

ADAPTING TO A CHANGING CLIMATE



Adapting to A Changing Climate: Guide to Local Early Action Planning (LEAP) and Management Planning

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Table of Contents

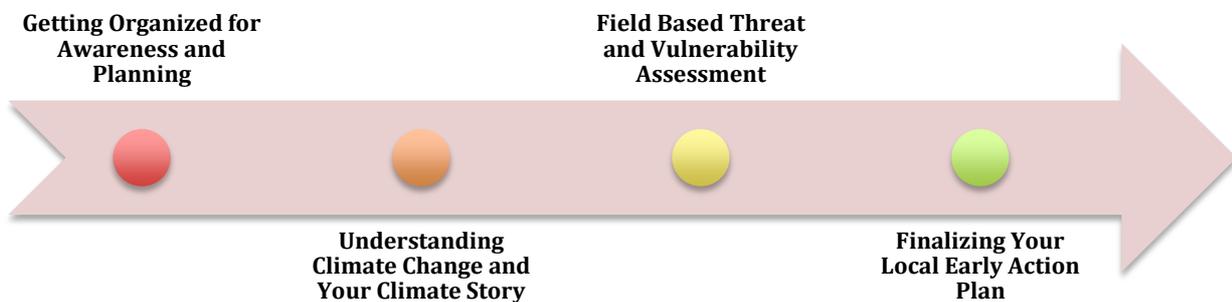
| | |
|---|-----------|
| About This Guide Book | 5 |
| Step One: Getting Organized for Raising Awareness and Planning | 7 |
| Session One: Completing the Getting Organized Checklist | 8 |
| Session Two: Reviewing the LEAP Template | 10 |
| Step Two: Understanding Climate Change and Your Climate Story | 13 |
| <i>Sub-Step 2.1. Understanding Climate Change</i> | <i>14</i> |
| Session Three: Reviewing Factors that Make a Community Healthy or Unhealthy | 14 |
| Session Four: Explanation of Weather And Climate | 20 |
| Session Five: Historical Timeline | 22 |
| Session Six: Explaining El Niño and La Niña | 24 |
| Session Seven: What Is Climate Change? | 28 |
| Session Eight: Why Is Climate Change Happening? | 30 |
| Session Nine: What Changes and Impacts Are We Likely to See from Climate Change | 32 |
| Session Ten: Seasonal Calendar | 38 |
| Session Eleven: What Future Changes in Climate and Associated Impacts Are We Most Concerned About in Our Community? | 40 |
| <i>Sub-Step 2.2 Telling Your Climate Story</i> | <i>41</i> |
| Session Twelve: Writing Your Climate Story | 42 |
| <i>Sub-Step 2.3 Understanding What Communities Can Do to Reduce Local Threats and Impacts of Climate Change</i> | <i>44</i> |
| Session Thirteen: How Will Climate Change Impact a Healthy Community and an Unhealthy Community? | 44 |
| Session Fourteen: What Can We Do to Reduce Local Threats and the Impacts of Climate Change. | 48 |
| Step Three: Carrying Out A Field Based Threat and Vulnerability Assessment | 52 |
| <i>Sub-Step 3.1 Understanding Factors that Contribute to Vulnerability</i> | <i>54</i> |
| Session Fifteen – Reviewing Factors that Contribute to Vulnerability | 54 |
| <i>Sub-Step 3.2 Developing Your Community Profile</i> | <i>59</i> |

| | |
|--|-----------|
| Session Sixteen: Collecting Background Information about Your Community | 60 |
| Session Seventeen: Prioritizing Natural Resource and Social Targets | 62 |
| Session Eighteen: Mapping Your Community | 64 |
| <i>Sub - Step 3.3 Field-Based Threat and Vulnerability Assessment</i> | <i>67</i> |
| Session Nineteen: Classroom Preparation | 68 |
| Session Twenty: Field Based Threat and Vulnerability Assessment | 69 |
| <i>Sub - Step 3.4 Developing a Threat/Action Model</i> | <i>81</i> |
| Session Twenty-One: Review of Early Actions That Can Reduce Vulnerability of Targets to Threats Including Climate Change | 82 |
| Session Twenty-Two: Vulnerability and Threat Action Model | 86 |
| Session Twenty-Three: Results Chain and Finalizing Actions | 90 |
| Step Four: Finalizing Your Local Early Action Plan | 91 |
| Session Twenty-Four: Developing Your Local Early Action Details | 92 |
| Session Twenty-Five: Developing Your Local Early Action Plan | 94 |
| Session Twenty-Six: Developing SMART Objectives (Optional) | 96 |
| Session Twenty-Seven: Updating Existing Management Plans (Optional) | 98 |
| APPENDIX ONE | 99 |

About This Guide Book

This guide is designed for practitioners working within and with local governments and communities that normally facilitate capacity development at the community or local level. The guide was developed to support facilitators in community-based processes and includes outreach material, key messages, and instructions for group exercises that support awareness and planning.

This community-based Local Early Action Planning (LEAP) process will help you determine key actions to take to improve health and resilience of natural and social resources and reduce your vulnerability to climate change.



This guide is organized into Four Steps that include getting your team organized, raising awareness about climate change, collecting information about your community, and adaptation planning. Each step will help guide communities through a series of sessions and exercises to develop a Local Early Action Plan that identifies activities that can help lessen the impacts of climate change on their natural and social resources.

Steps include :

1. Step One: Getting Organized for Raising Awareness and Planning
2. Step Two: Understanding Climate Change and Your Climate Story
3. Step Three: Conducting a Threat and Vulnerability Assessment
4. Step Four: Developing Your Local Early Action Plan

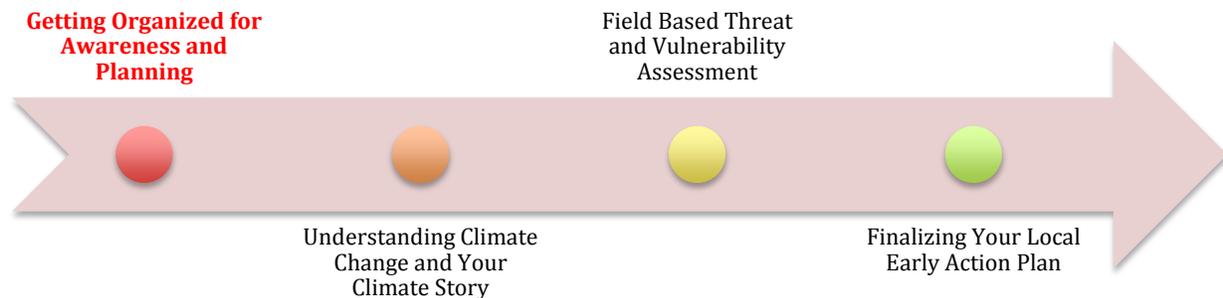
The result of this process will be a Local Early Action Plan or LEAP document. The LEAP is intended to be a simple document of a few pages that can be used to guide actions that a community can take to start addressing existing threats and potential impacts from climate change. There are very likely technical actions that may be identified that a community cannot pursue by itself. We highly recommend seeking expert advice before tackling any technical actions, such as enhancing shoreline protection through any physical structures. This guide does not provide

advice on these issues, but focuses on supporting communities to start doing what they can as early actions.

Some sessions of this planning process should be carried out by the entire community while for other sessions it will be more efficient to carry them out with a planning team only.

Many communities may have already completed some or many of these steps for other planning processes. If your community has completed any of these steps or similar steps, be sure to gather this information and utilize it in the VA-LEAP process. You may find it helpful to update materials such as community-maps that were generated during previous planning processes. For example, if you only need to carry out awareness, you can carry out Step Two only. Or if your community has already been through participatory and learning activities (such as mapping) or a resource management planning process (such as problem/solution tree), information and products from those activities can be used to support this process. You should collect and review the information from earlier planning efforts as a foundation for the exercises in this document. In some cases, you might need to collect additional information while in other cases you may find that you already have enough information and can skip an exercise instead of doing it again.

Step One: Getting Organized For Raising Awareness and Planning



Purpose:

Before you begin to conduct outreach or planning within your community, it is important that you have a team of people who are committed to facilitating the process and have adequate information to be effective. This step will help ensure that this team is identified and prepared for success through the following sessions:

1. Session One: Complete the Getting Organized checklist. This session is done with the core planning team only and will help to make sure that a) appropriate leaders and authorities are aware of and support the outreach and planning process, and b) the planning team is organized and ready to facilitate the process.
2. Session Two: Reviewing the Local Early Action Plan (LEAP). This session will familiarize the core planning team with the contents of a LEAP and how each further step in the process supports the completion of the final document.

Below we provide some instructions on how to carry out each of these sessions.

Session One: Completing the Getting Organized Checklist

FACILITATOR INSTRUCTIONS

Exercise – with core planning team only

Before you start raising awareness and planning with the whole community, a core “planning team” should be developed who will be committed to facilitating the process and completing the associated documents (for example, writing the climate story and local early action plan). Be sure the core team has the skills, time, and commitment to complete this work.

To make sure the core team is organized and prepared to be successful, review the statements below. Check the boxes YES or NO for all statements and fill in the blanks for those that apply to your situation. It is recommended that all of the getting organized activities at least be discussed and ideally be completed before moving forward.

| | Question | YES/ NO | Answer |
|----|--|------------|---|
| 1. | Have we identified a core planning team who are capable of and committed to facilitating community awareness and the VA-LEAP process? | | List all members of the team and the their role: |
| 2. | Do leaders in our community understand the reasons for conducting awareness and developing a local early action plan and want to do so? | | Please explain why they want to do a LEAP: |
| 3. | Have we identified the geographic boundaries of the area that will be included in the awareness and planning process? | | The area is: |
| 4. | Have we identified a strong team of local leaders and experts that have agreed to participate in the awareness and planning sessions? Consider experts in hazard management, food security, resource management, water management, health, and communications. | | List additional team members and their role in awareness and/or planning: |

| | | | |
|-----|---|--|--|
| 5. | Have we identified key stakeholder groups and how to engage them in the awareness and planning process? | | Women Youth Elderly Resource Poor Other |
| 6. | Do we have the authority or have support from the appropriate people/agencies to make management decisions for the area? | | Please Explain: |
| 7. | Do we have a target date for finishing awareness and planning process? | | Target date for awareness completion: Target date for VA-LEAP completion: |
| 8. | Do we know how the final plan will be approved and who has authority to approve it? | | How? |
| 9. | Do we know how the plan will be integrated into existing community plans and projects? | | The existing plan(s) are: |
| 10. | Have we collected existing information about the area (e.g. management plans, maps, historical photos, social or biological studies, information on climate)? | | This includes: |
| 11. | Does our team have sufficient time and financial resources to complete our awareness and local early action planning process? | | List financial sources: |

After reviewing the statements in the checklist, your team should decide if you are prepared with the right information and if now is the right time to initiate awareness raising and the development of a local early adaptation plan OR if you need to carry out more activities before you are ready to start the planning process.

Session Two: Reviewing the LEAP Template

FACILITATOR INSTRUCTIONS

Exercise - *with core planning team only*

If your team is planning to carry out all of the steps in this guide to develop a local early action plan, it is recommended that you first review the LEAP template below to understand what contents will make up the complete document. Different sections of the template can be filled in after finishing different steps in the process so at the end of Step Four you have a complete plan.

The plan can be used to guide actions to improve the health of the community's resources, reduce non-climate threats, and reduce vulnerability of their community to climate change. This plan is also designed in a way to make it easy for planning teams to seek support from funders and resources agencies. If the community already has existing plans, they can take any new activities or objectives from the LEAP and integrate these into appropriate plans.

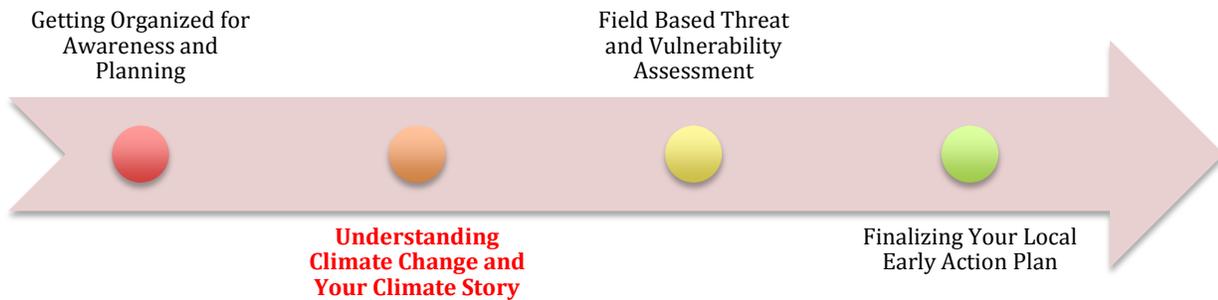
LEAP Template

1. **Community Name:**
2. **Community Climate Story** (*Completed in Sub-Step 2.2*)
3. **Community Profile:** (*Completed in Sub-Step 3.2*)
 - a. **Community Background Summary**
 - b. **Natural and Social Resource Targets and their Current Condition**
 - c. **Community Map (attach to the LEAP Template)**
4. **Threat and Vulnerability Assessment** (*Completed in Step 3.3*)
 - a. **Threats and Root Causes of Threats for Target Resources**
 - b. **Describe Which Resources are Highly Vulnerable to Climate Change Impacts and Why**
 - c. **Summarize any Existing Resilience/Adaptation Strategies & Community Strengths to Maintain or Build upon**
5. **Early Actions to Address Climate Change Impacts and Non-Climate Threats** (*Completed in Step 4*)

| Action | Time-frame | Responsibility | Resources or Support Needed | Priority (High, Medium, Low) |
|--------|------------|----------------|-----------------------------|------------------------------|
| | | | | |
| | | | | |
| | | | | |

6. **Long-term Objectives to Address Climate Change Impacts and Non-Climate Threats (OPTIONAL)** (*Completed in Step 4*)

Step Two: Understanding Climate Change And Your Climate Story



Purpose:

This step will help your community understand climate change concepts and future predictions for the area. This information will help them develop a “story” that explains which climate hazards they are most concerned about and why based on past experience and future scenarios.

This Step has three sub-steps, each with several sessions:

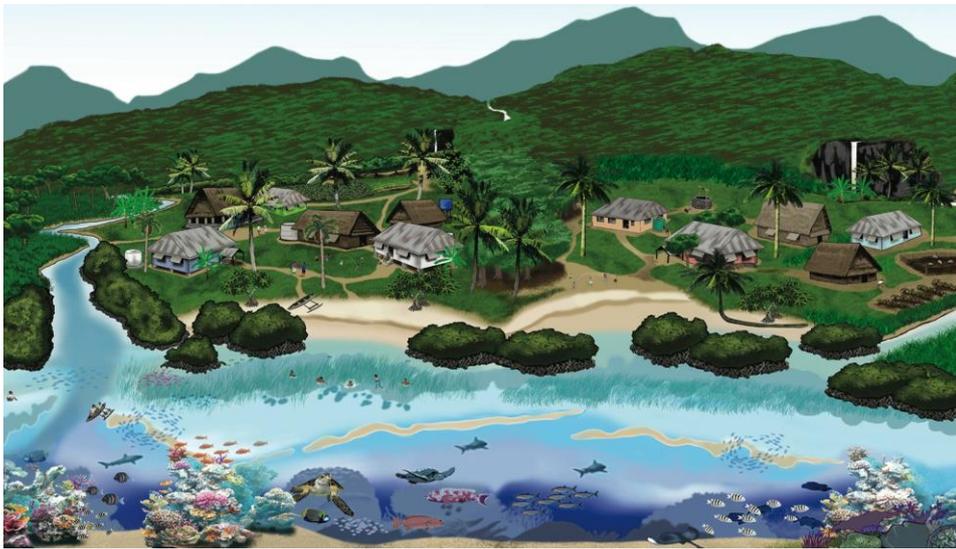
- 2.1 Understanding Climate Change – this sub-step provides information on raising awareness about climate change concepts, it’s potential impacts, and what communities can do. It also collects information about past and present climate events that have impacted your community.
- 2.2 Telling Your Climate Story – This sub-step will utilize information collected in the previous sub-steps to write a “story” about the community, explaining which climate hazards your community is most concerned about and why.
- 2.3 Understanding What Communities Can Do To Reduce the Impacts of Climate Change – This sub-step helps communities understand how local threats can contribute to negative impacts from climate change and what they can do to identify and reduce these threats and impacts

Sub-Step 2.1. Understanding Climate Change

Session Three: Reviewing Factors that Make a Community Healthy or Unhealthy

NOTE: Prior to showing the flipcharts below read the facilitator instructions and complete the exercise with the community.

