The Caribbean Climate Change Adaptation (3CA) Toolkit

Guide for Facilitators

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CADRIM

International Federation of Red Cross and Red Crescent Societies

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The Caribbean Change Adaptation (3CA) Toolkit
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Strategy 2020 is guiding the actions of the International Federation of Red Cross and Red Crescent Societies (IFRC) throughout this decade. It defines three strategic aims and three enabling actions for the IFRC and its member National Societies in order to achieve a common vision:
To inspire, encourage, facilitate and promote at all times all forms of humanitarian activities by National Societies, with a view to preventing and alleviating human suffering, and thereby contributing to the maintenance and promotion of human dignity and peace in the world.
The strategic aims of Strategy 2020 are:
1. Save lives, protect livelihoods, and strengthen recovery from disasters and crises
2. Enable healthy and safe living
3. Promote social inclusion and a culture of non-violence and peace
The enabling actions to deliver our Strategic Aims are:
1. Build strong National Red Cross and Red Crescent Societies.
2. Pursue humanitarian diplomacy to prevent and reduce vulnerability in a globalized world.
3. Function effectively as the International Federation.

Table of Contents

Acronyms

CBDRR	Community Based Disaster Risk Reduction
CC	Climate Change
CDEMA	Caribbean Disaster Emergency Management Agency
CDM	Comprehensive Disaster Management
CDRT	Community Disaster Response Team
CRRO	IFRC Caribbean Regional Representation Office
DFATD	Department of Foreign Affairs, Trade and Development, Canada
DFID	United Kingdom's Department for International Development
DRR	Disaster Risk Reduction
ECHO	European Commission Humanitarian Aid Office
GIS	Geographic Information Systems
IFRC	International Federation of Red Cross and Red Crescent Societies
NGO	Non-Governmental Organization
OFDA	Office of U.S. Foreign Disaster Assistance
VCA	Vulnerability and Capacity Assessment

FOREWORD

The Fifth Assessment Report (AR5) of the United Nation's Intergovernmental Panel on Climate Change (IPCC), speaks to the possible impacts of climate change in the Caribbean as being strong and evidenced by an increase in temperature, sea levels and the intensity and frequency of other meteorological extreme events.

Climate change has the potential to intensify the negative impact of natural and anthropogenic hazards in the Caribbean. With seasonal industries and agriculture being the backbone of our Caribbean economies, we are susceptible to catastrophes and phenomenon that makes us extremely vulnerable. We must therefore do our part to mitigate the risks and dangers that are associated with disasters that can threaten our citizens and livelihoods. It is noteworthy that the effects of climate change will not be homogeneous in the region and, in some cases, it may come to represent positive impacts and new opportunities for communities.

The International Federation of Red Cross and Red Crescent Societies is aware that climate change poses a serious challenge in humanitarian work as established in Strategic Aim 1 of Strategy 2020 to "Save lives, protect livelihoods, and strengthen recovery from disasters and crises" in regions such as the Caribbean where the vulnerability to climate change is high. Since 2011, this has been a key priority for the Red Cross Caribbean Disaster Risk Management Reference Centre, which has been working to develop this Caribbean Climate Change Adaptation (3CA) toolkit that is designed to complement other disaster risk management tools such as the Vulnerability and Capacity Assessment. The aim is to identify the effects of climate change on a population and the remedial actions that could be implemented to strengthen a community's capacity to adapt to climate change.

The topic of climate change is one of upmost importance to the IFRC and continues to inform our overall strategy, frameworks and programmes. Therefore, it is imperative that Red Cross Staff and volunteers remain knowledgeable as to the challenges that are likely to affect their humanitarian work and what approaches should be taken to cope.

This toolkit is the result of efforts made and contributions by the IFRC, Partner National Societies, Caribbean Red Cross National Societies and regional external partners; and builds on the "Climate Smart Community Disaster Management Module" developed by the Caribbean Disaster Emergency Management Agency and the IFRC publication on "Integrating climate change and Urban Risks into the Vulnerability and Capacity Assessment".

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Caribbean Cooperation of the Red Cross (CCORC), President

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Acknowledgements

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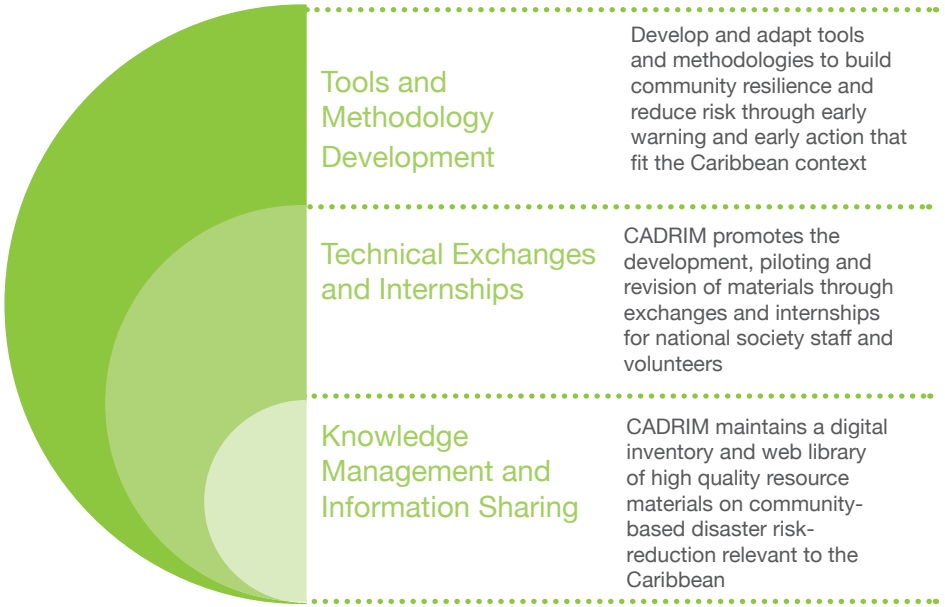
The Red Cross Caribbean Disaster Risk Management Reference Centre

CADRIM is one of four Red Cross Reference Centres in the Americas and specialises in research, systematization, validation and analysis of risk management methodologies for the English and Dutch-speaking Caribbean National Societies. A tool of the International Federation of the Red Cross Red Crescent Societies, CADRIM was established upon the behest of the Caribbean Red Cross Disaster Management Network in 2010 and builds on the best practices of the two other Reference Centres established several years prior: the Reference Centre for Community Resilience (CRREC), located in Costa Rica and the Reference Centre for Institutional Disaster Preparedness (CREPD), located in El Salvador. In 2014, a fourth Centre was established - the Reference Centre for Emergencies and pre-hospital service (CREMYAP), hosted by the Ecuadorian Red Cross.

All 4 Centres fall directly under the Learning and Innovation Unit in the Americas Zone Office, located in Panama. This Unit aims to provide services and support to 35 National Societies, and support multilateral and bilateral efforts on Learning and Innovation; all with a goal is to help National Societies to enhance their leadership, organisational systems and capacities, and consider measures to enable transformations that allow them to realise their full potential in serving the communities of which they are a part.

CADRIM's core functions are outlined as follows:



Some other Tools and Methodologies adapted and published through CADRIM

- Safer Houses Methodology
- Response and Contingency Planning: A Guide for Caribbean Red Cross National Societies
- Simulations and Drills: A ManualStrategic Targeting Methodology
- Community Disaster Response Team: A guide to help communities prepare now, respond better and recover faster

The Development Process

CADRIM develops or adapts tools and methodologies for use by Red Cross Societies and partners throughout the region. The adaptation, modification or development of guidelines for any tool must first be registered as a need from the National Societies within the region. Once the tool's content and methodology meet the objective of the National Societies, the tool development process should focus on quality, accuracy and relevance of information in adherence with global Red Cross standards.

Introduction

The Caribbean has 70% of its population living along threatened coastline and with its over 40 million people particularly vulnerable to disasters, the consequent destruction of natural habitat and infrastructure through sea level rise and hurricanes is likely to endanger the essence of many of the Caribbean economies. The region is especially vulnerable and prone to hazards of hydro-meteorological origin. It has a hurricane season that officially lasts six months and which has caused significant destruction in recent years. In addition to hurricanes, the Caribbean has experienced negative impacts from hazards such as floods, landslides, and strong rains which have caused severe damage in the "Guianas" every year since 2004.

The Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report establishes that it is extremely likely that the world is warming due to human activity, creating Climate Change. Proof has been found that the changes are already happening, and regardless of future emissions further changes are inevitable. The small islands are already feeling the impact of Climate Change, from tropical bird population changes to degradation of groundwater and freshwater ecosystems due to saline intrusion.

One of the most important tools for the IPCC to study and determine the range of impacts of Climate Change is the climate scenarios. These help to explain the relationship between climate vulnerability and the direct impacts of Climate Change. However, it is really difficult to project the scenarios to the scale necessary for the small islands so the Climate Change scenarios and projections that currently exist for the Caribbean tend to apply to the region as a whole.

Adaptation, as the process of adjustment to actual or expected climate and its effects, is the only effective option to manage the impending impacts of Climate Change that mitigation cannot reduce. Through adaptation, societies and communities can seek to moderate the harm of current and future climate risks or to take advantage of new opportunities. Adaptation can reduce the risks posed to livelihoods, infrastructure, ecosystem services and economic stability.

The Caribbean Climate Change Adaptation Toolkit and Guide is a revision of the Caribbean Disaster Emergency Management Agency (CDEMA) Community-Based Climate Change Adaptation Handbook and builds on the IFRC VCA Toolkit. It is designed to help Red Cross National Society staff, volunteers and partners work with communities by adapting the tools within the 3CA to incorporate Climate Change adaptation considerations into their daily lives and planning processes.

This toolkit aims to develop processes at the community scale that make it possible to identify climate-related risks using the regional information provided by the different organizations and local information built through a community-based participative assessment process, namely, the Vulnerability and Capacity Assessment (VCA) from the RCRC. The 3CA helps to identify the main risk elements and the Climate Change related impacts, providing the community with the information at a local scale needed to take action and develop Climate Change adaptation.

Preface

Our world is changing: can you tell? Many countries are observing shifts in natural systems which range from less agricultural lands, rapidly changing ecosystems, rising sea level to smaller and thinner ice cover. Shifts are also being observed in man-made systems where there are countless examples of increased development in coastal/mangrove areas and wetlands, challenges of overfishing and removal of large forest areas and replacement with physical infrastructures. However, despite the changes we see in the natural system, we cannot find a definitive answer as to why they are changing. Can you guess?

June, too soon
July, stand by
August, you must
September, remember
October, all over

Our environment and the seasons as we know them are changing too. Remember this Caribbean hurricane nursery rhyme ?* Do you think it remains the same? How has it changed?

The poem was a reminder that we could set our clocks on the exact time when the rainy season would occur each year. It also reminded farmers when to till the soil, plant and reap certain crops before the heavy downpours came. Seasons are becoming less predictable and weather trends more dynamic.

Our climate is changing: One of the main changes in the world today is not technology but our climate. Scientists have been debating the concept and reasons behind our changing climate for over a decade. They have been collecting climate data since the dawn of the satellite age. Current climate data has been captured for many years and now with proof that the climate is changing, scientists have gone back many years; investigating past climate records

* R. Inwards, Caribbean Hurricane Season Rhyme: Weather Lore 1898. Retrieved August 1, 2013.

to find answers to questions we are asking. Should we be concerned? Will Climate Change affect us and if so, what should we expect?

Many debates and academic battles have evolved since the concept of Climate Change – truth or fiction? For the non-scientific, Al Gore's documentary, An Inconvenient Truth,** became the supernova for Climate Change awareness and adaptation. For the most part, we think that skeptics are less vocal on the present context as with the increased observation of the changes and challenges of Climate Change. But what does Climate Change really mean? Why is it happening? How will we be affected and how can we prevent any negative impacts?

For Red Cross staff and volunteers working mostly in the field alongside the most vulnerable, we see the effects of weather events on communities and individuals and we work with them to build resilience and hope for their future. With the impacts of Climate Change it is likely that our roles will change as we seek to adapt and develop actions necessary to address Climate Change issues both at individual and community levels.

As project staff and community practitioners, we want you to have a better understanding of the concept of Climate Change so that you can help communities adequately prepare themselves for the dynamics of these changes and address the issues according to their context. This guide provides details on how to use the tools in the 3CA Toolkit. **Module One** focuses on the awareness component. By the time you are finished you will be better able to respond to questions, design your own presentation, and learn how to use references and technology to increase your understanding. **Module Two** will guide you on how to integrate Climate Change into the VCA process to adequately measure a community's risk and capacity. Finally, **Module Three** will help you to determine the actions you are best placed to consider if you want to effectively adapt to or reduce the impact of the issues identified.

** Lawrence Bender, Scott Z. Burns, Laurie David, Al Gore, et al., An Inconvenient Truth: A global warning, Paramount Pictures, 2006.

Structure of the 3CA Guide

The 3CA guide is developed to help users understand the various ways in which the tools can be used. It is divided into three modules. Each module is designed so that they can be used independently but they also complement each other. For example, use of Module Two may require a review of Module One which covers the various climate hazards and their effects on a community. Facilitators would need this information to help them conduct assessments with Climate Change considerations.

Module One: AWARENESS

The Climate Basics

- General information: Increasing an understanding of climate basics, Climate Change awareness
- Climate Change in the disaster context
- How to communicate Climate Change
- The classroom context
- Using the tools in the toolbox

Module Two: ASSESSMENT

Incorporating Climate Change into the VCA and GIS/GPS

- Review of exisiting VCA tools
- Incorporating Climate Change into VCA
- Review of the pre-designed Climate Change integrated VCA tools
- Enhancing the VCA process using Geographic Information Systems (GIS) and Geographic Positioning Systems (GPS)
- Facilitating a CC VCA Process

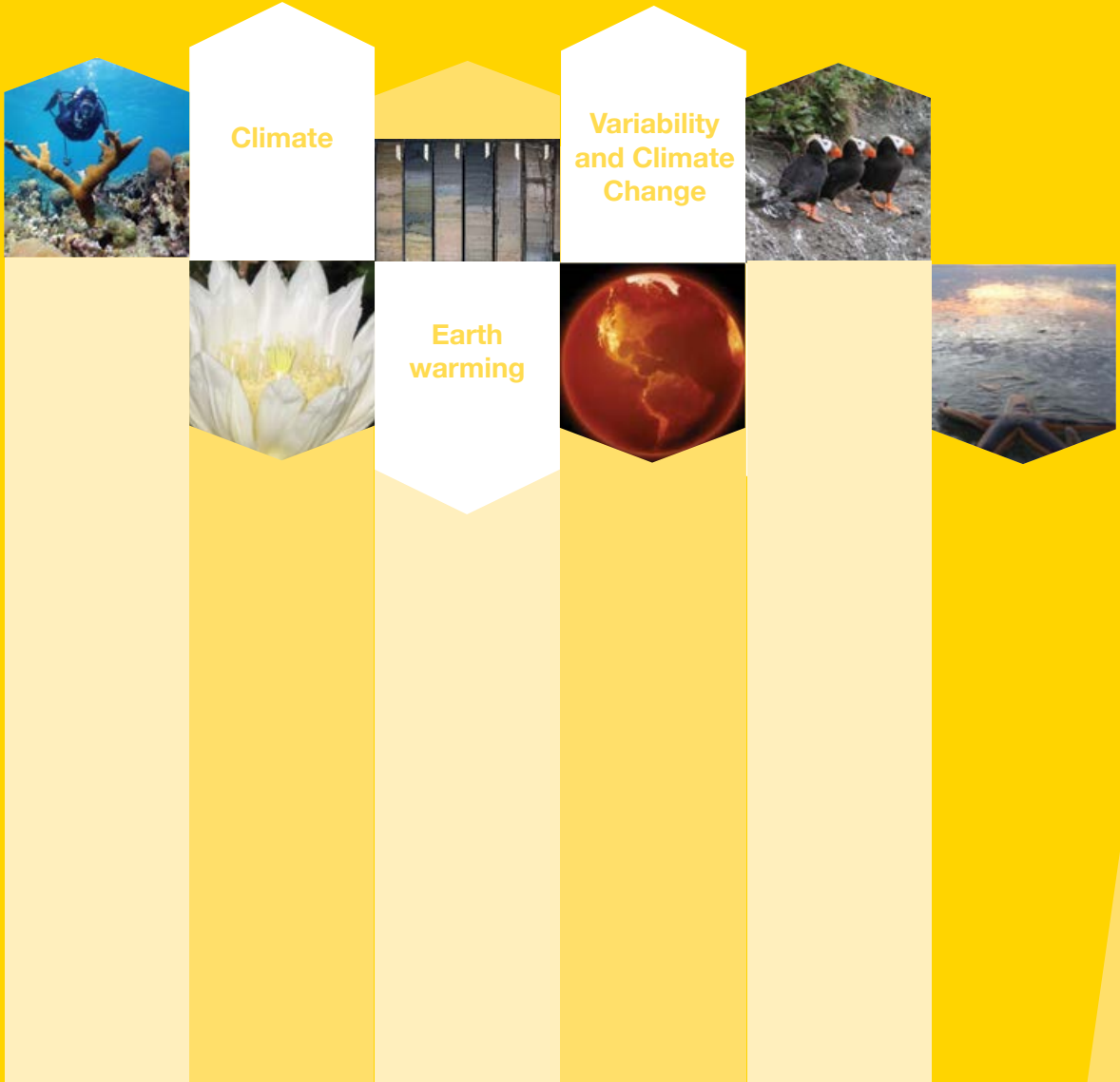
Module Three: ACTION

Adapting to Climate Change at the Community Level: using CRiSTAL and Developing Microproject Proposals

- How to empower communities to take action
- General information on CRiSTAL
- How and when to use CRiSTAL
- Finalizing the process: project and project proposal
- Facilitating and training

Module One – Awareness

Enhancing Climate Change Knowledge



How to Review Module One:

Module One aims to generate knowledge and awareness about Climate Change in general, and how it impacts the Caribbean region.

