



CANARI Caribbean Natural Resources Institute

# Implementing climate change action

A toolkit for Caribbean civil society organisations



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and BHP Billiton Trinidad and Tobago

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The ***Climate ACTT*** project sought to strengthen the capacity of five civil society organisations (CSOs) in Trinidad and Tobago to internationally accepted levels of best practice in two areas: institutional (organisational) strengthening; and technical capacity to deliver programmes/projects related to climate change adaptation and resilience. Section 6 features case studies of climate change projects implemented by these five CSOs under the project: Caribbean Youth Environment Network Trinidad and Tobago Chapter; Environmental Research Institute Charlotteville; Environment Tobago; the Fondes Amandes Community Reforestation Project; and the Turtle Village Trust.

The additional case studies featured in Section 6 were contributed by Ingrid Parchment, Caribbean Coastal Area Management Foundation; Nakita Poon Kong, IAMovement; and Yves Renard, Panos Caribbean.

The ***Climate ACTT*** project was implemented and managed by the Caribbean Natural Resources Institute in collaboration with Conservation International and BHP Billiton Trinidad and Tobago.

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# List of Acronyms

ACTT	Action by civil society in Trinidad and Tobago
CANARI	Caribbean Natural Resources Institute
CARICOM	Caribbean Community
CBA	Community-based adaptation
CBO	Community-based organisation
C-CAM	Caribbean Coastal Area Management Foundation
CCCCC	Caribbean Community Climate Change Centre
CI	Conservation International
CNFO	Caribbean Network of Fisherfolk Organisations
COP	Conference of the Parties
CSO	Civil society organisation
CYEN	Caribbean Youth Environment Network
CYEN-TT	Caribbean Youth Environment Network Trinidad and Tobago Chapter
EBA	Ecosystem-based adaptation
EIA	Environmental impact assessment
ERIC	Environmental Research Institute Charlotteville
ET	Environment Tobago
FACRP	Fondes Amandes Community Reforestation Project
GHG	Greenhouse gas
GIS	Geographic information system
HFCC-EHC	Holy Faith Convent Couva Eco-Heroes Environment Club
IPCC	Intergovernmental Panel on Climate Change
KAP	Knowledge, attitude and practice
KAPP	Knowledge, attitudes, practices and perceptions
MEA	Multilateral Environment Agreement
MEAU	Multilateral Environmental Agreements Unit
NE	North East
PBFMC	Portland Bight Fisheries Management Council
PBPA	Portland Bight Protected Area
THA	Tobago House of Assembly
TVT	Turtle Village Trust
UNFCCC	United Nations Framework Convention on Climate Change
VRA	Vulnerability risk assessment
YCARE	Youth Climate Advocacy and Resilience Building Endeavour

# Introduction

This toolkit is an output of the *Climate ACTT: Action by Civil society in Trinidad and Tobago to build resilience to climate change* project, which was implemented by the Caribbean Natural Resources Institute (CANARI) between August 2015 and January 2017, in collaboration with Conservation International (CI) and BHP Billiton, Trinidad and Tobago. The project was conducted under CANARI's [Civil Society and Governance](#) and [Climate Change and Disaster Reduction](#) programmes.

The *Climate ACTT* project sought to strengthen the capacity of five civil society organisations (CSOs) in Trinidad and Tobago to internationally accepted levels of best practice in two areas: institutional (organisational) strengthening; and technical capacity to deliver programmes and projects related to climate change adaptation and resilience. The five CSOs were:

- [Caribbean Youth Environment Network Trinidad and Tobago Chapter](#) (CYEN-TT);
- [Environmental Research Institute Charlotteville](#) (ERIC);
- [Environment Tobago](#) (ET);
- the [Fondes Amandes Community Reforestation Project](#) (FACRP); and
- the [Turtle Village Trust](#) (TVT).

The purpose of the toolkit is to provide other CSOs with practical information and examples to assist them in designing and implementing effective climate change projects and programmes in their communities and countries.

The toolkit is divided into four sections:

**Section 1: Understanding climate change** provides an overview of the key concepts used to discuss climate change and its impacts, and highlights how the Caribbean region in particular is affected. The climate change policy environment is also presented.

**Section 2: Communicating effectively about climate change** highlights the importance of communicating effectively in any activity related to climate change and provides CSOs with a step-by-step guide to designing a climate change communication plan.

**Section 3: Assessing vulnerability to climate change** provides an overview of vulnerability assessments and provides step by step instructions for using a number of different vulnerability assessment tools.

**Section 4: Planning for adaptation** looks at the key principles and processes CSOs should apply in developing a climate change adaptation plan.

**Section 5: Taking action to adapt and build resilience** provides an overview of different approaches and strategies for adaptation, including community-based adaptation and ecosystem-based adaptation.

**Section 6. Adaptation in action** documents eight case studies of practical climate change adaptation projects in the Caribbean.

CANARI regards this toolkit as a living document that will be refined, adapted and expanded based on its own and others' experiences. We welcome comments, suggestions and feedback to ensure that the toolkit meets the needs of natural resource managers in the Caribbean. Please send these to [info@canari.org](mailto:info@canari.org).

## Understanding climate change

- 1.1. Introduction
- 1.2. What is climate change?
- 1.3. What is the main cause of the climate change we are experiencing now?
- 1.4. What are the global effects of climate change?
- 1.5. How is climate change currently affecting the Caribbean?
- 1.6. Understanding the policy environment to address climate change
- 1.7. Useful resources

## Box 1: Key terms used in Section 1

<b>Climate</b>	The average, or typical, weather conditions of a given area observed over a long period of time, usually 30 years or more. When scientists talk about climate, they are looking at averages of precipitation, temperature, humidity, wind velocity, phenomena such as fog, frost, and hail storms, and other measures of the weather that occur over a long period in a particular place (NASA, 2005).
<b>Climate change</b>	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 (UNISDR, 2009).
<b>Climate change adaptation</b>	The adjustment of human or natural systems, including specific measures to address the actual or potential impacts of climate change (adapted from IPCC, 2014).
<b>Climate change mitigation</b>	The reduction of greenhouse gas emissions by limiting activities or mechanisms that release the gases and/or enhancing activities or mechanisms that remove the gases from the Earth's atmosphere (adapted from IPCC, 2014).
<b>COP21</b>	21 <sup>st</sup> Session of the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) that took place in Paris in December 2015, resulting in the landmark Paris Agreement, which established goals and binding commitments around climate change mitigation and adaptation.
<b>Disaster</b>	A serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses that exceed the ability of the affected community or society to cope using its own resources (UNISDR, 2009).
<b>Global warming</b>	Refers to the increase in average global temperature due to greenhouse gas emissions which trap heat in the Earth's atmosphere (NASA, 2005).
<b>Greenhouse gases (GHGs)</b>	The atmospheric gases that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere and clouds. Carbon dioxide, methane, nitrous oxide, ozone, and water vapour are the primary GHGs in the Earth's atmosphere (NASA, 2005).
<b>Weather</b>	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 (adapted from NASA, 2005).

## 1.1. Introduction

Climate change poses a significant challenge for the Caribbean region, affecting biodiversity, livelihoods, infrastructure and human settlements, and the economy. Organisations across the region, including CSOs, have started to address these challenges. Understanding the causes and impacts of climate change is critical to taking effective action.

In this section, we outline the:

- processes and factors driving climate change;
- specific impacts of, and vulnerabilities to, climate change in the Caribbean; and
- the policy context for addressing climate change at the national, regional and international levels.



Figure 1: Climate change can cause the loss of recreational beaches and therefore poses a significant threat to our way of life in the Caribbean. Photo: Natalie Boodram/CANARI

## 1.2. What is climate change?

Climate change refers to a change in the components of climate, such as temperature, precipitation, atmospheric pressure or winds that persists for decades or longer. Climate change can arise from either natural causes or human activity.

Major signs that the climate is changing include:

- planet-wide increases in average temperature (see Figure 2 of rising global temperatures over centuries);
- increases in land and ocean temperatures;
- changes in the frequency and strength of extreme weather events (e.g. hurricanes); and
- changes in ocean chemistry.

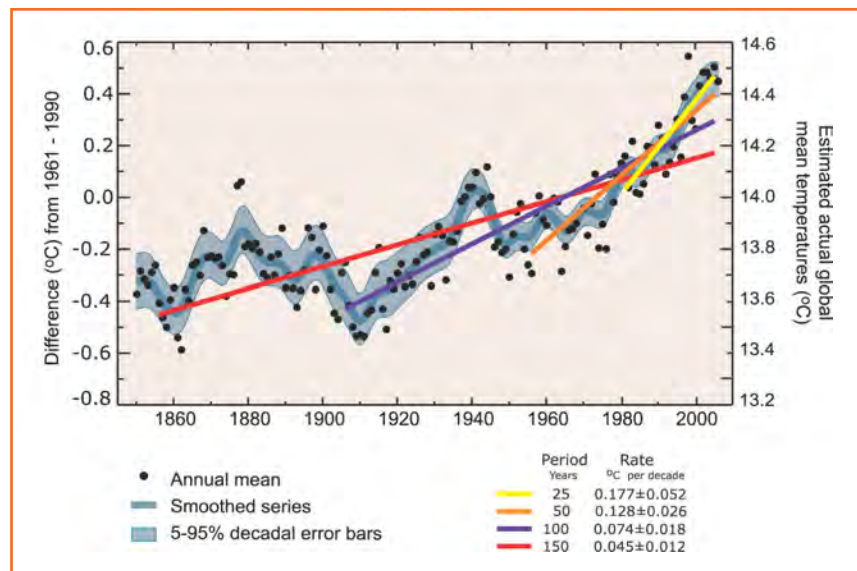


Figure 2: Rising Global Temperatures.  
Source: Intergovernmental Panel on Climate Change (IPCC)



## Box 2: Clarifying some common misunderstandings

### Weather and climate

Weather refers to the short-term changes we see in temperature, clouds, precipitation, humidity and wind in a particular city or region. Weather can vary greatly from one day to the next, or even within the same day. In the morning the weather may be cloudy and cool but by afternoon it may be sunny and warm.

The climate of a city or region is its weather averaged over many years (30 years or more). For example, in a city in the Caribbean, you expect a tropical climate with a rainy season and a dry season. Although some years the rainy season may start later or be drier than expected, on average the heaviest rainfall is from June to November. The climate of a city, region or the entire planet changes very slowly. These changes take place on the scale of tens, hundreds and thousands of years (NASA, 2005).

The main difference between weather and climate is the time scale. Weather is short term - hours, days, months and weeks. Climate is longer term - years, decades and centuries.