FLIPCHART#1A - Healthy High Island Community



FLIPCHART#1B - Healthy Low Island/ Atoll Community



KEY MESSAGES

Factors that make this community healthy include:

- **Healthy Forest** - including intact native upland vegetation that provides protection from landslides, prevents sediment from polluting streams, and filters pollutants to keep them from entering freshwater springs and lenses. Intact riparian vegetation (next to rivers/streams) protects water quality by capturing, storing, and filtering water through the soil before it gets to freshwater springs, lenses, rivers, and streams and holds stream bank soils in place and protects them from erosion
 - **Healthy Freshwater Resources** – including clean and unpolluted rivers and streams. Intact freshwater lens, unpolluted and well managed. Wells designed and managed to allow sustainable use. Freshwater catchments, storage, and well-maintained distribution systems. Provides safe drinking and bathing water
 - **Healthy Coastal Vegetation, Mangroves, and Beaches** - provide protection from storm surges, stabilize coastline to prevent or slow rates of erosion, help prevent salt spray from getting inland to crops/homes, provide feeding grounds, nursery, and habitat for important fish and invertebrates, and trap sediment from land and prevent it from getting onto the coral reef
 - **Healthy Seagrass** - protect coastline from currents and therefore reduce erosion, provide critical habitat, breeding grounds and nursery areas, and food for important fish and marine life, trap sediment from land, improving water clarity and preventing it from getting onto the coral reef, and uptake nutrients from land runoff preventing algal blooms
 - **Healthy Coral Reefs** - provide a buffer against storm surges by breaking wave energy, provide nursery areas, habitat, and food for important fish, invertebrates, and other marine life (e.g., turtles, marine mammals)
 - **Healthy People and Children** - People are able to practice their culture, and children can learn about island self-sufficiency through traditional knowledge and evolving cultural practices and have pride in their community. Homes safe from storms and landslides. Safe drinking water systems. Variety of healthy foods available (through agriculture and fishery) Healthy, happy children
- The healthy resources of this community are providing for the livelihood and health of the community members.
 - The healthy resources will help to protect the community against the impacts of climate change. For example, if a community has several areas of healthy coral and coral bleaching happens, it is more likely that some of the corals will survive than if the coral was already weakened. The higher survival rate will help the reefs to recover more quickly. Healthy coral reefs can also better protect the shoreline from erosion in storms.

FLIPCHART#IC - Unhealthy High Island Community



FLIPCHART#ID - Unhealthy Low Island / Atoll Community



KEY MESSAGES

- This community's resources have been degraded by local threats and cannot provide abundant resources for community members.
- Elements of this community include:
 - **Degradation of Forest** - including widespread clearing of native forests/vegetation, no vegetation adjacent to streams, Pollution (e.g., piggeries, trash), and sedimentation/runoff from cleared land
 - **Degradation of Agriculture** - including poor agricultural practices (e.g., mono-cropping, overuse of fertilizers and pesticides, land clearing, removal of native vegetation)
 - **Degradation of Freshwater Quality and Quantity** from pollutants on the ground that seep into freshwater lens, and people collecting too much freshwater from wells so they are not able to recharge
 - **Threatened Coastline/ Mangroves** from clearing of native vegetation (mangroves/trees/shoreline shrubs) along the shore dredging of sand and loss of seagrass, overharvesting of species that live in these areas, damaging types of coastal development such as seawalls which can increase erosion
 - **Threatened Coral Reefs** including overfishing; taking from spawning aggregations; taking too many herbivores, which can lead to algae smothering coral, destructive fishing practices such as nets with small mesh, cyanide and native plants used to poison fish, breaking small corals, dynamite fishing, scuba/night spearfishing, abandoned gillnets, Destructive tourism practices – walking on or touching the reef, sedimentation from cleared land can smother reefs, and increased nutrients from runoff
 - **Degradation of Community Well Being** because people are not able to sustain their families on the resources and have few sources of income because resources are depleted and other sources of income are not available, homes and infrastructure are located in flood zones, no sustainable, local source of drinking water (bottled water is not sustainable), damaged food crops, lack of food variety, dependency on imported foods, unknown future for children to live/stay in this area, People working together less and lack of community cohesion. Health issues
- This community will be more severely impacted by climate change because their resources are already weakened. As a result recovery from climate hazards and other threats will take longer or may not happen.

FACILITATOR INSTRUCTIONS

Exercise - with core planning team and community members

The objective of this exercise is for participants to share their perceptions of what factors make a community healthy versus what factors make a community unhealthy. Communities that have more factors that make it healthy will be better able to cope with climate change impacts.

1. Before you show the Flipcharts, ask the group to list the factors that make a community HEALTHY versus the factors that make a community UNHEALTHY. Capture the answers on flipchart paper in two columns (one for Healthy and one for Unhealthy)
2. Next place the Flipchart with healthy community side by side with the one the unhealthy community, where the participants can see them both.
3. Now review the flipchart illustrations and note how the participants' answers are similar to the illustration key messages. Use the illustration to point to healthy or unhealthy resources from key messages.
4. Explain to the group that before we can understand how a community will be impacted by climate change in the future, we must understand how healthy a community and its resources are now. To do this, we will use these communities on the flipchart to understand how climate change will impact them differently.

Session Four: Explanation Of Weather And Climate

FLIPCHART#2: What Is Weather And Climate?



*illustration provided by SeaWeb

KEY MESSAGES

Weather is the day-to-day temperature, wind, and rain activity in a place.

Climate is the average weather in a place over many years. This includes the average temperature, the seasons, wind patterns.

While weather changes everyday, climate takes years to change.

FACILITATOR INSTRUCTIONS

1. Explain that before we examine how climate change will impact a community we will review; the difference between weather and climate, what is climate change, and why it's happening.
2. Refer to the Flipchart. This Flipchart explains **Weather**. Tell the group something like the following:

“Weather is the day-to-day temperature, wind, and rain activity in an area. Weather is what the forecaster on the radio predicts everyday. The weather in an area changes every day and is very different in different areas around the world each day. As you can see in this Flipchart the weather is different in different areas. Some areas are sunny. Some areas are rainy. Some areas are colder, and some areas are warmer. Ask the group to describe the weather where they are for that day.

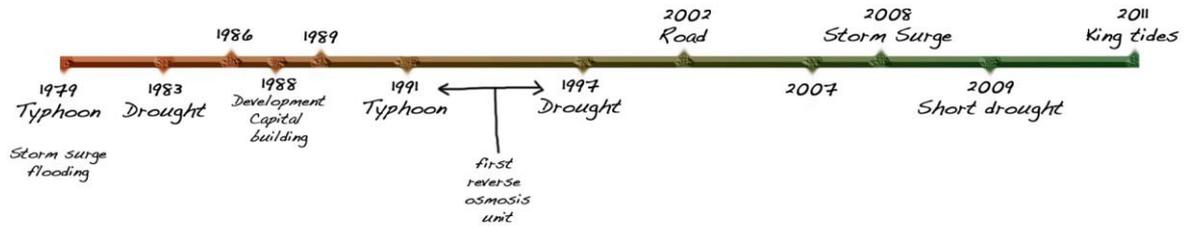
3. There is not a separate Flipchart to explain climate. Tell the group something like the following:

“Climate is the average weather in a place over many years. This includes the average temperature, the seasons, wind patterns. While weather can change everyday, climate takes years to change. The climate of Micronesia tends to be hot and humid in most areas throughout the year with rainy and dry seasons. The climate in many areas in North America includes four seasons: Spring, Summer, Fall, and Winter. Summer is much hotter than winter and winter is generally cold with snow in lots of areas of North America.”

4. While climate tends to be generally consistent over many years, extreme events occur periodically. For example, there may be a year that is especially hotter and dryer than most years, or an extreme monsoon event one year. People tend to remember these events because they are “not normal” and can cause severe damage to communities because people are not prepared for them. In the next exercise, we will explore our own climate and extreme weather events that have occurred over time in this area.

Session Five: Historical Timeline

Reviewing Extreme Weather Events in Our Community



Hazards: Drought Surges, King tides \Rightarrow (more frequency / more intense)

IMPACTS

Storm Surge \Rightarrow
 -flooding
 -property damage
 -evacuation to higher buildings

Drought
 -people H₂O catchments severely impacted
 -passive on social services for water and medicine
 -pink eye epidemic
 -schools closed
 -coral bleaching

COPING MECHANISMS

\Rightarrow -reliance on family members
 not impacted

\Rightarrow Assistance from:
 FEMA - water
 community groups
 churches
 gov't agencies
 shelter
 clean-up
 food
 H₂O

HAZARDS OF MOST CONCERN TO MAJURO, RM1 \Rightarrow 1) DROUGHT
 2) STORM SURGES

FACILITATOR INSTRUCTIONS

Exercise - with core planning team and the community

Now that you have reviewed the difference between weather and climate, we are going to explore this community's history and any extreme or "abnormal" climate hazards that have occurred over the past 50 years. This will help the group understand major climate and extreme weather events that have happened in the community over the years, and what impacts these events have had on natural and social resources.

1. Prepare a large sheet of Flipchart paper that can be hung up in front of the group.
2. Be sure to involve older people who may know more about the historical climate hazard events than younger people
3. Draw a timeline dating back about 40- 60 years. Draw the line large enough so all the people in the group can all see and give yourself about 30 centimeters of space between each ten year mark.
4. Ask the group the following questions and write their responses on the appropriate place in the flipchart as they answer:

Question One: What is the general/normal climate in this region? Write the answer to this below the timeline.

Question Two: What extreme weather and climate events have happened in your area in last 40 - 60 years? For example: droughts, heavy storms, floods, king-tides, etc. List down the year that each event happened that the group can remember on the time-line.

Question Three: What impacts have these weather or climate events had on the community's natural and social resources? For example, droughts caused crop failures, difficulty in finding fish, and/or coral bleaching (explained on page 34 of this guide). Below the timeline, write each climate hazard and their impacts. Also, note if these hazards are increasing or decreasing over time.

Question Four: How did you cope with the impacts of the event? Write the way the community coped with each event and if it was successful next to each of the impacts.

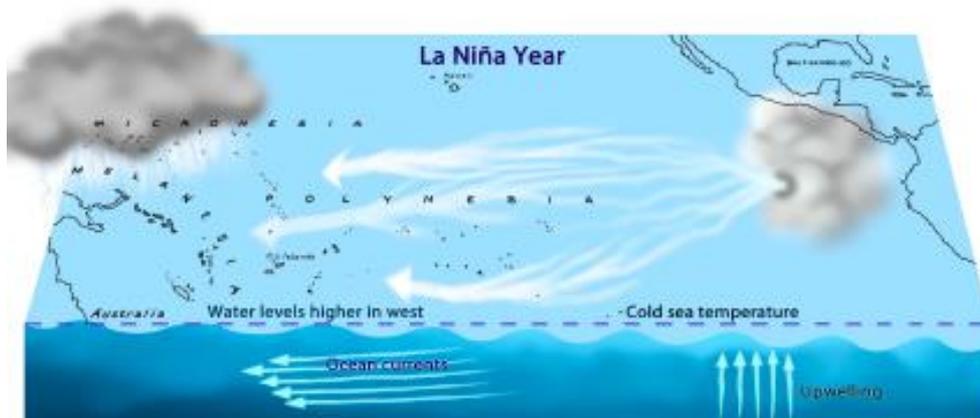
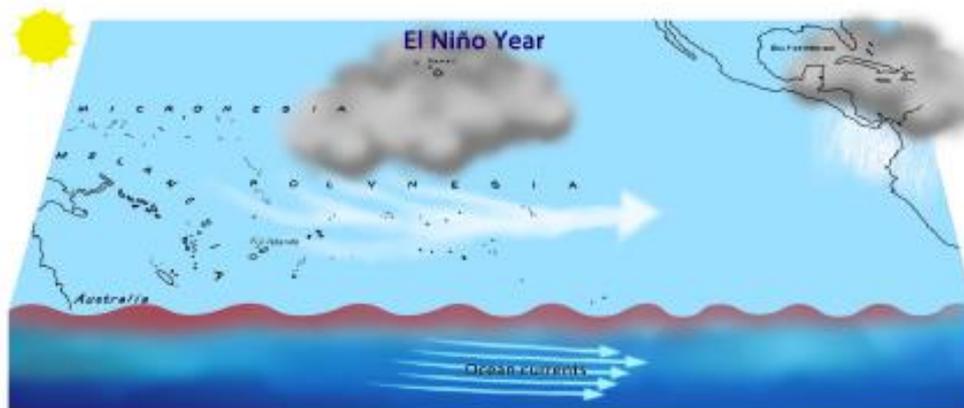
Question Five: Based on past experience, which climate hazards is your community most concerned about happening again in the future? Write these at the bottom of the flipchart.

Please note earthquakes, tsunamis, and volcanic eruptions are not weather or climate events but can be included in the timeline to show how communities cope with natural disasters.

Session Six: Explaining El Niño And La Niña

FLIPCHART#3 - What Are El Niño And La Niña ?

What are El Niño and La Niña?



KEY MESSAGES

El Niño and La Niña are natural weather patterns and have a big effect on the weather causing lots of impacts such long droughts, heavy rain, and king tides in Micronesia.

Normal Year

- a. In the western Pacific, a pool of warm water makes the water molecules spread farther apart, increasing the water volume so it expands upward, causing the sea level to rise.
- b. The ocean surface is about 1 foot higher in the western equatorial Pacific than in the eastern equatorial Pacific and strong surface winds blowing east to west keep the water piled up in the west.
- c. The warm pool also puts a lot of warm, moist air into the atmosphere. This leads to the routine development of thunderstorms and typhoons in the western Pacific.
- d. Eventually, “Mother Nature” redistributes the heat in the Pacific and sets off actions that initiate an El Niño. El Niño and La Niña have a big effect on the weather causing lots of impacts to weather patterns.

El Niño

- e. During El Niño east-to-west surface winds weaken or become west to east moving warm water in the west toward the eastern Pacific.
- f. As the ocean heat moves eastward, so does the area where thunderstorms and typhoons develop. By March, typhoons may develop around Pohnpei, by April around Kosrae, and around May and June in the Marshall Islands. This is the wet phase of the El Niño. After this wet phase, Micronesia is typically drier during El Niño. Drought begins to set in, and from the following January through April, conditions can be very dry in Micronesia.
- g. As the heat in the western Pacific moves eastward, the ocean volume in the west decreases and the sea level drops, sometimes by as much as a foot.
- h. Drought worsens the occurrences of fires and causes reduced water and food resources on the high islands. Drought is very severe on the low islands. The small aquifers become thinner and thinner. As sea level falls, saltwater eventually gets drawn into the freshwater lens. Eventually, the water becomes too salty to drink and may begin to damage or kill food sources.

La Niña

- i. During La Niña east-to-west equatorial surface winds increase and the warm water is mixed deeper into the ocean in the western Pacific.
 - j. This process shifts thunderstorm and typhoon development west of the normal locations and causes the sea level to rise as the ocean volume expands. The increased easterly surface winds can cause the sea level to rise as much as a foot above normal. This, coupled with high surf events, especially near new and full moon periods, can cause episodes of coastal inundation and flooding.
 - k. La Niña can create very wet conditions across Micronesia from Mili in the Marshalls, to Kosrae, to the southern Mortlocks in Chuuk State, to Satawal and Woleai in Yap State, and to Peleliu in Palau.
- El Niño always happens first and lasts for one year followed by La Niña , which may last for two or more years. Usually, the cycle between El Niño and La Niña happens every 3-

7 years with more normal years in between. Scientists do not yet know how climate change will impact El Niño/La Niña but suspect they may become more frequent.

- Many people assume that climate hazards (e.g. extreme king tides and associated erosion, droughts) that occur during El Niño and La Niña years are due to climate change and are the “new normal”. However, these events are part of natural climate variability. It is good to know if an El Niño and La Niña year is happening so you can understand why some extreme events may be occurring and be prepared for them. If these extreme events begin occurring more frequently over a longer period of time, they may be due to climate change.