The topics covered are:

Climate Change basics

- This topic seeks to explain the context of the climate and the different climate systems on earth
- The concept of Greenhouse Gases
- Global Warming
- The relation between warming and greenhouse gases

Impacts of Climate Change.

- General impacts of the Climate Change
- How Climate Change will impact the Caribbean, and
- How Climate Change will affect different sectors.

After the detailed training is completed, Module One can be used to refresh your memory and to increase your understanding of Climate Change and the climate context. When you are confident about communicating Climate Change, you are ready to respond to difficult questions.

The Climate Context: Our Earth and Climate

Before we can discuss Climate Change or its impacts we must develop a sound understanding of what climate is. After all, if climates, as we know them, and climate phenomenon are projected to change we also need to understand the concept of the world we live in called earth.

What makes life possible on earth

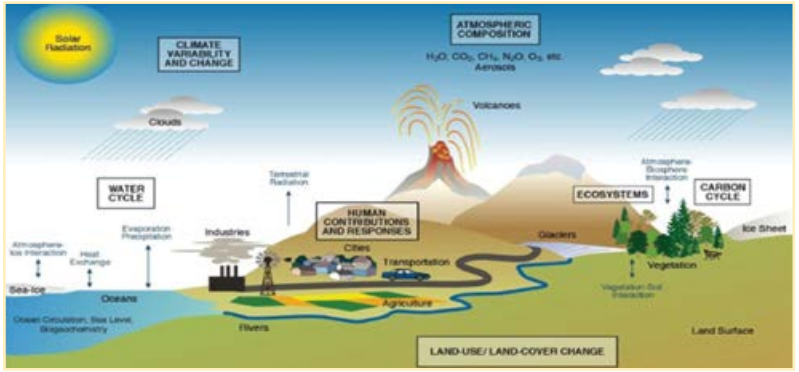
Table 1.1 factors that make life possible on earth*

Factors that make a Planet Habitable	Not Enough of the Factor	Just Right	Too Much of the Factor	Situation in the Solar System
Atmosphere Traps heat, shields the surface from harmful radiation, and provides chemicals needed for life, such as nitrogen and carbon dioxide.	Small planets and moons have insufficient gravity to hold an atmosphere. The gas molecules escape to space, leaving the planet or moon without an insulating blanket or a protective shield.	Earth & Venus are the right size to hold a sufficient-sized atmosphere. Earth's atmosphere is about 100 miles thick. It keeps the surface warm & protects it from radiation & small- to medium-sized meteorites.	Venus's atmosphere is 100 times thicker than Earth's. It is made almost entirely of greenhouse gases, making the surface too hot for life. The four giant planets are completely made of gas.	Of the solid planets & moons, only Earth, Venus, & Titan have significant atmospheres. Mars' atmosphere is about 1/100th that of Earth's, too small for significant insulation or shielding.
Energy Organisms use light or chemical energy to run their life processes	When there is too little sunlight or too few of the chemicals that provide energy to cells, such as iron or sulfur, organisms die.	With a steady input of either light or chemical energy, cells can run the chemical reactions necessary for life.	Light energy is a problem if it makes a planet too hot or if there are too many harmful rays, such as ultraviolet. Too many energy-rich chemicals is not a problem.	Surface: The inner planets get too much sunlight for life. The outer planets get too little. Sub-surface: Most solid planets & moons have energy-rich chemicals.
Temperature Influences how quickly atoms & molecules move	Low temperatures cause chemicals to react slowly, which interferes with the reactions necessary for life. Also low temperatures freeze water, making liquid water unavailable.	Life seems limited to a temperature range of minus 15°C to 115°C. In this range, liquid water can still exist under certain conditions.	At about 125°C, protein and carbohydrate molecules and genetic material (e.g., DNA and RNA) start to break apart. Also, high temperatures quickly evaporate water.	Surface: Only Earth's surface is in this temperature range. Sub-surface: The interior of the solid planets & moons may be in this temperature range.

* Lunar and Planetary Institute, http://www.lpi.usra.edu/education/explore/our_place/hab_ref_table.pdf, retrieved June 5, 2013.

The first component to consider about the earth is our atmosphere which is a layer of gases. Earth gets energy from the sun that warms the earth and allows plants to make food. But, without the special atmosphere and gases present, this would not be possible. Our atmosphere allows just the right amount of heat to penetrate into earth. Too much or too little radiation or heat from the sun would present a very different situation and earth would not be habitable.

Image 1.1 Climate Varaibility and Change



In more detail, light energy from the sun reflects on to the earth. The atmosphere only allows a certain amount of solar energy to pass through it and therefore on to earth. Some of this energy is absorbed by the earth's components (e.g., bodies of water) whilst some is immediately reflected from clouds and glaciers (note: white reflects energy, i.e., bounces off and dark surfaces absorb heat, wich allows it to penetrate). Some of the energy (long wave radiation) is re-emitted to space. However, not all the energy is allowed to leave the earth, the atmosphere traps some of this heat and this process is what keeps the earth at its ultimate temperature of a global average of +18 degrees Celsius. This process is called the Greenhouse Effect because the atmosphere acts like the covering of a greenhouse. Without the Greenhouse Effect, earth's atmosphere would be -33 degrees Celsius. At that temperature, earth could not support the diversity of life we now have, if any life at all.

How the Earth Stays Alive: The Temperature Factor and the Greenhouse Gases

In the previous section, we mentioned that the earth has a protective layer which controls the amount of solar energy entering the earth and leaving it. This layer is made up of different types of gases called Greenhouse Gases or GHG. Do you remember why we call them GHGs? Take a look at the photos in the figure below and you'll see that the layer of gas acts in the same manner as the protective sheet covering a controlled number of agricultural plants. Both processes have a similar purpose - to control heat.

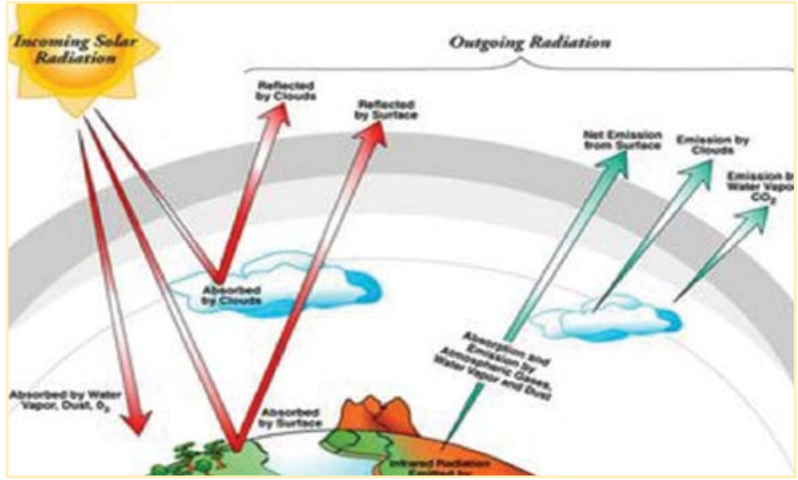
Figure 1.1

How do greenhouse gases balance Solar Energy and moderate the earth's temperature?

The sun is the fuel of all life on earth. Sunlight energy comes through our atmosphere, plants absorb that energy, use it to grow, reproduce and store some of that energy in their leaves, roots and fruits. When animals eat plants, the energy is transferred up the food chain as humans eat both plants and animals and get their energy from both sources. As Image 1.2 below shows, the heat from the sun regulates our climate, warmth, seasons and the type of precipitation (rain, snow, ice). The ocean also absorbs some of the energy with its currents taking warm waters from the equator where it is warmest, to places on earth that do not receive as much sunlight. This is a very important process for life in various places.

But just how much radiation does earth need and can tolerate if the earth's systems regulate this energy coming from the sun? Nearly one third of the incoming solar short-wave radiation is reflected back into space by clouds in the earth's atmosphere, some of this radiation does not get in at all (see Image 1.2), but bounces off our atmosphere's ozone (earth's protective layer, the ozone, prevents more harmful solar energy from filtering into earth's atmosphere). Of the energy allowed to enter our atmosphere, what is not reflected by the clouds is absorbed by the Earth and its atmosphere. The heat-trapping quality of the atmosphere, the so-called 'greenhouse effect,' is caused by gases that absorb energy leaving the Earth. This greenhouse effect is the reason our earth has the temperature that makes it habitable, otherwise it could be as cold as Mars, if all the energy was allowed to leave.

Image 1.2 Sun radiation cycle



Weather and Climate: The Basics

Weather describes the actual state of the atmosphere's conditions at a specific location and time. Wherever we are in the world, weather is described in terms of certain factors such as: temperature, wind, precipitation, and cloud cover. Additional factors used to describe weather include air pressure and moisture (humidity).

Because weather is location and time specific, it changes from day to day and from season to season. For example, it can be raining in Portland, Jamaica but sunny or windy in other parts of the country or in other Caribbean islands. Although the weather may vary from island to island on any given day or time, the islands still share the same type of climate which is an average temperature of between 28-32 degrees Celsius, year- round.

Image 1.3 Weather examples

Climate

Climate is used to describe the long-term pattern of weather conditions typical to a particular geographic region. We talk about the "tropical" (i.e., warm all year round and never snows) climate of the Caribbean, and the "temperate" (where there are distinct seasons at the same time each year, such as winter) climate of southern Europe and North America.

Climate is defined by the weather average over a particular geographic region over protracted periods (at least 30 years).

The climate describes the characteristic range of weather factors that are to be experienced in a particular geographic location in terms of temperature, precipitation**, wind, cloud cover, humidity, and air pressure. These factors will display particular patterns in their variation from month-to-month over the space of a year. These variations are called seasons. Historically the month-to-month variations in any geographic region have been relatively predictable. There might be departures from the normal, seasonal, climatic pattern for a period of a few years, but these departures tend to be short-lived in comparison to a 30-year timeframe used to define the climatic conditions.

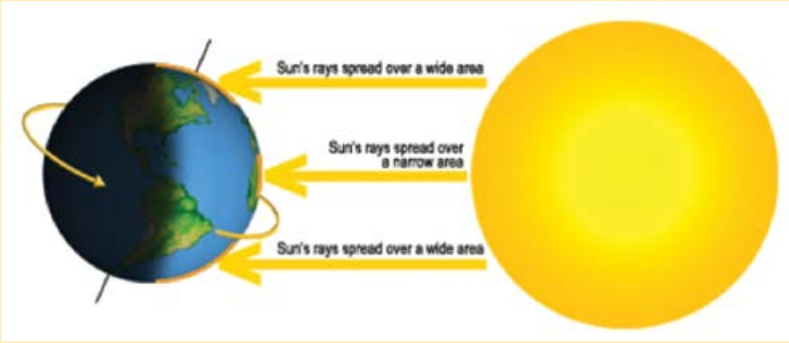
The different climates of the earth are the result of the angle of the sun and earth. The earth tilts as it goes around the sun and as a result not all parts of the earth get equal amounts of sunlight at the same time of the year (see Image 1.4), except of course the equator and those countries close to the equator. Because of this tilt, it appears that the equator is always closer to the sun, the short distance causes us to have the same amount of radiation all year round and of course the same time of weather events, and very little variation in temperature. Areas of the earth such as the North and South Poles are farther away from the sun and so they do not get equal amounts of sunlight all year. This explains why the farther away from the equator you go, the more drastic the temperature variations and the more seasonal it gets.

** Precipitation is a meteorological or weather term and is any atmospheric water that is any product of the condensation of atmospheric water vapour that falls under gravity. Precipitation forms include drizzle, rain, sleet, snow, graupel and hail (Wikipedia, http://en.wikipedia.org/wiki/Precipitation, retrieved November, 2014.)

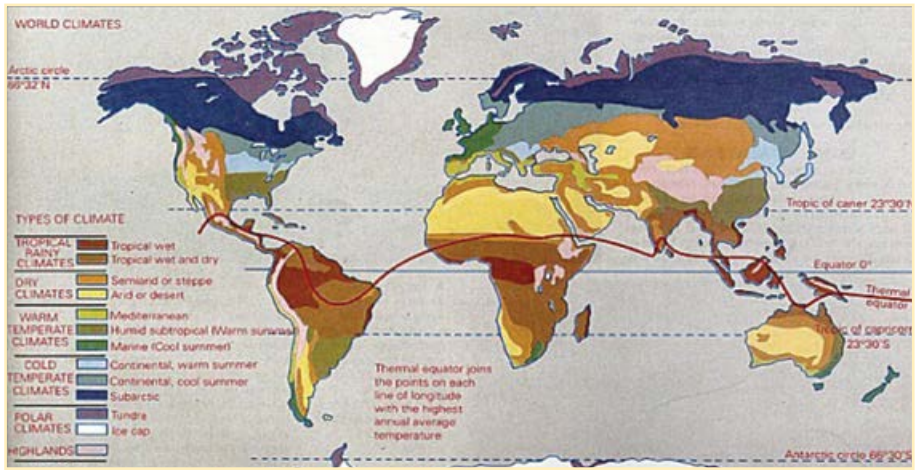
In the Caribbean, we get rains and sunlight almost at any time of the year. It is this solar variation that determines our climate. And this very concept is what can change if our climate is changing. Is this starting to make sense now? If not, hang in there, we are coming to the best part.

There is a saying, often attributed to Mark Twain, that is used to help make the distinction between climate and weather: “Climate is what you expect (e.g., dry spell in February), weather is what you get (e.g., a very wet February).”

Image 1.4 Sun´s rays



Source: Lunar and Planetary Institute, http://www.lpi.usra.edu/education/skytellers/seasons/about.shtml, retrieved June 5, 2013



Variability and Climate Changes

The behavior of climatic variables such as temperature and precipitation, wind speed and direction, humidity, and cloud cover are expected to naturally change over the years (short term). This fluctuation in the values of these variables from their average state is known as climate variability. For example, the average maximum temperature in Georgetown, Guyana during the month of July might be 32°C (89.6°F). However, as the hottest month of the year and an average temperature of 24°C (75.2 °F), July’s daily average maximum temperature will be less than or greater than the long-term average maximum and minimum values. The highest temperature ever recorded in the capital was 37.7°C (99.9°F) and the lowest 16.6°C (61.9 °F). This indicates the range over which temperatures will “vary” around the average values. The climate variability is considered stable if the long-term average does not significantly change.

So, if the natural changes produce in the average ranges in the climate variables is called variability, Climate Change is the effects produced in the climate’s variability due to the rise in the amount of the greenhouse gases. These effects can create changes faster and stronger than with just the regular variability.

Climate Change: Why is the earth warming?

Carbon dioxide and other greenhouse gases are not bad for our atmosphere. They are the reason we have a habitable climate. It is also important to note that carbon, which is one element of carbon dioxide, exists in all things - in the atmosphere, as we already know, and the oceans. Vast amounts of carbon are also stored within the Earth in fossil

fuels and rocks, and on the surface of the Earth in vegetation. In fact, all living things contain carbon, even animals and humans. How do you think carbon exists in fossil fuels? What are fossil fuels? You can find out more about carbon and fossil fuels on the Internet. Carbon occurs in the atmosphere mainly in the form of CO_2. Before the Industrial Revolution, additions of CO_2 and other greenhouse gases to the atmosphere were balanced by removals, thus atmospheric concentrations of these gases did not vary much http://www.nrcan.gc.ca/environment/resources/publications/10766

The main greenhouse gases

The main energy-absorbing or greenhouse gases, aside from water vapour (H2O), are carbon dioxide (CO_2), methane (CH4), and nitrous oxide (N2O). CH4 and N2O absorb far more long-wave radiation than CO_2, and are much more potent greenhouse gases. However, CO_2 has the greatest influence because it is much more abundant than the other two gases.

CO_2 buildup and the enhanced greenhouse effect

CO_2 concentrations in the atmosphere have increased 30% since the start of the Industrial Revolution during the 1700s. Scientists predict that atmospheric CO_2 will double from pre-industrial levels over the next 40 to 60 years. The cause of the rapid build-up of CO_2 is human activities: burning fossil fuels (coal, oil, and natural gas), agricultural practices, and deforestation. There is widespread concern that the recent dramatic build-up of CO_2 and other greenhouse gases is changing our climate. The continual build-up of these gases is expected to profoundly warm the planet.

Venus, our planetary neighbour, has an atmosphere that is 98% CO_2. Due to the extreme greenhouse effect, temperatures reach 430°C. Similar conditions would exist on Earth if all the carbon stored in rock and vegetation were to be released as CO_2.

Greenhouse gases accumulate in the atmosphere because their molecules have life spans of decades (or even centuries).

Climate Change, Disaster Context

In the past hundred years, the Earth's average temperature has risen by 0.7°C and it is almost certain that by 2050 (given past and expected burning of more fossil fuels) it will be 2°C warmer than it was before humans started burning coal, oil and gas for energy, transport and industry. While we do not know exactly how this will affect our lives and livelihoods, Climate Change is a new factor that will act as an additional stress to increase the existing vulnerabilities of many people, especially in countries that are already vulnerable because they are less developed. The different types of impacts that Climate Change is expected to have in general and throughout the region are summarized in Table 1.2 and 1.3.

Climate Change therefore presents the RCRC with a whole series of challenges, since it will affect every area of this organization's work. Climate Change will make existing problems worse, bring new risks and increase risks to people and National Societies, branches or volunteers who may have little or no experience of them. Much of this change

affecting temperature and rainfall will be fairly slow, but is already being experienced around the world in farming, fishing and pastoralism, and the passing of each decade will bring significant additional challenges. More frequent floods, and droughts and other more extreme events are also already evident, and expected to increase – although it is difficult to predict how fast the changes will take place. The problems are expected to be especially challenging in developing countries, but rich countries are not exempt. They will face increased floods, drought, hot and cold waves, problems in agriculture (including new pests and crop diseases), and possibly some new disease risks.

