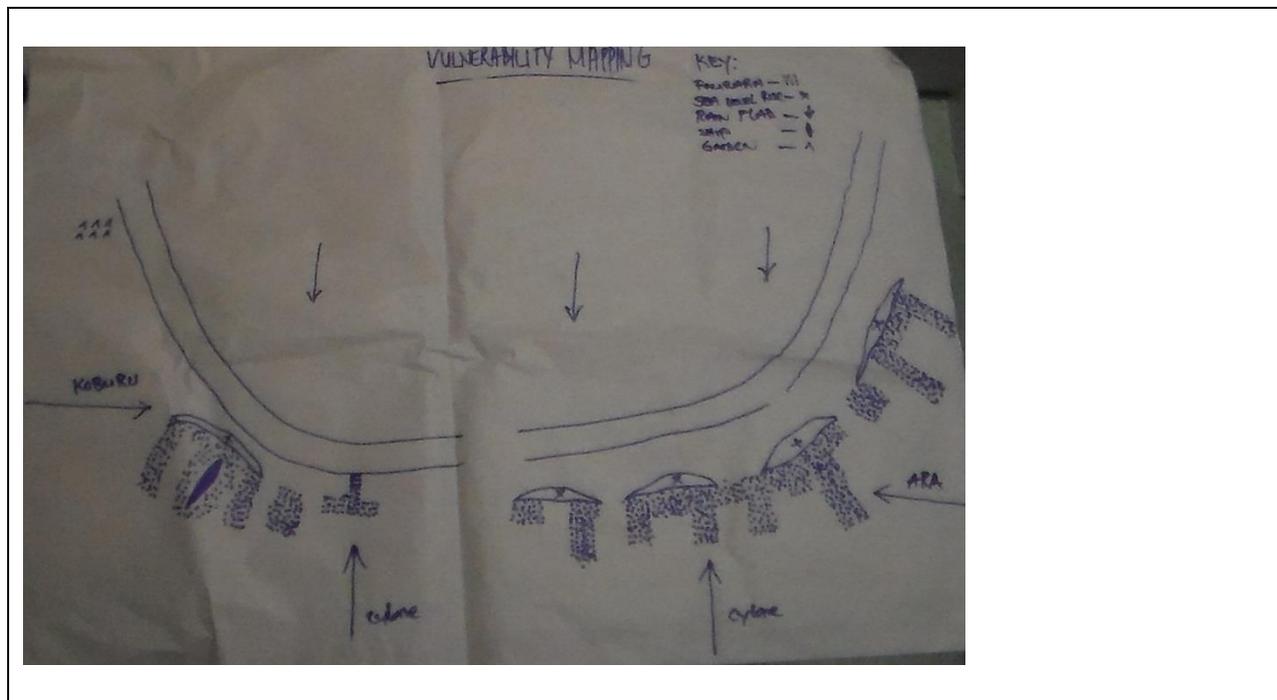
Tool 6 (Box 7) can be overlaid or overdrawn on Tool 5, the physical map. This tool shows the parts of the communities that are vulnerable to different hazards based on the available observed impact information and experiences of the village. It will also show the vulnerability of communities to each hazard identified in the hazard mapping (T3) (historical, current and future risks). This tool will also show the sites in the community that have been affected by or exposed to historical hazards. The communities can use this mapping tool to show various future scenarios of impacts of separate hazards and how they will address the associated risks through proper and relevant coping and adaptation actions.

Purposes:

- To show the sites in the communities that are most vulnerable to specific hazards;

- To show the assets that are most exposed to specific hazards;
- To show which sites were impacted when specific hazards occurred (based on historical records and observations);
- To show new developments (community visions) and how it will reduce the overall vulnerability/exposure of assets;
- To visualize the impacts of future hazards on the communities given different coping and adaptation options.

Box 7: An example of a vulnerability/impact map from Radeaekoa community, Solomon Islands



6.7. Loss and Damage Matrix (T7)

Tool 7 is helpful for the communities to link the impacts before and after the intervention (coping/adaptation) and to identify the loss and damage incurred when coping and adaptation is not enough (Box 8).

Purposes:

- To list the type of hazards or climate stressors experienced by the community (From tools 2 and 3).
- To list the specific impacts on the sector (Agriculture and Tourism) (From tools 3, 4, 5);

- To list the coping and adaptation interventions applied by the communities to reduce loss and damage (if none, list the reasons why);
- To list the evaluation/effectiveness of the interventions (stop, reduce, increase the impacts when the next event occurred);
- To list the possible reasons that the community is aware of that contributed to the success or failure of the intervention to prevent loss and damages.