FACILITATOR INSTRUCTIONS

1. Tell the group: In your historical timeline we reviewed some of the extreme climate hazards your community has experienced. Now we will review El Niño and La Niña because they are natural weather patterns that have a very big impact on the weather around the world and specifically in the Pacific Region. They may be the reason for some of the extreme climate hazards you experienced.
2. Ask the following Questions: Who has ever heard of El Niño or La Niña? Can someone explain El Niño?
3. Highlight what was right and what was not right about the response.
4. After the participants have been given a chance to share what they know, the facilitator should go over the key messages referring to the Flipchart.
6. After you have gone over the key messages, refer to the timeline that people created and ask people if they can identify years where there was El Niño or La Niña. If you know the specific years that El Niño and La Niña affected your area, you can review them.
7. If you would like to, you can explain that El Niño is a Spanish term meaning “the little boy”. The term started in South America after they noticed a regular extreme weather event every 3-7 years that started in December, near Christmas (birth of Jesus). La Niña is an opposite weather pattern so it’s named this way because it means a “the little girl” in Spanish.

Exercise - with core planning team and the community

The objective of this group exercise is for participants to easily understand what happens to the wind, rain, and seawater during El Niño and La Niña. After this exercise it should be easy for people to remember what happens and how El Niño and La Niña affect weather patterns.

1. Give everyone a piece of paper that says either Wind, Seawater, or Rain. Make roughly equal groups of each category.
2. Explain that each group uses a different action to show what they are:
 - Wind (makes a pushing motion)
 - Seawater (has arms out to their side)
 - Rain (hold their hands above their head with their hands mimicking rain like a shower)
3. Explain that one side of the room or village meeting area is the Western Pacific (Indonesia) and the opposite side is the East (South America).
4. Tell the participants that Wind is the driving force in El Niño and La Niña. Wind pushes the Seawater, Seawater grabs the Rain.
5. The facilitator will tell the group if they are going to be either El Niño or La Niña.
6. Without talking, the group has to move themselves around to get organized and move in the right direction with wind pushing seawater and seawater grabbing the rain to move in the right direction.
7. When the group moves in the right direction, review El Nina/ La Nina

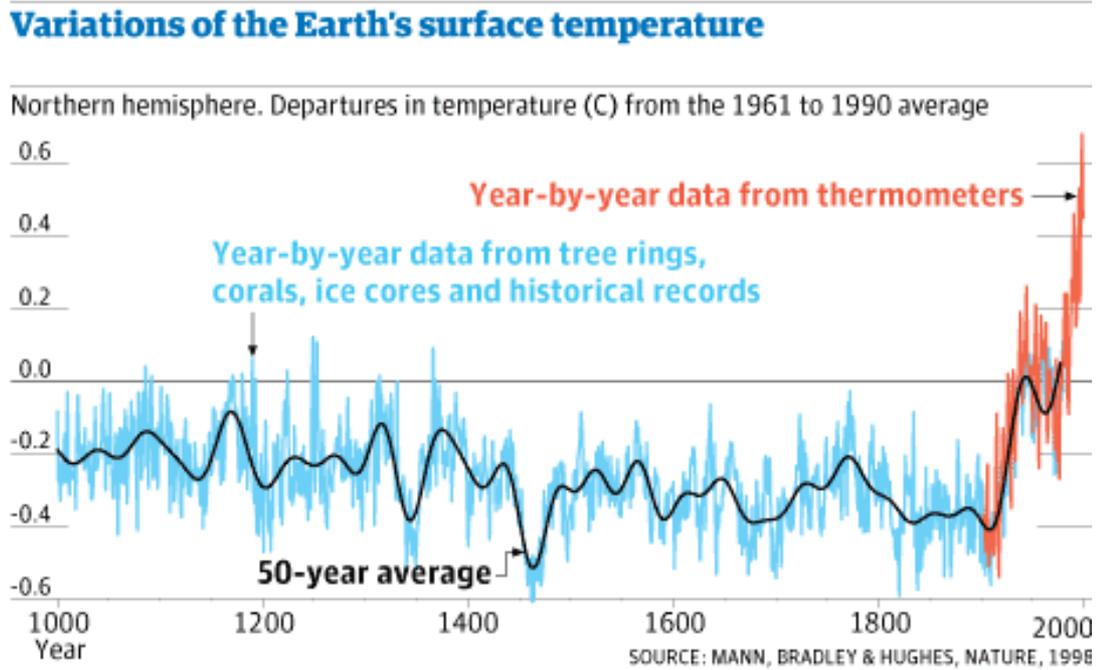
El Niño. (To help people remember they can think of E in “El” Nino for East) -
Wind moves to the East and pushes the Seawater and brings the rain to the East.
Seawater piles up to the east.

La Niña - Wind moves to the West and pushes the Seawater and brings the Rain to the West. Seawater piles up to the west.

8. Do the exercise one to three times until everyone understands what happens during El Niño and La Niña.

Session Seven: What Is Climate Change?

FIGURE #1



FLIPCHART#4 - What Is Climate Change?



* illustration provided by Indonesia LMMA

KEY MESSAGES

1. Climate Change is a long-term change in average climate patterns all around the world due to an increase in the average temperature of the earth. In other words, the world is getting hotter and this is causing changes in the climate around the world.
2. Throughout history, the earth has warmed and cooled over very long periods of time.
3. However, the earth is now warming at a much faster rate due to human burning of fuels such as oil, wood, and coal.
4. Scientists predict that the earth's average temperature will increase from 2 – 4.6 degree Celsius in the next 100 years. This amount of temperature change will create shifts in normal climate patterns all over the world.

FACILITATOR INSTRUCTIONS

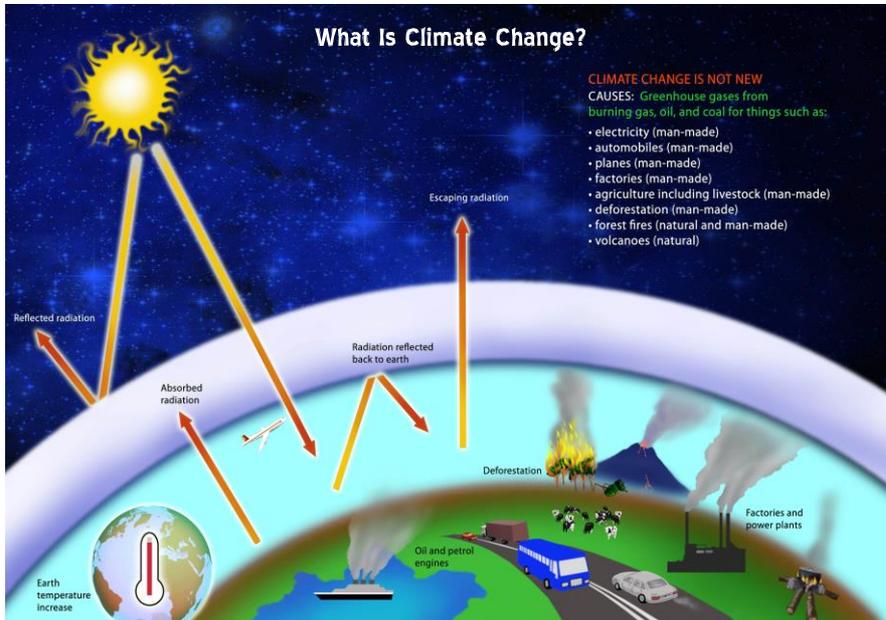
1. Go over the key messages with the group.
2. Refer to the Figure and Flipchart and tell the group the following:

Figure 1: You may have to draw a simplified version of this on a flipchart to explain it to the group. The graph in Figure 1 (on the top) shows the average global temperature over the past 1,000 years. For the first 900 years there is little variation. Then, in the 20th century, comes a sharp rise due to human burning of fuels such as oil, wood, and coal.

In the next image you can see there was more snow and ice on Puncak Jaya (in Papua, Indonesia) in 1850, 1936, 1942, etc. than there is today. This is because since then the temperature of the earth has increased causing the snow to melt. Scientists predict that the temperature of the earth will continue to increase and cause climate change and impacts to communities. We will explain these impacts later.

Session Eight: Why Is Climate Change Happening?

FLIPCHART #5 – What is Climate Change?



FLIPCHART #6 - Why is Climate Change Happening?



KEY MESSAGES

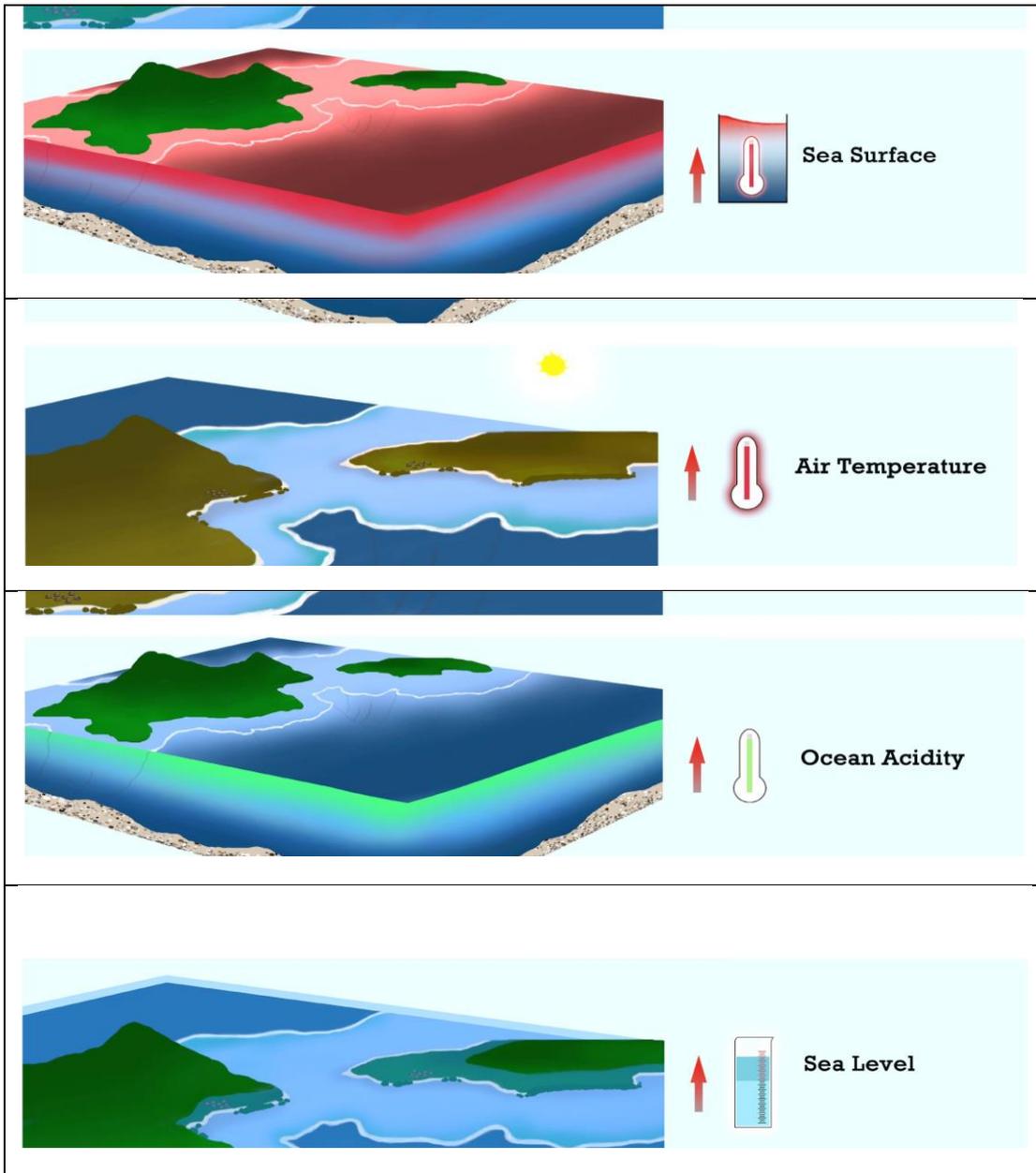
1. Human and natural activities are causing the earth's temperature to increase, which is causing climate change.
2. Human causes are related to the burning of fuel, coal, oil, wood, etc. to power cars, trains, planes, factories, and agriculture which causes the release of gases that accumulate in the atmosphere.
3. Natural causes include forest fires and volcanic eruptions, which also release gases.
4. Once in the atmosphere, these gases form a sort of blanket that traps the heat from the sun. This warms the entire planet much like how a car parked in the sun with the windows rolled up gets hotter.
5. This increase in temperature causes changes in climate patterns around the world called "climate change". This may include noticeable changes in the seasons in specific areas. For example, the rainy season may come later or be shorter as climate patterns change.
6. The climate has always changed over long periods of time in the earth's history.
7. However, as the human population and industry have grown in the last 200 years, humans have burned more fuel thus releasing more gas. As a result, the amount of gas trapped in the atmosphere has increased, and the rate of warming has increased more rapidly than it would naturally. Humans are the main cause for this rapid change in temperature we are now experiencing.

FACILITATOR INSTRUCTIONS

1. Using Flipchart 5 go over key messages 1 to 3.
2. Using Flipchart 6 go over key messages 4 to 7

Session Nine: What Changes and Impacts Are We Likely to See From Climate Change

FLIPCHART#7: What Changes Will We See on Land and Sea



KEY MESSAGES

Over the long term (40+ years) climate change will gradually cause:

- a. The average air temperature will increase as the earth becomes hotter. This will cause shifts in normal weather patterns. For example, some areas may become drier while others may become wetter.
 - b. The average temperature of the sea surface will increase as the earth becomes hotter. This may cause coral bleaching and changes in the fish distribution.
 - c. Sea level will rise. This is due to the melting of land ice in Antarctica and other areas. This will mean that the water that was previously frozen on the land will now move into the sea and raise the sea level. As the level of the sea rises, this may impact the coastline and increase intensity of storm surges.
 - d. We don't know how weather patterns including storms, drought, rainy seasons, and dry seasons will change. However, scientists think the seasons will become less predictable.
 - e. It's unclear how storm events will change. However, as sea levels rise, any storm events that occur could bring greater storm surges.
 - f. Some locations (e.g., Marshall Islands) are getting less rainfall. We don't know if this is part of a normal cycle (natural variability) or a result of global climate change.
 - g. Based on a range of models, it is likely that future tropical cyclones (typhoons and hurricanes) will become more intense, with larger peak wind speeds and heavier precipitation associated with ongoing increases of tropical sea surface temperatures.
- a. We don't know how climate change will affect the El Niño and La Niña but scientists predict that El Niño and La Niña will happen more often.
 - b. Fortunately scientists are usually able to predict when El Niño or La Niña will come. When El Niño or La Niña is predicted to come, it's important for communities to prepare. For example to store water and food when El Niño is predicted because it will bring long dry periods, and to secure homes and crops and store food when La Niña is predicted because it will cause heavy rain and king tides.

FACILITATOR INSTRUCTIONS

1. Referring to Flipchart 7, review the key messages with the participants.
2. As you review the key messages, point out that brown color land is drier, green color land is wetter, red color water is hotter, and blue color water is cooler

FLIPCHART#8 - Examples of the Impacts from Climate Change

POTENTIAL IMPACTS



"CLIMATE RELATED HAZARDS WE'RE ALREADY EXPERIENCING"



KEY MESSAGES

Climate change can impact our communities because of changes in weather patterns and seasons, and potential increases in extreme climate events. Island communities are already noticing the impacts of climate change. Potential impacts include:

- Sea level rise can cause stronger storm surges, flooding, saltwater inundation and intrusion, and coastal erosion.
→ This can cause a loss of and damage to crops, food and livelihoods, homes, and coastal infrastructure, health hazards, and problems with community services
- Increased sea surface temperature of the ocean can cause coral bleaching, which can make corals weak or die
→ This can lead to a loss of habitat and nursery ground for fish and marine life, and loss of coastal protection, loss of food and/or income sources for community members who are dependent on fisheries, and loss of coastal areas where homes and farms may be located.
- Increased air temperature can cause increased stress on plants, crops, and people
→ This can cause a loss of food and/or create a health hazard
- Changes in weather patterns can cause droughts if less rain or flooding/landslides if more rain
→ This can damage or destroy crops, homes, and infrastructure, and cause health problems from water- and vector-borne diseases.