In developing countries the majority of the people have a strong reliance on natural resources and dependence on the weather for their livelihoods (i.e., farming, livestock and forest products, access to water, and fishing). Their livelihoods are therefore highly vulnerable. Farmers rely on rainfall for their crops and to feed their livestock. In many parts of the world, the effects of Climate Change on these livelihoods are already being felt. For example, the amount and distribution of rainfall is changing (bringing too much or too little rain), affecting crop yields, and in some instances increasing the number of diseases and pests affecting livestock and crops. Small, low-lying island countries, for example in the Pacific and Maldives, have been exposed to high risks due to increased coastal erosion and sea level rise. In the next 50 years, according to scientific modelling research and regional technical experts, the islands will disappear; communities living along the coastlines and depending on root crops are already being inundated by sea water.

Projected Impacts of Climate Change

Global Warming will exacerbate climate-related natural hazards such as floods, droughts, heat waves, and storms which are expected to become more frequent and, in some cases, more intense (e.g., tropical cyclones/ hurricanes may have more rainfall and stronger winds, and cover more territory). Such climate trends will, for many people, (especially those in low-lying areas such as the Caribbean) damage livelihoods, increase poverty and damage food security, due to increased agricultural losses. This will increase the number of people who are vulnerable to these types of hazards. In addition, some climate-related hazards such as tropical cyclones, storms, floods, droughts, heat and cold waves will affect places that have not experienced them before. For instance, there is some evidence that typhoons affecting the Philippines and Vietnam are moving southwards, affecting new areas. Hurricanes struck Brazil in 2004 and 2010 in the south Atlantic, where they had not been known to happen before.

An increase in intense rainfall in hilly and mountainous areas may also result in more landslides, particularly in areas that have been affected by deforestation. There is also evidence of landslides occurring where there is no deforestation. In the January and March 2012 floods in Fiji, the highlands community for the first time witnessed several cases of landslides and rivers drying up. This latter led to the loss of livelihood as many people depended on the harvesting of river mussels. Landslides are a significant destroyer of livelihoods, and kill many people, but usually in small numbers (so they remain a 'hidden disaster'). In some countries they often kill more people than any other single hazard. Climate Change is also expected to increase the incidence of both short- (seasonal) and long-term droughts (build-up of dry years that lead to a serious disaster), and to affect areas that have not had much experience with droughts.

Table 1.2 How Climate Change is expected to affect sectors within the Caribbean

Climate Change and Health	• Increased flooding can lead to contamination of water sources and give rise to water-borne diseases • Higher temperatures may create favorable conditions for vector-borne diseases • Higher temperatures/drought reduce crop yields affecting nutrition and leading to lower immunity in children and increasing health risk for the elderly and persons living with non-communicable diseases • Heat waves can badly affect individuals and populations, and can cause death
Climate Change and Agriculture	• Hurricanes and storms will damage crops and livestock, increasing losses and the risk to food security • Temperature increase will likely damage heat-resistant crops and animals • Drought will result in increased agricultural production costs and food security risk • Affect/increase government spending • Increased importation of goods
Climate Change and Natural Resources	• Coastal erosion, loss of beaches due to storm surges and sea level rise • Coral bleaching leading to coral mortality is likely to result in a reduction in fish stock • Loss of land due to slope erosion • Loss of trees and crops due to storms and hurricanes Deforestation resulting from drought • Changes to river-flow levels, impact on fresh water resources, e.g., crayfish, mullet fish
Cimatle Change and Social Security	• Economic pressures on government and the private sector could result in job losses • Increased crime, break-ins and aggravated assaults • Domestic violence • Migration and more parents working away from home can result in greater delinquency among children and more children being vulnerable to harm
Climate Change and Tourism	• Warmer temperatures which may result in altered seasonality, heat stress for tourists and increased energy costs • Increased health impacts such as infectious and vector-borne diseases leading to increased health advisories for Caribbean countries • Risk of damage to tourism facilities leading to increased insurance costs/loss, business interruption costs as a result of increased frequency and intensity of hydro-meteorological disasters • Competition between tourism and other sectors over scarce water resources • Loss of beach area, higher costs to protect and maintain waterfronts and sea defenses • Sea surface temperature rise and increased coral bleaching contribute to marine resource and aesthetic degradation in dive and snorkel destinations • Loss of historical architectural, archaeological assets and natural species linked to destination attractions
Climate Change and Tourism	• Increased migration and overcrowding in urban areas, due to lower agricultural yields and the need to diversify • Increased employment demands and crime • Higher energy outputs as cities tend to be warmer, and will become warmer with global warming, increased costs for cooling • Job losses as companies diversify to reduce cost of production and services • Increased disaster effects and floods from surface run-offs as cities have less infiltration capacity (percolation of surface water into the ground) due to paved roadways-walkways, fewer trees
Climate Change and Gender	• Reduces the capacity of single women to recover when affected by disasters • Raises concern about gender roles and dominance, shared resources • Raises concern about the coping capacity of males who are the breadwinners of their families and how they will cope with loss of income • Raises concern for the well-being and welfare of different gender cohorts (age groups – youth, middle aged, elderly, etc.) • Women could be out of jobs due to migration of informal sector, e.g., fishing • Increased temperature may impact on females, public transport, work and health

Table 1.3 Climate Change impacts on communities

Auto Protection	• Actual coping strategies may not work due to changes. • Exposure to climate-related hazards of households and entire communities can bring new vulnerabilities or reinforce the existing ones.
Civil Protection	• If actions are not taken, the civil protection institutions may not have the tools to adapt to Climate Change. • The intensity or frequency of climate-related hazards can surpass institutional capacities.
Governance	• If the politics and local governments are not addressing Climate Change as a public matter, the communities will not have the tools to develop Climate Change adaptation actions.
Livelihood	• If the politics and local governments are not addressing Climate Change as a public matter, the communities will not have the tools to develop Climate Change adaptation actions. • Livelihood loss from agricultural damages. • Damages to small business operations. • Damages to business can result in job loss and loss of income to families. • Reduced employment which can result in vulnerable households becoming poorer. • Youth unemployment issues exacerbated which can lead to social issues such as teenage pregnancy and delinquency. • Malnourished children and families. • Lack of social security and services. • Regression of communities.

For more references about Climate Change and its effects, you can review the IPCC's Fifth Assessment Report, What's in it for Small Island Developing States at this link: http://capacity4dev.ec.europa.eu/public-environment-climate/document/ipcc-ar5-whats-it-sids

Regional Impacts of the Climate Change in the Caribbean.

5 things to know about Climate Change

1. The Caribbean is a minute contribuitor to global greenhouse gas emissions, but will be amog the most severely impacted.

2. We are already experiencing its impacs. More frequent extreme weather events, such as the 2013 rain event in the Eastern Caribbean; the extreme droughts being experienced across the region, with several consequences in places like Jamaica; the 2005 flooding in Guyana and Belize in 2010. And further Climate Change is inevitable in the coming decades.

3. Inaction is VERY costly! An economic analysis focused on just three areas - increased hurricane damages, loss of tourism revenues and infrastructure damages -could cost the region US$10.7 billion by 2025. That is more than the combined GDP of OECS members.

4. These risks can be managed by taking "no regrets" actions - development actions we must take in any event. So we must build our infrastructure to withstand more intense weather events, select crops that can withstand extreme conditions and climate - influenced opportunistic pests, and transform our planning framework to improve our resilience.

5. Climate Change is a fossil-energy related problem. Fossil fuel consumption is a major driver of Climate Change. It also costs the region US$37 million of its foreign exchange earnings and further reduces the potential for economic growth. Employing renewable forms of energy will allow us to tackle two big problems: Climate Change and economic competitiveness.

Source: Caribbean Community Climate Change Centre, 2014

Table 1.4 Climate Hazards in the Caribbean: Trends and Expected Impacts.

IPCC Report Regional Impacts of Climate Change	
Climate Hazard	Projected Impacts
Sea Level Rise	• Likely to cause salt water intrusion into fresh water systems • Decreases the availability of fresh water to communities • Causes forced migration as coastal areas become inundated • Increased flood risk, causing death, injuries and loss of property due to flooding • Increased economic costs for coastal protection
Drought/Water Resources*	• Likely increase in dry spells • Reduction in the quality of agricultural produce, lower yields • Increased mortality of livestock • Increased risk of bush/forest fires • Less water availability for domestic use • Increased food and water shortage, malnutrition • Increased illnesses and even deaths from water- and food-borne diseases • Negatively affects the educational system and services (children not being able to attend school) • Outbreaks of diseases due to insufficient water for drinking and hygiene practices
Increased Tropical Cyclone/ Hurricane Activities	• Increased runoff from slopes which will likely increase sedimentation and pollution of the ocean and coral reefs • Increased potential for landslides • Increased flooding • Strong winds will damage crops and structures, critical services (e.g., power lines, communication) • Lightning can affect services, sources of energy, cause death from shocks, cause fires • Storm surges and damage to coastal areas, fisher folk beaches, boats, homes, businesses • Loss of livelihood; crop damage, livestock death • Food insecurity after the disaster; increased cost of food due to scarcity
Temperature increase	• Coral bleaching • Increased migration of native species** • Increased invasion of non-native/alien species • Increased health risk to vulnerable groups • Heat waves will likely cause death • Impacts of non-heat resistant crops • Ecosystems and habitats are likely to be vulnerable to temperature variations and increase***

Measuring Climate Change

While it may not be critical for everyone to understand the scientific reasons why we can say the climate is changing, we see the changes in many ways. We are able to measure those changes visibly, tangibly and by proving through observations and science that it is not an idea but a fact. This section highlights some of the ways Climate Change has been measured. It looks at how we measure change today by taking a look at changes in our past and shows how we use that information to predict the likely outcomes as well as to determine what mitigation and adaptation strategies to implement at government and policy levels and finally within communities.

Before you absorb the information in this section, be reminded that the 3CA guide for facilitators is just that, for you. It is important that you are aware of the science of Climate Change and some relevant facts. How you choose to communicate Climate Change with the information you have is entirely up to you. Your audience will vary from location to location but what must be certain is that you have the appropriate information and knowledge to respond to questions by your audience and those you work with.

Evidence of Climate Change is linked to how information is gathered on the changes in our climate and weather patterns. These are based on observations over decades, trends, patterns and chemical and physiological research. In this short section we will observe some ways in which climate data is collected. Based on the evidence of Climate Change and the observed trends, you can make your own assumptions about the relevance of these changes in your area.

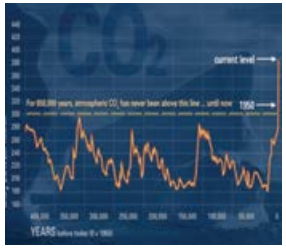
* IPCC Fourth Assessment Report, 2007.
**A species that has been introduced to an environment where it is not a native or is silent, and whose introduction causes environmental or economic damage or harm to human health. IUCN. Retrieved July 16, 2013 http://www.iucn.org/about/work/programmes/species/our_work/invasive_species/
*** IPCC Fourth Assessment Report, 2007

Scientists collect evidence from ice, tree rings, sediments, sea surface temperatures, measuring carbon levels in the atmosphere and the use of satellite images and data to show that something about our climate today and the rate of change is very different from our climate 50 years ago. It may not matter why it is changing but for us, the change is critical if we are to survive in the future.

Measuring of the CO_2 concentration

Ice measuring

Image 1.5



This graph (Image 1.5), based on the comparison of atmospheric samples contained in ice cores and more recent direct measurements, provides evidence that atmospheric CO_2 has increased since the Industrial Revolution *

We will remember that CO_2 is the main greenhouse gas that is responsible for the habitability of our climate. However too much CO_2 is likely to cause an increase in the temperature of a planet. Once it was discovered that CO_2 might be responsible for the level of warming in our atmosphere and the changes in the global temperature, climate scientist started collecting data about CO_2 increase.

It was discovered that the CO_2 increase has risen from 280ppm to over 380ppm since the 1950s. How do scientists know that?

* National Climatic Data Centre. Paleoclimatology data: Retrieved July 16, 2013 NOAA http://www.ncdc.noaa.gov/paleo/icecore/

They relied on ice and other organisms from thousands of years ago. Drilling through ice, thousands of feet deep in Antarctica and the Arctic, scientists were able to measure the amount of CO_2 from thousands of years ago. The graph on the left shows the rise in CO_2 since the 1950s and the constant levels of CO_2 before the 1950s (the industrial period).

You may ask how we know what period the ice dates from. See the image 1.6 on the right. Each year layers of ice are formed during the winter which is followed by the summer season. The ice in the winter is denser than that in the summer and therefore has a cloudier layer while the ice in the summer season is thinner and lighter. This pattern is repeated yearly. Ice cores also tell us if the summer was warmer or longer based on the clarity and the thinness of the ice. Way cool

Image 1.6

Image courtesy of US Geological Survey. Retrieved July 18, 2013. http://international .usgs.gov/ipy/images

Tree rings

Tree rings, like ice cores, provide insight into past climates. Each ring indicates a year. If the growing season was long, moist with ample rain, the rings are broad. If the growing season was short, dry with variation in rainfall, the rings are tighter. According to Jacoby and D' Arrigo**, Tree-ring measurements can help to distinguish anthropogenic (caused by human beings on nature) from natural environmental change. These data can be used to determine whether recent climatic changes are unusual

** Gordon C. Jacoby and Roxanne D. D'Arrigo. "Tree rings, carbon dioxide and climate change"

Image 1.7

Photo courtesy of Peter Kolb, Montana State University.
Tree rings. Extension.org. Retrieved July 18, 2013: http://www.extension.org/pages/33763/tree-growth

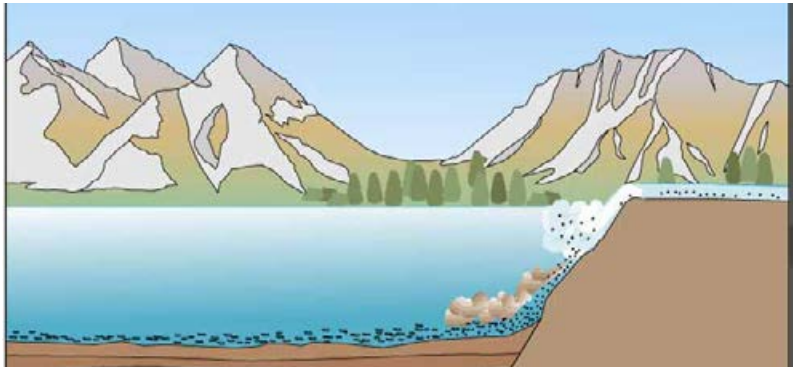
and possibly due to anthropogenic effects, specifically, increasing CO_2 and other trace gases, (e.g., see ref. 6) or are still within the range of natural climate variability.

River and lake sediments:z River and lake sediments provide varying types of data about past climates and seasons. Scientists (Paleoscientists) collect cores of sediments, similar to ice cores. Lake sediments can provide information about the wet season and dry season, the length of the rainy season, periods of warm climate or the Ice Age based on biological remains, types of vegetation (pine forest versus grassland), etc. [***]

Satellites

*** USGS. Global Change and Climate History: Evidence of Climate Change over the Last 10,000 Years from the Sediments of Lakes in the Upper Mississippi Basin. US Geological Fact Sheet FS-059-99. April 1999. Retrieved July 18, 2013 from http://pubs.usgs.gov/fs/fs-0059-99/

Image 1.8

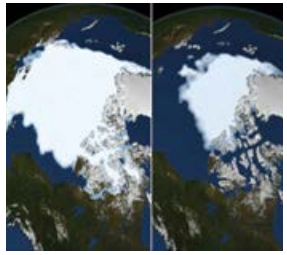


Satellites, as part of the global array of networks for monitoring Climate Change and its impacts, provide a unique and critical global perspective in terms of Earth observations. As displayed in the images 1.9, satellites are now used to monitor changes in polar sea ice and glaciers, emissions of greenhouse gases related to deforestation and industrial processes, temperature changes, sea level rise, and other parameters[****].

Satellites record changes in atmospheric conditions over time, oceanic temperatures and currents and terrestrial changes; change in vegetation, species composition, migratory patterns and climate influence on earth's system and components.

**** WMO. Space and Climate Change: Use of Space-Based Technologies in the United Nations System. World Meteorological Organization, 2011. Retrieved July 19, 2013 http://www.uncosa.unvienna.org/pdf/pub/WMO-1081-SCCE.pdf

Image 1.9



Satellite images record percentage rate of Greenland ice sheets. Scientists using satellite imagery have said that Greenland ice sheets are melting at an alarming rate with75-80 percent of the ice already melted . Photos: NASA
Audun Beyer-Olsen. New Research: 80 Percent of Polar Ice Gone, published February 22, 2013. Retrieved July 19, 2013. http://www.zeeburgnieuws.nl/nieuws/mb_arctic_melt.html

Module Two – Assessment

Introducing the Vulnerability & Capacity Assessment Methodology

Module Two provides the tools to elaborate a community assessment that takes into consideration elements of Climate Change as future hazards, impacts, and adaptation process.

The topics covered are:

The Vulnerability and Capacity Assessment

- Introduction to the VCA process
- The VCA´s Critical Path
- Why and how to incorporate the Climate Change into the VCA
- The VCA tools

GIS and GPS

- What´s the GIS process
- Use of the GPS in the field
- How to elaborate community based maps using the GPS and GIS

Module two could be used as a field guide for the community processes, it also gives the templates necessary to develop some of the tools of the 3CA, this module is complete with the “Assessment GIS and GPS Practical Guide”

A Process for VCA: Moving from Investigation to Action in 12 Steps

Level One: National Society Support

1. Understanding why a VCA is being proposed
2. Sensitizing (of National Society leadership, branches, partners)
3. Setting up of a team to facilitate VCA process
4. Setting the VCA objectives

Level Two: From Assessment to Planning

1. Planning the VCA
2. Preparation Phase
3. Using the investigation tools with the community
4. Systematizing, analyzing and interpreting the data
5. Returning information to the community and deciding priorities and actions for transformation

Level Three: From Planning to Action

1. Turn vulnerabilities into capacities through practical actions
2. Recommendations and report writing for local authorities, donors and partners
3. Programme implementation: risk reduction projects with the community*

* How to do a VCA, p. 21, IFRC; Integrating Climate Change and Urban Risks Into the VCA, p. 45, IFRC

According to the "How to do a VCA" booklet, it is important to note that due to its highly participative nature, those leading the VCA exercise should be prepared for any eventual outcome that the community highlights as a priority – whether it is disaster risk reduction, health, income generation or an area outside of the mandate of the organization leading the VCA – many of which cannot be foreseen or controlled. As a result, strategic partnerships should be developed before the assessment begins, in order to address outstanding issues identified by communities or to advocate with government for changes.