Box 8: An example of the template for loss and damage matrix

Stressor/hazard	Specific impact on Sector Agriculture/Tourism	What are the Coping and Adaptation interventions	What are the ongoing impacts after coping and adaptation?	Explanation for ongoing impacts?
Sea level rise	- crops died and reduced yield because the sea water inundated x acres of cropping lands	- planted salt water tolerant varieties of sweet potato and taro	- there is an improvement in yield but about 20 plants in an acre died when inundation happened during king tides	-
	- sea water inundation during king tides caused coastal flood that wet the beds and damaged other equipment	- built a seawall along the coastline	- waves overtopping during storm surges and king tides, leads to less earnings and loss of employment because of damages to rooms closer to the seaside.	

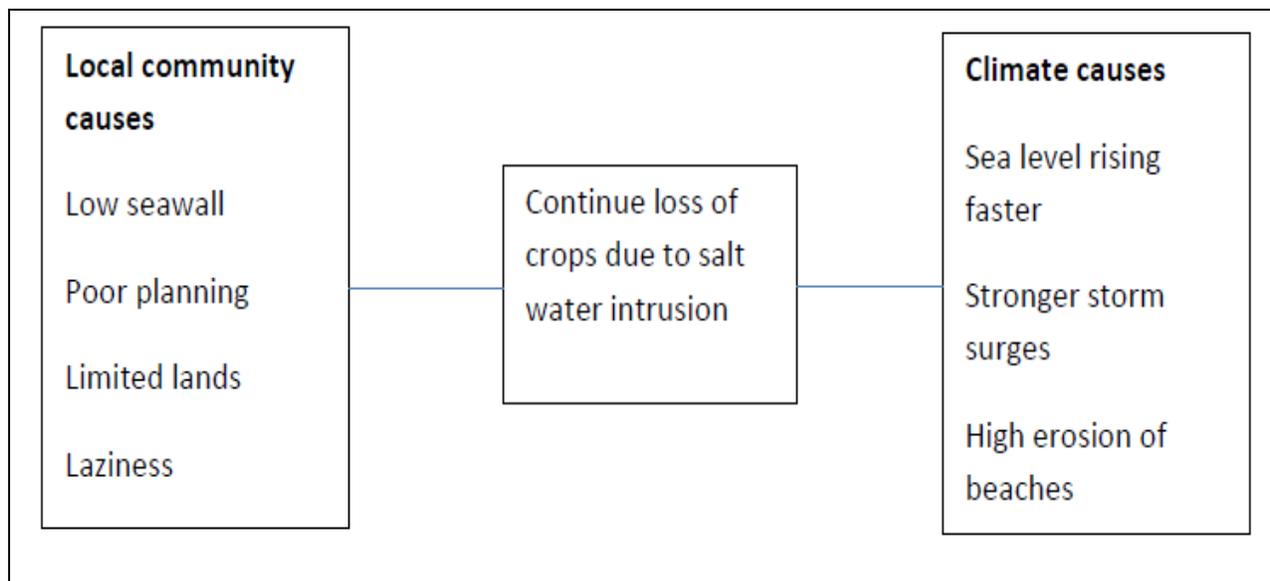
6.8. Root causes (Causal Analysis) of continuous impacts diagram (T8)

Tool 8 lists the ongoing impacts from Box 8 (Tool 7) and map out the “root causes” what the community perceived are responsible for ongoing impacts (Box 9).

The purposes of this tool are:

- To identify the root causes of ongoing impacts (residual loss and damage) after adaptation
- To identify if the ongoing impacts are due to locally human interference (mal adaptation, poor planning, unsustainable practices) or climate change (increase sea level,
- For community to visualize the link between root causes and residual loss and damage

Box 9: An example of a root causes diagram (causal analysis)



6.9. What is next? Feedback Session (T9)

After the data/information is collected, the facilitators should present back to the community the major findings of the assessment. These includes the climatic hazards and their impacts, coping and adaptations and their effectiveness, residual loss and damage, attribution or contribution factors and initiate a discussion to confirm the finding.

This feedback session is very important to confirm the finding and assessment results and also discuss a consensus on the next step for the community and stakeholders. This is mainly on how the results should be disseminated. It is also an important time to briefly discuss possible next actions to reduce loss and damage.