Impacts communities are already noticing include:

- a. Flooding during king tides from sea level rise that damage the coast line and buildings;
- b. Coastal erosion from sea level rise combined with king tides and storm surges;
- c. Salt water getting into wells and fields from extreme high tides due to sea level rise and king tides;
- d. Water shortages from longer dry seasons/drought periods,
- e. Crop failures from long dry seasons or too much rain,
- f. Changes in fruiting and growing seasons for key crops.
- g. Bleaching of coral reefs during long dry seasons and the sea surface temperature getting hotter; threatening local fisheries.*

***Coral Bleaching:** When water temperatures become warmer than normal many corals will lose their color and become white. This happens because the colorful algae that lives in the coral and provide food for corals, moves out of coral when they are stressed with high

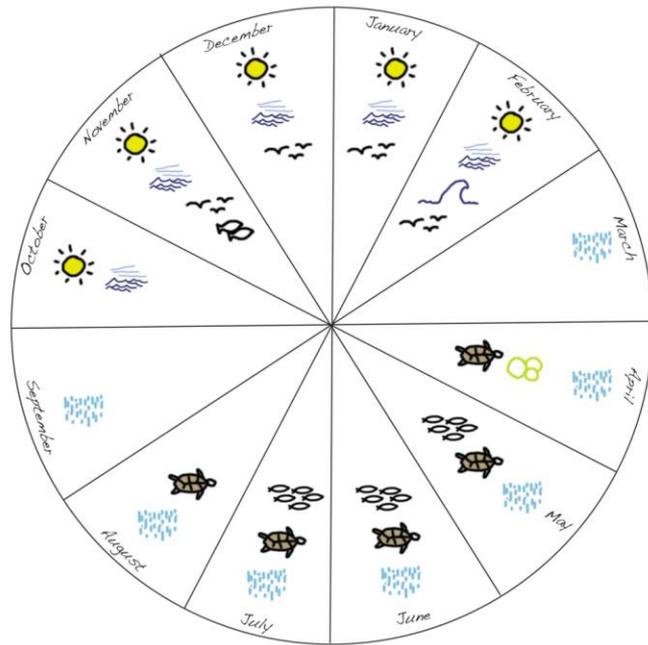
temperatures. If the coral remains stressed and the algae stay out for too long, the coral will die because they cannot get enough food. If the water gets cooler the algae will move back into the coral. However, if the conditions do not improve, the algae will not return to the coral and the coral can die especially if larger algae or seaweed begin to grow on top of the coral. Corals can also be stressed by local threats, such as pollution or sediment, which may cause them to bleach faster with warmer sea surface temperature. Additionally, nutrients in the water may cause larger algae to grow quickly and grow on top of the coral, decreasing the coral's ability to recover after they have bleached.

FACILITATOR INSTRUCTIONS

1. Referring to the photos in Flipchart Eight and the key messages, point out the types of impacts from Climate Change that communities will potentially experience and changes communities are already noticing
2. Tell the group that you can review changes your community is experiencing by doing the next group exercise the "seasonal calendar"
3. Before wrapping up this flipchart page, review that in order for the community to understand how severely it will be impacted by climate change they have to look at the existing condition of the natural resources and the social situation like they did in the first two flipcharts. In the next session, we will look at the difference in how a community will be impacted by climate change if it is healthy or unhealthy. In the planning process, we will explore the health of their natural and social resource targets to determine the potential impacts of climate change on their community. They will also talk about how to prepare for many of the potential impacts in later steps.

Session Ten: Seasonal Calendar

What Changes and Impacts Are We Noticing in our Community



Normal Year
Wind direction East to West

Dry 80° Wet
Less than 80°
harvest

Changes
-Longer dry season
-Later fruiting and shorter periods
-Past ten years
-Getting drier
-Likely to get hotter in future maybe more drier
-Storm events happen in dry seasons

KEY

| | |
|--|-------------------|
| | sun - dry season |
| | turtle nesting |
| | rain season |
| | tuna migration |
| | storms |
| | grouper spawning |
| | king tides |
| | breadfruit season |
| | bird migration |

CC impacts of most concern ⇒ Potential for longer dry season which also includes storm surges

FACILITATOR INSTRUCTIONS

Exercise - with core planning team and the community

The objective for this exercise is that people review the normal seasons and the major social and ecological events that happen in each season to understand changes in these seasons that may be occurring and the ecological and social impacts they are having. These types of changes may become more common as climate change continues.

1. Tell the group that in this exercise you will explore how climate change may be changing the normal seasons in their area and how those changes might impact important social and natural resource targets.

2. Divide into small groups of 5 to 10 people each. Be sure to involve older people who may know a lot about the normal seasons. Each group should have Flipchart paper and pens.
3. You can complete the calendar in two ways. Circular (like the example above) in which the group should prepare a large circle divided into 12 pieces. First divide the circle in four and then divide each of these into 3. The second option is to draw the calendar in a table like this:

| Normal Year | | | | | | | | | | | |
|-------------|------|-------|-------|-----|------|------|--------|-------|------|------|------|
| Jan. | Feb. | March | April | May | June | July | August | Sept. | Oct. | Nov. | Dec. |
| | | | | | | | | | | | |

| Changes Being Noticed | | | | | | | | | | | |
|-----------------------|------|-------|-------|-----|------|------|--------|-------|------|------|------|
| Jan. | Feb. | March | April | May | June | July | August | Sept. | Oct. | Nov. | Dec. |
| | | | | | | | | | | | |

4. Ask each group to answer the following questions and capture the information on their calendars:

Question One: What are the normal seasons throughout the year? On the calendar, draw or list the normal weather conditions that dominate each season (rainy, dry, windy, waves, etc.) and other natural or social events that happen during each season (fruiting, turtle nesting, fish migration, harvesting).

Draw what happens in each month on the calendar. They may want to use a symbol for each type of event, like a picture of rain for the rainy season. Be sure to make a legend. Be sure to include all major climate/weather events and other seasonal events such as fruiting, turtle nesting, fish migration etc.

Question Two: What changes have you noticed in the seasons? If the group has filled out a circular calendar they should list down any changes that they are observing next to the calendar on the Flipchart paper. If they are completing a table, have them draw an identical table below the first one and note the changes they see to each month. This method can be done each year to monitor changes in seasons over time.

Question Three: How might these changes impact things such as food, livelihoods, and health? Write these on the flipchart.

Question Four: What changes are of most concern and why? For example, the dry season lasts longer, or mango season is shorter which is a concern because it is a key crop for the community. Also note how long these changes have been noticed. Write these answers below the circular or table calendar.

5. Have each group present back their Seasonal Calendars and discuss if the groups agree or if there are any differences. Try to resolve any differences and prepare one calendar as the final Season Calendar for the community. Save this as we will use this later in the planning process.

Session Eleven: What Future Changes in Climate And Associated Impacts Are We Most Concerned about in Our Community?

FACILITATOR INSTRUCTIONS

Exercise - with core planning team and the community

This exercise will help the community consider how future climate change scenarios may impact the community's natural and social resource targets.

1. Review the known predictions for your area. Discuss these changes and add details about local predictions to the middle column if you have additional information.
2. Next discuss the possible and likely impacts to natural and social resources from predicted changes in climate. You can use flipchart #7 & 8 for this discussion. Discuss which climate hazards and impacts might become worse or better with future climate predictions. For example, we have experienced drought in the past and lost crops. Future predictions say it will get hotter and have less rain so we may have more frequent and severe droughts and lose more crops. Our water resource may also become low in the future because we depend on rainfall for much of our water. Complete the last column in the table below to capture this information and note the areas or impacts that community is most concerned about and why.

| Climate Predictions for the Future | | |
|---|---|--|
| Climate Change/ Hazard | Known or likely change over time (increase/decrease/stay the same) | Likely Impacts to Natural and Social Resources: |
| Air temperature will | Increase | |
| Sea surface temperature will | Increase | |
| Sea level will | Increase | |
| Weather Patterns will | Change unpredictably and may become more severe | |

Sub-Step 2.2 Telling Your Climate Story

This section will draw from information you've collected in the previous sub-steps to develop a climate story that reviews the history of climate events in the community and future climate scenarios to try to get an understanding of:

- What climate events have happened in the past?
- How climate events and seasons are changing in the community?
- What resources have been impacted by climate events?
- What is likely to happen in the future?
- What climate events are of most concern to community members?

Session Twelve: Writing Your Climate Story

FACILITATOR INSTRUCTIONS

Exercise - *with the planning team only*

This exercise will guide your planning team in writing a short description about the climate hazards the community has experienced in the past, changes to season the community is noticing in the present, and future climate impacts they are most concerned about and why.

To complete the Climate Story, hang the following on the wall so everyone can see:

- Historical Timeline and the Seasonal Calendar created during the Outreach session (include flipcharts with written information)
 - The Community Map (if you have one)
 - Information on projected changes in climate for the region or area.
1. Review the Historical Timeline, Season Calendar, and Future Predictions to refresh the planning teams memory as to the climate history in your area, changes that have been observed in the seasons, and likely changes in the future. Be sure to note the impacts to natural and social resources of these past, current, and future events.
 2. The Planning Team should write the Community Climate Story in the box below. Include three paragraphs on the following:
 - **PAST:** Write a paragraph summarizing the communities' normal seasons, and climate events and impacts your community is most concerned about based on historical experience. Also include how your community coped with the impacts of these events in the past and if that was successful.
 - **PRESENT:** Write a paragraph summarizing changes the community is noticing to normal weather and season patterns. Note how these change are impacting important natural resource and socio-economic factors.
 - **FUTURE:** Based on the future predictions, write a paragraph summarizing the climate related hazards and impacts the community is most concerned about.

Local Climate Story:

Past:

Present:

Future:

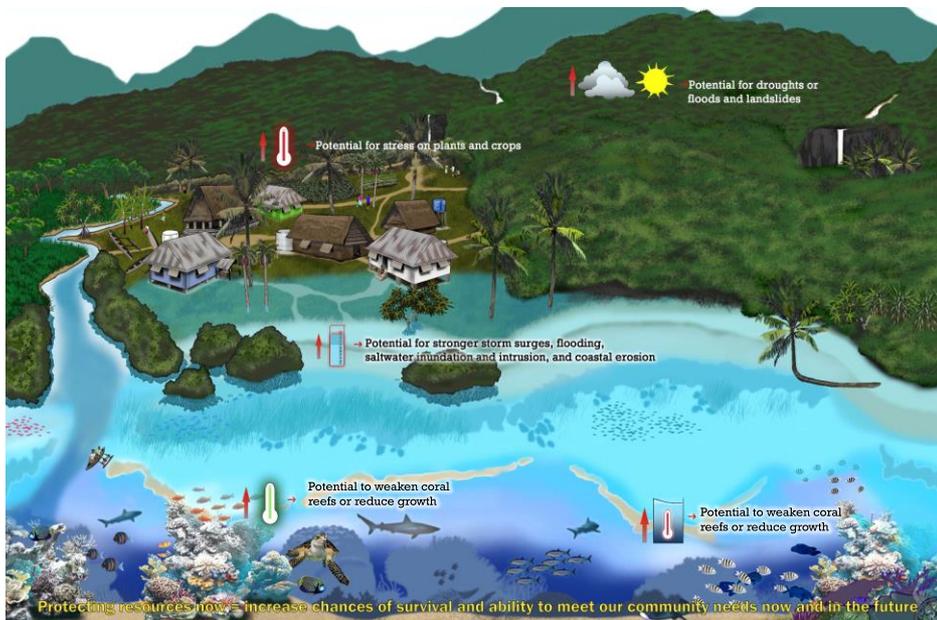
**Upon completing the information above, add Community Climate Story
into the LEAP Template.**

Sub-Step 2.3 Understanding What Communities Can Do to Reduce Local Threats and Impacts of Climate Change

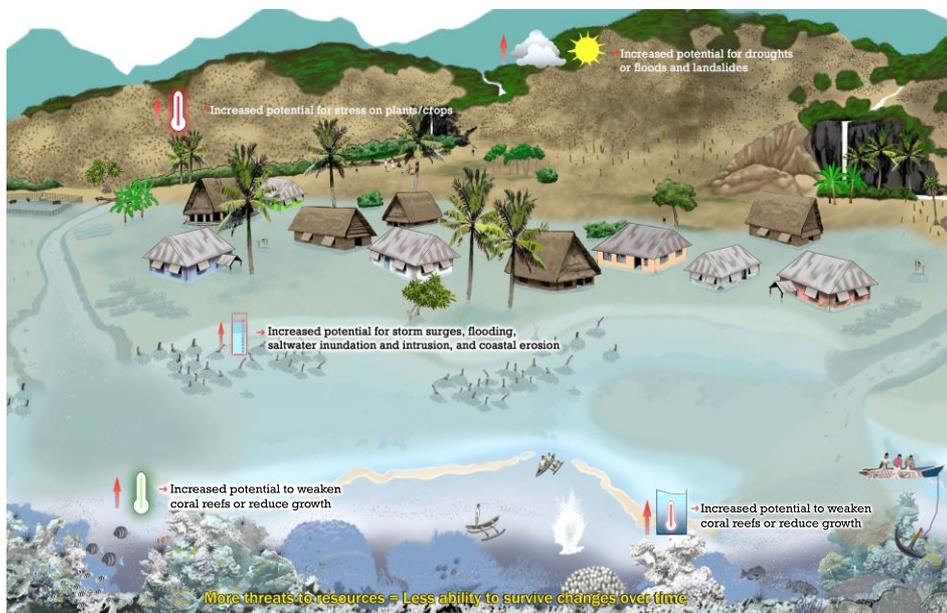
Session Thirteen: How Will Climate Change Impact a Healthy Community and an Unhealthy Community?

NOTE: Prior to showing the flipcharts below, read the facilitator instructions and complete the exercises with the community.

FLIPCHART #9 – How Will These Changes Impact a Healthy Community?



FLIPCHART #10 – How Will These Changes Impact an Unhealthy Community?



KEY MESSAGES

- Both communities with healthy and unhealthy resources will be impacted by these changes.
- For example, as air temperature rises, plants may become stressed in both communities. As sea temperatures rise, both communities may experience coral bleaching. As sea levels rise and if storms become more severe, both communities will experience storm surge.
- However, the community with healthier resources will be able to either withstand or recover from these impacts more successfully. This is called **RESILIENCE**. For example, plants in the healthy community may recover from heat stress while plants in the unhealthy community may die, more corals in the healthy community may survive coral bleaching where as the unhealthy community has weakened coral and less coral survival, and storm surges will cause more flooding and erosion in the unhealthy community due to lack of coastal vegetation to buffer the surge. The unhealthy community is more **VULNERABLE** to the impacts of climate change because the social and natural resources are already weakened.
- Having healthy resources does not guarantee that these resources will survive the impacts of climate change; however, it provides a much higher chance that the resources can withstand or recover from impacts thus helping to protect and provide benefits to the community in the long-term.

FACILITATOR INSTRUCTIONS

Exercise - with core planning team and the community

The objective of this exercise is that participants understand how climate change will have different levels of impact on communities with healthy resources versus communities with unhealthy resources by using every day examples such as people with the flu.

1. Divide the participants into two groups:

Group One: A group of healthy people. They eat healthy food, get plenty of rest, are very organized and up to date with their work, and are physically active daily.

Group Two: A group of unhealthy people. They don't eat well, they don't rest enough, they have too much to do and are stressed at work, and they rarely do physical activity.

2. Prepare a Flipchart page with two columns. Group One (Healthy) and Group Two (Unhealthy). Ask the following questions:

- a. If both groups are exposed to the flu, what are the likely impacts for Group One as compared to Group Two?
- b. Why is there a difference in how the flu impacts these two groups?

3. Provide the participants time to answer and record their answers on the Flipchart. Ask them to present back. Make sure they cover at least the following points and review the overall answers with the participants.

| Group One (Healthy) | Group Two (Unhealthy) |
|---|---|
| 1. Less likely to get the flu but can still get the flu | 1. More likely to get the flu because their immune system is weaker |
| 2. If they get the flu they are likely to recover more quickly because they have a stronger immune system | 2. They are more likely to recover slowly because their immune system is already weak |

4. Explain that the healthy person is more RESILIENT to the flu and the unhealthy person is more VULNERABLE.

5. Once the participants have discussed the example using the Flu, tell them we will now go through the same type of exercise using examples from the communities with Healthy Resources and Unhealthy Resources.

Exercise - with core planning team and the community

The objective of this exercise is for participants to share their perceptions of what a community with healthy resources looks like versus one with unhealthy resources. Communities with healthy resources will be better able to cope with climate change impacts.

1. Place the Flipchart #IA or #IC with healthy resources side by side with the Flipchart #IB or #ID with unhealthy resources, where the participants can see them both.
2. Divide into five small groups. Each group should look at both the healthy and unhealthy communities and each group should answer ONE of the following questions:

| | Question | Community with healthy resources? | Community with unhealthy resources? |
|----------|---|-----------------------------------|-------------------------------------|
| Group 1. | If the air temperature increases, how will it impact the: | | |
| Group 2. | If the sea water temperature increases, how will it impact the: | | |
| Group 3. | If the sea level rise, how will it impact the: | | |
| Group 4. | How will Increased storms impact the: | | |
| Group 5. | How will increased drought impact the: | | |

3. Ask each group to share their answers and discuss all together using the following flipcharts to point out their answers. Be sure to cover the all key messages.