When setting objectives (**Step 4**), the National Society leadership, branches and volunteers should be aware of how Climate Change can affect different areas of the country. During the planning stage (**Step 5**), sufficient resources should be available to build the capacity of the National Society and the community. For **Step 7**, it is important to consider the order in which the revised tools that will be presented in a later section of this module should be presented. **Step 10** considers the practical solutions for addressing the risks identified and should take Climate Change into account.

The VCA process is carried out using qualitative and quantitative tools that allow the systematization and analysis of data related to the vulnerability and capacity of communities. A list and description of the tools used is shown in Table 2.1

Table 2.1. VCA tools

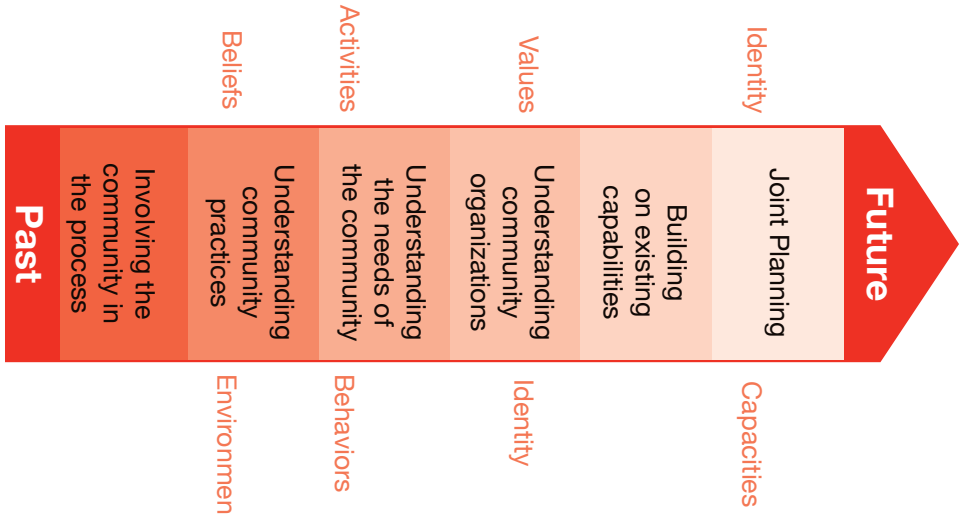
Tool	Description
Review of Secondary Sources	A review of secondary sources means collecting information that already exists, usually in the form of written reports or documents. It provides an overall picture of the community in which the VCA is going to be carried out. This review should be done prior to any field work, as the findings may influence the types of tools you choose to use in a given community.
Community Baseline Data	This is a list of questions designed to obtain much of the information needed for the creation of baseline data. It is important to undertake it early on in the process because it enables you to compare the situation before and after risk reduction projects have been implemented.
Semi-Structured Interview	A semi-structured interview is a form of guided interview in which only a few questions are decided upon ahead of time. The questions are open-ended, with the aim of stimulating an informal discussion on a given topic. This interviewing technique can be used both to give information (such as raising awareness of tuberculosis) and to receive information (such as finding out what people know about tuberculosis).
Focus Group Discussion	A focus group discussion is an organized dialogue between a selected group of knowledgeable individuals in a community to obtain their views on and experiences of a given topic. It is particularly suited to obtaining several perspectives on the same topic. Focus groups also provide insight into people's shared understanding of everyday life and the ways in which individuals are influenced by others in a group situation. However, problems can surface when attempting to separate the individual view from the group view. It is very important that the facilitator has good group leadership and interpersonal skills in order to moderate such a group successfully.
Direct Observation	Direct observation is a useful research tool as it helps the VCA team to understand the context in which the information is being gathered. All members of the VCA team should be constantly taking notes on what they are observing. It is essential to provide as much detail as possible and to describe the circumstances and the context that led to certain observations. This will allow others to assess the reliability of the information. When carrying out direct observation, you need to confirm that you have properly understood what you observe as it is easy to misinterpret what you are seeing.
Mapping	Maps can be made by a community to indicate the position of risks and hazards. They can also be used to understand what a community has in the way of resources and where they are located. Maps are also useful for stimulating discussion among community members about important aspects of the community. They can help a community to analyze potential problems and solutions.
Transect Walk	A transect walk involves walking through a community to observe the surroundings, people, land use and resources. The route taken can be determined by drawing a line on a map of the locality that goes through or "transects" all zones in order to gain a representative view of the community. A transect walk is usually carried out early in the research process because it gives you an overall view of the community and helps you to observe things that may require further investigation later on during interviews or group meetings. The tool is even more effective when carried out in the company of community members.
Seasonal Calendar	For a seasonal calendar, a chart is created with the months of the year along the horizontal axis and the events and activities significant to the community listed in the vertical axis. Completion of the chart by the community helps the VCA team to see the hazards and risks in terms of when they occur. The analysis can help a community to rethink its living habits according to its vulnerability to hazards.

Historical Profile/ Historical Visualization	With a historical profile, a community can build up a picture of past events, track changes in the environment and behaviors and understand causal links. Awareness of these patterns can influence the decisions that community members take when planning projects. With historical visualization, the community creates a chart showing how key aspects of their lives have changed over time. It can show up changes in housing, trees, river levels, livestock and hazards and helps people to think about how their susceptibility to certain risks may continue to change in the future. It is a good starting point for a discussion on what projects would be relevant for the future.
Household/ Neighborhood Vulnerability Assessment	This tool is useful for helping households – and by extension neighborhoods – to assess their level of vulnerability so that action can be taken to reduce it. It assists in assessing how vulnerable the household/ neighborhood is in relation to likely hazards and risks, taking into account key factors such as type of housing, rivers, evacuation routes, electricity, gas and drainage.
Livelihoods Analysis Coping Strategies Analysis	Livelihoods analysis and coping strategies analysis look at two separate but closely related issues. The tools can be implemented separately or together. Livelihoods analysis creates an inventory of a household's assets and how they are applied as a "bundle" to its income earning. It is a powerful tool to identify the areas of a household's vulnerabilities and what capacities it has to protect itself from hazards. Coping strategies analysis focuses on what people do when they are already affected by a hazard (e.g., drought). Coping strategies are what come into play when dealing with the hazard. They are what families (and communities) rely on to develop means to maintain their livelihoods during and after a disaster.

Institutional and Social Network Analysis	This tool helps to gauge people's perceptions of the role and significance of various organizations within the community. It can stimulate discussion leading to identification of the role each organization can play not only in time of disaster but also in relation to disaster preparedness and mitigation activities.
Assessing the Capacity of People's Organizations	Listing the key organizations in the community, such as religious bodies, schools, financial committees, hospitals, coordinating bodies and local government can help to identify the various types of support available to the community in time of crisis. This can be used to gradually build up a picture of local capacities. It is closely linked to capacity mapping.
Venn Diagram	Venn diagrams are designed to collect social data by using circles to show the links or relationships between different parts of a community or institution. Because they reveal similarities and differences between institutions, partners, people and issues within a community, they can be useful in identifying problems and possible solutions. Venn diagrams are especially relevant for institutional analysis as they can help to identify specific organizations that could be involved in implementing a community action plan or specific risk reduction projects.

Source: VCA toolbox. IFRC 2006

The VCA´s Critical Path



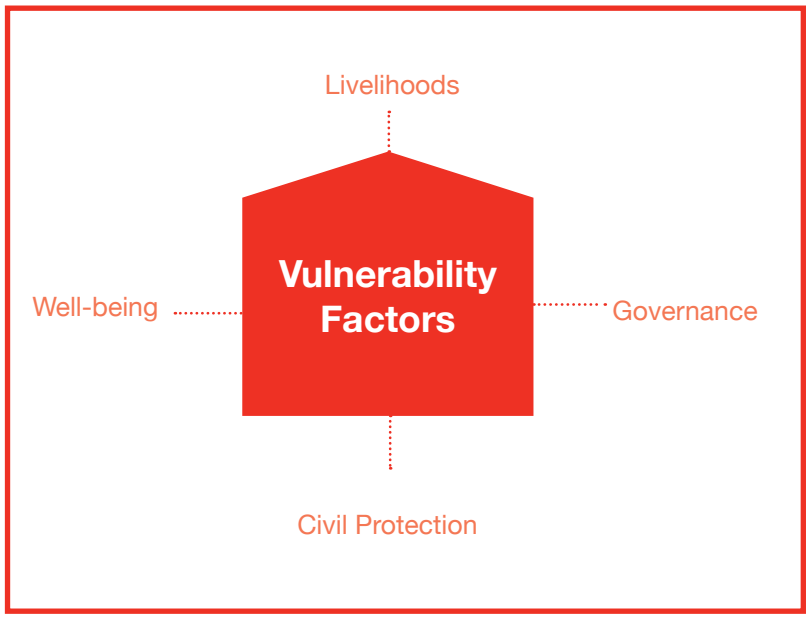
Source: What's the VCA, IFR 2006

The critical path is the process that anyone who wants to do a VCA process or apply the 3 CA Toolkit must follow in order to correctly gather the information needed for the assessment. In addition, the critical path gives you the elements to take into consideration in two ways:

Outside the community: The elements shown outside the arrow in the critical path are the ones you need to analyze from the community viewing them as an outsider. Basing your analysis of the information gathered throughout the entire process on the elements from the critical path will allow you to do the linkage between the different data and to get a deeper understanding of the community.

Inside the community: The process explained inside the arrow of the critical path describes the correct way to approach a community. Taking into account each of the steps translates into a successfully participative community-based assessment.

Image 2.1



The vulnerability factors are the elements within the community that if they are reduce or interrupt in somehow, the vulnerability will be increase, so to archive resilient in the communities is necessary for this factors to be increase or develop. In the table 1.3 you will find the Climate Change can affect this vulnerabilities factors.

Why Integrate Climate Change into the VCA

As our planet warms, existing vulnerabilities are worsened by the increased threat from climate trends such as changing temperature and rainfall patterns that affect livelihoods, health and food security with more frequent and/or more intense climate-related hazards. In the Caribbean, these intensifying hazards include hurricanes, tropical storms, drought, flash floods, strong winds, storm surges and rising temperatures. Unless Climate

Change is considered during VCA and in the development of communities, there is a danger that risk reduction efforts will be undermined. Disaster impacts not being properly assessed could lead to great proportionate losses and casualties.

The review and modification of the VCA tools to include the topic of Climate Change is to ensure that VCA-led investigations are thorough, and support community-led actions in the context of a warming climate.

1. Climate Change will likely disrupt lives and slow the growth of community development and efforts to build resilience. New VCA interventions not reflecting the priorities and challenges that will be brought about by increasing climate hazards, such as drought and temperature increase, will prevent proper interventions to ensure communities are aware of new risks and can take steps to prevent or reduce these risks. Integrating Climate Change into disaster risk-reduction and the building of community resilience is a global approach of the RCRC to ensure that the RCRC continues to reduce disaster impacts and improve livelihood security of communities.

2. This module should not be seen as a Climate Change VCA but one which provides VCA tools that incorporate Climate Change. We endeavor to highlight options for using the guide that will ensure that the VCA methodology can be easily adapted with slight alterations. The reason for the pre-designed tools is to provide a foundation and a base for integrating Climate Change into the VCA. As you become comfortable with the methodology you can develop your own tools and analysis with community members. However, full guidance on how the VCA tools should be used effectively are available in the VCA Toolbox with Reference Sheets and can be accessed at http://www.ifrc.org/Global/Publications/disasters/vca/vca-toolbox-en.pdf

3. We have included Module One in this guide in order to help facilitators correctly interpret Climate Change concepts and respond to problems raised by the community. However this guide is not meant to solve all the enquiries on Climate Change. Therefore the facilitator will require some assistance from experts in how to deal with Climate Change in the VCA. How to source help and analyze some data is covered in topics on the different VCA tools.

Analyzing the Climate Change Information Collected from the VCA Process

1. The lack of any effective or standardized monitoring and evaluation framework for VCAs and outcomes is a key problem. Some NS and regions have devised their own templates for Monitoring & Evaluation which could be strengthened and exported elsewhere. Many NGOs face similar M&E issues. It is strongly recommended that the RCRC initiate discussions with other organizations to develop a global reporting and evaluation system to collate results from all organizations that use VCA or similar processes.

2. The task of integrating Climate Change into the VCA process creates a challenge to some NS and VCA facilitators. To make the process simpler some pre-design tools were created with Climate Change adaptation considerations. They can help to collect information on the past in order to better predict

responses for the future and measure the potential capabilities and resources of the community.

3. The analysis process is simplified with the use of data form spreadsheets. This process will be explained in more detail in the analysis section of each tool.

List of VCA tools covered in this section

1. Secondary Sources
2. Direct Observation
3. Semi-structured Interview
4. Focus Group Discussion
5. Mapping using GPS and GIS
6. Historical Profile
7. Seasonal Calendar

A full review of the VCA, the VCA tools and How to do a VCA can be found on the IFRC website. The VCA Toolkit is presented in four IFRC manuals; What is VCA*, VCA Toolbox with Reference Sheets**, How to do a VCA*** and the VCA Training Guide****.

* www.ifrc.org/global/publications/disasters/.../vca/whats-vca-en.pdf
** http://www.ifrc.org/Global/Publications/disasters/vca/vca-toolbox-en.pdf
*** www.ifrc.org/Global/Publications/.../vca/how-to-do-vca-en.pdf
**** www.ifrc.org/Global/Publications/.../vca/how-to-do-vca-en.pdf

Direct Observation

Direct observation is a non-intrusive method of collecting information about a study area (community). The observer listens, sees but does not interfere. It is a useful tool, in that it helps the facilitator/observer to collect information of physical conditions, environmental issues, social cohesiveness or disparities, and begin to assess the severity and risk within the context of Climate Change. Climate-related disasters and trends will increase the risk and intensity of potential disasters. For example, a community surrounded by slopes on which farming is carried out, during heavy rains and floods will be at a greater risk of landslides and soil inundation. In addition, roads could be blocked and farmers could lose their crops due to the looseness of the soils. Assessing these risks in the context of Climate Change allows the facilitator to:

- Use additional data to measure the frequency of these events
- Consider the best intervention and adaptation strategies based on not only the current context but also the future impacts
- Assess the readiness and resilience of the community to recover from disasters

Be reminded that no single event or change is caused by Climate Change, hence do not make assumption that any change or event observed in a community is the result of Climate Change. For example, with an outbreak of malaria, an assumption could be that the increased temperature is causing the anopheles mosquitoes to multiply and that is the reason for the malaria. Under normal conditions changes will

occur and sometimes incidents happen under relatively normal conditions. A malaria outbreak in a community can occur because it is summer or there is a drought thereby causing water shortage and standing water in rivers, catchment areas, or holding containers. In such a situation, increased humidity in some areas can create favorable conditions for the incubation of the female anopheles mosquitoes which cause malaria. The data collected however can be used to make inferences when compared with the results from other VCA tools. In this scenario, the shortage of water created standing waters which caused the favorable conditions for which mosquitoes reproduce. This information is critical when considering Climate Change if under normal conditions the community experiences a breakout of malaria then under extreme conditions it is likely that malaria outbreaks can be increased. The appropriate action therefore could be to eliminate the opportunities and potential breeding sites of the anopheles mosquito.

Collecting information using Direct Observation

During direct observation it is common for an observer to be present. They move, sits passively and records as accurately as possible what he/she sees, what is heard and all that is going on. For example, the observer may go by the football field or community centre where a number of community members may gather to interact. The informal sector establishments are a good place to observe how services are utilized by community members; transport systems and the dynamics of the economic environment.

Techniques and tools for collecting information when doing Direct Observation

The observer can collect information using a video recorder (camcorder), camera, or the reliable notebook and pen. The number of categories depends on the information you want to collect. Be objective rather than subjective. One way to avoid subjectivity is to have detailed categories rather than having broad categories; being “specific” rather than “too general”.

Direct observation is a very effective method of data collection because it is carried out in the setting or location, observing an ecological zone in context. It is recommended that the observer blend him/herself into the scene and become “a fly on the wall”. A reference sheet has been provided which highlights some broad categories which could be considered. It is not exhaustive and there may be some observations made that are not currently identified on the form. The sheet can be amended to include additional areas observed. The Direct Observation Sheet is intended to capture the observations made immediately after the task has been completed. It is not recommended that too much time be spent filling out this sheet whilst in the community.

Direct Observation Sheet

Date:	**Start – End Time:**
Name of Observer:	**Organization/Role:**
Name and Location of Community:	
Demographic Information	
Distribution of the population (age, work, gender). Daily routine (school-aged children in school, adult present with children at home, persons working in the fields, etc.). Family structure (nuclear or extended family, single parent headed households). Community interaction.	
Infrastructure	
Types of housing and other infrastructure (e.g., use of latrines). Construction materials, design and proximity of buildings. Types of roads (quality, ability to resist rainfall, erosion and flooding). Green spaces and playgrounds. Easily identifiable emergency shelters. Sports facilities. Access to basic services (electricity, water, gas). Communications access (telephone, mobile network, Internet coverage).	
Health, Sanitation and Other Essential Services	
Sanitation (sewers, running water – availability, functionality and type). Health and nutritional status of children. Availability of electricity, water and telephone. What basic services exist? Distance people have to travel to schools and health centres. Health of animals in the streets. Areas that could be breeding grounds for mosquitoes and rodents. Waste disposal practices. Proximity of businesses, markets and institutions.	