### Global warming and climate change

Global warming and climate change are sometimes used interchangeably but the two have different meanings. Global warming refers to the increase in average global temperature due to greenhouse gas (GHG) emissions. Climate change is the long-term change or shift in temperature, rainfall, snow, humidity, wind and all the other components of climate and weather. It also includes changes in the frequencies and strength of extreme weather events such as droughts and storms.

### Climate change mitigation and adaptation

Climate change *mitigation addresses the causes of climate change*. Mitigation seeks to reduce the emission of GHGs (e.g. through use of alternative energy sources to produce energy that do not release GHGs) or to capture and store carbon (e.g. through planting trees that absorb carbon dioxide from the atmosphere).

Climate change *adaptation addresses the impacts of climate change*. It encompasses the adjustment of human or natural systems, including specific measures to address the actual or potential impacts of climate change, for example, replanting mangroves to protect against coastal erosion and flooding due to sea level rise and more intense hurricanes and storm surges.

## 1.3. What is the main cause of the climate change we are experiencing now?

Most scientists agree that current climate change is caused by human activities that are increasing the amount of greenhouse gases (GHGs) and trapping more heat in the Earth's atmosphere. These activities include:

- burning fossil fuels that contain a high percentage of carbon (e.g. coal, oil and natural gas) for electricity, transportation and industrial processes, which adds GHGs such as carbon dioxide to the atmosphere;
- clearing forests for agriculture and human settlement; forests are major stores of carbon and their removal leads to less absorption of carbon dioxide (a major GHG) and therefore more carbon dioxide in the atmosphere; and
- agriculture where cattle grazing, use of fertilizers and animal waste are major sources of GHGs, such as methane and nitrous oxide.

### Box 3: How our climate works?

The energy from the sun is the main source of heat and the main driver of the Earth's climate. Because of the shape of the Earth and its rotation around the sun, the amount of the sun's energy reaching the Earth's surface varies from place to place producing the various climates. For example, unlike North America, the Caribbean has a tropical climate as it is near the equator and receives more of the sun's energy.

Other factors that influence the climate include:

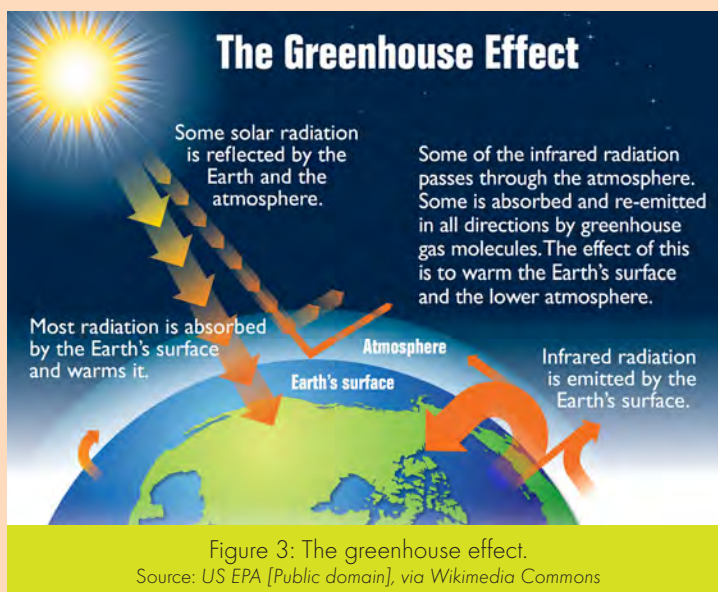
- gases that occur naturally in the atmosphere, such as carbon dioxide and water vapour, are very efficient at trapping heat. Increasing concentrations of these gases can lead to warming, while decreasing concentrations lead to cooling;
- ocean currents that move heat from the equator to the poles and from the surface of the ocean to the depths of the ocean. For example, without the ocean currents that bring warmer waters north, the United Kingdom would be 5°C cooler (NCAR UCAR, 2011);
- volcanic eruptions that release gases, such as sulphur dioxide, and tiny particles into the atmosphere which reflect incoming sunlight out into space and cause cooling;
- snow and ice that have light-coloured surfaces, which reflect incoming sunlight out into space and cause cooling;
- forest fires that release carbon dioxide, which traps heat; and
- cloud cover that both traps heat in the atmosphere because clouds are made of water vapour and reflect light and heat from the atmosphere because they are light in colour.

#### Climate change and the enhanced 'greenhouse effect'

As energy from the sun enters the atmosphere, it is absorbed by the Earth's surface and warms the land and oceans. This energy is then radiated back into the atmosphere as heat.

Several gases in the atmosphere, including carbon dioxide, methane, nitrous oxide, ozone, and water vapour, trap some of this heat. This process is called the 'greenhouse effect' because these gases act like the glass walls of a greenhouse – they let in light but keep heat from escaping. This process occurs naturally and has kept the Earth's temperature about 33°C warmer than it would be otherwise (NASA, 2005). Current life on Earth could not be sustained without the natural greenhouse effect.

However, when the concentration of these greenhouse gases (GHGs) gets too high, conditions on Earth start to change. Since the industrial revolution, humans have released more GHGs into the atmosphere than the Earth can absorb, trapping more heat. This increase in GHGs is believed to be the main cause of the increase in average global temperature and current climate change (IPCC, 2014).



Adapted from National Center for Atmospheric Research - University Corporation for Atmospheric Research. *Weather and Climate Basics*. [https://eo.ucar.edu/basics/cc\\_1.html](https://eo.ucar.edu/basics/cc_1.html) [accessed 15 February 2017].

## 1.4. What are the global effects of climate change?

The main effects of climate change are:

- changes in rainfall and seasonal patterns, as well as changes in ocean conditions and currents due to rising air and ocean temperatures;
- more extreme and frequent weather-related disasters, such as droughts, floods, heatwaves, hurricanes and storm surges;
- melting ice caps and less snow at the poles and in mountain regions due to rising temperatures;
- rising sea level because of higher ocean temperatures that cause water to expand, and melting polar ice caps that add water to the oceans. Sea level rise causes coastal erosion and salt water intrusion into fresh water resources; and
- ocean acidification, which is due to our oceans absorbing excess carbon dioxide from the atmosphere and becoming more acidic. Ocean acidification threatens coral reefs and the wide range of marine species that depend on reefs.



Figure 4: Rising ocean temperatures have caused massive coral mortality across the globe. *Photo: Charles Sheppard*



Figure 5: Small increases in sea levels can have devastating effects on coastal habitats. *Photo: Charles Sheppard*

## 1.5. How is climate change currently affecting the Caribbean?

The effects of climate change are felt differently across the globe. In the Caribbean region, temperature records have shown increases in air and ocean temperatures over the past century. Rainfall patterns have become unpredictable with more periods of heavy rainfall and flooding. Rising sea levels also threaten coastal areas where the majority of the population and infrastructure in Caribbean islands is located. This section outlines the major actual and potential effects of climate change across the Caribbean.

### 1.5.1. Observed effects of climate change in the Caribbean

The following are the main effects of climate change that have been observed in the Caribbean:

#### *a) Heat stress and rising air temperatures*

Since the 1950s, there has been a 2°C increase in the daytime temperature range (Taylor, *et al.*, 2007). The region has also experienced more very warm days and fewer very cold nights.

#### *b) Changing rainfall patterns*

Greater extremes and variability in rainfall are being experienced across the region. More periods of heavy rainfall have been recorded over the last 20 years, leading to flooding and damage to infrastructure (Taylor, *et al.*, 2007). Sporadic rainfall and dry spells lead to water shortages, affecting domestic water supply and the key economic sectors of agriculture and tourism.

#### *c) More extreme weather events*

There have been more droughts since the 1960s and more flooding events and storms since the mid-1990s. After experiencing drought for much of 2015, Jamaica then had severe flooding in December 2015. Similarly, Saint Lucia had severe flooding in 2013 that caused millions of dollars in damage to its infrastructure (Caribbean Development Bank [CDB], 2016).

Hurricanes and storm surges cause damage to important ecosystems (reefs and mangroves) that play an important role in protecting the coastline. Extreme weather events can also be potentially very damaging to the key economic sectors of agriculture and tourism.

#### *d) Rising sea levels*

Global average sea level has been rising at an average rate of 1.7 mm/year (plus or minus 0.5mm) over the past 100 years, which is significantly greater than the rate averaged over the previous several thousand years (National Ocean Atmospheric Administration [NOAA], 2007). Rising sea levels not only erode the coastline but can also lead to the contamination of fresh water by salt water, a process called salt water intrusion.

### 1.5.2. Future projections for the Caribbean

The following are the main projections for the Caribbean in terms of the future effects of climate change:

#### *a) Increase in surface temperature*

An average annual increase in surface temperature of 1.2 to 2.3°C is projected across the Caribbean by 2100 (Nurse, *et al.*, 2014). With a 2°C increase, 13,000 km<sup>2</sup> of land would disappear in the region due to rising sea levels as warmer waters expand; this is an area comparable to the whole of Barbados, St Vincent & the Grenadines, Anguilla, and Antigua & Barbuda combined (Panos Caribbean, 2015). The Caribbean has been advocating for measures to ensure a maximum rise of 1.5°C for a chance to stay alive (see Case Study 1point5tostayalive, an advocacy campaign on climate justice in Section 6).



## Figure 6. Selected Climate Change Effects on the Caribbean

**Caribbean biodiversity is being affected** by climate change. Several species of plants and animals that are either found in the Caribbean or migrate to the region for part of the year are already affected by global warming. The Caribbean Sea has already warmed by 1.5°C in the past century. If it were to become a further 1°C warmer, fish like tuna, parrot, and dolphin fish, would go in search of cooler waters.



A 0.5 m increase in sea level is expected to result in the loss of just over one third of marine turtle nesting sites in the Caribbean.<sup>9</sup> Sea level rise, increases in water temperature, storminess and rainfall could also damage reefs and sea grass beds, the foraging habitats of sea turtles. **Photo: Paul Diamond**



St. Georges, Grenada. **Photo: Lyndon John**

**More intense hurricanes.** The region has had more and stronger storms over the past 10 years. A major hurricane can have very high costs: Hurricane Ivan in 2004 cost the Cayman Islands US\$3,432 million.



More intense hurricanes and rising sea levels will contribute to coastal erosion in many Caribbean countries. **Photo: Stephen Smalling**

**Rising sea levels** will make parts of the coastal zone disappear. Sea level rise can lead to flooding of low-lying areas and coastal communities; dislocation of coastal communities; loss of land due to erosion; and contamination of groundwater by salt water. Seventy per cent of Caribbean people live and work in the coastal zone and it is also where much of the infrastructure, like roads, airports, and sea ports, is found.