Session Fourteen: What Can We Do to Reduce Local Threats and the Impacts of Climate Change.

FLIPCHART #11 – What Can Communities Do to Make a Difference?

What Can Communities Do to Make a Difference?

Ngarchelong Community, The Republic of Palau

Threats/Impacts the community is experiencing:

- Bleaching of coral reefs
- Negative impacts on fisheries, tourism and local way of life

Actions:

- Establishing a marine managed area
- Protecting traditional coral and fish spawning aggregations.

Palau Conservation Society

Namdrik Atoll, The Republic of Marshall Islands

Threats/Impacts the Community is Experiencing:

- Accelerated rates of coastal erosion
- Severe droughts
- Decline in fisheries

Actions:

- Management and adaptation Planning
- Timely vulnerability assessment
- Planting vegetation around coastline

Marshall Islands Conservation Society

Tegua Community, Vanuatu

Threats/Impacts the community is experiencing:

- Regular inundation by ocean water from tidal surges
- Erosion of topsoil
- Erosion of the ground
- Frequent illness from mosquito bites
- water-borne illness
- Insufficient access to fresh water

Actions:

- The Tegua community relocated to higher grounds
- Installed several water tanks in the community
- Do not experience any of the flooding or water shortages and are finding health benefits from the ability to bathe regularly in fresh water

Concept and Implementation supported through Nakhehu, T. and Philip S. Nozaki. Post-Project Survey Report: Tegua Community Total Resilience, Vanuatu, Secretariat of the Pacific Region Environment Programme (2007)

Key Messages

There are lots of things that a community can do to improve the health of their natural and social resources and reduce the impacts of Climate Change. These communities are taking action:

1. **Namdrik Atoll, Marshall Islands:** Threats the community is experiencing are accelerated rates of coastal erosion, severe droughts in the past ten years that threaten drinking water supplies, and decline in fisheries. Actions the community is taking are: 1) completed a “vulnerability assessment” and “management and adaptation planning” process; 2) planted vegetation around coastline to stabilize the shoreline; 3) installed household water tanks to catch rainwater for consumption; and 4) establishing marine protected areas to protect important food fish and other marine life that are important to them.
2. **Ngarchelong Community, Palau:** Threats the community is experiencing are mass bleaching of coral reefs occurred in ‘97/98, concerns that high water temperatures and bleaching coral could lead to the large-scale death of coral reefs and have a negative impact on the fisheries, tourism, and local way of life. Actions the community is taking include working with State government, local conservation groups, and scientists to establish a marine managed area that is designed to support the resilience of the coral reef and fisheries over time. The community planning team is considering climate change in the design and planning of the MMA, recommending additional levels of protection to areas that have shown resilience and/or recovery to past bleaching events, as well as important fish spawning aggregations.
3. **Tegua Community, Vanuatu:** The community of Tegua was located very close to the high-water mark on a low-lying atoll. The community had to stay in the same area as they shared one water tank and relied on freshwater springs at low tides despite the fact that these sources did not supply sufficient water for consumption and bathing. Threats the community experienced include regular inundation from tidal surges, increased erosion of the islands, flooding that created health problems from mosquitoes and water-borne diseases, and water scarcity because they had only one water tank and depended on freshwater springs at low tide for drinking and bathing water. Actions the community took involved relocating to higher ground and rebuilding homes. The community is confident in their decision and have no regrets. They no longer experience any of the flooding or water shortages like they did in the old location. They also installed several water tanks in the community, which resulted in an increase in the freshwater supply per family and health benefits from the ability to bath regularly in fresh water.

FACILITATOR INSTRUCTIONS

1. Referring to the photos in Flipchart Eleven and the key messages, point out the types of impacts from Climate Change that communities will potentially experience and changes communities are already noticing

FLIPCHART#12: Undertaking A Threat And Vulnerability Assessment And Developing A Local Early Action Plan To Reduce Climate Change Impacts

Take Action: Community Vulnerability Assessment, Local Early Action Planning and Implementation

COMMUNITY MANAGEMENT AND ADAPTATION PLAN SUMMARY

Resource Targets

- Water resources, local fish (e.g. grouper and banggai parrotfish), marine turtles, coral reefs, community agriculture, traditional use of natural resources

Vision

- A healthy community with intact natural resources providing food, jobs, and quality of life

Non - Climate Change Threats and Impacts

- Overfishing resulting in shifts in population structure and loss of predators and herbivores
- Destructive fishing (using chemicals and explosives) destroying reef and marine life populations
- Pollution from pigsties causing too many nutrients on the reef, which promotes algae growth, and also contaminates the fresh water

CC Threats and Impacts

- Increased extreme rainfall events causing runoff and sedimentation
- Increase in sea surface temperature causing coral bleaching
- Increase in air temperature with long dry periods causing drought and limiting water supplies
- Sea level rise causing coastal erosion and inundation

Vulnerability (HIGH)

- High Exposure to CC Impacts: Homes and crops are near the shore
- Highly Sensitive to CC Impact: The ecosystem is degraded due to non-climate change threats
- Limited Adaptive Capacity: The community has limited understanding of effective management

Solutions

Reduce Exposure

- Relocate crops away from coastal areas
- Build new homes on stilts

Reduce Sensitivity

- Rocks and protect mangroves to protect against coastal erosion
- Reef and protect marine organisms
- Move pigsties away from the shore
- Clear a mangrove area to protect spawning aggregations and populations of herbivorous species
- Install community seawater catchments

Increase Adaptive Capacity

- Provide awareness programs on how to reduce threats and prepare for climate change impacts
- Partner with health organizations to prepare for increased heat events and water borne illness
- Work with adjacent communities to protect resources and apply for grant funding

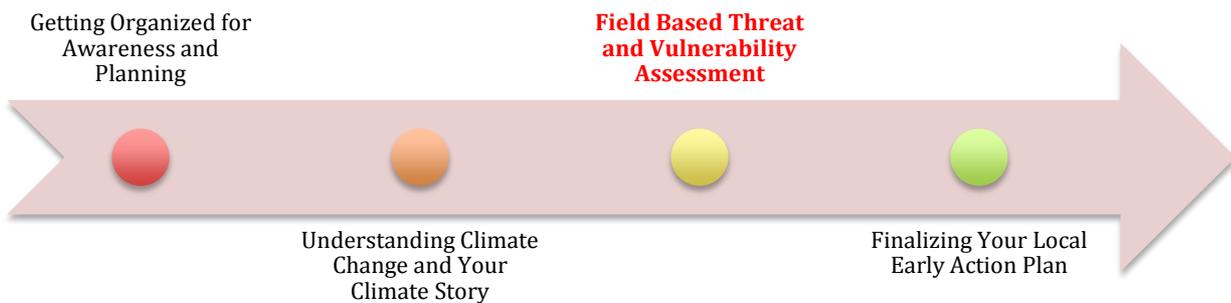
KEY MESSAGES

1. This flipchart shows a community that has degraded its natural and social resources but wanted to reduce their vulnerability to climate change and improve their overall resilience.
2. As a result they undertook a Vulnerability Assessment (VA), which helped them to figure out which resources are the most vulnerable to climate change impacts and why they are vulnerable.
3. They have determined that a large number of their natural and social resources are in poor condition and are therefore more vulnerable to climate change than if they were healthy. This includes: degraded reefs and fish populations from overfishing, destructive fishing methods such as dynamite, dredging for lime and building materials, cleared forests and coastal vegetation such as mangroves, poor water quality from piggeries being too close to the ocean and sedimentation, and limited sources of fresh water. The community is also vulnerable to climate change impacts because their houses are more exposed to coastal storms without healthy coastal vegetation and reefs to protect the shoreline. Additionally, they are vulnerable because with few alternatives they are highly dependent on fisheries as their main source of food and income. So if these resources are lost due to climate change they will not have a good source of protein.
4. Next they developed a Local Early Action Plan (LEAP) to identify actions that they can do to reduce their vulnerability and make their community and its resources healthier and more resilient to withstand existing and future impacts of climate change.
5. Key actions this community is pursuing include: prohibiting the use of destructive fishing methods, prohibiting the harvesting and dredging of corals, replanting forests and coastal vegetation, moving their piggeries and crops away from the coast, building water catchments, establishing a fish replenishment zone to enable fish to grow large and reproduce, getting the community organized by forming a community action group to undertake these actions and prepare for changes, and working with nearby communities to share information and resources.
6. Most of these actions are just good practices that reduce both direct threats from human activities and reduce the community's vulnerability to climate change by strengthening the health of their natural and social resources.

FACILITATOR INSTRUCTIONS

1. Review the key messages as summarized above and point out the specific actions that this community is taking to help reduce their vulnerability and increase their resilience by improving the health of their natural and social resources.
2. Be sure to tell the participants that by improving the health of their natural and social resources, the community is reducing their vulnerability to climate change impacts and building their overall resilience to climate change and other threats.
3. Ask the participants if they can think of any other actions that may be appropriate for their community, based on the examples provided and the list they have already brainstormed.

Step Three: Carrying Out a Field Based Threat and Vulnerability Assessment



Now that you have developed your climate story, it's time to use that information to help carry out a threat and vulnerability assessment for your social and natural resource targets. To complete the vulnerability assessment your group will go through four sub-steps:

- 3.1 *Understanding Factors that Contribute to Vulnerability* – this sub-step can be done with the planning team only and with members of the community, if appropriate. This session describes key terms used to understand and describe vulnerability to climate change and other threats and demonstrates their relationship to one another. Understanding these terms are needed to complete the vulnerability assessment. Terms include exposure, sensitivity, potential impact, adaptive capacity, vulnerability, and resilience.
- 3.2 *Developing a Community Profile* – this sub-step will help the community collect background information about the community that can help to assist with completing the vulnerability assessment. After completing this sub-step information can be directly added to the LEAP template.
- 3.3 *Field-based threat and vulnerability assessment* – this sub-step provides the community with an engaging way to undertake a simple assessment of vulnerability for their key resources. This assessment will not be based on scientific data but more on the community's knowledge and experience, and known climate predictions for the future. We have purposely kept this process fast and simple so the planning process will not take too long and we can quickly move from planning to action.

3.4 *Developing a Vulnerability and Threat Action Model*- this sub-step is aimed at a developing a visual way for the community to view the information collected in the field based threat and vulnerability assessment. It will also help people see how different threats, vulnerabilities, and their root causes are connected. This sub-step will also help the community to identify and decide on actions to take to address root causes of threats and vulnerability by looking at the short, medium, and long-term results expected from those actions.

NOTE: This is a good time to invite technical experts to join the process. There may be specific resources of concern that could utilize expert opinion to help understand changes over time, potential future impacts, as well as determining effective actions.

Sub-Step 3.1 Understanding Factors that Contribute to Vulnerability

Session Fifteen – Reviewing Factors that Contribute to Vulnerability

FACILITATOR INSTRUCTIONS

Exercise - with core planning team and/or the community (if appropriate)

The objective of this exercise is for the planning team and/or community members to understand key terms used to understand and describe vulnerability to climate change and other threats and demonstrates their relationship to one another. These terms are critical for the planning team to understand well as they will be used throughout the vulnerability assessment. It is less important for the community members to understand these terms but at a minimum the following exercise should be carried out with the planning team to ensure everyone is comfortable with the terms prior to completing the vulnerability assessment.

1. Review the following the vulnerability model on a piece of flipchart paper, explaining each term's definition in the model and how they interact together, as well as the term resilience.

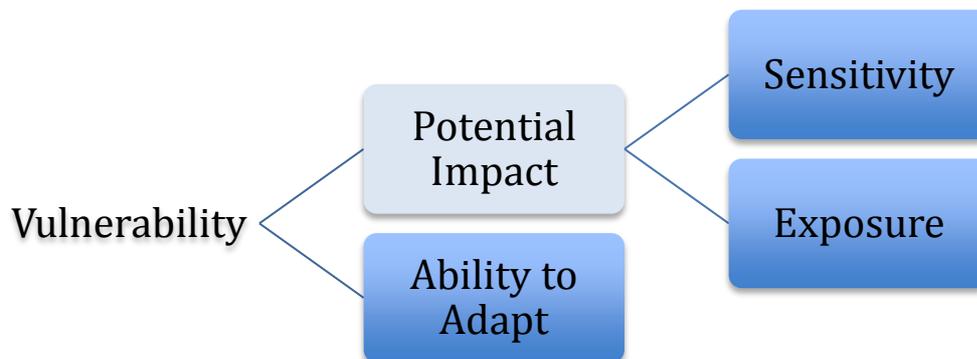


Figure 1. Vulnerability as a function of Sensitivity, Exposure and Adaptive Capacity (Marshall et. al., 2009)

Vulnerability: is the degree to which a resource or community is susceptible to, or unable to cope with, adverse effects of climate change. Vulnerability is a function of exposure, sensitivity to climate impacts and related adaptive capacity.

Exposure: the extent to which a resource comes into contact with climate hazards or specific climate impacts.

Sensitivity: the degree to which a resource or community is negatively affected by changes in climate conditions (e.g. temperature and precipitation) or specific climate change impacts (e.g. sea level rise, increased water temperature).

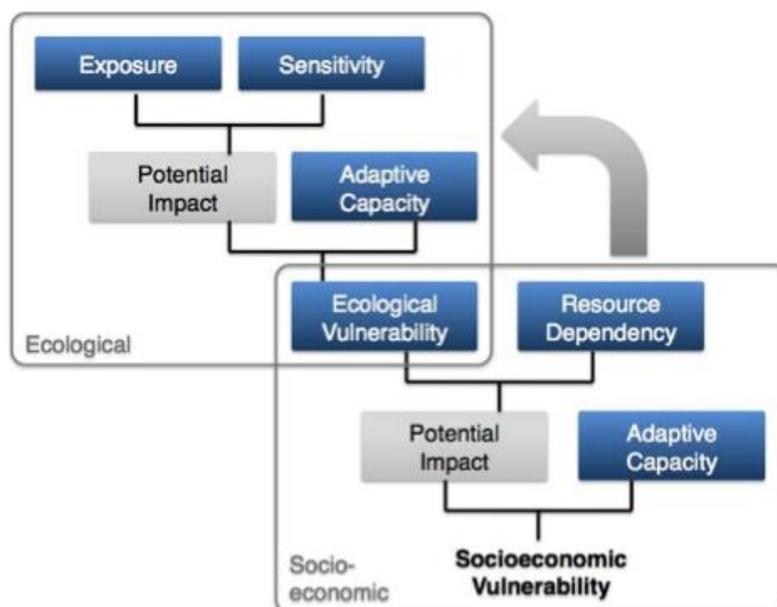
Potential Impact: Exposure and sensitivity combined will tell you how big the potential impact might be or to what degree the community could experience negative impacts from climate change. The greater the exposure and/or sensitivity the greater the potential impact may be.

Adaptive capacity: potential, capability, or ability of a resource or community to adapt to impacts of climate change and variability with minimal potential damage or cost.

Resilience: ecological and social capacity to cope with, adjust to and recover from external stresses and disturbances. It is the flip side of vulnerability. Therefore, if you increase resilience of a community or resources, you will decrease their vulnerability.

Community/Social Vulnerability: is the degree to which a community is susceptible to, or unable to cope with, adverse effects of climate change on the target being assessed.

2. Next, review the model below of community vulnerability or social vulnerability. The level in which the *community* will be vulnerable is based on the vulnerability of the natural or social resource target, how dependent your community is to using that target, and the community's ability to adapt with changes in that target.



The co-dependency of ecological and social systems means that their vulnerabilities cannot be reliably evaluated without reference to the other. (Marshall et. al, 2009)

3. After reviewing the terms, go back to the illustrations of the healthy and unhealthy communities (Flipcharts # IA, IB, IC, ID) and discuss them using these new terms. Be sure to review the following:

Unhealthy Community:

- Resources in the unhealthy community are exposed to impacts of climate change such as rising sea surface temperature, sea level rise, and changes in weather patterns. This community is **MORE** exposed to some of these impacts. For example, they are more exposed to sea level rise because there is no vegetation on the shoreline to protect the homes and coastline. Also the land and soil in their community is more exposed to rainfall because the forest vegetation has been cleared, exposing the land and increasing chances of landslides.
- Resources in the unhealthy community are sensitive to the impacts of climate change because they are already weak and unhealthy. So the impacts from climate change will be more severe. For example, the coral reefs (habitat for important fish) have several existing threats including destructive fishing practices and overharvesting which make them weak. So increased sea surface temperature can cause extreme bleaching events and possible coral death. This community is also highly dependent on their resources for food and livelihood with very few alternatives. So they are more sensitive to negative changes in their resources.
- Natural resources often have very little natural ability to adapt to the impacts or changes in climate. The unhealthy community has a lower ability to adapt because they do not have access to resources to be able to adapt to these changes and reduce their dependence on the resources. They are also not aware of the likely impacts and are not working together to prepare for the changes.
- Because of the high exposure and sensitivity, and low adaptive capacity, the unhealthy community's natural and social resources are more vulnerable to the impacts of climate change.