Daily Activities	
What do people eat? Where do they shop? Religion – churches, etc. What are the main livelihood activities? Recreational activities. Types of transportation used. What are the main activities by group (e.g., men, elderly, women and children)? Main uses of physical surroundings. Use of technology and basic services.	
Visible Vulnerabilities and Capacities	
What are the main agricultural activities and at what scale do they appear to operate (small, medium, large scale)? Do crops/livestock appear affected by pests/ diseases? Existence of safe havens for refugees? Existence of food-storage facilities? Early warning systems? Evacuation routes?	
Physical Environment	
What natural resources exist and location: beach, trees, river? Forest/vegetation evident? Topography Evidence of erosion – coastal/land? Bad smell/effluents/chemicals/smoke? Temperature (very dry environment/wet) Is there any evidence of excavation/mining? Land Use	

Source:Base on VCA 2010, IFRC

Hint: How you collect information relating to Climate Change impacts and intervention with other VCA data

You will notice that your data contains indirect information on Climate Change. It might seem the data collected was general information about the community you are investigating, including housing type, recreation, physical environment information, information on health-risk, gender diversity and issues and resources, in addition to direct information on climate sensitivity. As a result, you can deduce from the information collected what are the actual or likely impacts from Climate Change, as per the following table:

Table 2.2 Likely impacts from Climate Change.

	Temperature variation/increase	Stronger/ more frequent hurricanes and storms	Strong winds	Drought
Infrastructure/ housing type and conditions		Roofs blown off. Houses collapse. Flooded events depending on locations.	Blow roofs off houses. Flatten some weak structures or increase their vulnerability.	
Livelihoods/ Agriculture	Affect the growth and productivity of some crops. Increased cost to provide cooler, sheltered houses for livestock.	Crop damages after storms/ hurricanes, farm lands may flood, increase in agricultural losses.	Affect crops like bananas and plantains. Wind shear from coastal areas can wither crops. Increase cost of agricultural production.	Increased mortality of agricultural livestock. Reduced production and growth of agricultural crops. Increase of production, increased cost of goods to consumers. Impact on food security.
Physical environment, e.g., slopes, degraded land, location	Soil becomes loose.	Slope failure due to weakness and saturation from rain. Coastlines will be impacted by storm surges and erosion.	With loss of vegetation, soil is vulnerable to wind erosion, dust problems increase.	
Gender diversity, social infrastructure	Vulnerable groups susceptible to increased temperature. Data collection on the social infrastructure determines the number of elderly males and females, children and those with permanent health conditions. Heat stress can affect already weak immune systems.		Some groups are more exposed during an emergency, e.g., their houses need reinforcement due to increased strength and frequency of storms and hurricanes	Some groups require more attention, e.g., students, farmers, the elderly.

Analysis of Direct Observation Data

In your VCA you will observe many other aspects of the community to help in assessing a number of risks, including health, security, economic stability, social cohesion, and infrastructural development. Quite likely you may analyze data from direct observation along with data from other VCA tools. Whatever approach you take, it is important to note that the wealth of information collected is a waste of your time if it is not properly reported or included in your report to show the dynamics, trends and avenues for intervention. Not all of your data must be used at once – if you have a results section you may not want to have 15 pages of graphs or tables.

Secondary Sources

Secondary sources is another method of collecting raw data and information about the study area that you will be working in. It is defined as secondary because it is not data that you collect but the work of another person. Primary data is raw data that you the VCA facilitator collect using the other VCA tools. Secondary sources can provide you with valuable community baseline data that is critical but that would be too expensive if you were to collect it yourself. With respect to Climate Change, meteorological data (that is weather data), satellite data on historical climate trends, data of rainfall trends over a number of years and seasonal temperatures are outside the work scope of National Societies. Such information though, including future projection data, is available on the Internet. Again be reminded that because your VCA is comprehensive your review of secondary sources should also be comprehensive and should include sector-driven information.

Tips on the review process

- Review sources to see what information already exist about Climate Change – sources can include local organizations, websites, articles, universities, meteorological offices, local disaster management offices, non-government organizations (NGOs), community-based organizations (CBOs). You may need help to understand some of the information collected so take time to schedule an appointment with relevant persons and talk to them about the information you have questions about – this is especially useful if the study was done by a local person.
- Check to see if your National Society has worked on a Climate Change document/programme before.
- Find out who in your National Society is in contact with local disaster management offices, meteorological offices, NGOs and any other partner organizations.
- Check to see if someone in your National Society has collected information on climate.
- National Societies should create an inventory of contacts, sources of information, programmes, articles and reports. These can be uploaded to a virtual library or server or printed and filed.

Information from secondary sources should/can include

- Location and geography of the community
- Main economic activity and income breakdown (by household, by person)
- Access to community (road infrastructure, methods of transportation, etc.)
- Population (total, births, deaths, distribution, age, gender, occupation, education, etc.)
- Community resources (services available to community members)
- Community organizations
- History of risks and impacts on the community (e.g., health risks such as dengue fever, malaria or disaster risks such as hurricanes, earthquakes, etc.) on farming, livelihoods, gender, community structure and natural resources
- Vulnerable areas, e.g., hazard-prone, low-income or densely populated areas where there are many vulnerable people
- Location of emergency shelters and environmental hazards
- Political parties or social movements active over the past number of years
- Security issues in the area
- Past observed local changes in vulnerability, e.g., migration, economic developments, etc.
- Past observed local changes in hazards, trends and extreme events including Climate Change impacts (e.g., events, farming, livelihoods, community structure, natural resources), water course variation, changing river runoff due to deforestation
- Current and predicted Climate Change impacts on the community
- Gender roles and potential impacts of Climate Change on women
- What the NS already knows about Climate Change
- Past projects/activities carried out in the community and their reports

How to use secondary sources of information:

- To verify and support results from other VCA tools (develops confidence in your data and helps to establish the accuracy and quality of the data)
- To guide approaches and actions and to decide which VCA or other tools should be used during activities
- To determine what actions should be taken, the relevance of additional data and the type of data
- In VCA and other types of reports to support primary data collected. This increases confidence in users and makes reported results more reliable.
- To provide credible information in support of the identification and development of micro-mitigation project proposals.

Relevant Steps when collecting information from secondary sources:

Identify

- Identify the source/s of information
- Identify the methods of collecting the information
- Identify how the information will be processed

List

- List the sources
- Contact persons
- What information is to be collected

Collect

- Collect the information using the process identified in the first step
- Types of hazards - population most at risk, what is being done, proposal for action
- Who is working in the area

Analyze

- Use information from secondary sources in the introduction
- Use data from secondary sources to support data from other VCA tools in your discussion

Using secondary sources of information - integrating Climate Change

Sources of Information	
Libraries:	**Other Organizations:**
• Local library • University library • Local, regional and state government libraries • Related organizations • Clearing houses • Journals, magazines, books, newspapers • Maps (aerial, GIS, topographical, satellite imagery) • Data and statistics • References	• Other National Societies • Red Cross Red Crescent Climate Centre, IFRC Climate Helpdesk, IFRC and its reference centres • International NGOs (e.g., Oxfam, World Vision, CARE, HelpAge) • UN agencies working on Climate Change (e.g., UNEP, UNDP, FAO and WFP) • CARICOM agencies working on disaster management, Climate Change and climate-related issues • (e.g., CIMH, CCCCC, CDEMA) • Networks and coalitions • Local, regional and state governments • Specialized government institutes (e.g., National Disaster Management Office, Meteorological Office, Agriculture, Environment, Planning and Development) • Private sector or business suppliers • Other needs assessments • Reports (situation reports, project reports, annual reports) • Data and statistics • Budgets • Expert opinions from key individuals (e.g., Climate Change focal points at the IFRC Zone Office and the IFRC Secretariat in Geneva) • Testimonials
Internet:	**People**:
• UN organizations (e.g., UNHCR, UNICEF, WFP, WHO) • IPCC • World Bank • Government websites • Foundations • Educational institutions and universities • Summary reports • Data and statistics • Access to libraries • Links to related websites (www.cadrim.org)	• Government officials • Local authorities (e.g., police, health care workers, fire service, social workers) • National Society colleagues • NGO workers • Community leaders (e.g., elders, religious leaders, health and school officials) • Teachers • Groups (e.g., women's group, farmers' group, etc.)

Semi-structured interviews

Semi-structured interviews are conducted with a fairly open framework which allows for focused, conversational, two-way communication. They can be used to give information as well as receive information. This allows the interviewee to ask the interviewer questions about the purpose of the interview, significance of certain questions and how specific responses will help the interviewer.

The semi-structured interview is different from the questionnaire in that no detailed questions are formulated ahead of time. Semi-structured interviews may start with general questions and proceed to more specific details about a particular topic. Semi-structured interviews can be open, having more than one person participate or a group of persons participating at the same time, e.g., a family or group of friends can be interviewed at the same time. The interviewer however must be prepared with a list of topics and have a matrix or map that guides how he/she wants the interview to go.

Importance of trends, variations, patterns, cultural and social dynamics to Climate Change. We should remember that Climate Change is a change in seasonal trends, change in weather patterns, and change in climate hazards.

Posible key informants and the topics to be covered:

Informants	Topics
Police	• Frequency and types of criminal activities • Response time
Health workers	• Types of illnesses, those relating to climate hazards, e.g., temperature, drought • Seasonal disease trends
Fisher folks	• Changes in weather, seasonal • Changes in fish species, trade • Markets, what affects their market
Informal business sector	• Types of businesses (find out about types of goods and/services) and if any are affected by seasonal trends and/or climate hazards) • Markets (who are the buyers), where do they get their raw materials
Farmers	• What are some of the issues faced • How do they market their crops • What types of crops do they plant, have they changed over the years and why, do they have other jobs
Men's/ women's group	• Ask what are the main functions of the group, frequency of meetings, active members, contributions to the community
Teachers	• Teachers will have information about when students attend school, if certain disasters or issues in the community affect students' attendance and performance • Ask if students' attendance rate fluctuation is seasonal and what are the leading trends

CARIBBEAN CLIMATE CHANGE ADAPTATION (3CA) TOOLKIT

SEMI-STRUCTURED INTERVIEW TEMPLATE

Date:

Name of Field Officer:

Community:_____Parish:_____

Community Description: (Location, type, etc.)

Type of Interview: Key Informant/Individual/Small Group

Number of Participants: Male_____ Female _____ Total_____

Age range:

18-24 ☐ 25-30 ☐ 31-40 ☐ 41-50 ☐ Over 50 ☐

How long have you lived in this community?

Less than 5 years ☐ 5-10 ☐ 10-15 ☐

15-20 ☐ 20-25 ☐ Over 25 ☐

Use of Information

Where do communities receive early warnings on natural hazards (e.g., hurricanes, etc.)?

Who in the community receives this information?

Are warnings of immediate dangers (1-5 days) and also long-term, seasonal forecasts received?

Is anyone in the community responsible for announcing early warnings? What happens if the person is not there?

Is weather information used and are forecasts understood?

Are there any institutions that help with sharing information (e.g., schools, churches, clinics)?

Can the information that is shared be improved?

Does the community use weather forecasts/warnings to know when to harvest crops? (Why/why not?)

How does the community normally communicate with each other and what is the preferred form of technology?

Traditional Knowledge

What traditional signs warn of bad weather or a change of season?

What are the agricultural practices and how do they compare to past practices?

During which seasons does the community normally plant crops? Has this changed?

Are there changes such as flowering or harvesting times that are affecting the community?

Is traditional knowledge about crops still used and is it still correct?

Is traditional knowledge still being used to predict hazards? Is it useful?

Have changes in those hazards been noticed?

Have there been changes in temperature or rainfall patterns?

Changes in Livelihoods

Are any changes in livelihoods occurring that are resulting in positive or negative outcomes for the community?

Have people noticed differences in wildlife and fish stocks or differences in the times of the year of the catch?

What are the people's main coping strategies? Have they changed? Are those strategies still working?

Health

Are there diseases that are more common during certain times of the year (including drought and rainy periods)?

Have some diseases been increasing or decreasing in the last 5-15 years?

Which ones have been increasing or decreasing? What is causing that?

Who is most affected?

What are people doing to reduce their risk to these diseases?

What could be done differently?

Where do people receive information about health problems?

Natural Resources & Environmental Issues

What are the main environmental issues in the area? (e.g., soil erosion, water pollution, desertification, soil contamination, overexploitation of natural resources)

What are the main causes?

Whose livelihoods and which livelihoods are most affected by current environmental issues? Have these issues been the same through these years?

What has been and is being done to address them?

How do weather and climate extremes affect the community? Are they increasing?

Are they becoming more severe?

Community

What group(s) or gender in the community is more vulnerable than others to Climate Change and extreme weather events? How?

What capacity does the community have to address problems facing it?

How can they be used to work on the problems identified?

Focus Group Discussion

A focus group discussion is a qualitative information-gathering tool whereby selected individuals, guided by a facilitator, are invited to give their thoughts and views on a specific issue.

Depending on the topic, a focus group discussion can be useful at any stage of planned research. It is usually held at a later stage in a VCA. The participants are from similar and often specialized backgrounds. They are involved with the issue through their interests or profession. Although the discussion may focus on a specific topic, the group members may talk freely and spontaneously about the issue.

Use it to…

- Create community awareness of Climate Change, to gain their views on the relevance of Climate Change to their lives, livelihoods and to generate discussion about how to address Climate Change-related problems.
- With regard to Climate Change, it is important that the members of the group be familiar with the terms used in Climate Change, (e.g., climate variability, global warming, solar energy, greenhouse gases, etc.). A useful approach is to have a glossary of terms for reference. During the meeting, use language that the group, especially those with community members, are most familiar with. The concept of Climate Change can be challenging to explain. It is therefore strongly recommended that the lead facilitator be familiar with the subject of Climate Change and have an excellent grasp of the topic.

Guide to planning a focus group discussion around Climate Change

1. Determine the purpose of the group discussion
2. Identify who you would like to participate in the focus group discussion; non-governmental organizations, community-based organizations, professionals from the community, youth leaders/groups, churches, other social organizations, community support groups for health, agriculture, etc.
3. Decide on the best location, occasion for a focus group discussion; time of day is particularly important
4. Decide and prepare the questions you want to ask prior to the time of meeting for the focus group discussion

The table below lists possible themes and topics for a focus group discussion. Remember, these are suggestions and recommendations and do not have to be followed strictly. If you have a large group, split the group into smaller groups and have them discuss. It is important to follow discussions closely. Have someone in the group take notes while others are talking, and allow the group to make a definitive conclusion about a problem. For example, is a coping strategy working? Yes/No/Sometimes? Explain.

CARIBBEAN CLIMATE CHANGE ADAPTATION (3CA) TOOLKIT

FOCUS GROUP DISCUSSION TEMPLATE

Date:

Name of Field Officer:

Community:_____Parish:_____

Community Description: (Location, type, etc.)

Type of Interview: Key Informant/Individual/Small Group

Number of Participants: Male_____ Female _____ Total_____

CLIMATE TRENDS/CHANGES: ENVIRONMENT

1. Have you noticed any change in temperature in recent times?

2. Have you noticed any change in rainfall patterns?

3. How long have you noticed temperature, weather pattern changes?

4. Have climate related events influenced a change in:

5. Which climate-related events/incidents impact/s the most on gender roles

LIVELIHOODS

6. Has temperature variation changed the way you conduct your business/ form of employment?

7. Do you or a family member own a farm (commercial, kitchen garden)?

8. Have you or anyone you know suffered loss from crop failure, livestock loss or job loss in recent times as a result of:
Increased cases of pests and diseases?

9. What are your traditional crops/livestock?

10. Are you cultivating:

11. If farming/business/employment activities have changed, what factors caused them to change?

12. How has temperature or rainfall influenced or challenged/enhanced your

HEALTH

13. How has climate-related incidents/variables affected health in your community?

FAMILY

14. Have recent climate events changed or influenced:

15. How has recent climate events changed the roles of men and women in the home/community?

16. With regard to recent or past climate events, has the community:

17. With regard to information, does the community:

CARIBBEAN CLIMATE CHANGE ADAPTATION (3CA) TOOLKIT

LIVELIHOOD ANALYSIS TOOL TEMPLATE

The livelihood analysis tool is important because the information gathered from using it can inform other tools and results and help to maximize time when resources are limited. The matrix below is used once you have identified the main livelihoods in the community.

Livelihoods analysis matrix

Resource	Access (Livelihoods that benefit)	Hazard(s) (Affecting resources/ livelihoods	Level of Impact 1-3	Coping Strategy (How do people cope?)
Natural				
Land				
Water				
Forests				
Fisheries				
Physical				
Roads				
Schools				
Hospital/Clinic				
Equipment/Machinery				
Shelters				
Financial				
Savings				
Cash				
Credit/Money Transfers				
Human				
Education (ex., teachers)				
Masons/Carpenters				
Medical Personnel				
Social				
Membership in Societies				
Community Groups				
Informal Safety Nets				
Political				
Policies/Legislation				
Local Government Representatives				

Historical Profile

As a VCA facilitator or practitioner you are aware of the usefulness of historical profiling. A pre-designed template for gathering information on past trends and activities has been developed to facilitate historical profiling and to monitor recent and future Climate Change events within communities. Communities evolve naturally when circumstances are modified and they learn to cope over time. Unfortunately, the events associated with Climate Change may occur more rapidly than the natural process of adaptation within communities. Collecting information on past events is one way of monitoring what is changing and how communities are adapting. Information gathered can be used to strengthen a community's resilience to Climate Change extremes and improve coping strategies. A MS Excel template for the historical profile is included in the 3CA Toolkit.

Seasonal Calendar

The seasonal calendar (pictured below) is important for gathering information on seasonal trends. A pre-designed seasonal calendar is included in the 3CA Toolkit with analysis in MS Excel. The results of the seasonal calendar are ratings from 0-2, with zero being not likely, 1 being a possibility and 2 being most likely. These ratings refer to the potential of an event occurring at a selected time of the month.