Landslide in Cascade Jamaica. **Photo: Jamaica Conservation and Development Trust.**

**Changing rainfall patterns.** Cuba, Jamaica, and Belize have all experienced severe droughts in recent years and heavy rains have caused catastrophic flooding and landslides in Guyana, Haiti, and Jamaica. Islands that are already short of water, like Antigua and Barbuda, Barbados, and St. Kitts and Nevis, could be faced with severe drought and water shortages in the future. **Photo: Jamaica Conservation and Development Trust.**

<sup>9</sup> Fish *et al.*, 2005, cited in Mimura, N., L. Nurse, R.F. McLean, J. Agard, L. Briguglio, P. Lefale, R. Payet and G. Sem. 2007. Small islands. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge, UK: Cambridge University Press, 687-716. <sup>10</sup> Gouvernement de la République d'Haïti. 2008. Rapport d'évaluation des besoins après désastre Cyclones Fay, Gustav, Hanna et Ike. Un rapport préparé par le Gouvernement de la République d'Haïti avec l'appui de la Banque Mondiale du Système des Nations-Unies et de la Commission Européenne. <sup>11</sup> International Strategy for Disaster Reduction (UNISDR) and Centre for Research on the Epidemiology of



Gonaïves, Haiti. Between mid-August and early September 2008, Haiti was hit by four hurricanes and tropical storms in a row. They affected more than 165,000 families, killed an estimated 793 people and caused US\$89,739 million in damages.<sup>10</sup> One of these hurricanes, Hanna, was ranked sixth on the list of 10 worst natural disasters in 2008 by the number of deaths and missing persons.<sup>11</sup> Photo: Jean-Claude Louis/Panos Caribbean



The humpback whales that travel to the northeast coast of the Dominican Republic each year to give birth and mate for the next season are arriving later and leaving earlier than they used to do. Scientists think warmer waters in the Gulf of Maine where the whales feed are encouraging them to stay there longer. Photo: Leslie Dibos/CEBSE Inc.



Coral reef after bleaching event. Photo: Owen Day.

**Severe stress on Caribbean coral reefs.** Strong hurricanes damage reefs already weakened by pollution from the land, over-fishing and disease. Warmer sea temperatures contribute to coral bleaching. Damaged coral reefs weaken coastal defences and can have a negative effect on fisheries, beach quality and tourism.

Many mangrove forests in the region have already been weakened by pollution or destroyed to make way for buildings and agriculture. Photo: Nicole Leotaud/CANARI

The natural response of mangroves to higher sea levels is to retreat and re-establish themselves further inland. But when barriers such as roads, seawalls and other construction prevent them from doing so, they become submerged or drown and the protective fringe of mangroves along the coastline gets smaller.



Beautiful beaches like this make the Caribbean an attractive tourism destination. Photo: Stock

**Productive sectors are affected by climate change.**

In 2005, Hurricanes Dennis and Emily caused an estimated US\$2.2 million in agricultural loss and damage in Jamaica.<sup>12</sup> Hurricane Ivan's impact on Grenada in 2004 caused losses in the agricultural sector equivalent to 10% of GDP. The two main crops, nutmeg and cocoa, both of which have long gestation periods, will not make a contribution to GDP or earn foreign exchange for the next 10 years.<sup>13</sup> Warmer temperatures could lead to an increase in the pests and plant diseases that thrive in warm weather and could also affect crops yields.

If other regions, such as North America and Europe get warmer, the Caribbean may become less attractive as a tourism destination. The beaches and coral reefs that tourists come to see and experience are affected by intense hurricanes and warmer water temperatures. These ecosystems are already weakened by human activity such as construction in the coastal zone and pollution from land, which makes it harder for them to stand up to climate threats.

Disasters (CRED), Department of Public Health Université Catholique de Louvain, Belgium. 2008 Disasters in numbers. Available at <http://www.unisdr.org/eng/media-room/facts-sheets/2008-disasters-in-numbers-ISDR-CRED.pdf>.<sup>12</sup> Brown, I. 2005. Impact of climate change on Caribbean agriculture: CARDI calls for research targeted at areas under threat. Jamaica Information Service. Tuesday, August 30, 2005. <http://www.jis.gov.jm>.<sup>13</sup> Mimura, N., L. Nurse, R.F. McLean, J. Agard, L. Briguglio, P. Lefale, R. Payet and G. Sem. 2007. Small islands. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge, UK: Cambridge University Press, 687-716.

### ***b) Changing rainfall patterns***

A decrease in rainfall of about 5–6% is projected by 2100 (Nurse, *et al.*, 2014).

### ***c) Rising sea levels***

Sea level rise projections range from 0.5 to 0.6 metres by 2100 (Nurse, *et al.*, 2014). As a result of the projected sea level rise in the 21st century and beyond, coastal systems and low-lying areas will increasingly experience adverse impacts such as submergence, coastal flooding and coastal erosion.

### ***d) Ocean acidification***

Oceans are becoming more acidic as a result of absorbing some of the excess carbon dioxide in the atmosphere. This presents a threat to coral reefs and shellfish as they cannot form their external skeletons (hard shells) when the water is too acidic (Nurse, *et al.*, 2014).

## **1.5.3. Potential impacts of climate change on natural resources and the Caribbean's economy and livelihoods**

Climate change is a complex challenge as its impacts and consequences are interlinked and wide-ranging. While many of the impacts will first be experienced within the natural environment, the consequences will also be cultural, economic and social. Climate change will have impacts on:

### ***a) Caribbean biodiversity***

- Many species of animals and plants are likely to be affected by climate change. For instance, a 0.5m increase in sea level is expected to result in the loss of approximately one third of marine turtle nesting sites in the Caribbean (Fish, *et al.*, 2005, cited in Mimura, *et al.*, 2007).
- Higher temperatures can lead to a change in the length of the growing season for plants.
- Sea level rise and increases in water temperature, storms and rainfall could also damage reefs and sea grass beds, which are important foraging habitats for sea turtles and many other marine species.

### ***b) Coastal and marine ecosystems***

- Increased coral bleaching occurs when ocean water gets too warm. Coral reefs thrive in waters around 25°C. If water temperatures rise above this, corals expel the small organisms that live on them. When this happens, the corals appear white or “bleached”.



Figure 7: Coastal erosion of the Boggy Sand Road, Cayman Islands. Photo: CANARI



- Coastal erosion and saltwater intrusion lead to the degradation of mangroves, wetlands, and seagrass beds that support nurseries for fish and aquatic species.

### **c) Food production**

Food production can be severely disrupted by extreme weather events, such as droughts and flooding, as well as livelihoods based on farming, fishing and other productive sectors that rely on natural resources. Climate change impacts on food production include:

- **Agriculture:** changing rainfall patterns may mean that farmers will no longer plant or reap certain crops at the accustomed time. Too much rain at the wrong time can ruin a crop; too little can also lead to losses. Also, new pests and invasive species due to changing climatic conditions can ruin a crop and reduce productivity.
- **Fisheries:** decline of coastal ecosystems, and the fisheries that depend on them, due to the direct impacts of climate change, including increased coral bleaching, ocean acidification, sea level rise and damage from more intense hurricanes and storm surges. Non-climate factors, such as overfishing and pollution, also compound these impacts.



Figure 8: An example of small scale agriculture in the Caribbean. Photo: CANARI

### **d) Water resources**

Increased water scarcity, due to changing rainfall patterns, could lead to severe droughts and water shortages. In 2015, many Caribbean countries, including Jamaica, Antigua & Barbuda, and Trinidad & Tobago (particularly Tobago) experienced an extended period of low rainfall that led to water shortages (Food and Agricultural Organisation [FAO], 2016).

### **e) Tourism**

Tourism is one of the region's most important economic sectors and is highly climate-sensitive because climate change directly affects environmental resources that are amongst its major tourism attractions. Widespread resource degradation, such as beach erosion and coral bleaching, has been found to negatively impact the perception of destination attractiveness.

### **f) Public health and well-being**

- Public health is at risk, and can be seriously compromised by lack of access to adequate, safe freshwater and nutrition.



Figure 9: Beach tourism, Barbados. Photo: Nicole Leotaud/CANARI

- Extreme weather events are conducive to the transmission of diseases such as malaria and dengue. In 2014, the mosquito-borne chikungunya devastated the Caribbean work force. Scientists predict that vector- and water-borne diseases will increase as climate changes in the Caribbean (Nurse, *et al.*, 2014).

<b>Table 1: Summary of climate change trends and impacts in the Caribbean</b>	
<b>Climate change trends</b>	<b>Climate change impacts and consequences</b>
<ul style="list-style-type: none"> <li>• Higher temperatures on land</li> <li>• More warm days, fewer cold nights</li> </ul>	<ul style="list-style-type: none"> <li>• Heat stress and heatwaves</li> <li>• Increase of some vector- and water-borne diseases</li> <li>• Increase in forest fires</li> <li>• Damage to forests</li> <li>• Food shortages due to heat stress and pest outbreaks</li> </ul>
<ul style="list-style-type: none"> <li>• Higher temperatures in the sea</li> </ul>	<ul style="list-style-type: none"> <li>• Coral bleaching</li> <li>• Damage to coral reefs</li> <li>• Damage to mangroves</li> <li>• Migration of fish and other marine animals to cooler water</li> <li>• More intense hurricanes and storm surges</li> </ul>
<ul style="list-style-type: none"> <li>• Greater rainfall variability</li> </ul>	<ul style="list-style-type: none"> <li>• Flooding</li> <li>• Landslides</li> <li>• Soil degradation</li> <li>• Increase of some vector- and water-borne diseases</li> <li>• Food and water shortages</li> <li>• Damage to forests</li> </ul>
<ul style="list-style-type: none"> <li>• More frequent and extreme weather events such as droughts, floods and hurricanes</li> </ul>	<ul style="list-style-type: none"> <li>• Coastal erosion</li> <li>• Food and water shortages</li> <li>• Landslides</li> <li>• Soil degradation</li> <li>• Flooding</li> <li>• Storm surge</li> <li>• Increase of some vector- and water-borne diseases</li> <li>• Damage to coral reefs</li> <li>• Damage to mangroves</li> <li>• Damage to forests</li> <li>• Damage to buildings, roads, bridges, airports, ports</li> </ul>
<ul style="list-style-type: none"> <li>• Sea level rise (due to increased sea temperatures and melting of glaciers)</li> </ul>	<ul style="list-style-type: none"> <li>• Coastal erosion</li> <li>• Coastal flooding and more intense storm surges</li> <li>• Saltwater intrusion</li> <li>• Damage to coral reefs</li> <li>• Damage to mangroves</li> <li>• Damage to coastal infrastructure (buildings, roads, airports, ports)</li> <li>• Decline in coastal fisheries</li> </ul>
<ul style="list-style-type: none"> <li>• Ocean acidification</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced growth of coral reefs and molluscs</li> <li>• Decline in coastal fisheries</li> </ul>