Healthy Community:

- Resources in the healthy community are also exposed to impacts of climate change such as rising sea surface temperature, sea level rise, and changes in weather patterns. However, the healthy community is less exposed to some of these impacts. For example, they are less exposed to sea level rise because there is vegetation on the shoreline to protect them from things like sea level rise and coastal storms. They also have healthy vegetation and forests, which reduce the exposure of the land to increased rainfall events. As such, they are less likely to have landslides.
- Natural resources in the healthy community are less sensitive to the impacts of climate change because they are healthy and strong. So the impacts from climate change will be less severe. For example, the coral reefs are healthy and fisheries are abundant. These corals will have a better chance of withstanding or recovering from coral bleaching from increased sea surface temperature. This community is also less dependent on resources for food and livelihood because they have many sources of income and food so they are less sensitive to changes of the resources.
- Natural resources in this community also have very little ability to naturally adapt to the impacts or changes in climate. The mangroves may be able to keep up with sea level rise. However because there are no buildings right behind them, they may be able to move inland. The healthy community itself has a higher ability to adapt because they have access to resources such as information and technical assistance to help them adapt to these changes and reduce their dependence on the resources. They are working together to plan for the changes.
- Because of the lower exposure and sensitivity, and higher adaptive capacity the healthy community's natural and social resources are less vulnerable to the impacts of climate change. They are more resilient

Sub-Step 3.2 Developing Your Community Profile

The community profile describes the social situation in the community and the resources that are important to community members, both written and visually. The community profile is developed through the following Sessions:

- Session Sixteen: Collecting Background Information on Your Community
- Session Seventeen: Prioritizing Natural and Social Resources
- Session Eighteen: Mapping Your Community

You can develop your Community Profile in any of the following ways:

1. A large group meeting for all of the activities. This will take the longest but ensures the greatest amount of participation
2. Small groups work different activities and then present back to the entire group. This will be the fastest method.
3. You do some activities by small groups and some as a large group.

If you do any sessions by small group, all information should be presented back to the entire group for them to have a chance to provide input.

Session Sixteen: Collecting Background Information about Your Community

FACILITATOR INSTRUCTIONS

Exercise - with core planning team and the community (if appropriate)

The objective of this exercise is to collect important background information about the community that can provide a better understanding of vulnerability to climate change and other threats. This information will also be used in the LEAP template to share basic demographic information about the community as an introduction to the LEAP.

1. Facilitate the participants to answer the following questions about their community. You can capture their answers on flipchart papers for the group to see. After all the questions have been answered the Planning Team should write a short summary covering all the answers provided above and include it in the LEAP template

| Community Background Questions | Answer |
|---|---------------|
| Where is your community located? | |
| About how many people live in your community? | |
| What are the major occupations (income generating and subsistence activities) of community members? | |
| What are the main stakeholder groups in your community? | |
| How are decisions made in your community? Who has authority? | |
| What social groups are currently active and what purpose do they serve? | |

| | |
|--|--|
| What are the main strengths of your community? | |
| What aspects of resource management and quality of life are working well? | |
| Please explain 1-3 major resource management threats or problems your community is facing. Provide details. | |
| Please explain 1-3 social threats or problems your community is facing. Provide details. | |
| Are there any community improvement initiatives underway or planned? (e.g., development, capacity, transportation) | |

Community Background Summary:

Transfer the Community Background Summary Statement to the LEAP Template

Session Seventeen: Prioritizing Natural and Social Resource Targets

FACILITATOR INSTRUCTIONS

Exercise - with core *planning team and the community*

This exercise guides the planning team and community members in deciding which natural and social resource targets they are most concerned about being negatively impacted by climate change. They will use these targets to complete the threat and vulnerability assessment.

1. Draw the following table on a piece of flipchart paper:

| Natural Resource Targets | Level of Importance and Why | Current Condition |
|--|------------------------------------|--------------------------|
| 1. Reef Fish | | |
| 2. Invertebrates | | |
| 3. Coastline | | |
| 4. Coral Reefs | | |
| 5. Mangroves | | |
| | | |
| Social Resource Targets | | |
| 6. Infrastructure (buildings, roads, electricity, etc) | | |
| 7. Agriculture/crops | | |
| 8. Drinking Water Resources | | |
| | | |

2. Begin the session by reviewing the Background information about the Community” developed in Session Sixteen. Specifically, review any information that describes the resources that the community is dependent upon for subsistence and livelihoods, as well as the natural resource and social problems facing the community. Using this information as a starting point, each group should begin by reviewing the social and natural targets that are listed in the table above and adding any additional resources important to them.

3. If more than ten targets have been identified, look to see where you can lump resources into one bigger category. As a general rule you can lump resources that will have the same basic strategy for protection or management. For example, if the community lists several types of coral reef food fish (e.g. rabbit fish, surgeon fish, parrot fish) and the main strategies used to help protect them are to eliminate destructive-fishing practices and create a local managed marine area (LMMA), then all these fish can be lumped into one resource called “reef food fish”. If a particular species needs a special management activity to protect it, then it should be split out as a separate important resource. For example, grouper may be listed separately since they may require special management of their spawning aggregation sites.
4. Facilitate the group to list your top 8-11 Priority Natural and Social Resources on a piece of flipchart paper and write out their level of importance and why, as well as their current condition. It is best to consider the resources listed in the table unless they are truly not important to the community. Be sure to include all resources that are most important to the community for food security, livelihoods, health, and protection from climate hazards. Ensure that the group agrees on the top eight and add one to three more if necessary.

Transfer this information into the LEAP template

Session Eighteen: Mapping Your Community

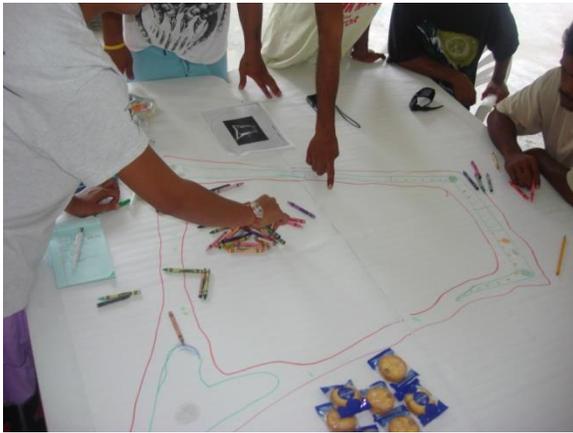
FACILITATOR INSTRUCTIONS

Exercise

This exercise is aimed at developing a visual tool that the community can use to discuss natural and social resource targets and the existing and potential threats they are facing. It will be used throughout the threat and vulnerability assessment to support discussions and decision-making.

If you already have a resource map for your community, there is no need to create a new one. Just review the existing map with the participants and make sure you have it available for the entire planning process. If you don't have a resource map, you should prepare one on large sheets of flip chart paper. Then, with your community, answer the questions below and use the answers to draw features on your map. Be sure to create a legend so the definitions of any symbols are clear. Additional written information collected can be captured on flipchart paper.

1. Identify and mark the key habitats and species on the map. Include terrestrial, aquatic, and marine habitats and species (e.g. mangroves, coral reefs, forests, grouper, etc).
2. Write the condition of each key habitat on the map (e.g. good reef areas, damaged reef, healthy streams, polluted streams, etc).
3. Identify and mark the areas that are important for key species on the map (e.g. turtle nesting beaches, dugong feeding areas, bird nesting, spawning aggregations).
4. Identify and mark the important social and cultural features on the map, such as fishing shrines, houses, fishponds, churches, etc.
5. Draw the roads, bridges, buildings, schools, hospitals/clinics, churches, evacuation routes, water reservoirs or tanks, on the map.
6. Mark where the key social and economic activities are carried out, on the map. Include things such as farming (including type), fishing (including type), harvesting, boating, diving, snorkeling, etc.
7. Note how has land use and/or development changed over time.
8. Mark how past climate events and hazards (for example, storm-related flooding, bleaching) impacted specific areas. Note if certain areas have been more impacted than others by past climate events.
9. Include any other features that are important to your community



When you complete the final map, you can attach the **Community Map** as an **Appendix** to the LEAP template.

Keep the **Community Map** available as we will use it and update it throughout other Sessions. If possible, take digital pictures of your map.

Sub - Step 3.3 Field-Based Threat and Vulnerability Assessment

Now that you have developed your community profile, it's time to use that information to help carry out a threat and vulnerability assessment for your social and natural resource targets. The field-based threat and vulnerability assessment provides the community with an engaging way to undertake a simple assessment of vulnerability for their key resources. This assessment will not be based on scientific data but more on the community's knowledge and experience, and known climate predictions for the future. We have purposely kept this process fast and simple so the planning process will not take too long and we can quickly move from planning to action.

NOTE: This is a good time to invite technical experts to join the process. There may be specific resources of concern that could utilize expert opinion to help understand changes over time, potential future impacts, as well as determining effective actions.

This Sub-Step is made up of two sessions.

- Session Nineteen – Classroom Preparation, which is completed in the classroom to prepare the group to carry out the field assessment. It will take approximately one to two hours.
- Session Twenty is completed in the field with different groups assessing different resources. It will take approximately two to four hours for each group to complete assessing one resource.

Session Nineteen: Classroom Preparation

FACILITATOR INSTRUCTIONS

Exercise - with core *planning team and the community (if appropriate)*

This exercise will prepare the team to go into the field and conduct the threat and vulnerability assessment. It ensures the group has reviewed the right information and is ready for successful field work.

1. Divide into groups based on your target natural and social resources. If you don't have enough people, each group can work on two or more resources. Each group should have someone that knows the history and condition of the resource. For example, someone who knows about how the area's mangroves have changed over time should be in the mangrove group.
2. Review the Vulnerability model and key terms with the whole group using Figure 1 and associated definitions on page 55. Let the group know that they will be using these terms to explore the vulnerability of each of their key natural and social resources. If needed, review the flu exercise again to help the group understand the terms. Tell the group that there are also questions that will be used to help each small group determine rankings for each of these terms.
3. If possible, print out copies of the local climate story for each small group. If this is not possible, review the climate story with the whole group and have each group write down notes from the story to bring with them on the field exercise. Be sure to capture the climate hazards the community is most concerned about for the future.

Session Twenty: Field Based Threat and Vulnerability Assessment

FACILITATOR INSTRUCTIONS

Exercise - with core planning team and the community members in appropriate teams

This exercise aims at getting planning team members, community members, and experts out into the community to look at and discuss the various targets included in the threat and vulnerability assessment. Physically viewing these targets can provide more in-depth discussion and allow the group to “ground truth” perceptions from previous sessions. For example, the group can review the map and location of targets as well as their condition.

The field based threat and vulnerability assessment will take two to four hours per resource. Therefore it is best to break into small groups and include participants who have a strong understanding of the resource they are assessing.

1. To prepare for the field exercise, make sure each group has someone to facilitate and take notes. This person should review and understand the questions and the relationship between Exposure, Sensitivity, Potential Impact, Adaptive Capacity, and Vulnerability. They should have a clipboard with a copy of the VA- Threat sheet worksheet and associated questions (below). Take several extra copies of the VA-Threat worksheet. They should also have a copy of the local climate story or notes from the story.
2. Each group should prepare a simple sketch map of the community based on the overall community map and take this small map with them to use in the field assessment.
3. Each group should go out into the community and view the resource they are working on.
4. While viewing the resource, the facilitator should first review the local climate story including the main climate events that the community is most concerned about. Remember to consider both past events and future events that may never have occurred before.
5. Next, the facilitator should ask the participants the questions listed in the VA-Threat worksheet in specific reference to the resource the group is working on. The facilitator should use the VA-Threat questions to help determine the answers for the associated columns in the VA-Threat worksheet.
6. The group should fill out the VA-Threat worksheet before returning to the classroom. The group should also update their sketch map with the location and condition of the resource as needed.

Please Note: Appendix One has a detailed explanation of the relationship between Exposure, Sensitivity, Potential Impact, Ability to Cope, and Vulnerability. Each facilitator should study this ahead of time so they understand the relationship.

Vulnerability and Threat Assessment Worksheet (VA-Threat) - (please explain all answers)

| CURRENT STATUS OF TARGET | THREATS (non-climate) | ROOT CAUSES OF NON-CLIMATE THREATS | CLIMATE EVENTS | EXPOSURE | SENSITIVITY | POTENTIAL IMPACT | ADAPTIVE CAPACITY | RESOURCE VULNERABILITY | COMMUNITY VULNERABILITY |
|--|---|---|--|---|--|--|---|---|---|
| <p>What is the current status of this target?</p> <p>Poor, Fair, Good, Very good</p> | <p>What are the non-climate threats to this target?</p> | <p>Why are the non-climate threats happening? List all of the root causes</p> | <p>Which of the current and likely future climate change events are of most concern for this target and why?</p> <p>List them individually</p> | <p>How much area of this target will sometimes or frequently be exposed to current and future climate hazards?</p> <p>Little/ Some/ Most/ All</p> | <p>How severely will this target be impacted by increased climate hazards and why?</p> <p>Severely/ Moderately/ Hardly</p> | <p>How would you rate the level of potential impact to this target from future climate hazards?</p> <p>High/ Medium/ Low</p> | <p>Rate the ability of this target to adapt to impacts increased climate hazards</p> <p>High/ Medium/ Low</p> | <p>Based on the potential impact and the ability to adapt, rate the vulnerability of this target to future climate hazards</p> <p>High/ Medium/ Low</p> | <p>Based on the potential impact to the community, and the ability of the community to adapt to changes in the target, rate the social vulnerability</p> <p>High/ Medium/ Low</p> |
| <p>20 years ago:</p> <p>10 years ago:</p> <p>Now:</p> <p>Has it changed and why?</p> | | | | | | | | | |

EXAMPLE TARGET: DRINKING WATER RESOURCE

| CURRENT STATUS OF RESOURCE | THREATS (non-climate) | ROOT CAUSES OF NON-CLIMATE THREATS | CLIMATE EVENTS | EXPOSURE | SENSITIVITY | POTENTIAL IMPACT | ADAPTIVE CAPACITY | RESOURCE VULNERABILITY | COMMUNITY VULNERABILITY |
|---|---|--|---|--|---|---|---|------------------------|---|
| <p>20 years ago: Good</p> <p>10 years ago: Fair</p> <p>Now: Fair - Poor</p> | <p>Contamination from waste in fresh water sources creating health risks</p> <p>Salt Water Intrusion – loss of drinking water</p> | <p>Piggeries too close to water source</p> <p>Lack of awareness on health risk from piggeries</p> <p>Clearing of land creating more runoff</p> <p>Poor regulations</p> <p>Overdrawing</p> <p>Poor well design</p> <p>Lack of funds for catchment</p> <p>Lack of political awareness</p> <p>Drought</p> | <p>Increased drought limiting recharge of water and worsening salt water intrusion</p> <p>More severe rainfall events creating more runoff into water sources</p> <p>Sea Level rise causing intrusion</p> | <p>All exposed to drought</p> <p>All exposed to rainfall</p> <p>Most exposed to sea level rise – particularly the wells close to the coastline for families that live in that area</p> | <p>Sea Level – severely because once it's contaminated it does not recover</p> <p>Drought – moderately because it can recharge if there is enough new water</p> | <p>High – all water resources are exposed and sensitive to these events</p> | <p>Low – water resources have little to no ability to change on their own</p> | <p>High</p> | <p>High</p> <p>The community is dependent on these resources for drinking, crops, and for livestock. So there is a high potential impact if these are contaminated, including health risks and waterborne diseases</p> <p>The community is aware and concerned, but the local government is not and has not allocated funds for better management of resource and water storage</p> |

DETAILED QUESTIONS TO SUPPORT THE CORE QUESTIONS IN THE THREAT AND VULNERABILITY ASSESSMENT (THREAT-VA)

The facilitator should be very familiar with the climate change terms and how they are related. Use the following questions in the field to help support the appropriate answers to the core questions in the matrix. Read the definition, example, and any other information to the group before asking each set of questions.

| ROOT CAUSES OF THREATS |
|--|
| <p>To identify the best actions to address threats, it is important that you understand the root cause of why the threats are occurring. Actions that address the root causes, will have the best chance of addressing threats to the target.</p> |
| <p>To understand the root causes of the threats to this target, ask the group “why are those threats occurring?” The facilitator should keep asking “why is that happening?” until the “root causes” of the threat are revealed and there are no more answers. When there is no more reason for why the threat is happening, you should review the answers and ask “if all of these causes were addressed, would the threat be reduced?” If yes, then you can move on. If there are any further reasons for the threat, be sure to capture them.</p> <p>Example: Target (natural resource): Reef Fish Threat: Illegal fishing (Poaching)/ Legal overfishing Root Causes:</p> <ul style="list-style-type: none">• Lack of enforcement → lack of funds for enforcement boat → lack of political will to provide funds → lack of informed government leaders on environment• Lack of Awareness → community resistance → no awareness programs• Weak rules → only one fish replenishment area• Poverty → no alternative livelihoods |

EXPOSURE

Exposure is the extent to which a target comes into contact with climate hazards or specific climate impacts. For example, a house on the shoreline will be more exposed to storm surges than a house further inland. It may be helpful to use your community map to review where the target is located to discuss the following questions.