NB: It is very important to be honest with the community and NOT to raise false hopes and expectations. It is important too to identify what the community can do to reduce their loss and damage (both community and household level) and if it is beyond their capacity provide some guidance on how to link to key development partners.



6.10. Household Questionnaires (T10)

Assessing L&D at the household level is very important. This is where the real picture of household coping and adaptation interventions can be seen. The real effectiveness, efficiency and learning are also best measured at the household level.

The questionnaire in this section is designed to collect sufficient data to reflect L&D, coping and adaptation and level of coping/adaptation effectiveness at the household level for Agriculture and Tourism Sectors. The specific crops, livestock, farming equipment could be adjusted based on the type of community and country assessed.

7. Example of the Questionnaire

A Community Based Loss and Damage Assessment Questionnaire

Date: _____ Country: _____ Site: _____

A. SOCIO-ECONOMIC CHARACTERISTICS

1. **Are you:** Male Female

2. Please indicate the **year** you were **born:** _____

3. What is the **monthly income for your household (local currency)?**

less than \$100 \$100 – 250 \$250 – 500 \$ 500 – 1000 more than \$1000

4. What is the **main source of income for your household (select only one)?**

No income Wages/salary Own business Sale of products (fish, handicraft, crops, etc)
 Land lease House rent Remittances Other source (specify)

5. Who is (are) the main income earner? (Note the gender)

8. Who **manages the household income?** (note the gender)

9. What is your highest level of **education (select only one)?**

No school completed Primary school Secondary school
 Diploma Degree Masters PhD

10. How **many people** live in your household? Adults: _____ Children: _____
 Male _____ Female _____

11. What is your **major monthly household expense (select only one)?**

- Food Water Energy
 Transport Healthcare Education Other (specify) _____

12. What is your land holding status?

- Customary land Freehold land State land Oleased land
 Sub-leased land others (specify) _____

B. Types of Hazards, Impacts on Agriculture and Tourism

13. What are the main disasters/hazards that affect your community and how often do they occur? (You may select more than one disaster)

<i>Disaster / Hazards</i>	<i>At least once a year</i>	<i>More than once a year</i>	<i>Once Every 2 years</i>	<i>Once every 3 or more years</i>	<i>Rank in terms of severe impacts on household (1- 3 1 is worst)</i>
<i>SD – Sudden Onset</i>					
<i>SO – Slow Onset</i>					
Cyclone (SD)					
Flooding (SD)					
Drought (SD/SO)					
Earthquake (SD)					
Tsunami (SD)					
Salt water intrusion/inundation (sea level rise) (SO)					
Storm surges (SD)					
Increasing temperature / Heat waves (SO)					
Other (Specify)					

B.1 Agriculture

14. Which of the above disaster affected your house hold agriculture the most?

Please explain how?

15. When the above disaster happened (14), on average how much was affected? You may tick more than one box. (NOTE: Facilitator can add crop, specific livestock (chicken, cow etc) and farm equipment from list)

cassava	<input type="checkbox"/>	25%	<input type="checkbox"/>	50%	<input type="checkbox"/>	75%	<input type="checkbox"/>	100%	<input type="checkbox"/>
taro	<input type="checkbox"/>	25%	<input type="checkbox"/>	50%	<input type="checkbox"/>	75%	<input type="checkbox"/>	100%	<input type="checkbox"/>
kumara	<input type="checkbox"/>	25%	<input type="checkbox"/>	50%	<input type="checkbox"/>	75%	<input type="checkbox"/>	100%	<input type="checkbox"/>
yams	<input type="checkbox"/>	25%	<input type="checkbox"/>	50%	<input type="checkbox"/>	75%	<input type="checkbox"/>	100%	<input type="checkbox"/>
banana	<input type="checkbox"/>	25%	<input type="checkbox"/>	50%	<input type="checkbox"/>	75%	<input type="checkbox"/>	100%	<input type="checkbox"/>
breadfruit	<input type="checkbox"/>	25%	<input type="checkbox"/>	50%	<input type="checkbox"/>	75%	<input type="checkbox"/>	100%	<input type="checkbox"/>
mangoes	<input type="checkbox"/>	25%	<input type="checkbox"/>	50%	<input type="checkbox"/>	75%	<input type="checkbox"/>	100%	<input type="checkbox"/>
vegetables	<input type="checkbox"/>	25%	<input type="checkbox"/>	50%	<input type="checkbox"/>	75%	<input type="checkbox"/>	100%	<input type="checkbox"/>
Livestock	<input type="checkbox"/>	25%	<input type="checkbox"/>	50%	<input type="checkbox"/>	75%	<input type="checkbox"/>	100%	<input type="checkbox"/>
other specify	<input type="checkbox"/>	25%	<input type="checkbox"/>	50%	<input type="checkbox"/>	75%	<input type="checkbox"/>	100%	<input type="checkbox"/>