## Box 4: Vulnerability to climate change in the Caribbean islands

Small island developing states in the Caribbean have been identified as amongst the most vulnerable to the impacts of climate change for several reasons:

- **Caribbean islands are routinely exposed to climate hazards.** About 70% of Caribbean people live and work in coastal areas, where infrastructure such as roads, airports and sea ports are also located, exposing them to coastal erosion and flooding due to sea level rise and storm surge. Many of the Caribbean islands such as Grenada, Saint Lucia, and The Bahamas are also located along the path of tropical storms. Storms affect the Caribbean each year, causing loss of lives and millions of dollars in damages to the countries. Some of our island states are also prone to dry conditions that are exacerbated during extended periods of low rainfall leading to droughts. Islands like Aruba, Bonaire and Antigua have dry conditions that are expected to increase as the climate continues to change.
- **Caribbean islands are highly affected by climate hazards and related disasters.** Our past has shown that extreme climatic events, such as heatwaves, drought and hurricanes, can cause natural disasters and disproportionately affect the population and economies of Caribbean islands. In small islands with economies based on one or two sectors, such as agriculture and tourism, a single climatic event can result in loss of life and damage to infrastructure and livelihoods affecting the entire island. In 2016, Hurricane Matthew resulted in the death of more than 800 persons and the loss of US\$1 billion in Gross Domestic Product in Haiti alone (Bryan, 2015). Flooding in Dominica in 2015 “caused significant damage and set back economic growth” (CDB, 2016) while the 2009-2010 drought caused a 20% reduction in vegetable production and 200% rise in vegetable prices in St Vincent and the Grenadines (FAO, 2016).
- **The costs of adaptation are a disproportionate burden on developing economies.** Most of the islands of the Caribbean are classified as medium developed countries, with Haiti classified as among the least developed countries in the world. Adapting to climate change is costly. The infrastructure needed to adapt to climate change, such as sea walls, changes to building structures and roads, is expensive to put in place and most Caribbean islands cannot afford these costs.

The net effect is that the Caribbean is highly vulnerable to climate change and related natural disasters. With limited finances and technical resources to address the impacts of climate change, Caribbean governments and civil society have been advocating for additional support for adaptation from developed countries.

The potential for more extreme events in the face of climate change poses a critical challenge for the future.



Figure 10: Damage in the city of Moron, Haiti, following Hurricane Matthew. Photo: Avi Hakim, CDC (Flickr) [CC BY 2.0 (<http://creativecommons.org/licenses/by/2.0>)], via Wikimedia Commons



Figure 11: After Hurricane Tomas hit St. Lucia in 2010, severe flooding and mudslides were experienced throughout the island. Photo: Natalie Boodram/CANARI

## 1.6. Understanding the policy environment to address climate change

For effective advocacy around climate change, CSOs need a sound understanding not only of climate change and its impacts but also of the policy response in terms of mitigating and adapting to climate change at the global, regional and national levels.

Policy response to climate change focuses on two measures:

- **Adaptation to address the impacts of climate change.** Adaptation helps human and environmental systems to adjust or change to be able to function in changing climates. These measures can include changing crops to drought resistant varieties in the Caribbean as it becomes drier and warmer.
- **Mitigation to address the causes of climate change.** Mitigation seeks to reduce the emissions of GHGs (e.g. use of alternative energy sources for electricity and transportation that do not produce carbon dioxide) and enhance activities that absorb and store carbon dioxide from the environment (e.g. planting and protecting forests that absorb carbon dioxide from the atmosphere).

This section presents the current status of key policies, agreements and organisations driving these measures and shaping the climate change policy environment at various levels.

### 1.6.1. Global level

#### *a) The United Nations Framework Convention on Climate Change (UNFCCC)*

The UNFCCC is one of three conventions emanating from the 1992 Rio Declaration on Environment and Development. The ultimate objective of the UNFCCC is to stabilise greenhouse gas concentrations “at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system.” It also states that “such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner.” (UNFCCC, 1992)

The UNFCCC took effect in 1994; 197 countries have ratified the text, thus becoming Parties to the Convention. Since the first meeting of the Conference of the Parties (COP) to the UNFCCC held in Berlin, Germany in 1995, world leaders have met on a regular basis to try and provide adequate responses to the challenges posed by climate change impacts.

One of the most notable outcomes of these COP meetings was the **Kyoto Protocol**, adopted in 1997. When it entered into force almost 10 years later in 2005, the Kyoto Protocol set binding emission reduction targets for a total of 37 industrialised or developed countries, as well as the European Community, based on the fact that these countries have been and continue to be the highest emitters of greenhouse gases. The first commitment period



set out by the Kyoto Protocol spanned 4 years, 2008-2012, while the second commitment period started in 2013 and runs until 2020.

The 21st COP meeting (COP 21) of the UNFCCC was held in December 2015, in Paris, France. The main outcome of the meeting, the **Paris Agreement**, was considered a major achievement in light of the provisions agreed by the Parties to the Convention to increase efforts to combat climate change as well as to adapt to its effects. The Paris Agreement entered into force on 4 November 2016.

The Paris Agreement states that all parties to the Convention will work to ensure that global temperature rise can be maintained to well below 2°C above average pre-industrial levels, while countries will strive for a maximum of 1.5°C. In the lead-up to the COP 21 Paris meeting, Caribbean countries advocated for a cap of 1.5°C, and many stakeholders embarked on a “1point5toStayAlive” campaign (see Case Study 6.8 in Section 6). Indeed, a 2°C increase would lead to rising sea levels as warmer waters expand and could submerge as much as 13,000 km<sup>2</sup> of land in the Caribbean region, an area comparable to the islands of Barbados, Saint Vincent and the Grenadines, Anguilla, Antigua and Barbuda combined<sup>1</sup>.

The Paris Agreement includes provisions for enhanced support to assist developing countries including:

- international cooperation and support;
- capacity-building, including through innovation and technology; and
- financial support and resources, especially to meet the costs of adaptation.

The Paris Agreement also contains provisions inviting CSOs to “scale up their efforts and support actions to reduce emissions and/or to build resilience and decrease vulnerability to the adverse effects of climate change”<sup>2</sup>.

### ***b) The Intergovernmental Panel on Climate Change (IPCC)<sup>3</sup>***

The IPCC is an organisation set up by the United Nations Environment Programme and the World Meteorological Organization in 1988 to provide the world with a clear scientific view on the current state of knowledge in climate change and its potential environmental and socio-economic impacts. It reviews and assesses the most recent scientific, technical and socio-economic information produced worldwide relevant to the understanding of climate change. Since 1990, the IPCC has produced five assessment reports on climate change with contributions from over 1,000 scientists worldwide. The most recent assessment reports from 2013-2014 focus on state-of-the-art climate science and model projections, impacts and vulnerability to climate change, and strategies for adaptation and mitigation.

1 For more information, see: <http://1point5.info/whatsup>

2 For more information, see: <http://bigpicture.unfccc.int/#content-the-paris-agreemen>

3 For more information, see: <https://www.ipcc.ch/index.htm>

## 1.6.2. Regional level

### ***a) Caribbean Community Climate Change Centre (CCCCC or 5Cs)<sup>4</sup>:***

The CCCCC coordinates the Caribbean Community's (CARICOM) response to climate change. It is also the repository and clearing house for regional climate change information and data and provides climate change related policy advice and guidelines to the CARICOM Member States through the CARICOM Secretariat.

### ***b) Regional Framework and Implementation Plan for Achieving Development Resilient to Climate Change:***

The CCCCC has prepared a Regional Framework and Implementation Plan for Achieving Development Resilient to Climate Change (CCCCC, 2009). The Regional Framework, which was approved in 2009, defines a strategic and coordinated approach to address climate change and build resilience within CARICOM. The framework focuses on:

1. Mainstreaming climate change adaptation strategies into the sustainable development agendas of CARICOM states.
2. Promoting the implementation of specific adaptation measures to address key vulnerabilities in the region.
3. Promoting actions to reduce GHG emissions through fossil fuel reduction and conservation, and switching to renewable and clean energy sources.
4. Encouraging action to reduce the vulnerability of natural and human systems in CARICOM countries to the impacts of climate change.
5. Promoting social, economic, and environmental benefits through the sustainable management of standing forests in CARICOM countries.

An implementation plan has been developed for the period 2011-2021 to secure buy-in and funding from the CARICOM governments, civil society and key donors to take action and establish a monitoring and evaluation system to track progress in building resilience to climate change (CCCCC, 2011).

<sup>4</sup> For more information on CCCCC, see: <http://www.caribbeanclimate.bz/>



Figure 12: The Aripo Savannas Scientific Reserve, Trinidad. Photo: CANARI



Figure 13: The Fondes Amandes Community Reforestation Project, Trinidad. Photo: CANARI

### 1.6.3. National level

#### *a) National Climate Change Policy*

At the national level, many Caribbean countries have established comprehensive policy and legislative frameworks to address adaptation and mitigation of climate change. These policies seek to integrate climate change issues into planning for sustainable and resilient development, ensure a coordinated approach across government agencies and foster partnerships with businesses and civil society. Climate change policy aims to identify nationally appropriate mitigation actions to reduce GHG emissions and achieve specific targets as part of their commitments under the Paris Agreement, and to promote actions to reduce vulnerability and adapt to the impacts of climate change.

#### *b) National Adaptation Plans*

Parties to the UNFCCC are encouraged to develop and implement National Adaptation Plans under the Cancun Adaptation Framework<sup>5</sup> through a participatory and multi-stakeholder process. National adaptation plans help countries identify medium- and long-term adaptation needs and priorities for action and implement strategies to address the impacts of climate change. Several Caribbean governments, including in Antigua & Barbuda, Barbados, Belize, Grenada and Jamaica, have developed national adaptation plans for the entire country and specific sectors, such as the agriculture and water.

<sup>5</sup> For more information, see: <http://unfccc.int/adaptation/items/5852.php>



## Box 5: Trinidad and Tobago Climate Change policy<sup>6</sup>

The national climate change policy of Trinidad and Tobago, drafted in 2011, provides a situational analysis, as well as guiding principles, policy directives and strategies for addressing climate change.

In light of both the Sustainable Development Goals (SDGs) adopted in September 2015 and the Paris Agreement, Trinidad and Tobago's climate change policy is currently being revised to include provisions in line with the country's obligations under this evolving international policy context. The policy also needs to be implemented to fulfil Trinidad and Tobago's commitments to the UNFCCC and the Kyoto protocol. The Multilateral Environmental Agreements Unit (MEAU) of the Ministry of Planning and Development is coordinating these efforts.