Which climate/weather hazards have come into contact with this target or will in the future, based on climate predictions?

Are these hazards increasing or decreasing?

In the future, will this target come into contact with these hazards rarely, sometimes, or frequently? Specify which hazards.

rarely, sometimes, frequently

Based on the information collected in the previous three questions, answer the following to determine exposure:

Core Question: How much of this target will be sometimes or frequently exposed to current and future climate hazards?

Little/ Some/ Most/ All

Little: A small amount (1-10%) of the target will be exposed to the climate hazard

Some: A moderate amount (11-30%) of the target will be exposed to the climate hazard

Most: Much (31-70%) of the target will be exposed to the climate hazard.

All: All or most (71-100%) of the target will be exposed to the climate hazard.

SENSITIVITY

Sensitivity: the degree to which a target or community is negatively affected by changes in climate conditions (e.g. temperature and precipitation) or specific climate change impacts (e.g. sea level rise, increased water temperature). If a social or natural resource target is already in a weakened state from other threats or just because it is very fragile, then it will be more sensitive than a target that is strong and healthy. So targets that have many threats and are weak will be more sensitive. For example, a thatch building would be more sensitive to increased impacts from storms than a concrete one.

How severely was this target impacted by past climate hazards?

What is the current condition of your this target?

What non-climate change threats are impacting your targets? **And** how severe are they?

What will future climate hazards do to the existing non-climate threats? For example, reviewing houses as the target. Current non-climate threats are landslides from cleared forest during the wet season. Future climate predictions say that more heavy rain is likely – therefore the landslides may become more frequent.

Based on the information collected about current condition of the target and existing non-climate threats to it, answer the following to determine sensitivity:

Core Question: How severely will this target be impacted by increased climate hazards?
(consider how non-climate threats could get worse)

Pick one: severely moderately hardly
***fill this answer into the VA table**

POTENTIAL IMPACT

Potential Impact: Exposure and Sensitivity combined will tell you how big the potential impact might be or to what degree the community could experience negative impacts from climate change. It is looking at exposure (how much of the target will come into contact with the hazard) combined with the sensitivity (what is the existing strength or weakness of the target). The greater the exposure and/or sensitivity, the greater the potential impact may be. Use the table below to guide your answer but also discuss it to see if the ranking feels correct. If not, consider that either the exposure or sensitivity ranking may need to be modified. If those are correct, then the potential impact ranking is likely right.

| | | Sensitivity | | |
|----------|----------------|-------------|----------|--------|
| | | Hardly | Moderate | Severe |
| Exposure | None to Little | Low | Low | Medium |
| | Some | Low | Medium | High |
| | Most to All | Medium | High | High |

*Adapted from: Siringan, Fernando P. and Yvaine Sta. Maria. 2011. A vulnerability assessment tool for coastal integrity. In: Vulnerability assessment tools for coastal ecosystems: A guidebook. Quezon City: Marine Environment and Resources Foundation, Inc and Conservational International – Philippines.

Core Question: How would you rate the level of potential impact to this target from future climate hazards?

Pick One: High Medium Low

*** use the table below to help decide on the answer and fill this answer into the VA table**

ADAPTIVE CAPACITY

Adaptive capacity: potential, capability, or ability of a resource or community to adapt to impacts of climate change and variability with minimal potential damage or cost. Adaptive capacity includes the innate ability of the target to “adapt” to future changes. Most natural resources have a low to medium level ability to adapt on their own to changes. An example of a natural resource that can have a medium to high adaptive capacity is mangroves. They have the ability to move inland and keep up with sea level rise only however if there is no development behind them.

Adaptive capacity also includes all of the information, knowledge, skills, and resources that your community can access to adapt to changes in the resource. For example, if there will be more flooding of many homes in the future due to increased sea level and storm surges, the community may know that this change is coming and work with local leaders to develop building plans that require new homes to be on stilts, and address land tenure issues to allow people in very bad locations to re-locate to higher ground.

Have you observed recovery or resilience in this target to past hazards? Explain.

Is there any way for this target itself able to adapt to impacts from climate change?

How effectively managed is this target?

Based on the information collected in the previous three questions, answer the following to determine social adaptive capacity:

High = the target will be able to adapt to future climate hazards / or changes in the resource quite easily

Medium = although it may be difficult, the target will be able to prepare for and cope with future changes so they will only be moderately impacted.

Low = the target does not have the ability to make changes to prepare for or cope with future changes and will likely be impacted severely.

Core Question:
How would you rate the ability of this target to adapt with impacts from increased climate hazards?

A. Pick one: High Medium Low

***fill this answer into the VA table**

VULNERABILITY OF TARGET

Vulnerability - is the degree to which a target is susceptible to, or unable to cope with, adverse effects of climate change. The level in which the resource will be vulnerable is based on the potential impacts to that resource and its innate ability to adapt to changes. First rank the vulnerability of the resource based on the VA matrix using the information about exposure, sensitivity, impact, and adaptive capacity and the table below. $\text{Exposure} + \text{Sensitivity} = \text{Potential Impact}$. $\text{Potential Impact} - \text{Adaptive Capacity} = \text{Vulnerability}$. Use the “Potential Impact” and “Adaptive Capacity” rankings from the previous tables and the table below to answer the following two questions:

ADAPTIVE CAPACITY

| | | | |
|---------------|----------------|---------------|---------------|
| | Low | Medium | High |
| IMPACT | Extreme | High | Medium |
| | High | High | Medium |
| | Medium | Medium | Low |
| | Low | Low | Low |

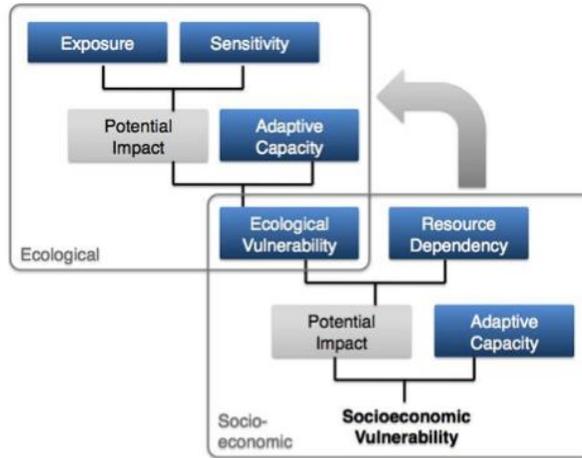
Core Question:
Based on the potential impact and the adaptive capacity, rate the vulnerability of this target to future climate hazards

Pick one: Extreme High Medium Low

***use the vulnerability ranking table below to help fill this answer into the VA table**

SOCIAL VULNERABILITY RELATED TO TARGET RESOURCES OF COMMUNITY

Community/Social Vulnerability - is the degree to which a community is susceptible to, or unable to cope with, adverse effects of climate change on the target being assessed. The level in which the *community* will be vulnerable is based on the potential impact to your target, how dependent your community is to using that resource, and the community’s ability to adapt with changes in that target. Next rank the vulnerability of the community based on the questions below.



The co-dependency of ecological and social systems means that their vulnerabilities cannot be reliably evaluated without reference to the other. (Marshall et. al, 2009)

Target Vulnerability: Low/ Medium/ High

Dependence: Discuss the following two questions and determine if the dependence of the community is High/Medium/Low

What is the communities’ level of dependence on this target and for what purpose? (consider income, food, cultural practice, spiritual practice, etc) and any specific community members or groups (fishers, farmers, tour operators) who would be more impacted by negative changes to this target.

Ranking: High/ Medium/ Low

Potential Impact (Target Vulnerability + Dependence)

| | | Vulnerability of Target | | |
|------------|--------|-------------------------|--------|--------|
| | | Low | Medium | High |
| Dependence | Low | Low | Low | Medium |
| | Medium | Low | Medium | High |
| | High | Medium | High | High |

Adaptive Capacity:

1. Does the community have adequate alternatives if this target was negatively impacted from increased climate hazards? Consider cultural, economic, and social values and needs when considering the alternative. Consider past events and how these community members dealt with them, successfully or not. Please explain your answer. If your answer is yes and there will be relatively little stress on the social system to use alternatives, your adaptive capacity is likely high. If your answer is no, ask question 2 to determine ranking.

2. Does the community have the knowledge, skills, resources, and/or support to develop alternatives either now or in the future? These could include assets (funding, equipment), people (partners, staff, volunteers, experts, social networks), and/or information (data, outreach). Please explain your answer. A high level of knowledge, skills, and resources to develop alternatives would likely rank your adaptive capacity as medium. A moderate to low level of knowledge, skills, and resources to develop alternatives would likely rank your adaptive capacity as low.

Ranking: High/ Medium/ Low

Social Vulnerability

| | | Adaptive Capacity | | |
|-------------------------|---------------|--------------------------|---------------|---------------|
| | | High | Medium | Low |
| Potential Impact | Low | Low | Low | Medium |
| | Medium | Low | Medium | High |
| | High | Medium | High | High |
| | | | | |

Core Question: Based on the potential impact to the community, and the ability of the community to adapt to changes in the target, rate the social vulnerability

Pick one: High Medium Low

***use the vulnerability ranking table below to help fill this answer into the VA table**

Sub - Step 3.4 Developing a Threat/Action Model

Creating a Threat/Action model is a visual way for the community to view the information collected in the threat and vulnerability matrix. It will also help people see how different threats, vulnerabilities, and their root causes are connected. This will help the community to identify and decide on actions to take to address root causes of threats and vulnerability. This activity should be carried out with the same groups who carried out the threat and vulnerability assessment for various resources.

This Sub-Step is made up of three sessions.

- Session Twenty-One: Review of Early Actions That Can Reduce Vulnerability of Targets to Threats Including Climate Change - uses flipcharts to review actions that can be taken to reduce the vulnerability of specific targets and increase their resilience to climate change.
- Session Twenty-Two: Developing a Vulnerability and Threat Action Model allows the planning team and community to develop a visual model of the vulnerability assessment and see the connections between different threats, causes and impacts. This model can be used to develop meaningful actions to reduce threats and vulnerability.
- Session Twenty-Three: Results Chain and Finalizing Actions – allows the planning team to develop realistic short, medium, and long term results they will see after implementing specific actions. This can help the group determine if the actions will achieve the results they are looking for or if further changes are needed.

Session Twenty-One: Review of Early Actions That Can Reduce Vulnerability of Targets to Threats Including Climate Change

FLIPCHART#13, 14, 15 - Actions to Make Our Community and Its Resources Healthy to Reduce the Impact of Climate Change

Adaptation Strategies to Build Resilience of Coral/Fisheries and Coastal Vegetation

The best way to prepare for climate change and avoid negative impacts to important resources is to keep these resources as healthy and strong as possible

Coral Reefs and Fisheries Adaptation Strategies



1. Establish a Locally Marine Managed Area (LMMA) that includes:
 - Protection of herbivorous fish that eat algae and prevent algae from smothering and killing bleached corals
 - Protection of spawning aggregations
 - Protection of coral reefs near upwelling, flushing, and shading
 - Protection of a range of habitats (beach, mangrove, seagrass, coral)
2. Pelagic fish aggregation devices to reduce pressure on reef fish
3. Small pond aquaculture
4. Develop supplementary or alternative livelihoods that are less dependent on reefs

Coastal Land and Vegetation Adaptation Strategies



1. Replanting native coastal vegetation (mangroves, trees)
2. Establish community rules to protect mangroves, coastal vegetation, and seagrass beds (e.g. set-backs of homes and coastal infrastructure)
3. Coastal protection
 - a. "Hard options" – concrete, stone, seawall
 - b. "Soft options" – vegetation, sand bags
4. Work with local and national governments to ensure buildings and roads are not built on shorelines where they are susceptible to sea level rise
5. Reduce cutting of vegetation by using appropriate fuel or renewable energy sources for cooking

Adaptation Strategies to Build Resilience of Terrestrial and Water Resources

The best way to prepare for climate change and avoid negative impacts to important resources is to keep these resources as healthy and strong as possible

Terrestrial Adaptation Strategies



1. Establish community rules to protect native upland vegetation and riparian zones, and prevent introduction of invasives
2. Eradicate and manage invasive species
3. Apply wise agricultural practices
4. Restore native upland vegetation

Water Resources Adaptation Strategies



1. Fix leaky pipes
2. Install household or community water catchment and tanks
3. Protect reservoirs
4. Ensure that reservoirs and freshwater lenses are free from pollution and managed to avoid evaporation
5. Ensure wells are designed and managed to allow sustainable use
6. Use solar water filters to filter out contaminated well water
7. Use solar distillation systems to supplement drinking water in remote areas

Adaptation Strategies to Build Resilience of Agriculture and Community Well-Being

The best way to prepare for climate change and avoid negative impacts to important resources is to keep these resources as healthy and strong as possible

Agriculture Adaptation Strategies



1. Diversify agriculture and move crops inland or up, away from inundation areas
2. Use food preservation methods
3. Salt-tolerant species are being explored
4. Utilize and enhance traditional food preservation methods
5. Avoid clearing forests and monocropping
6. Use traditional and native crops
7. Eat locally produced and more nutritious traditional foods "Go Local!"
8. For low-lying islands, raise taro patches through traditional practices of filling with compost or concrete beds

Adaptation Strategies that Support Community Well-being



1. Apply traditional and local knowledge
2. Provide climate information and build awareness for better preparedness
3. Provide access to emergency services and transportation
4. Provide access to health services
5. Develop alternative livelihoods, providing know-how
6. Develop partnerships with other communities and local organizations
7. Organize the community
8. For low-lying areas (and low-lying atolls) put new buildings on stilts to prevent flooding

KEY MESSAGES:

1. Some actions are simple; others need expert guidance.
2. Some key actions that can be considered include:
 - a. Planting of mangroves and other native shoreline plants that help to reduce coastal erosion and buffer from the impacts of storm waves and rising sea levels. Mangrove planting is recommended only in areas that have mangroves in the past.
 - b. Reforestation. Maintaining and/or reforesting your upland vegetation can help to protect hillsides, help to secure the fresh water supply by retaining water in the forest, and reduce flooding, landslides, and sedimentation in times of severe storms.
 - c. Building water catchments to store water for severe droughts.
 - d. Fixing leaky pipes to existing water tanks to ensure that available rainwater is being captured for use.
 - e. Planting crops in areas well away from sea water inundation areas and use species that are drought tolerant. If you have to plant next to the coast, try to use species that are salt tolerant.
 - f. Establishing and extending the size and numbers of your Locally Managed Marine Areas (LMMAs) and include features that help build resilience to climate change. SEE BOX 1 below.
 - g. Prohibiting destructive practices for harvesting resources (for example, dynamite/poison fishing, clearing mangroves and forests, coral mining, etc) Protect areas where fish reproduce. This can increase the number of fish for catching.
 - h. Reducing fishing pressure on the reef by providing alternative fishing options such as Fish Aggregating Devices (FADs) for off shore species such as mackerel and tuna.
 - i. Preventing removal of rocks, corals and sands from the coast as these help to buffer against the impact of waves and can protect the shoreline and villages in case of sea level rise and heavy storms.
 - j. Utilizing and enhancing traditional agro-forestry practices, and diversify new agriculture methods and use shade trees to protect from drought.
 - k. Building partnerships with local agencies and organizations that can support climate change adaptation activities (e.g. resource management, hazard management, health services, community colleges, etc.)
 - l. Providing climate information and warnings and build awareness for better preparedness for known and potential climate change impacts.
 - m. Ensuring people know about and have access to emergency routes and services for extreme events (e.g., floods, typhoons), use high areas for evacuation zones.
 - n. Ensuring people know about and have access to health services to cope with climate related stressors (physical and emotional).
 - o. Engaging in alternative livelihood programs to diversify income sources.