The rationale behind the pre-designed tools and analysis using data sheet is to assist with the analysis and reporting of qualitative data. Graphs, charts and figures increase readability and presentation of information while providing clarity to some material. They are also important for comparison of data.

	Mons of the year											
Acitvity	J	F	M	A	M	J	J	A	S	O	N	D
Climate Variables												
Peak Rainfall												
Warmer Months												
Cooler Months												
Peak Dry Periods												
Highest High Tide												
Lowest Low Tide												
Livelihoods												
Peak Planting Seasons												
Peak Growing Seasons												
Peak Harvesting Seasons												
Freshwater Fishing												
Livestock Rearing												
Eco-Tourism												
Tourism												
Tourist Arrivals/Air												
Tourist Arrivals/Sea												
Hiking												
Snorkelling/Diving												
Rafting/Boating												
Seasonality												
Low Income												
High Income												
Immigration and Migration												
Burglaries												
Crop Season												
Drug Trafficking												

Vehicle Accidents												
Domestic Violence												
Tourist Season												
Harvest Time												
Rainfall Period												
Health												
Flu, cough, colds, respiratory illness												
Stomach illness (vomiting, diarrhea)												
Vector-borne illness (e.g., dengue, leptospirosis)												
Conjunctivitis												
Water-borne disease (e.g., diarrhea, dysentery, Hepatitis))disease, fungi, sores)												
Head lice												
Hazards												
Hurricane												
Forest Fire												
Agricultural Fire												
Floods												
Fire												
Hazardous Materials (e.g., oil & chemical spills)												

Participative Mapping

The participative mapping process, when related to Climate Change, should improve the discussion about changes observed in the last years of the hazards' dynamics and their impacts.

As an integral part of the mapping, it is recommended to perform a transect walk after the development of the maps as a means of validating the process. This can be done by using handheld GPS units to take waypoints which can help to verify and confirm the accuracy of the information gathered as it relates to the terrain covered in the participative mapping process.

Table 2.3

Things to Consider During the Mapping Process			
Hazards	Flood	Flood zones	Increasing risk of floods as a result of Climate Change - knowing the likely areas and who will be affected is important for planning effective climate adaptation strategies
	Sea level rise	Evidence of sea level rise	If the sea is rising, this will impact on coastal communities and result in beach erosion
	Winds	Areas affected by winds	High impact winds will increase due to Climate Change, fluctuation in seasons, climate systems, hurricanes and storms will create unpredictability
	Hurricanes	Exposure (e.g., people, houses, livelihood) based on location, proximity to hazard	The risk to vulnerable people and structures will increase with Climate Change if those vulnerable to hurricane and storm impacts have no adaptation mechanism in place
	Storm surges	Location and extent of storm surges	Communities located close to the coastline and dependent on coastal and marine resources are at risk due to rising temperatures and increased storm events. Stronger winds and stronger storm surges coupled with human practices will only increase the risk
	Drought	Who and what is at risk (based on vulnerability and infrastructure)	It is difficult to map drought but we can map the resources that can be affected by drought – mapping resources such as farm lands and those vulnerable in the community to drought when it occurs is important for interventions and preparing for Climate Change impacts

Things to Consider During the Mapping Process			
Risk	Agriculture	Agricultural lands, crops, animals	Agriculture, including fisheries, is at risk from a number of climate variables such as floods, storms, hurricanes, drought and temperature increase
	Health	Elderly, critically ill, children	Climate Change causes increased health risk from heat stress, vector-borne diseases and malnutrition. Some persons are more vulnerable, such as children, the elderly and those with communicable diseases. In times of disaster, the number and locations of these special groups are important as they are more at risk and will likely need specialised care and support.
	Gender	Single women/ single fathers	Women and children living alone are at risk during increased times of disasters and with Climate Change these disasters may occur more frequently. Fathers living alone with their children are also vulnerable, with increasing threats from Climate Change. Fathers may be pressured to increase coping strategies which means they may be away from home much longer leaving children who spend time alone more vulnerable to many things
	Infrastructure	Roads, types of houses, electrical poles	Roads and paths that can break away easily pose a threat to community members. Climate Change events such as flash floods and storms will increase the risks to poor infrastructure
	Tourism/ livelihood	Tourist areas	Climate variables such as temperature increase, variability in rainfall events will impact on tourism. This could impact on local livelihood options, employment and food security. Connecting resources in a community to tourism will help to map what and who will be impacted directly and indirectly by Climate Change
	Forest	Deforested lands	Forestry is an important natural resource. The presence or degradation of forested areas should be noted. Adequate forest cover is an resource while degraded forests can increase flooding and landslide events

Things to Consider During the Mapping Process			
Capacities	Natural resources	Trees, rivers, aquifers	Natural resources such as trees, rivers and aquifers are important to communities. They are important coping strategies and also significant if communities are to adapt to Climate Change
	Critical facilities community centre	Health centres, schools, churches, police post, water storage, social groups	It is not only important to know what resources exist for treating health related incidents, provision of shelter and social security but also to know what capacities are lacking. With Climate Change hazards, social issues, crime and health issues will increase and in some cases, improving current facilities to handle these changes becomes critical for adaptation
	Water catchments	Tanks, rain water catchments, wells	Knowing how a community will cope in times of drought is important. Therefore knowledge of where, how and what opportunities exist for storing, harvesting finding water is critical to a community's survival
	Livelihoods	Informal businesses, farming (kitchen garden), livestock rearing	A community cannot survive without financial security. Most vulnerable communities consist of people who survive using natural resources; mapping these livelihood resources is critical to a community's survival but also important for looking at alternate livelihoods
	Educated/ professionals	Type of professionals, employment outside of the community	If community members are educated and employed outside of the community, it can have significant impact; if members are less dependent on resources within a vulnerable community, this can offer sustainability and provide some financial security for community members

The Base Map

The base map is a cartographic representation of the community and allows the participants of a mapping process to draw different elements needed. The main difference between this process and the traditional VCA mapping process is that the community's representation is given to the participants so that they do not need to create it themselves.

The base map can correspond to an official map of the community if the scale is good enough to allow participants to map closely. If an official map is available, it is recommended that Red Cross National Societies partner with mapping institutions in the country, so that they can provide the needed base maps and possibly Geographic Information Systems (GIS) and Global Positioning Systems (GPS) training. If these options are not possible, the 3CA facilitator's training offers a methodology for creating base maps for use during the participatory mapping process.

Understanding Geographic Information Systems and Global Positioning Systems

It is important to note that most of the data collected during the VCA process can be integrated into a GIS program for spatial analysis of your data. GIS improves the accuracy of your data, and can be used to plan mitigation and adaptation projects. It allows spatial analysis of hazards such as impacts of sea level rise, risk of slope failures and allows you to identify who is at risk in the community as well as where to put in new features and enhance a climate-smart planning framework. Before proceeding to using the GPS and GIS in vulnerability and capacity assessment, it is important to first understand what is GPS and GIS. It is also important to understand how the GPS and GIS are used in daily life, in different sectors and how to collect and analyze GPS /GIS data. The processes and uses of GIS in this module are simple, for more enhanced GIS use, further training should be considered.

The objective of using GPS and GIS in community participatory mapping is to increase accuracy and use of maps with more spatial details.

While we try to adopt a simple way of integrating GPS and GIS into VCA and disaster risk reduction for Climate Change adaptation, GPS for mapping is a scientific and efficient way to collect accurate data information in the field. GIS can be viewed as being too technical and not for everyone, or be considered an easy process because the data is available electronically. GIS can be technical, time-consuming or less technical depending on the user and the desired GIS outputs.

Global Positioning Systems – GPS

Global Positioning Systems is a most accurate tool for collecting and mapping resources, however there are some important things to note about a GPS unit and levels of error. In most cases you will be using the Garmin handheld GPS devices. Errors in collecting coordinates can be a result of the GPS unit being used and the conditions present at the time of collecting the data.

The GPS consists of a constellation of 24 satellites that orbit the earth twice a day (making one revolution approximately every 12 hours) at an altitude of approximately 124,000 miles. The GPS satellite navigation system was initiated by the U.S. Department of Defense in the 1970's for military purposes. When the system is at full operational capacity, there are 24 operational satellites. This number changes periodically as satellites are commissioned (put into operation) and decommissioned (removed from operation). Currently there are 31 satellites in orbit. These satellites broadcast radio signals, containing satellite position and precise time data, twenty-four hours a day. These signals enable anyone with a GPS receiver to determine a geographic location. The GPS system consists of three distinct segments: space, ground and user.

Table 2.3. Errors in GPS Data Collection

Errors	Limitation in Analysis
Atmosphere	• Conditions in the ionosphere and atmosphere (e.g., solar flares) • Cloud cover
Signal Interference	• Buildings, trees
GPS	• GPS unit default settings: reference system • Type of GPS unit
Environmental	• Topography • Buildings • Vegetative covers (canopy) are among the most frequently encountered obstacles to GPS signal reception. Signals can be blocked completely, the signal strength can be reduced (analogous to static on a radio), or signals can bounce off nearby objects and contribute to position inaccuracies. (Retrieved at http://ligis.org/wp-content/uploads/files/SCGPS_Guidelines.pdf)
Collection	• Number of data points collected for a feature • How and if data are differentially corrected

Getting accuracy

The most successful strategy is to "be prepared". In the case GPS data collection, this means entering the field with knowledge of the conditions you are likely to encounter and knowledge of the "ideal" satellite times for minimizing the impact of difficult conditions. Data collection on a north slope or in a steep stream valley may dictate that GPS can only be collected at certain times of the day when a sufficient number of satellites are available above the topographic "obstacles". Most GPS software allows the user to predict the positions of all the satellites at any time of the day and users can enter the field with this information, allowing them to make decisions about when to attempt data collection or how long to wait at a particular location for favorable satellite availability.

A vegetative canopy is more likely to reduce the strength of (rather than completely obstruct) the incoming signal. If choosing the time of day is an option, plan to collect data when satellites are plentiful and high in the sky. Alternately, you may be able to raise your antenna into or above the canopy for better signal reception or plan your data collection for "leaf-off" conditions. Yet another option with some receivers is to collect an "offset" position; that is, GPS data are collected some distance off the desired position, but a compass bearing and estimate of distance to the actual point are also collected. Post-processing the position with the offset information "projects" the collected data to the actual location from the offset location.

Geographic Information Systems – GIS

"A Geographic Information System (GIS) is an information system that is designed to work with data referenced by spatial or geographic coordinates. In other words, GIS is both a database system with specific capabilities for spatially-reference data, as well [as] a set of operations for working with data. In a sense, GIS may be thought of as a higher-order map…" (Star and Estes, 1990, pg. 2-3).

Use of the GPS in the 3CA process

The GPS is meant to be used during the mapping process within the 3CA as a way of validating, on the ground, what people have drawn. This is done by taking waypoints with the handheld GPS of the key landmarks in the community that were identified.

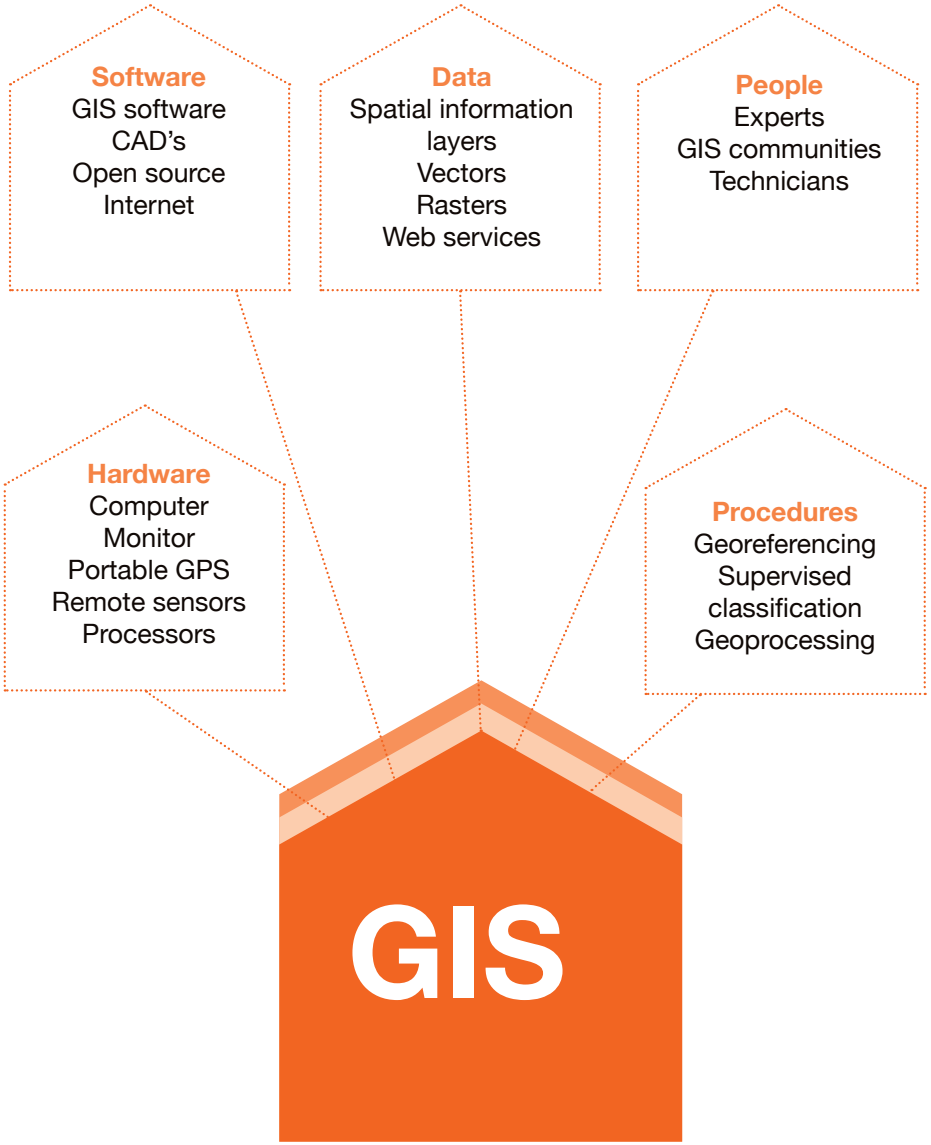


Table 2.4. Common types of data in a GIS Program

Type of Data	Description
Vector	Vector data takes on three forms, each progressively more complex and building on the former. • Points - A single coordinate (x, y) represents a discrete geographic location • Lines • Polygons - When lines are strung together by more than two points, with the last point being at the same location as the first, we call this a polygon. A triangle, circle, rectangle, etc., are all polygons. The key feature of polygons is that there is a fixed area within them.
Raster	One type of geospatial data is called raster data or simply "a raster". The most easily recognized form of raster data is digital satellite imagery or air photos. Elevation shading or digital elevation models are also typically represented as raster data. Any type of map feature can be represented as raster data, but there are limitations. A raster is a regular grid made up of cells, or in the case of imagery, pixels. They have a fixed number of rows and columns. Each cell has a numeric value and has a certain geographic size (e.g., 30x30 meters in size). Multiple overlapping rasters are used to represent images using more than one colour value (i.e., one raster for each set of red, green and blue values is combined to create a colour image). Satellite imagery also represents data in multiple "bands". Each band is essentially a separate, spatially overlapping raster, where each band holds values of certain wavelengths of light. As you can imagine, a large raster takes up more file space. A raster with smaller cells can provide more detail, but takes up more file space. The trick is finding the right balance between cell size for storage purposes and cell size for analytical or mapping purposes.

Module Three – Actions

Developing Climate-Smart Actions for Adaptation

Participative Processes

Community Approach

How to Review Module three:

Module Three guides through the process of identifying climate-smart actions that can be developed within the community.

Transformation actions

- Using the Change Influence Transform (C.I.T) process to identify actions

The CRiSTAL tool

- Applying the CRiSTAL process to develop climate smart tools

Developing Micro projects proposals

- How to develop the climate smart actions into projects

Introduction

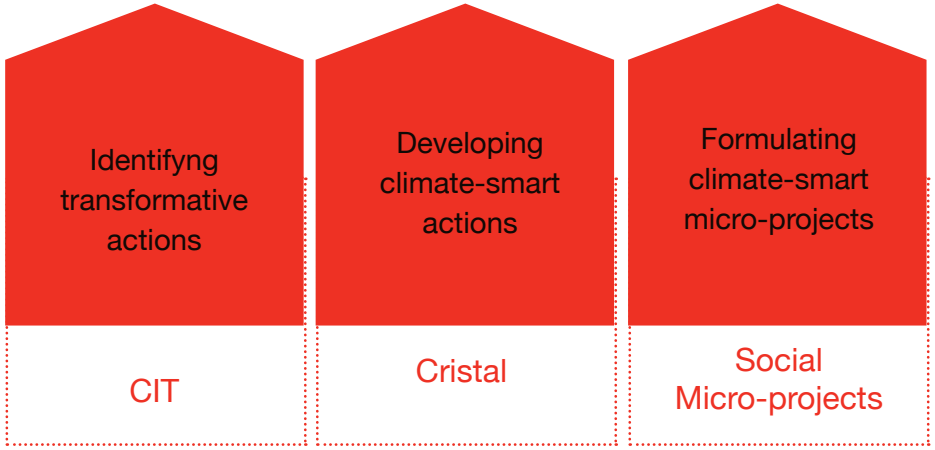
The main objective of the vulnerability and capacity assessment process is to generate knowledge about the community in order to prioritize needs and develop actions to reduce the community's vulnerabilities and increase the existing capacities. Good quality information that is an accurate reflection of the community's context can lead to the development of key transformative actions intended to deliver high levels of impact and sustainability. This module guides the process of how to use the information collected and analyzed during the assessment process to develop transformative actions which can build community resilience whilst taking Climate Change adaptation into account.

An important component of the 3CA process includes the identification of initiatives, which support the empowerment of communities to engage in climate-smart actions that can transform negative situations into opportunities for sustainable development. These actions are identified through the Change, Identify or Transform (CIT) process, a participative way of involving the community to generate actions using the results of the enhanced Climate Change VCA approach.