A number of actions are currently being undertaken or in the planning stages, including an action plan for implementing recommendations from a 2015 policy and legislative review and the development of a capacity building programme to target key stakeholders.

Since 2011, the MEAU has also convened the Climate Change Focal Point Network, inviting representatives from various government ministries and agencies, academic institutions, and CSOs to engage in national planning and policies on climate change. The Focal Point Network is responsible for:

- liaising with the Ministry of Planning and Development in relation to the role and functions of their respective institutions in the context of the national obligations under the various Multilateral Environment Agreements (MEAs) related to climate change;
- providing advice and inputs into strategies and actions to be taken at the national level in the implementation of obligations under the MEAs and climate change; and
- providing inputs, data and information to facilitate reporting requirements of Trinidad and Tobago under the MEAs.

Capacity building, as well as increased awareness among stakeholders, is essential to ensure successful implementations of the MEAs to which Trinidad and Tobago is a signatory, including the Rio Convention and the Paris Agreement. The MEAU recognises these needs and will be working to address these. Civil society representatives should therefore use the Network to get involved and continue building partnerships with key stakeholders to reduce the impacts of climate change.

<sup>6</sup> For more information, see presentation by Kishan Kumarsingh, Head of the MEAU, Ministry of Planning and Development, included as Appendix 3 to this report: <http://www.canari.org/wp-content/uploads/2015/12/CACTT-first-workshop-report.pdf>

## 1.7. Useful resources

Caribbean Community Climate Change Centre [CCCCC]. (2009). *Caribbean Community Regional Framework on Achieving Development Resilient to Climate Change*. Belmopan, Belize: CCCCC. Available at <http://dms.caribbeanclimate.bz/M-Files/openfile.aspx?objtype=0&docid=948> [Accessed 2 June 2016]

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Nurse, L., McLean, R., Agard, J., Briguglio, L., Duvat-Magnan, V., Pelesikoti, N., Tompkins, E. and Webb, A. (2014). Small Islands. In: *Climate Change 2014: Impacts, Adaptation and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. [Field, C., Barros, V., Dokken, D., Mach, K., Mastrandrea, M., et al. (eds.)] Cambridge, UK: Cambridge University Press. Available at [http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap29\\_FINAL.pdf](http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap29_FINAL.pdf) [Accessed 12 January 2017]

# Communicating effectively about climate change

- 2.1. Introduction
- 2.2. Planning your communications
- 2.3. Steps involved in developing your communication plan
- 2.4. Useful resources

## Box 6: Key terms and acronyms used in this section

<b>Advocacy</b>	Advocacy communications seek to influence people, typically policy- and decision-makers, to take a particular action. Advocacy campaigns generally focus on achieving change on a specific issue or policy of local, regional, national or international importance.
<b>Communication Product</b>	The format in which you present your messages, e.g. a flyer, a slide presentation, a video etc.
<b>COP21</b>	21 <sup>st</sup> Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), which took place in Paris in December 2015, resulting in the landmark Paris Agreement, which established goals and binding commitments around climate change mitigation and adaptation <sup>7</sup> .
<b>Dissemination channel (or pathway)</b>	How you get your communication product to the target audience. For example, a flyer could be handed over in person with some accompanying discussion, sent by email or mail, put in the window of a local shop or posted on social media.
<b>Key messages</b>	Articulate the most important things you want your target audience to understand, remember and act on.
<b>Knowledge, Attitude and Practice (KAP)</b>	All communications should seek to increase the knowledge of the target audience and/ or effect some change in their attitudes and practices (sometimes also referred to as 'behaviours').
<b>Public awareness and education</b>	Communication for public awareness and education provides people with information about a subject so that they can better understand it, and usually encourages them to change specific practices or behaviour.
<b>Results, outcomes and outputs</b>	<b>Result</b> is the over-arching term used to describe what you hope to achieve, whether in the short- or long-term. <b>Outputs are the tangible results</b> of your project (short-term and medium-term), i.e. the <b>products, goods and services that it directly produces</b> . <b>Outcomes are observable positive or negative attitudinal, behavioural, institutional and societal changes to which your project has contributed</b> ; these may only be seen in the <b>medium or long term</b> .
<b>Target audience</b>	The individuals, groups, organisations and institutions you want to influence through your communications.

<sup>7</sup> see: [http://unfccc.int/files/essential\\_background/convention/application/pdf/english\\_paris\\_agreement.pdf](http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf) for the full text of the Agreement.

## 2.1. Introduction

As Section 1 highlights, the Caribbean region is extremely vulnerable to climate change. Its impacts are affecting, and will continue to affect, our livelihoods, coastal settlements, infrastructure, ecosystems and economic stability. Communicating effectively about the causes and impacts of climate change, and what can be done to mitigate and adapt to it, is therefore critical. But you will only be effective in communicating about this if you are clear in your own mind about:

- what climate change is and what is causing it;
- how climate change is affecting your target audiences; and
- what actions each target audience could take to mitigate or adapt to climate change.

You may also need to clarify common misunderstandings, such as the distinctions between natural and man-made climate change, climate change and global warming, and climate change mitigation and adaptation (see Box 2 in Section 1). The list of key terms in Section 1 provides clear definitions that can also assist you with this and which you can use in your communications.

## 2.2. Planning your communications

The starting point for all effective communication is the development of a **communication plan**. This applies whether you are planning for an entire project or just a single communication product, such as a flyer or a video. Your communication plan outlines:

- **your overall communication objectives:** the change(s) in knowledge, attitudes and practice (KAP) that you want your communications to effect;
- **your target audience(s):** the individuals, groups or organisations you want to influence through your communications;
- the **desired outcomes** for each target audience;
- what you know about **each target audience's existing knowledge, attitudes, practices, interests, agendas** and what **opportunities or challenges** these present **for engaging them**;
- what you know about each **target audience's communication preferences**;



Figure 14: As part of the Climate ACTT project, representatives of the five beneficiary CSOs participated in a training workshop designed to strengthen the organisations' capacity for effective communication about climate change. In this photo, CANARI's former Executive Director mentors each CSO in producing a draft outline for a communication plan on climate change.  
Photo: CANARI

- **your key messages**, which articulate the most important things you want your target audience to understand, remember and act on;
- the **communication products** you think will be most effective in getting the messages across to the target audience;
- the **dissemination channels** (also referred to as **pathways**) that are most appropriate to the desired objective and target audience; and
- the **indicators/means of evaluation** that you will use to judge and measure the effectiveness of your communications, i.e. whether and to what extent the desired results have been achieved.

Steps 1 to 9 in Section 2.3 outline in more detail how you develop each aspect of the plan.



### Tip

You will also need to develop a **detailed breakdown of the activities and timeline** needed to accomplish the communication plan, including who will be responsible for what, and the proposed start and end dates. This may be developed as part of the plan or be included in the overall breakdown of project activities and timeline.

## 2.3. Steps involved in developing your communication plan

### Step 1: Develop your overall communication objectives

Reflect on what are the changes in knowledge, attitudes and practice/behaviour that you would like your climate change communication project or product to bring about, then draft them as objectives.

Make sure these objectives link well with, and contribute to, the wider objectives of the project.

Your overall objectives are likely to be expressed at quite a high level. For example, the overall objectives of CANARI's Communication Plan for the Climate ACTT project were:

- to raise awareness of how the project partners (CANARI, CI and BHP Billiton) are contributing to climate change action in T&T through the project;



Figure 15: Members of the Environmental Research Institute Charlotteville (ERIC) work on communicating climate change impacts they have observed in Tobago. Photo: CANARI

- to raise awareness on how beneficiary CSOs are contributing to climate change action in T&T through the project;
- to raise awareness on how beneficiary CSOs are strengthening their organisations to achieve best practice; and
- to catalyse and support development of partnerships and to leverage additional support for the work of CSOs on climate change to contribute to greater scale and depth of impact and sustainability of results.

## **Step 2: Identify your target audiences**

Effective communication must be tailored to the particular target audience you are seeking to influence. Sometimes we make the mistake of saying we want to influence ‘the general public’ or ‘the government’ but if we think in terms of such broad categories, our communications are unlikely to have the desired effect.

Instead, it is useful to start by listing the various sectors or types of target audience and then to identify key departments and individuals within each sector that you want to influence. Your target audience might, for example, belong to one or more of the following sectors or groupings:

- government
- private sector
- civil society organisations
- trade unions
- academia
- media
- women
- youth
- school children
- teachers
- resource users
- international agencies
- donors

Once you have identified the most relevant target sectors, you should focus on who are the individuals, or groups of individuals, that it would be most effective to target. These will usually be individuals or groups with power, authority and/or credibility. For instance, if you have identified the government sector as a target, you might consider focusing on one or more of the following:

- ministers



- other Members of Parliament
- permanent secretaries
- other government technocrats
- local councillors
- local government staff

You can then get even more specific and identify specific individuals (or positions/roles), such as:

- mayor of Port of Spain
- permanent secretary in the Ministry of Community Development
- chair of the Tunapuna/Piarco Regional Corporation



### Tips

- Sometimes you may have more impact by targeting a potential champion within an organisation, even if they do not have a high level of formal power and authority. These are usually persons who are already sympathetic to the desired outcomes and who are respected by their peers and maybe also target audiences in other sectors.
- Don't forget that people within your organisation are also potential target audiences and champions.
- It is important to target audiences whose views differ from yours or who are active opponents of your position, particularly if they are powerful.

### Step 3: Identify the desired outcomes for each target audience

The desired outcomes are the specific results you want to achieve for each target audience, usually by the end of the project (although sometimes they may also include outcomes you hope will be achieved over the longer term).

As you can see from Table 2, in the Climate ACTT project the desired outcomes for government agencies with roles and responsibilities related to climate change were that they would:

- a) be aware of best practices being implemented by the beneficiary CSOs;
- b) support the beneficiary CSOs in their work on climate change;
- c) involve the beneficiary CSOs as partners in development, implementation and evaluation of climate change policies and actions in T&T; and
- d) respond positively to the beneficiary CSOs' recommendations for change in policy and practice.