Box 1 - Resilient LMMA Design

One of the most common actions communities take to build resilience of important marine resources is the design a resilient locally marine managed area or network of marine managed areas. A resilient LMMA can be designed to improve the health of marine resources and ecosystems in the long-term so they will be less vulnerable to climate change and continue to benefit the community. The main things to consider are:

- a. Healthy marine ecosystems and species will provide ongoing benefits for local communities including sustainable fisheries, tourism, and recreation. Degraded ecosystems will not.
- b. To remain healthy, marine species need to 1). Have sufficient area of habitat and all the types of habitat they use in their lifetime, 2) be able to grow large and reproduce enough offspring to support the local fishery, 3) be protected from destructive activities including destructive fishing and land-based sources of pollution.

If your community is interested in designing a resilient LMMA or network of LMMAs with other communities, a companion guide to this guidance is available. It provides outreach information on important factors for building resilience of marine resources as well as instructions on designing your site.

FACILITATOR INSTRUCTIONS

- I. To prepare the group for developing actions, the facilitator can review the key messages of flipchart # 13, 14 and 15 to explain different adaptation actions for different social and natural resource targets.

Session Twenty-Two: Vulnerability And Threat Action Model

FACILITATOR INSTRUCTIONS

Exercise - with core planning team and the community

This exercise is aimed at providing the community with a visual way to see how each of threats and vulnerabilities are related. By creating a visual model of the threat and vulnerability assessment, community members and the planning team can better see which root causes of threats and vulnerabilities are most common and/or linked to one another. This will also help the group decide on which actions they could take to address root causes of threats and vulnerability.

1. The entire group will use the information from the field-based threat and vulnerability assessment to create the threat/action model so ensure that all participants have a copy of the assessment results.
2. Prepare a very large piece of paper (as much as 8 to 10 feet in width) as the “Canvas” on which your Threat/Action model will be developed. You can prepare the “Canvas” by writing the following across the top of the Canvas:

| | | | | |
|---|--|---|--|---|
| Action to Reduce Root Cause of Threat or Vulnerability | Root Cause of Threat or Vulnerability Rankings (for both target and community) | Non-Climate Threats and Climate Hazards (e.g. Sea level rise) | Target Resource (natural or social) | Impacts (to the target and community) |
|---|--|---|--|---|

3. Have each small group that carried out the vulnerability assessment use their results to write the following information on index cards in their small group:
 - a. **The Target** – The natural or social resource target on an index card.
 - b. **Non-Climate Threats** – as identified in the Threat and Vulnerability Assessment. Put only one threat on each index card.
 - c. **Climate Hazards of concern** - (e.g. drought, sea level rise, typhoons, etc) that were identified in the vulnerability assessment as “medium” or “high” vulnerability for this target. You do not need to include climate hazards that the target has a “low” vulnerability. Put all climate hazards that had “high” or “medium” vulnerability ranking on one index card.
 - d. **Community vulnerability and ranking** – write both on one card (e.g. community vulnerability = medium)
 - e. **Impacts from the non-climate threats and climate hazards** – Be sure to include impacts to the target as well as social impacts.

- f. **Root causes of each threat** – write one per index card.
 - g. **Root causes of vulnerability rankings** for the climate hazards (e.g. high exposure, high sensitivity, low adaptive capacity). Continue writing index cards to further explain the root cause of the vulnerability (e.g. low adaptive capacity → lack of awareness).
 - h. **Root causes of community vulnerability if it is “high” or medium**. Write down the root causes of vulnerability rankings (e.g. high dependence, low adaptive capacity). Continue writing index cards to further explain the root cause of the vulnerability (e.g. no alternative incomes sources, lack of awareness).
4. After all the small groups have completed writing their information on index cards, the facilitator can ask each group to begin adding it onto the canvas under the appropriate column. Have each group tape their index cards up in all the columns one at a time. The group can now draw lines that link the threats and their root causes, and climate hazards and their root causes of vulnerability, and community vulnerability and the root causes.
 5. After all groups have taped up their index cards to the canvas, each group should present on the results of their vulnerability assessment and threat/action model results. The rest of the participants should ask questions or revise information as needed. They can also present changes they made to the community map of based on their field observation of the resource
 6. Now that the whole group has spent some time carefully looking at the causes of threats and vulnerability in detail, they can begin to develop meaningful actions that will address the root causes of both threats and vulnerability (which are often connected). The idea is to develop the least amount of actions that will address the most threats and vulnerabilities. Consider actions that will do one or more of the following:
 - i. Address root causes of threats
 - ii. Lower exposure
 - iii. Lower sensitivity
 - iv. Increase ability of the target to adapt to future climate hazards
 - v. Change how the community uses the target or increase the ability of the community to adapt to changes in the target
 - vi. Prevent vulnerability of the target or community by maintaining or improving the existing condition or preventing future threats
 7. After all groups have presented back, the whole group should discuss which resources seem to be the most vulnerable and why and which actions they recommend to reduce threats and vulnerability, and improve resilience.

Session Twenty-Three: Results Chain and Finalizing Actions

FACILITATOR INSTRUCTIONS

Exercise - with core planning team and the community (as appropriate)

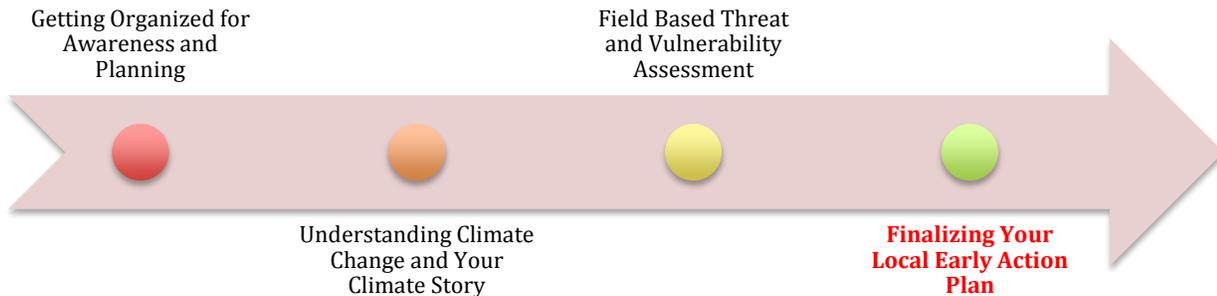
Now that the group has decided what actions they want to take to address the root cause of threat and vulnerability, they can examine short, medium, and long-term results they want to achieve from those actions. This exercise is particularly helpful in helping the group recognize which short and medium results might be more feasible to see prior the final result they aim to achieve.

1. To explore the realistic results the group is likely able to achieve over time, first draw the following table on a piece of flipchart paper.

| ACTIONS | SHORT-TERM RESULT (1-2 yrs) | MEDIUM-TERM RESULT (3-7 years) | LONG-TERM RESULT (8-15 yrs) |
|---------|-----------------------------|--------------------------------|-----------------------------|
| | | | |

2. Begin with one action and ask the group the following. Make sure the answers are realistic:
 - a. What will be the result of this action in the short term? (record the answer on the flipchart)
 - b. Based on the short term result, what will happen in the medium term? (record the answer on the flipchart)
 - c. Based on medium term result, what will happen in the long term? (record the answer on the flipchart)
 - d. If we take this action, are we achieving the short, medium, and long term results we are looking for or do we have to do something else?
3. After reviewing all of the actions, the whole group should then decide which actions will be included in the Local Early Action Plan. All actions chosen should be those that will best help reduce the vulnerability of the resource and the community. Include as many actions that the community sees important to reduce vulnerability by reducing threats. While some actions may require additional resources or technical expertise, it is important to include these if they will significantly reduce vulnerabilities. These may require additional actions to find resources and technical support to complete them.
4. If there is time to review actions developed for resources that are less vulnerable, these should also be included. All actions that seem feasible for the community to carry out can be included in the LEAP document. However, be sure to balance the number of actions with what is realistic to do and what is most important to do. Additionally be sure that the actions address the root causes for the most vulnerable resources and community members.

Step Four: Finalizing Your Local Early Action Plan



The LEAP document is intended to be a simple document of a few pages that can be used to guide actions that a community can take to start addressing climate change impacts. It will not provide technical solutions to major climate change questions such as what to do about physical structures for shoreline protection. It focuses on supporting communities to develop and pursue a simple set of actions that can be initiated by communities themselves to start to address climate change impacts. However, some actions may also be included to identify needs for additional resources or technical expertise, if they will significantly help reduce vulnerabilities. Communities may use the LEAP to help find support from external agencies and organizations that can assist with completing these actions.

At this stage, the last remaining elements to be developed are the details to support your early actions and your long-range objectives. Once you have completed these you will have all the information that you need to complete the LEAP Template. We suggest that the template be completed by a planning team rather than a larger community group.

Session Twenty-Four: Developing Your Local Early Action Details

FACILITATOR INSTRUCTIONS

Exercise - with core planning team and the community (as appropriate)

This exercise will help the planning team write a short but effective LEAP document by providing key information needed for implementation.

- I. With your planning team develop the following elements for each of your main early actions and write them in the table below:

| Action | Timeframe | Responsibility | Resources or Support Needed | Priority (High, Medium, Low) |
|--------|-----------|----------------|-----------------------------|------------------------------|
| | | | | |
| | | | | |
| | | | | |

- **Timeframe** - specify when this action will be completed (provide month/year)
- **Responsibility** – specify who will be responsible for completing this action. List all those involved and their role.
- **Resources or Support Needed** – specify any funds, technical expertise, equipment, or any other resources needed to ensure this action can be completed.
- **Priority** – specify if this action is either a high/medium/low priority for the community based on the following rankings:
 - a. High priority actions address threats and root causes of vulnerability that are urgent and severe. If nothing is done now, the impacts may not be reversible down the road and will have devastating consequences.
 - b. Medium priority actions address threats and root causes that are pressing but will not have the most impact in reducing vulnerability. These actions are important to consider but do not require immediate action.

- c. Low priority actions will have little impact on addressing the root cause of threats and vulnerability. These actions may be easy but will not build significant resilience of the community and resources over time.

Note: even if your priority actions that address the most urgent and severe causes of threats and vulnerability require extensive resources and support, it is still important to identify and include them in your plan because your community will need to work toward them to reduce vulnerabilities over time. Be sure to also include “quick wins” that the community can begin with little to no resources or support. These actions can be “no regrets” actions, which mean that under any future climate scenario (i.e. negative or not), these actions can provide benefits to the community. For example, protecting mangroves from development can provide benefits to local fisheries and provide shoreline protection. These actions, although they may not be the highest priority will help engage people and keep up things moving.

Once you have developed the details include the table into the LEAP template.

Session Twenty-Five: Developing Your Local Early Action Plan

FACILITATOR INSTRUCTIONS

Exercise - with core *planning team and the community (as appropriate)*

At this point you should have all the information you need to complete your LEAP. You have already been filling out several parts of the LEAP Template as you have been going through the sessions of this guide. Now simply complete any remaining sections and you are done.

1. Review the sections of the LEAP that have already been added to the LEAP template and complete any remaining gaps.
2. Once you have completed your LEAP, be sure to share it with local stakeholders and ask for their input. Local stakeholder groups may include village government, local institutions, church, youth groups, women's groups, fishermen groups, and village tourism management board. As appropriate for each community you may want to have a formal adoption process.

LEAP Template

7. Community Name:

8. Community Climate Story (Completed in Sub-Step 2.2)

9. Community Profile: (Completed in Sub-Step 3.2)

d. Community Background Summary

e. Natural and Social Resource Targets and their Current Condition

f. Community Map (attach to the LEAP Template)

10. Threat and Vulnerability Assessment (Completed in Step 3.3)

d. Threats and Root Causes of Threats for Target Resources

e. Describe which Resources are Highly Vulnerable to Climate Change Impacts and Why

f. Summarize any Existing Resilience/Adaptation Strategies & Community Strengths to Maintain or Build upon

11. Early Actions to Address Climate Change Impacts and Non-Climate Threats (Completed in Step 4)

| Action | Time-frame | Responsibility | Resources or Support Needed | Priority (High, Medium, Low) |
|--------|------------|----------------|-----------------------------|------------------------------|
| | | | | |
| | | | | |
| | | | | |

12. Long-term Objectives to Address Climate Change Impacts and Non-Climate Threats (OPTIONAL) (Completed in Step 4)

Session Twenty-Six: Developing SMART Objectives (Optional)

FACILITATOR INSTRUCTIONS

Exercise - with core planning team

This activity is optional and should be done if your planning team is already comfortable developing objectives. These can help to provide guidance on the outcomes your Actions will strive to achieve in the future and help you measure success. We suggest that you identify objectives for three to five years and that you follow the SMART criteria S- Specific, M – Measurable, A- Achievable, S- Specific, and T – Time-bound as outlined below.

Objectives are practical translations of the medium-term and in some cases short-term outcomes that you wish to achieve by pursuing each of your actions. If you achieve your objectives you will overcome your threats, and your community and its resources will be healthier and more resilient in the long-term.

Each key action from the VA Threat Assessment can be translated into one or more objectives by using the table below. After you have developed all the objectives that you think you need, you should go back and make sure that if you achieve these objectives you will overcome the threats to the resources that you are trying to manage and reduce vulnerability.

We recommend that your planning team develop the objectives and then share them with major stakeholders to seek their input.

TABLE FOR WRITING SMART OBJECTIVES:

Simply answer the questions in the table for each action from your Threat - Action model and you will have a SMART objective like the example below. Note each action may have more than one desired outcome and some actions may contribute to more than one outcome.

| | Action | Outcome the ACTION is trying to achieve? (develop an objective for each Outcome) | Where? | When? | Target Level of Change |
|----|--------------------|---|--|-------------------------|----------------------------------|
| 1. | Enforcement | - Reduction in violations of marine resource regulations | - In the waters surrounding our community | In the next year | 50% |
| 2. | Enforcement | - Increase abundance of target fish species | - In three villages where there is good fish habitat | In the next three years | Any Increase over baseline level |
| 3. | Education Campaign | Local community members voluntarily comply with rules | In the LMMA area | In the next 2 years | All |

Now lets write an Objective for Number 1 and test it against the SMART Criteria.

OBJECTIVE #1: Increased fish abundance within three years in communities where there is good fish habitat

- **Is it Specific?** Yes - Local communities, three villages, good fish habitat
- **Is it Measurable?** Yes - Increased abundance of target fish species, three years
- **Is it Achievement or Outcome Oriented?** Yes - Increase fish abundance
- **Is it Realistic?** Yes - The communities are interested. Fish populations can increase in three years.
- **Is it Time Limited?** Yes - Three years

IT IS A SMART OBJECTIVE!

Session Twenty-Seven: Updating Existing Management Plans (Optional)

FACILITATOR INSTRUCTIONS

Exercise - *with core planning team*

Many communities will already have existing management plans or action plans to help guide their efforts to conserve resources and improve management in their communities. If your community already has a plan, whether it's informal or formal, we recommend that you integrate the results of the VA-LEAP process into this plan.

If your community does not have a management plan, the LEAP can serve to function as a management plan. If you need to develop a management plan to comply with government requirements, the LEAP can provide a lot of key information to be included in for more formal management plans.

1. With your planning team review your existing management plan with a focus on objectives and actions.
2. Adjust or add objectives based on the results of the VA-LEAP process.
3. Add any specific actions based on the results of the VA-LEAP process.
4. Review your objectives and actions and ask the following questions:
 1. If we successfully pursue the actions we have outlined, will we achieve our objectives? If not, you may need to add additional actions or activities.
 2. If we achieve all the objectives and/or actions we have outlined, will we overcome the threats and their root causes, reduce our vulnerability to climate change impacts, and as a result improve the condition and resilience of our resources and community? If you don't feel confident answering yes, you should go back and decide if you need to develop additional objectives or actions.

Once you have updated your existing plans the process is complete. Congratulations and good luck implementing your plans.

APPENDIX ONE

References

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