Although the actions are identified through this enhanced approach, it is still important to ensure that they take Climate Change into account and can promote adaptation processes. This is why the actions resulting from the CIT process are going to be screened for 'climate smartness' using a component of the Community-based Risk Screening Tool – Adaptation and Livelihoods (CRiSTAL) tool.

This section will take you through how to help communities to:

- Identify transformative actions to reduce their vulnerabilities
- Learn how to use CRiSTAL to produce climate-smartened actions
- Use the general guidelines provided to formulate climate-smart micro-project proposals



How to Identify Transformative Actions

Using the information collected during the 3CA, participants reflect on and discuss the information collected to identify any information gaps, community issues and community capacities. Once they have completed this process, they should be guided to agree on the main community issues and the main community capacities. Participants can then discuss about what actions could be taken to help the community transform the issues (vulnerabilities) into additional capacities. Special emphasis should be placed on ensuring that the actions are specific, realistic and lead to community empowerment. One suggested approach for discussing the issues identified could be via separate focus groups comprising women, the elderly, youth, men and any other special interest groups.

During the discussion/activity, all participants can use and complete the table below as a guide for the identification of the issues, capacities and proposed actions/potential solutions to the issues raised.

Table 3.1 Transformative actions matrix

Main Hazards	Vulnerabilities Identified	Capacities Identified	Actions to Transform Vulnerabilities Into Capacities

Source: VCA Training Guide, 2008, IFRC

Empowering the Community to Change, Influence and Transform (CIT)

It is important to ensure that every action identified considers the community's capacities for solving problems. When the community agrees on the actions for transformation, it should decide on the way forward using a process known to many VCA practitioners as CIT. The CIT process helps the community to better define what issues members believe they can change, the issues that they can influence in finding solutions and the issues that are outside of their reach or might take a longer time to transform. Based on the actions for transformation, participants should discuss:

- What actions for transformation can be carried out in the short, medium and long term using the community's resources
- Whether financial or technical support is required and where it can be sourced
- If the requisite resources are not available in the community, how will they find the resources themselves

Table 3.1 CIT process

Main Hazards	Vulnerabilities Identified	Capacities Identified	Actions to Transform Identified Vulnerabilities Into Capacities	C	I	T	Can be done with own Resources			Financial Support?		Technical Support?	
							S	M	L	Yes	No	Yes	No

Source: VCA Training Guide, 2008, IFRC

The facilitator should take the participants through the process of completing the matrix shown above. More detailed guidance on how to take participants through this process can be sourced in the VCA Training Guide developed by the IFRC. Once completed, the actions can be screened using CRiSTAL to ensure that they are 'climate smart'.

CRiSTAL*: Developing climate-smart actions

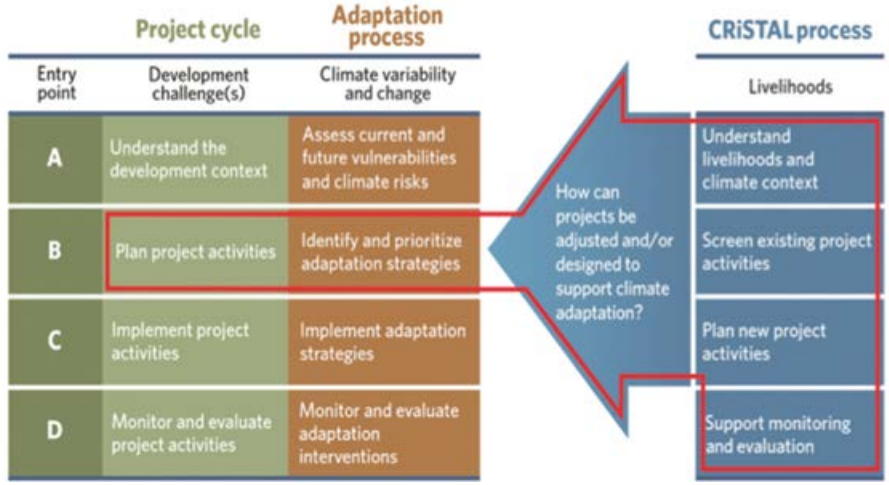
What is CRISTAL?

The Community-based Risk Screening Tool – Adaptation and Livelihoods (CRiSTAL) is a project planning tool that helps users design activities that support climate adaptation. CRiSTAL helps users understand the links between a development project and its contribution to climate adaptation. The rationale of a development project may be to address one or more development challenges, such as poverty, environmental degradation or gender inequality. The impacts of climate variability and change may undermine efforts to address these challenges**.

CRiSTAL can contribute to vulnerability and risk assessments by helping users to collect, synthesize and organize information about: a) the development context, b) the climate context, c) climate impacts and risks, and, d) the design of adaptation responses***.

CRiSTAL helps project planners and managers ensure that their project supports or, at a minimum, does not constrain climate adaptation so that communities are able to achieve their development goals.

* For more references visit: http://www.iisd.org/cristaltool/
** iisd, 2012, page 9.
*** iisd, 2012, page 10.



Source: iisd, 2012

Creating 3CA climate-smart actions, CRiSTAL screening.

During the design of projects, CRiSTAL allows us to determine how identified activities can be negatively impacted by Climate Change and climate variability. It allows users to modify activities in order to avoid negative impacts and can even enhance the positive ones.

During the 3CA, CRiSTAL's tools will be used as a way to determine the impacts that the transformation actions, identified through the CIT process, can have in the Climate Change adaptation in the community. In doing so, we are able to modify them as needed or create new "climate-smart actions" with a positive or neutral impact during the adaptation process.

Considerations of using the CRiSTAL tool in the 3CA

- As a form of risk assessment, the CRiSTAL tool gathers information about climate-related hazards as

well as the livelihoods contexts and resources. This information is used as an input to revise the action within a specific project. For the 3CA, the information used will be the one obtained in the VCA process (explained in Module Two).

- Knowing that the CRiSTAL tool has a very strong livelihoods component, it is also possible to do the screening on general resources and capacities on the community as long as the information on current hazards, vulnerability and Climate Change context is reliable.
- The CRiSTAL template to be used in the 3CA is based on version four of the CRiSTAL tool and is available in Microsoft Excel format. This format is more flexible than the executable version of CRiSTAL. The template helps to streamline the information collected through the assessment process which is related to current and projected hazards, climate context impacts and resources and to evaluate the actions defined in the CIT based on this data.

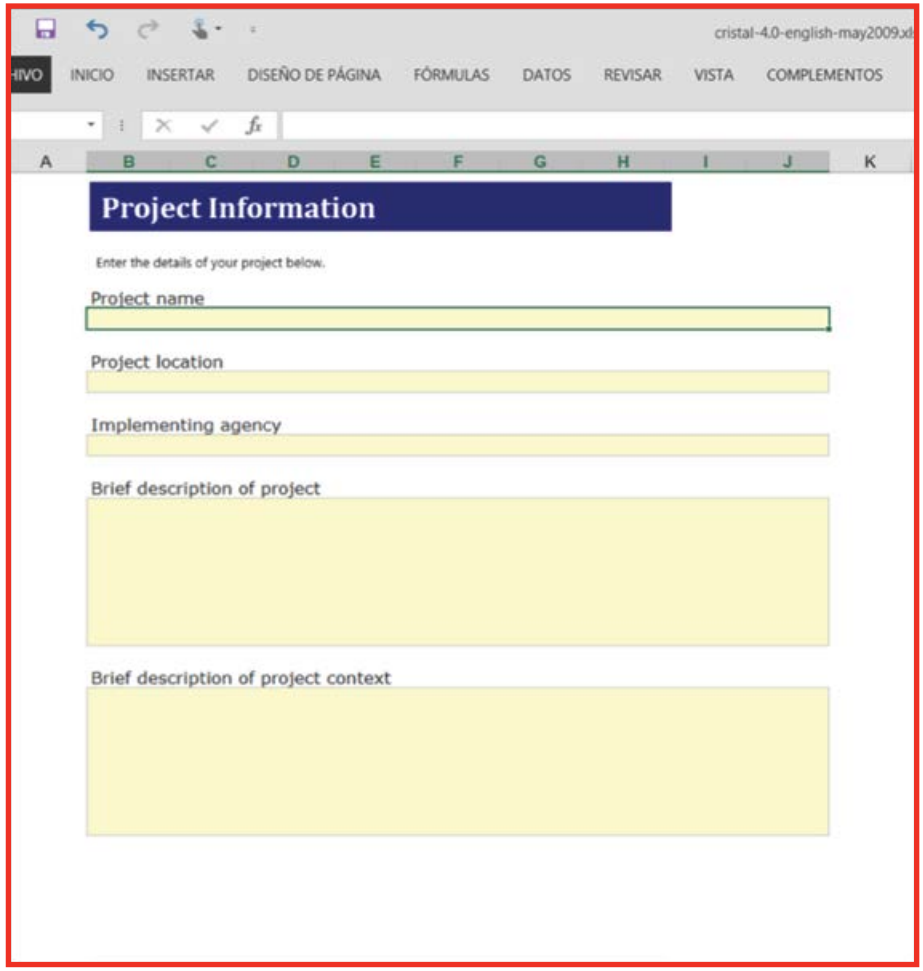
Defining Climate Smart Actions

The CRiSTAL template is divided into different sections or in this case, sheets. During the 3CA process we will only use the sheets that are most applicable for creating a climate smart action that can be developed into a project.

In this section, we are going to explain each of the sheets to be used during the 3CA process. You should note that CRiSTAL comes with a user manual* which provides details about the entire CRiSTAL screening process including how to use all of its templates. In this instance, you will be guided on how to use the templates applicable to the 3CA as well as how to use the livelihoods sections as a general resource.

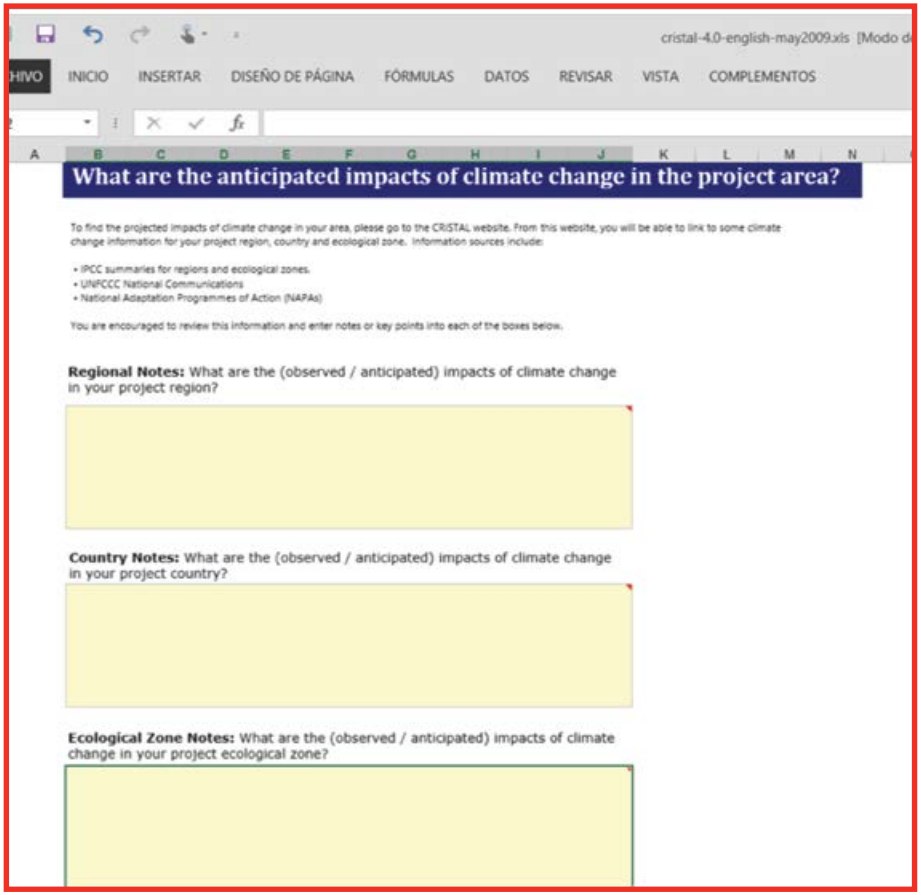
Project Information: This section outlines general information about the community and a description of the project to be developed during the 3CA. It can be used to describe the context and assessment process, describe the main findings and identify the needs.

* Can get the manual at http://www.iisd.org/cristaltool/download.aspx



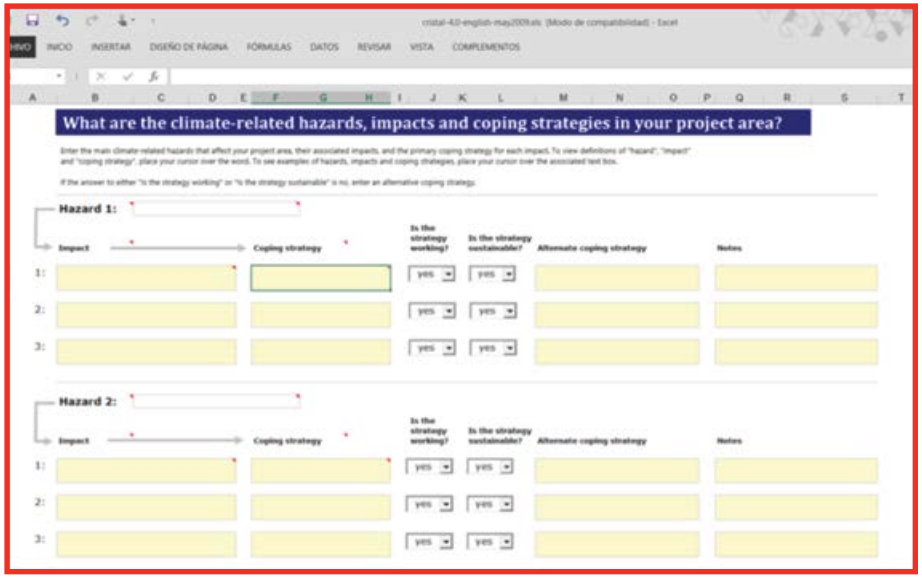
Climate Change Context:

This section should be used to describe the Climate Change context at different levels (regional, national and local). Regional or national information can be gathered through secondary sources. The local information is based on the 3CA assessment but its quality depends on the process and access to accurate, reliable Climate Change information. This is critical as it helps to identify the impacts that specific actions can have in adaptation processes.



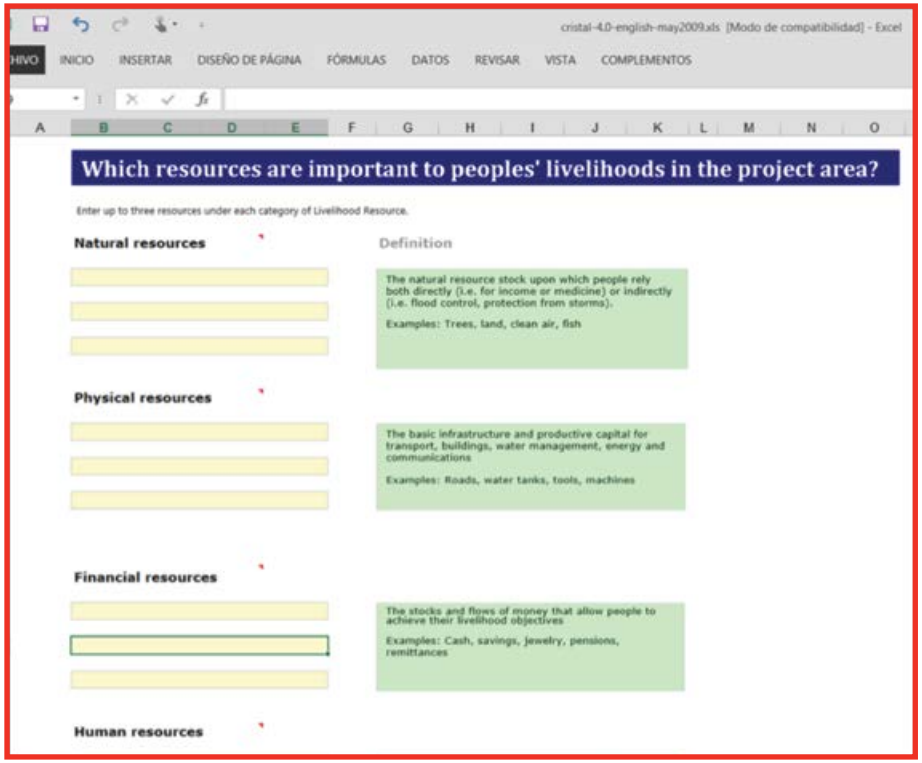
Current Climate Risk:

This section is used to describe the climate-related hazards that have been identified in the community. It should also describe the impacts of the hazards, identify how the community copes with these impacts and propose alternative coping strategies.