**Table 2: Extract from CANARI's Communication Plan for the Climate ACTT project**

Desired Outcomes for each target audience	Target audiences' interests/ opportunities for and challenges in engaging them	Communication preferences	Key messages	Products	Dissemination channels	Indicator/ Means of Evaluation
<p><b>Government agencies with roles and responsibilities related to climate change</b> will:</p> <ul style="list-style-type: none"> <li>• be aware of best practices being implemented by the beneficiary CSOs</li> <li>• support the beneficiary CSOs in their work on climate change</li> <li>• involve the beneficiary CSOs as partners in development, implementation and evaluation of climate change policies and actions in T&amp;T</li> <li>• respond positively to the beneficiary CSOs' recommendations for change in policy and practice</li> </ul>	<p><b>Government agencies: Interests/agendas:</b></p> <ul style="list-style-type: none"> <li>• have mandates to deliver policies and programmes related to climate change</li> <li>• are interested in how the project and the work of the CSOs can help them to deliver their mandate</li> </ul> <p><b>Opportunities:</b></p> <ul style="list-style-type: none"> <li>• have access to resources and skills (technical, communications etc.) that could complement those of the beneficiary CSOs</li> <li>• have access to or control of resources and permissions required by the CSOs to implement work on climate change</li> <li>• are responsible for developing policies and implementing programmes with potential opportunities for engagement of the beneficiary CSOs</li> </ul> <p><b>Challenges:</b></p> <ul style="list-style-type: none"> <li>• may have negative perceptions of CSOs as too weak to partner with</li> <li>• tend to engage CSOs via consultations seeking limited input, rather than as partners playing a meaningful role in climate change action in T&amp;T</li> </ul>	<ul style="list-style-type: none"> <li>• Email</li> <li>• Face-to-face meetings</li> <li>• Field visits to actual or potential project sites</li> <li>• Short summaries of information with clear arguments for a particular course of action</li> <li>• Ministers, Parliamentarians and Permanent Secretaries need information to be presented in a short, easily digestible form, i.e. in jargon-free language that a non-specialist can understand</li> <li>• More detailed technical information can be made available to senior technocrats and advisors if necessary/ useful</li> <li>• Short Powerpoint presentations</li> <li>• Audiovisual products, esp. short videos</li> <li>• Newspapers and radio</li> </ul>	<ul style="list-style-type: none"> <li>• The five beneficiary CSOs are already playing an important role in responding to climate change and can do even more</li> <li>• The Climate ACTT project is helping the five beneficiary CSOs to further strengthen their organisations and implement strategic, locally relevant adaptation strategies that will benefit T&amp;T</li> <li>• The five beneficiary CSOs need support from government to be able to implement their practical projects and achieve greater scale and depth of impact and sustainability of results in their work on climate change</li> <li>• The five beneficiary CSOs are well placed to contribute to the development of national climate change policy and action</li> </ul>	<ul style="list-style-type: none"> <li>• Policy and project briefs</li> <li>• Project webpage updates</li> <li>• PowerPoint presentations</li> <li>• Media releases</li> <li>• Videos</li> </ul>	<ul style="list-style-type: none"> <li>• Project launch (held 27.10.15)</li> <li>• Direct emails to agencies</li> <li>• Telephone calls</li> <li>• Face to face meetings</li> <li>• Facebook pages of CANARI and beneficiary CSOs</li> <li>• CANARI's YouTube channel</li> <li>• Websites of CANARI, CI, BHP Billiton and beneficiary CSOs</li> <li>• Field visits to CSO projects and participation in project events (launch, workshops)</li> </ul>	<p><b>Activity indicators:</b></p> <ul style="list-style-type: none"> <li>• # of government agencies targeted</li> <li>• Project webpage updated at least monthly</li> <li>• # of Facebook posts</li> <li>• # of YouTube videos</li> <li>• # of media releases</li> <li>• # of presentations given to government agencies</li> <li>• # of other communication products targeting government agencies</li> <li>• # of field visits/ project events/ meetings with government agencies</li> </ul> <p><b>Short-term results indicators:</b></p> <ul style="list-style-type: none"> <li>• # of government agencies responding/ engaged in the project</li> <li>• # of web hits</li> <li>• # of Facebook likes and shares and comments</li> <li>• # of YouTube views</li> <li>• # of references to Climate ACTT project in communications of government agencies</li> <li>• # of invitations from government agencies to beneficiary CSOs/ CANARI to partner or engage in a government-led process</li> </ul>

Note too that some of these outcomes, such as d) and to some extent c), are unlikely to be fully achieved within the duration of an 18-month project (the length of Climate ACTT) but they are outcomes to which the project can legitimately expect to contribute.

The more specific and measurable you make your desired outcomes, the easier it will be to evaluate whether they have been achieved (see also Step 8: Develop the indicators and means of evaluation).

#### **Step 4: Document what you know about the current knowledge, attitudes, practices, interests and agendas of your target audience**

Once you have identified who you want to target with your messages about climate change, it is useful to reflect on what you already know about each audience and what else it would be useful to find out. For example, it is useful to know:

- what they already know about climate change;
- what their attitude is to climate change;
- whether their practices contribute to exacerbating, mitigating and/or building resilience to climate change;
- what their interests are;
- what they believe in;
- what is on their agenda; and
- what may enable or hinder communicating and engaging with them.

This exercise can be wide-ranging, provided it is relevant to determining what and how you will communicate with the target audience. For example, you will note in Table 2 that there is little focus on what the government agencies know or understand about climate change as it is assumed that knowledge is high since responding to climate change is part of their mandate. On the other hand, since many of the desired outcomes relate to the agencies' potential to partner with CSOs, it was useful to document their attitudes to the CSO sector and practices in engaging with it.

If there are gaps in your understanding and knowledge of your audience, think of ways in which you could find out more, perhaps from others who have more experience of working with that target audience – or even by interviewing them, focus groups or asking them to complete a questionnaire.

#### **Step 5: Document what you know about the communication preferences of your target audience**

If you don't know how your target audiences prefer to receive information, there is a high risk that you will waste money and time creating a product that doesn't stimulate the changes in KAP that you desire. There is little published data in Trinidad and Tobago about

target audience preferences so take the opportunity to discuss these when you are meeting with actual or potential target audiences.

Our experience indicates that there has been a significant shift over the last few years in the preferences of almost all target audiences. There is less interest in hard copy, printed documents, such as policy briefs and technical reports. Instead, people prefer to access information electronically on websites, Facebook, YouTube, blogs etc. and the widespread use of smartphones means that almost everyone now has access to electronic media. Many people also express a preference for information to be provided in a series of shorter, more digestible ‘bites’ rather than one lengthy document, article or video, noting that they tend to set aside anything that they can’t read or watch immediately... and then may never get back to it. If you have determined that a longer document is necessary, make sure you have an executive summary or list of key messages on the first page.

### Step 6: Develop your key messages

It can be challenging to communicate about climate change and its impacts because of the complexity and scientific nature of some of the issues. This makes it all the more important that you clearly understand the issues and concepts before trying to communicate them to others and that you tailor your messages to the target audience’s current level of knowledge and particular interests.

A good message:

- is specific;
- communicates clearly to your audience;
- is linked to something the audience cares about; and
- is credible and can be backed up by facts or evidence.

Messages about climate change often try to convey a sense of urgency and emphasise the benefits of making the changes that are being recommended for the particular target audience. You can find two good examples of messages about the impacts of climate change, along with clear calls to action, in the following songs by Caribbean artistes:

- *Voices for Climate Change*, a collaborative effort by Jamaican artistes after training from Panos Caribbean on climate change, available at <https://www.youtube.com/watch?v=M-5NGTSzTJs>; and



Figure 16: Representatives of Environment Tobago (ET) work on mapping climate change impacts in Tobago. Photo: CANARI

- *1point5tostayalive* a collaborative effort by artistes from across the Caribbean, produced in the run up to COP 21, available at <https://soundcloud.com/panos-caribbean/1pont5-to-stay-alive>, (see also Case Study in Section 6).



### **Tip: Think about the messenger as well as the message**

Just having a good message may not be enough; it is also important to use the right messenger. A popular musician or sports person may be more effective in getting a message across to young people than a scientist or politician. On the other hand, a decision-maker or politician may be more receptive to a message conveyed by a technical expert. Leaders of faith-based organisations are already trusted by their respective congregations and can link climate change messages to the values they espouse.

Adapted from CANARI, 2009.

### **Step 7: Select the most effective products to convey the messages**

The **communication product** is the format in which you present the climate change message that you want to share with your target audience.

Some common examples of communication products are:

- news releases
- brochures and flyers
- posters
- fact sheets
- videos
- PowerPoint presentations
- technical reports
- policy briefs
- case studies
- blogs
- songs
- skits

The selection of the communication product for each target audience will be based on:

- their communication preferences (see Step 5 above);
- how much money you have available for communications; and

- how quickly you want to get the message out.

You might select a policy brief as the best way to present technical information to policy makers and advocate for policy change to policy makers, with the option of producing a printed version or just a soft copy. On the other hand, a video might be more effective for audiences like school children or resource users like fisherfolk and farmers, particularly if you develop it through a participatory process with the intended target audience. If you have an urgent message, a news release or television/radio interview might be the best option.

### **Step 8: Select the dissemination channel**

The communication **channel** (or **pathway**) determines how you disseminate the communication product. For example, if you have a policy brief in both soft and printed versions, you could:

- send it via email;
- send it in the post;
- hand it over in person (ideally with time for a discussion of the key points);
- summarise on slides the brief's key messages, then make a face-to-face presentation before handing over the printed version;
- post it on your website, Facebook, etc.; and/or
- ask partners and colleagues to post it on their social media platforms.

Popular dissemination channels include:

- face-to-face meetings;
- radio, television and print media;
- email, websites, and social media platforms; and
- public events such as lectures, workshops, festivals and exhibitions.

For maximum impact, it is best to convey your messages in more than one product and to use several dissemination channels. For example, a youth group focusing on climate change advocacy, and seeking to influence the position of the government in international climate change negotiations, might develop:

- a song or spoken word piece about key climate change issues, which they perform at a special concert, distribute on DVD, and get airplay on radio and television. The Caribbean 1point5tostayalive campaign in the run up to the UNFCCC COP 21 in 2015 provides a good example of multiple products and pathways being used to reinforce the messages (see Case Study in Section 6);
- briefing notes in the form of both an e-policy brief and slides, which they then disseminate via email, social media (e.g. Facebook, Twitter) and at face-to-face

meetings with the relevant minister, permanent secretary and other technical staff; and/or

- a series of newspaper articles advocating for the decisions and policies they want to see in place, which could then be further disseminated via their website and social media.

### **Box 7: Example of how dissemination via multiple channels can maximise impact**

In 2012, CANARI was contracted by the African, Caribbean and Pacific (ACP) Fish II Programme to help develop the capacity of fisherfolk leaders and organisations from 12 Caribbean countries to participate in fisheries policy and other discussions on mainstreaming of an ecosystem approach to fisheries (EAF) and climate change into small-scale fisheries at the national and regional levels.