15. Please tick the relevant box and answer the questions. You may answer more than one option

	<i>Coping and Adaptation in Agriculture</i>	Yes	Effectiveness 1 – stop impact 2 – reduce impacts 3 – no effect 4 – increase impacts	Comments on effectiveness why or Why not?
1	Shift to higher grounds away from flooded areas (salt water and rivers)			
2	Plant new varieties (high yield, short maturity, tolerant)			
3	Raise new livestock (tolerant and high returns)			
4	Plant new types of crops – vegetables, forest trees			
5	Change cultivation methods (plant in raised beds, pots, containers, apply compost)			
6	Improve crop management (apply irrigation, store water, fertilizers, mulching, control pest and diseases)			
7	Change time of planting and harvesting			
8	Stop agriculture activities – shift to another source of livelihood and foods			
9	Others (Please list down)			

16. What would be your next action to reduce the loss and damage on your crops and livestock?

B.2 Tourism

17. Are you a; (circle the best option(s))

a. owner: i - hotel, ii – guest house, iii – ecolodge, iv – tour operation, v – others _____

b. beneficiary: i – employ, ii – sell produce/handicrafts, iii – transportation, iv - culture/performance, v - others

18. Which of the above disaster (13) affected your tourism activity the most?

Please explain how?

19. When the above disaster happened (18), please estimate the level of loss on your tourism activity? Please you are allowed to tick more than one box. NOTE: Facilitator can add on the list

Beds and accommodation	<input type="checkbox"/>	25%	<input type="checkbox"/>	50%	<input type="checkbox"/>	75%	<input type="checkbox"/>	100%	<input type="checkbox"/>
Number of tourists	<input type="checkbox"/>	25%	<input type="checkbox"/>	50%	<input type="checkbox"/>	75%	<input type="checkbox"/>	100%	<input type="checkbox"/>
Infrastructure	<input type="checkbox"/>	25%	<input type="checkbox"/>	50%	<input type="checkbox"/>	75%	<input type="checkbox"/>	100%	<input type="checkbox"/>
Transportation	<input type="checkbox"/>	25%	<input type="checkbox"/>	50%	<input type="checkbox"/>	75%	<input type="checkbox"/>	100%	<input type="checkbox"/>
Performances	<input type="checkbox"/>	25%	<input type="checkbox"/>	50%	<input type="checkbox"/>	75%	<input type="checkbox"/>	100%	<input type="checkbox"/>
Produce/Handicraft	<input type="checkbox"/>	25%	<input type="checkbox"/>	50%	<input type="checkbox"/>	75%	<input type="checkbox"/>	100%	<input type="checkbox"/>
Employment	<input type="checkbox"/>	25%	<input type="checkbox"/>	50%	<input type="checkbox"/>	75%	<input type="checkbox"/>	100%	<input type="checkbox"/>
Others specify	<input type="checkbox"/>	25%	<input type="checkbox"/>	50%	<input type="checkbox"/>	75%	<input type="checkbox"/>	100%	<input type="checkbox"/>

15. Please fill in the coping and adaptation actions your household took to reduce future loss and damage. Household need to write their coping and adaptations in the table below.

	<i>Coping and Adaptation in Tourism (Write the actions in the spaces below)</i>	<i>Effectiveness</i> 1 – stop impact 2 – reduce impacts 3 – no effect 4 – increase impacts	<i>Comments on effectiveness why or Why not?</i>
1			
2			
3			
4			
5			
6			
7			
8			
9			

16. What would be your next action to reduce the loss and damage on your tourism activity?

Thank you for your time



Prepared for UNESCO by: Viliamu Iese, Pajilalai Dobui, Helene Jacot Des Combes, Morgan Wairiu, John Walenenea Jr, Moses Asitarau, Tapulolou Tuailemafua, Tessa Koppert, Taputu Mariri, Benjamin Delaivoni, Karen Chute

Pacific Centre for Environment and Sustainable Development (PaCE-SD), The University of the South Pacific, Suva, Fiji Islands