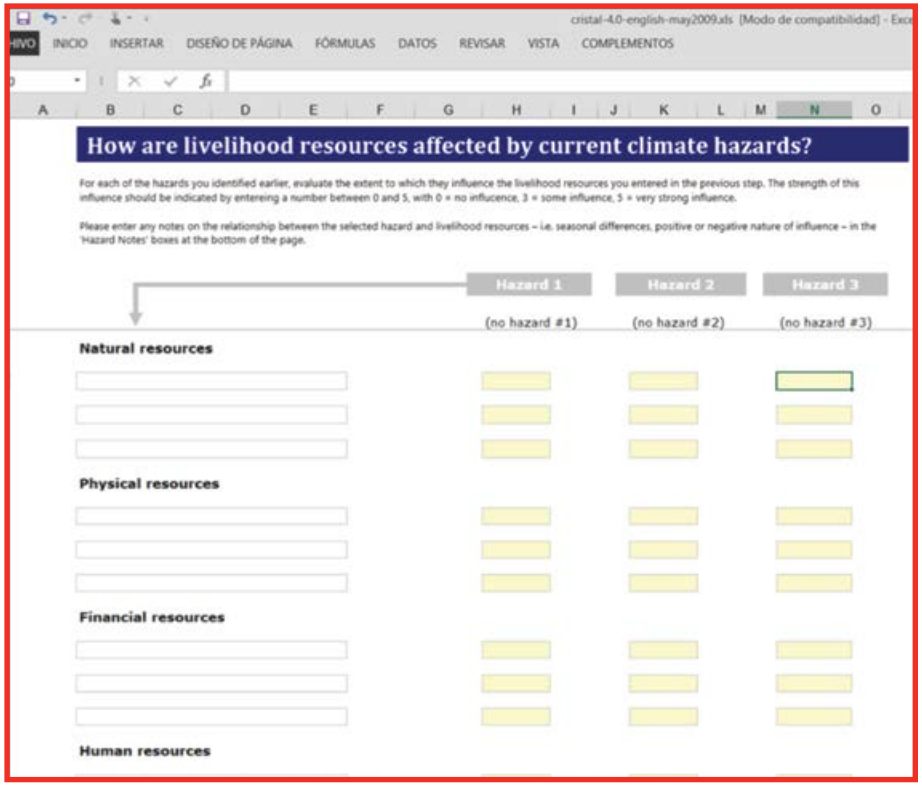
Livelihoods Resources:

The five livelihoods resources' categories can be used to describe the general resources and capacities identified in the community. The VCA incorporates a livelihoods analysis tool and the information gathered there can also be reflected on in this section.



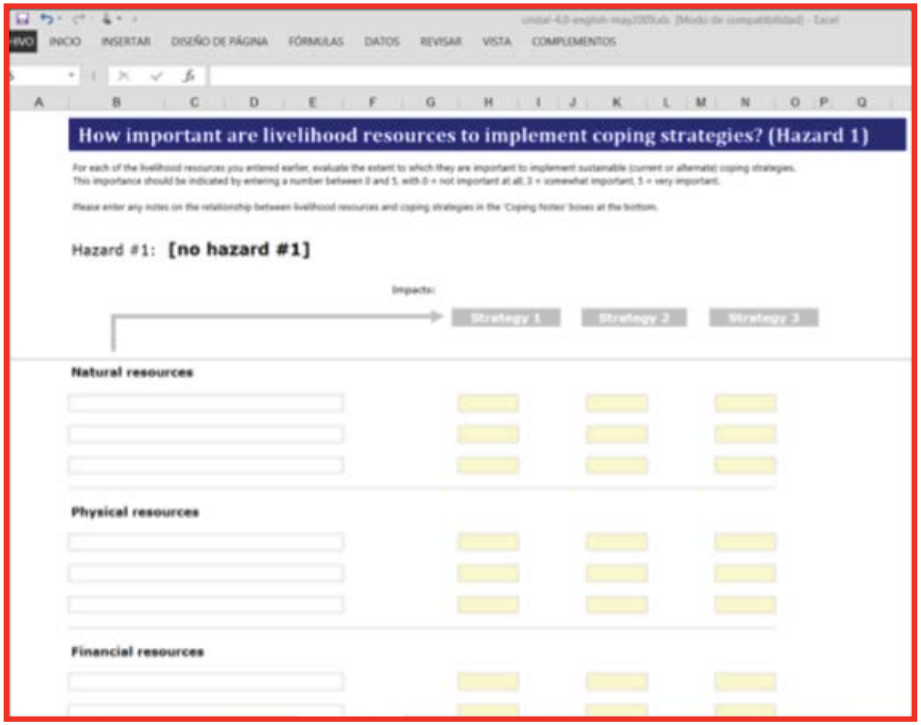
Hazard --> LR:

For each one of the climate-related hazards identified in the current climate risk section, evaluate the extent to which they influence the resources identified in the previous section. Follow the instructions provided in the template to enter the level of influence.



LR --> CS (Hzn):

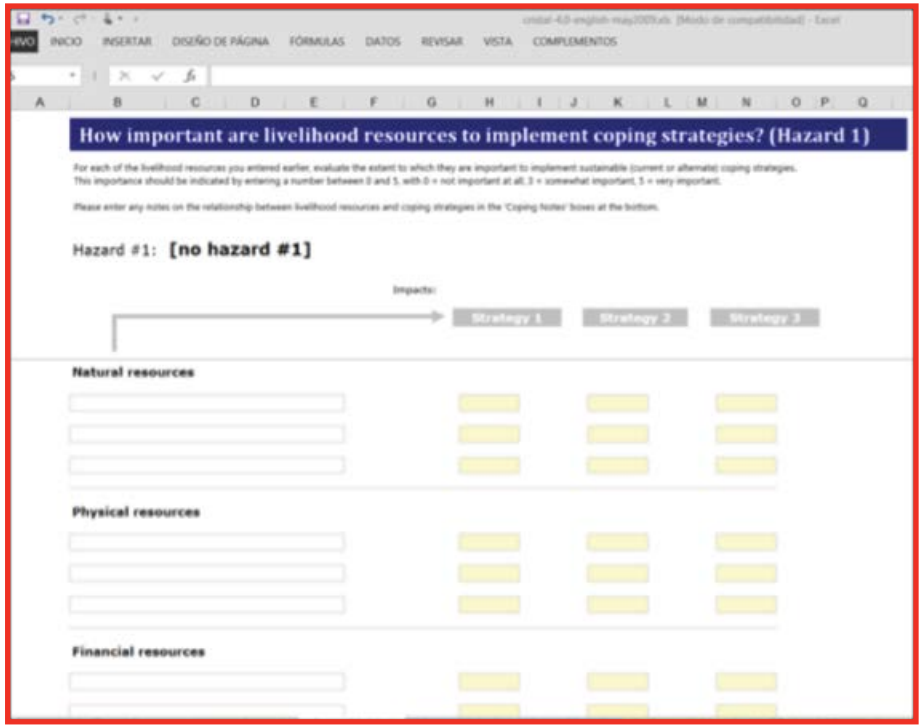
In this section, you will need to link the hazards with the most applicable identified resources and coping strategies. You may find that actions identified during the CIT process are helpful for completing this task. The template allows you to enter up to three strategies and has sheets for three climate related hazards, but it is still possible to add more. In the section titled *"Notes on Coping Strategy #"*, it is important to describe the relationship between the strategy and the resources.



Project activities:

This is the point of the template where the actions are going to be revised. The process consists of describing the action intended to address the main hazard as well as the resources that can be used to solve them. Once all the resources are listed, it is time to identify the real impact that the actions have over them. It is necessary to do so in order to screen the information about the hazards, Climate Change context and their relationships with identified vulnerable resources. After the types of impacts are identified, it is time to see if the action can be modified while taking these key points into account:

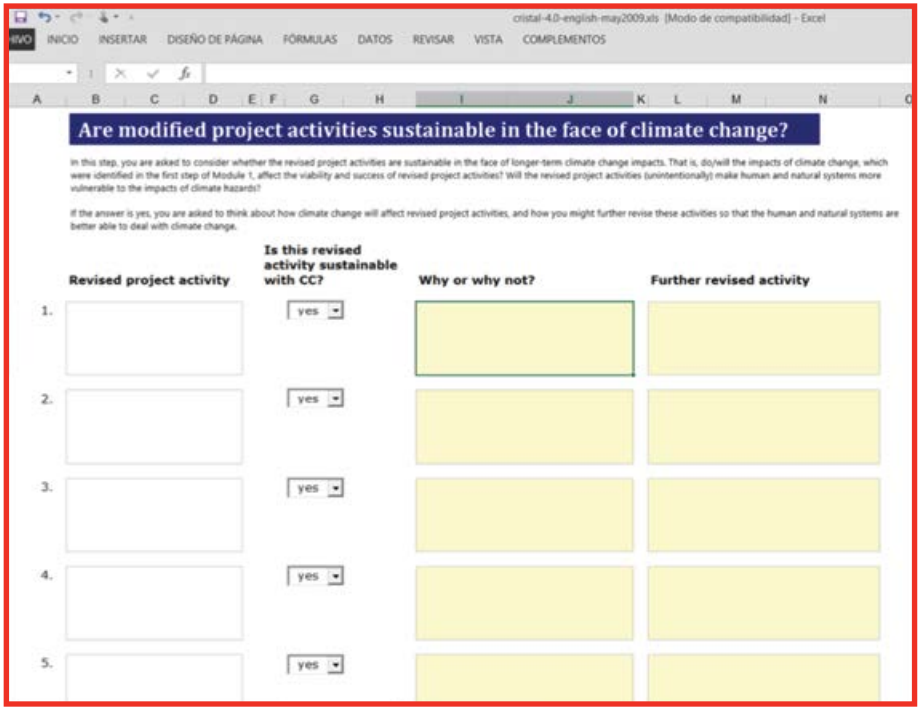
- If negative impacts on one or more resources are identified for an action, it is important to avoid them and remember that it is not possible to build on negative impacts even with different resources.



- If most of the impacts are neutral for the most vulnerable resources, then maybe the action should be re-established to see if it is possible to have more positive actions on the most vulnerable resources.

- If you have only positive impacts on an action, then this is a good opportunity to revise if the positive impacts are on the most vulnerable resources and if they are not, it is important to revise if this can change.

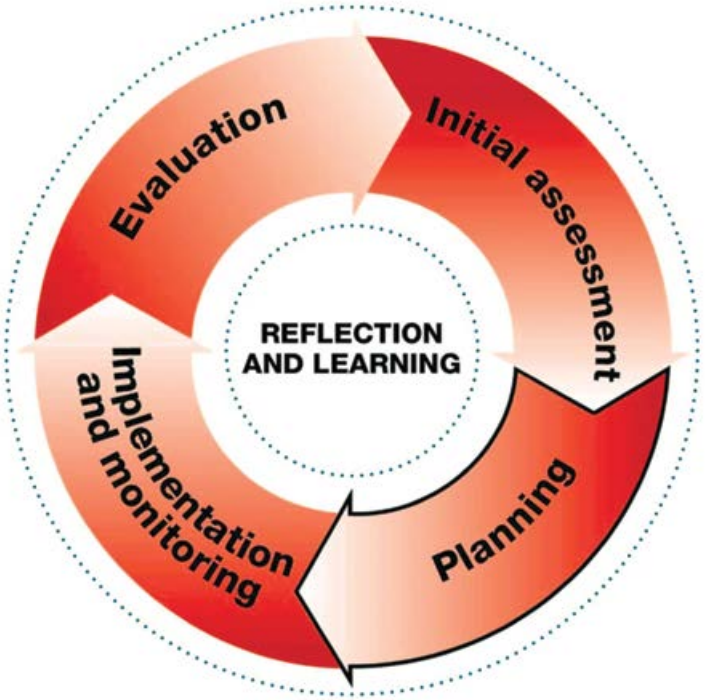
- One big part of revising the actions to create more climate-smart ones is to identify if the actions will generate new vulnerabilities in the future based on different Climate Change scenarios.



Modified activities:

Once the activities have been revised this section can be the product that you are searching for by using the CRiSTAL template on a 3CA process. In this sheet you are asked to describe the elements that make the revised actions sustainable. This is also a good moment to clarify how these actions are going to help the community to develop Climate Change adaptation processes.

Image 3.1



Development of Micro Project Proposals

Now that CRiSTAL has assisted with the identification of climate-smart actions, the participants can develop proposals for micro-projects intended to address issues of relevance to them. There are a number of documents available which can assist in this process. However, you will likely find 'Social Micro Projects' of the Better Be Prepared series developed by CRREC as well as 'How to do a VCA' developed by the IFRC as some of the more useful documents available.

The methodology used to develop these proposals is based on the basic project cycle which is divided into four phases as shown in Image 3.1.

M3

Table 3.3 Project cycle description

Phase	Description
Initial Assessment	Involves the identification and development of the profile for the micro-project based on the analysis of urgent problems and needs to be dealt with through community management. This is a process which involves compilation of all information which facilitates the categorization, prioritization and definition of the actions which provide a response to the identified problem (Diagnostic).
Planning	Once the problem has been identified, the second phase of the cycle, planning, involves a detailed description of the micro-project. During this phase a micro-project proposal is developed and includes the scope of work, partners, beneficiaries, schedule of activities and budget. It also involves an agreed approach for mobilization of resources from various funding organizations at local, national or international levels.
Implementation and monitoring	This phase involves carrying out the activities scheduled in the micro-project proposal, based on the plan of action, schedule of activities and budget. Information is gathered based on the constant follow-up as a means of control over what is being implemented in order to apply corrective actions at the earliest opportunities during this phase.
Evaluation	Evaluation aims to analyze or examine as far as possible the processes which are applied in the identification, formulation, implementation and achievement of the results, which were put forward to respond to the needs identified in the community.

Source. Adapted From 'Social Microprojects', CRREC, March 2010

Glossary

Adaptation - Initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects

Capacity - The combination of all the strengths, attributes and resources available within a community, society or organisation that can be used to achieve agreed goals

Capacity building - Efforts to develop the human skills or societal infrastructures within a community or organisation needed to reduce the level of risk. Capacity building also includes development of institutional, financial, political and other resources, such as technology at different levels and sectors of the society

Climate - The average, or typical, weather conditions of a given area observed over a long period of time, usually 30 years or more.

Climate Variability - Fluctuation in climate over the short term. Departures from long term averages or trends

Climate Change - A change in the components of climate (such as temperature, precipitation, atmospheric pressure, or winds) that persists for decades or longer arising from either natural causes or human activity. Climate change may be due to natural internal processes or external forces (that is to say processes like the sun getting brighter or dimmer, volcanoes, changes in atmospheric composition) or to persistent anthropogenic (caused by human impact) changes in the composition of the atmosphere or in land use

Community-based adaptation - is a community-led process, based on communities' priorities, needs, knowledge, and capacities, which should empower people to plan for and cope with the impacts of climate change

Community Resilience - The capacity of a community to cope with stress, overcome adversity or adapt positively to change

Comprehensive Disaster Management - Comprehensive Disaster Management which includes attention to all phases of the Disaster Management Cycle –prevention, mitigation, preparedness and response, recovery and rehabilitation. It includes emphasis on reducing risk. This nomenclature is the term that reflects the global trend in the discipline for increased focus on risk management and the intense desire among disaster management Stakeholders in the Caribbean to accelerate initiatives in promoting disaster loss reduction.

Coping Capacity - The means by which people or organisations use available resources and abilities to face adverse consequences that could lead to a disaster. In general, this involves managing resources, both in normal times as well as during crises or adverse conditions. The strengthening of coping capacities usually builds resilience to withstand the effects of natural and human-induced hazards

Disaster - A serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources

Disaster Risk Management - The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster

Disaster Risk Reduction - The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the underlying causes of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment and improved preparedness for adverse events

Global Warming – An increase in the average temperature of the atmosphere due to higher retention radiation from the sun by the greenhouse gases which have increased their levels product of the human being´s activities

Early Warning System - The set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss

Hazard - A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage

Hydro-meteorological hazard - Process or phenomenon of atmospheric, hydrological or oceanographic nature that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage

Livelihoods - A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stress and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base.

Mitigation of disasters - The lessening or limiting of the adverse impacts of hazards and related disasters. This is similar to what is called 'adaptation' by the climate change community

Mitigation of climate change - A human intervention to reduce the sources or enhance the sinks of greenhouse gases. Examples include using fossil fuels more efficiently for industrial processes or electricity generation, switching to solar energy or wind power, improving the

insulation of buildings, and expanding forests and other "sinks" to remove greater amounts of carbon dioxide from the atmosphere.

Preparedness - The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from the impacts of likely, imminent or current hazard events or conditions

Prevention - The outright avoidance of adverse impacts of hazards and related disasters

Recovery - The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors

Response - The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected

Resilience - The ability of a system, community or society exposed to hazards to resist, absorb, adapt to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions

Risk - The combination of the probability of an event and its negative consequences

Vulnerability - The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.

Weather - Short-term atmospheric conditions. Weather is measured by temperature, humidity, wind speed, atmospheric pressure, cloudiness and precipitation. In most places, weather can change from minute-to-minute, hour-to-hour, day-to-day, and season-to-season

COMMENTS FROM FIELD TEAM:

List Any Other Relevant Information

(including presence of organizations currently working on CBDRR):

Fundamental Principles of the Red Cross and Red Crescent Movement

Proclaimed in Vienna in 1965, the seven Fundamental Principles bond together the National Red Cross and Red Crescent Societies, The International Committee of the Red Cross and the International Federation of the Red Cross and Red Crescent Societies. They guarantee the continuity of the Red Cross Red Crescent Movement and its humanitarian work.

Humanity

The International Red Cross and Red Crescent Movement, born of a desire to bring assistance without discrimination to the wounded on the battlefield, endeavours, in its international and national capacity, to prevent and alleviate human suffering wherever it may be found. Its purpose is to protect life and health and to ensure respect for the human being. It promotes mutual understanding, friendship, cooperation and lasting peace amongst all peoples.

Impartiality

The Movement makes no discrimination as to nationality, race, religious beliefs, class or political opinions. It endeavours to relieve the suffering of individuals, being guided solely by their needs, and to give priority to the most urgent cases of distress.

Neutrality

In order to continue to enjoy the confidence of all, the Movement may not take sides in hostilities or engage at any time in controversies of a political, racial, religious or ideological nature.

Independence

The Movement is independent. The National Societies, while auxiliaries in the humanitarian services of their governments and subject to the laws of their respective countries, must always maintain their autonomy so that they may be able at all times to act in accordance with the principles of the Movement.

Voluntary service

The Movement is a voluntary relief movement not prompted in any manner by desire for gain.

Unity

There can be only one Red Cross or one Red Crescent Society in any one country. It must be open to all. It must carry on its humanitarian work throughout its territory.

Universality

The International Red Cross and Red Crescent Movement, in which all Societies have equal status and share equal responsibilities and duties in helping each other, is worldwide.

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