As part of the project communication and visibility activities, project participants used a participatory process to produce a video on the need to address climate change. In the video, Caribbean fisherfolk from Barbados, Belize, Jamaica and Saint Lucia, talk about the impacts of climate change they have been experiencing first hand, and the effects these are having on their activity and livelihoods. They also suggest that governments should seek fisherfolk input, as well as that of other relevant stakeholders, to implement adaptation strategies for better resilience to climate change impacts.

To maximise the impact of the video, it was placed on CANARI's YouTube page and on the Caribbean Network of Fisherfolk Organisations' (CNFO) website. It was also presented at a workshop in Guyana in March 2013 as part of the project "Implementing the Caribbean Community Common Fisheries Policy: positioning and engaging fisherfolk organisations", co-hosted by the Caribbean Regional Fisheries Mechanism, the Technical Centre for Agriculture and Rural Cooperation and CNFO.

Due to this widespread dissemination, the video was also seen by the organisers of an international conference in Dublin on the theme of *Hunger, Nutrition and Climate Justice: Making the connections for a more sustainable world* held in April 2013, co-hosted by the Irish Government and the Mary Robinson Foundation – Climate Justice. As a result, CNFO was invited to write and present a case study on empowering its members to act on climate change adaptation, reaching new audiences and achieving not only the intended results (increased awareness of climate change impacts on fisheries and potential adaptation actions in the Caribbean) but also wider international impact.



## Step 9: Develop the indicators and means of evaluation

Whether your communication plan focuses on public education and awareness or advocacy, it is important to evaluate the effectiveness of your approach in order to learn from the experience and apply the lessons learnt to future communication activities. However, you can only evaluate your results if you have determined at the planning stage what are appropriate indicators of success.

### *a) Develop simple indicators*

Developing specific and measurable objectives and desired outcomes (see Steps 1 and 3 above) will help in developing your indicators. To evaluate the overall effectiveness of your communication plan, you should consider three types of indicators:

- i. **Activity indicators**, which might include:
  - number of people targeted by a particular outreach activity (e.g. distribution of a news release);
  - persons invited to a workshop or other public outreach event;
  - number of topics covered by a particular outreach activity;
  - number of outreach events held; and/or
  - budget spent on outreach activities.
- ii. **Short-term result indicators** (i.e. what you hope to have achieved by the end of the project or campaign), which might include:
  - number of people who have heard about climate change or a particular climate change issue;
  - number of copies of outreach material distributed;
  - number of actual persons participating in an activity (with comparison to the number of those targeted/invited);
  - number of articles or news items published or aired in a month or week;
  - the geographic reach of the activity or product;
  - number of persons targeted by a particular activity who can subsequently recall the information; and/or
  - number of persons targeted by a particular activity who can subsequently repeat and pass on the messages.
- iii. **Medium- to long-term result indicators** (which may extend well beyond the project or campaign), which might include:
  - number of persons who have made lifestyle or other changes as a result of your communications (e.g. doing their part to respond to climate change, deciding to further study or work in a field related to climate change);

- number of persons who have become ‘champions’ or change agents’ as a result of your campaign; and/or
- changes in policy or legislation that reflect the ideas put forward in your campaign.

### ***b) Qualitative versus quantitative evaluation***

The easiest things to measure are usually quantitative but the most important indicators of your effectiveness are often qualitative, since they measure the shifts in opinions, attitudes and behaviour amongst your target audiences. That is why you will sometimes hear people say “Not everything that counts can be counted, and not everything that can be counted counts”!

**Quantitative evaluation** measures tangible results of activities, such as:

- how many persons were targeted;
- how many workshops were held;
- how many persons are aware of climate change impacts on their livelihoods; and
- the quantity of communications material produced (number of posters, booklets, etc.).

Quantitative evaluation is usually carried out using records such as workshop registration sheets, workshop reports, and questions in surveys and interviews.

**Qualitative evaluation** seeks to identify and measure the changes in knowledge, attitudes, practices/behaviour, policies, institutions and relationships. Qualitative evaluation approaches include:

- open-ended questions in a survey or interview;
- focus group discussions;
- video feedback from target audiences;
- written documents, such as official publications, reports and studies; and
- direct observation through field work and research into target audience activities, behaviours, and actions through conversations or focus groups with local organisations and community members.

### ***c) Documenting your process and learning from it***

It is important to document your communication activities and their results, not only to support your evaluation, but also to learn how future communication activities can be improved. You should identify both the major achievements and



Figure 17: Two members of Turtle Village Trust (TVT) present their organisation's "body map" – a visual representation of their organisation's anatomy. Photo: CANARI

the challenges. For achievements, it is useful to document why they were successful; similarly, for the challenges, it is useful to document how they were overcome or what could be done differently in future to avoid them. Putting this in writing ensures that the lessons learned can be institutionalised, rather than just remaining in the memories of the few people involved in the communications campaign.

## **2.4. Useful resources**

Caribbean Disaster Emergency Management Agency [CDEMA]. (2011). *Climate Smart Community Disaster Management Module and Facilitator's Handbook*. St. Michael, Barbados: CDEMA. Available at [http://www.cdema.org/cris/climate\\_change\\_adaptation\\_mitigation/CSCDM\\_FINAL\\_Facilitators\\_Handbook\\_web\\_version.pdf](http://www.cdema.org/cris/climate_change_adaptation_mitigation/CSCDM_FINAL_Facilitators_Handbook_web_version.pdf)

Caribbean Natural Resources Institute [CANARI]. (2009). *Communicating climate change: A toolbox for local organisations in the Caribbean*. Port of Spain, Trinidad and Tobago: CANARI. Available at <http://www.canari.org/communicating-climate-change-a-toolbox-for-local-organisations-in-the-caribbean-2>

# Assessing vulnerability to climate change

- 3.1. Introduction
- 3.2. Understanding vulnerability and resilience
- 3.3. Steps common to all vulnerability assessment tools
- 3.4. Surveys
- 3.5. Semi-structured interviews and focus groups
- 3.6. Participatory photo journaling
- 3.7. Rapid community mapping
- 3.8. Participatory three-dimensional modelling (P3DM)
- 3.9. Livelihood vulnerability analysis
- 3.10. Value chain analysis
- 3.11. Useful resources

## Box 8: Key terms and acronyms used in this section

<b>Adaptive capacity</b>	The full range of capabilities, resources and institutions available to an individual, community, organisation or society to implement climate change adaptation actions (adapted from IPCC, 2007).
<b>Climate change adaptation</b>	The adjustment of human or natural systems, including specific measures to address the actual or potential impacts of climate change (adapted from IPCC, 2014).
<b>Climate vulnerability</b>	Climate vulnerability: the characteristics and circumstances of a community, organisation or natural system that make it susceptible to the damaging effects of a climate hazard.
<b>Exposure</b>	Exposure is how likely an impact will occur in a community, organisation or natural system (Conservation International, 2016).
<b>Livelihoods</b>	Livelihoods encompasses the capabilities, assets and activities required for a means of living. This includes the concept of human well-being and quality of life including, but not limited to, the ability to earn a living in terms of having an adequate salary or generating enough money to cover at least basic needs (DFID, 1999).
<b>Resilience</b>	The ability of a community, organisation or natural system to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner (UNISDR 2009).
<b>Sensitivity</b>	Sensitivity is how much a community, organisation or natural system is affected directly or indirectly by climate change impacts (Conservation International, 2016).
<b>Value chain</b>	A series of steps in an enterprise. It shows the steps from sourcing the raw materials for the products and/or services to sale to the final consumer (Arline, 2016). It is used to improve the enterprise by adding value to the product or service.
<b>Vulnerability</b>	The characteristics and circumstances of a community, organisation or natural system that make it susceptible to the damaging effects of a hazard, including economic, environmental, physical and social factors (UNISDR, 2009).

### 3.1. Introduction

Caribbean islands have been identified as amongst the countries most vulnerable to the impacts of climate change but the level and type of vulnerability varies from community to community and sector to sector. It is therefore important to conduct a systematic, participatory vulnerability assessment for the community or sector you are focusing on. This enables stakeholders to better understand who is vulnerable, how they are vulnerable, and where they are vulnerable. It is also a key step towards identifying and prioritising specific, practical adaptation actions and resilience building measures.

This section clarifies what is meant by vulnerability and resilience and then presents a range of different participatory tools that you can use in conducting a vulnerability assessment. These tools are by no means exhaustive. Large-scale and highly technical vulnerability assessments can also be conducted by national governments and universities for a community or sector, drawing on data from climate modelling and environmental and socio-economic research. Participatory vulnerability assessments led by CSOs may even feed into these more technical vulnerability assessments.

It then outlines a variety of different tools for conducting participatory vulnerability assessments, including:

- Surveys
- Semi-structured interviews and focus groups
- Participatory photo journaling
- Rapid community mapping
- Participatory three-dimensional modelling (P3DM)
- Value chain analysis

Each of these is intended to collect data that is not readily available from other sources. They provide opportunities for stakeholders, such as community members, government technocrats, CSOs and academia, to be part of processes that collect data on vulnerability and adaptive capacity in the areas where they live or sectors in which they work. Table 3 provides a brief summary of the type of data you would collect with the different tools, the advantages and challenges of each approach, and the human and other resources you need to apply them effectively.

### 3.2. Understanding vulnerability and resilience

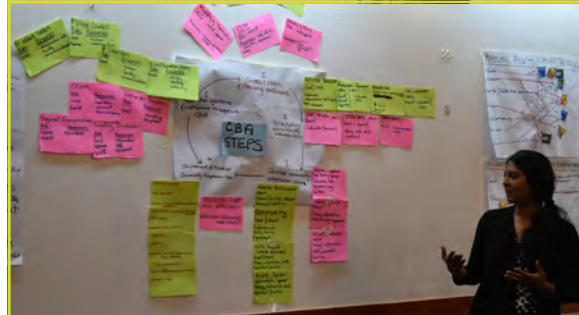
Before you undertake a vulnerability assessment, it is important to understand the components of climate vulnerability and what it means to have adaptive capacity for and develop resilience to climate change.



**Climate vulnerability** (see definition in Box 8) is determined by the extent to which a community, organisation or natural system is **sensitive to climate impacts, its exposure to climate stresses, and its adaptive capacity**. For example, a coastline where the mangrove forest is degraded is more sensitive to climate change than one with healthy mangrove forests that can withstand storm surges and protect the coast.

Our **exposure** to climate stresses relates to how likely it is that an impact will occur in our region (Conservation International, 2016). So in assessing vulnerability in the Caribbean, consideration needs to be given to the trends we are experiencing. As discussed in section 1, these include higher temperatures on land with more hot days and fewer cold nights, higher sea temperature, greater rainfall variability, more frequent and extreme weather events, sea level rise and ocean acidification.

**Adaptive capacity** refers to the ability of a community, organisation or natural system to cope with the impacts of climate change (Conservation International, 2016). For example, a person who only farms tomatoes for income is considered to have low adaptive capacity. But someone who farms tomatoes, corn, and beans and also fishes to earn income has high adaptive capacity because if one source of income is impacted negatively by climate change there are alternate income streams. Climate resilience is the ability of a community, organisation or natural system to anticipate and recover from a climate hazard quickly and return to its original conditions. A community with high adaptive capacity is generally more resilient and will recover from a negative climate impact more quickly with fewer losses or damages (Conservation International, 2016).



Figures 18 - 21: As part of the Climate ACTT project, representatives of the five beneficiary CSOs participated in a four-day training workshop designed to enhance their capacity for assessing vulnerability and building resilience to climate change. Photos: CANARI



Figures 22 - 25: As part of the vulnerability assessment workshop under the Climate ACTT project, participants went into the field and worked in teams to conduct rapid vulnerability assessments to understand how climate change will impact the coastal community of Salybia in north-east Trinidad. Photos: CANARI

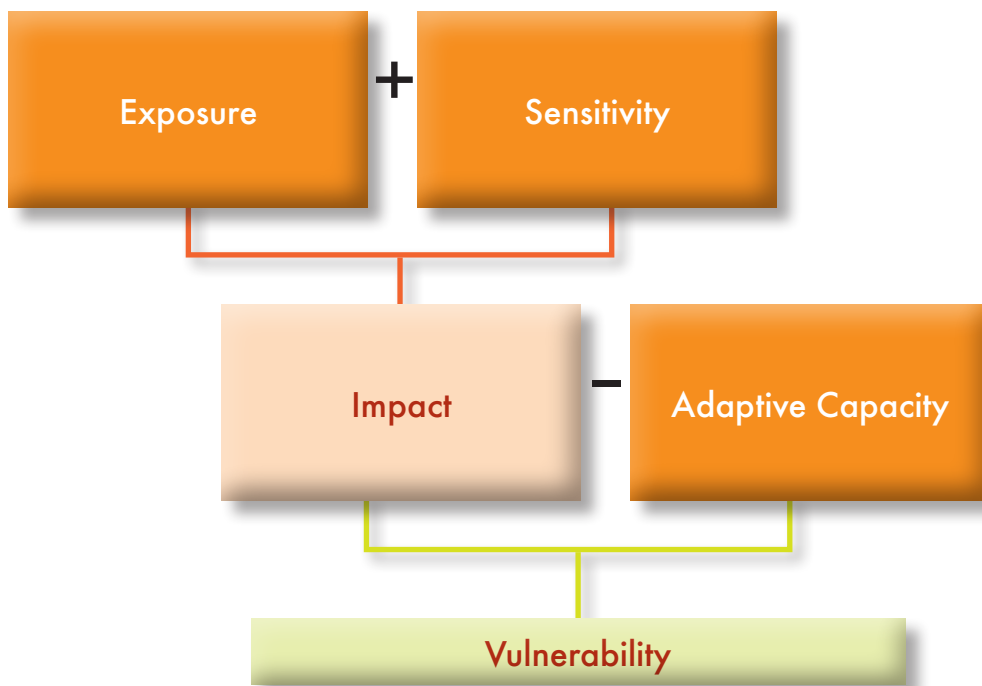


Figure 26: IPCC 2001 vulnerability model. Source: IPCC, 2001

### 3.3. Steps common to all vulnerability assessment tools

Although each tool is administered differently and uses different methods to collect data, there are some phases of the process that are common to all, as outlined in 3.2.1 – 3.2.3.

#### 3.3.1. Planning

The planning phase is common to all the different vulnerability tools and involves the following steps:

##### Step 1. Define the main objective(s) and scope of the survey

List the main reason(s) for doing the assessment using the chosen tool, what information you already have, and what information you need. Consider how the information you collect with and from community or sectoral stakeholders can be used to assess vulnerability and help them to build resilience to climate change.

##### Step 2. Identify the stakeholders that you want to involve in the process

You may want to involve stakeholders in three different ways:

- **to participate in the gathering and analysis of information:** in selecting who you want to involve, you need to consider the different groups within the community/sector and who possesses relevant knowledge or expertise. You also need to decide on sample size, particularly for surveys, interviews and focus groups. Other criteria for selecting participants might include age, gender, education, income, occupation, location, direct experience with specific climate change threats and capacity and willingness to participate.
- **to act as facilitators/interviewers:** you may want to use community members to collect data, for example in conducting household surveys. However, you need to weigh up whether doing so is more or less likely to create the necessary conditions of trust, respect and confidentiality or whether it would be better to use neutral, external interviewers and facilitators. If you use community members, you should ensure that you provide adequate training.
- **as target audiences** for the data you have collected, e.g. in the planning for and implementation of adaptation strategies (see Section 4 and 5).

It is useful to do a systematic identification of key stakeholders<sup>8</sup> (an exercise that should be continued throughout the mobilisation and engagement process as you are unlikely to be able to identify all of them from the outset). Depending on the tool, you may also want analyse who are the key stakeholders, for example, to determine who has relevant

<sup>8</sup> For more information, see CANARI, 2004. Guidelines for stakeholder identification and analysis: A manual for Caribbean natural resource managers and planners. CANARI Guidelines Series No. 5. Laventille: Trinidad. Available at <http://www.canari.org/wp-content/uploads/2016/04/Guidelines-5-Guidelines-for-stakeholder-identification-and-analysis.pdf>



expertise, who will be most affected by the impact of climate change, who might be resistant to the changes that adaptation would require, what are their communication preferences, and when and where is the best time for engagement of different categories of stakeholders.

### **Step 3. Mobilise and engage the stakeholders that you want to involve in the process**

- Determine how you will notify stakeholders of opportunities to take part in vulnerability assessments, e.g. individualised invitations via emails, fliers in popular places in the community, loudspeaker van announcing a meeting, announcements in churches, mosques and temples. It is also useful to send out text or phone reminders closer to the date of the meeting.
- Select a day and time for meetings tailored to the different types of stakeholders, e.g. non-working mothers of schoolchildren may prefer daytime during the week, fishers and farmers may prefer afternoon or evening, and certain days will not suit members of different religions.
- Decide where you will hold meetings with stakeholders (see Tip below). Particular approaches may necessitate special conditions. For example, for P3D mapping, you need a site that is well-ventilated to construct the model and space to store materials on or near the site while the model is being built.
- Make sure that any communication products you are using in the engagement process are suitable for the target audience (see Section 2).



#### **Tip**

An equitable and effective participatory process requires sensitivity to the needs and constraints of groups that might otherwise be marginalised, for example as a result of gender, disability, age, low literacy level or livelihood activity. This affects where, when and how you engage with your stakeholders. Someone elderly or in a wheelchair cannot participate in a meeting upstairs unless there is an elevator. You may find it more productive to engage farmers, fishers and young men in the places they work or congregate, e.g. the field, the fishing depot and sports field. Women may have constraints on their time, particularly single heads of household, or may prefer to meet without men present in order to express themselves more freely. Members of different religions also have varying constraints on their time. And you will need to use visual or audiovisual tools rather than written materials to engage those with low literacy.

Being sensitive to these needs means your process may take longer than you originally anticipated but is worthwhile because it ensures you are accessing diverse expertise and opinions and developing greater and more sustained buy-in to the adaptation planning process and the final plan.

**Table 3: Overview of different vulnerability assessment tools**

Tools	Type of data collected	Advantages	Challenges	Human resources/skills
Surveys	<ul style="list-style-type: none"> <li>Quantitative</li> <li>Yes/No or multiple choice responses to questions about KAPs</li> </ul>	<ul style="list-style-type: none"> <li>Facilitates collection of the same information from every respondent</li> <li>Eliminates or limits interviewer bias (depending on how administered)</li> <li>Can be administered without using human resources (e.g. online, via mail or email)</li> <li>Analysis is relatively simple, particularly if confined to closed-ended questions and/or online survey tools are used</li> </ul>	<ul style="list-style-type: none"> <li>Low response rates to surveys administered online or via email/mail</li> <li>May require a lot of interviewers if administering a large face-to-face survey</li> <li>Interviewees seeking to provide the 'right' answer rather than reflecting on and providing their own opinions/perceptions</li> <li>Analysis software can be costly</li> </ul>	<ul style="list-style-type: none"> <li>Interviewers with at least basic training in interview techniques</li> <li>Interviewers good understanding of the purpose of the survey and of the organisation administering it.</li> </ul>
Semi-structured interviews and focus groups	Mainly qualitative apart from basic demographic data	<ul style="list-style-type: none"> <li>Facilitates for more in-depth exploration and discussion of people's knowledge attitudes and practices</li> <li>More flexible and adaptive to respondents' interests and responses</li> </ul>	<ul style="list-style-type: none"> <li>Requires more skill to compile and administer effectively (e.g. ability to think and adapt on their feet without introducing personal bias or influencing answers, good recording skills).</li> <li>Transcribing responses can be very time-consuming</li> </ul>	<ul style="list-style-type: none"> <li>Interviewer/focus group facilitator with relevant skills, preferably perceived to be neutral (i.e. no personal stake in the outcomes).</li> <li>Where possible, an assistant facilitator to organise the digital recorder, note down people's responses and summarise them afterwards (essential for focus groups, desirable for all but short interviews to allow the interviewer to engage in uninterrupted conversation with respondents)</li> </ul>
Participatory photo journaling	<ul style="list-style-type: none"> <li>Qualitative</li> <li>Quantitative</li> </ul>	<ul style="list-style-type: none"> <li>Can be a rapid method</li> <li>Involves a wide range of stakeholders</li> <li>Very visual so makes vulnerabilities easier to understand and see</li> <li>Good method to use for people with low literacy</li> </ul>	<ul style="list-style-type: none"> <li>May not capture all aspects of vulnerability without further written or spoken explanations</li> </ul>	<ul style="list-style-type: none"> <li>Good photographer to train others</li> </ul>
Rapid community mapping	<ul style="list-style-type: none"> <li>Qualitative</li> <li>Quantitative (e.g. number of buildings, length of beaches, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Rapid process</li> <li>Can be less costly and time-consuming than other methods</li> </ul>	<ul style="list-style-type: none"> <li>Certain socio-economic information may not be captured (e.g. while the map may easily show the location of the hospitals and health centres, it may not easily show the number of persons who have contracted dengue in the area without first performing a literature review or interviewing health officials)</li> </ul>	<ul style="list-style-type: none"> <li>Cartographer/GIS expert</li> </ul>

**Table 3** *continued*: **Overview of different vulnerability assessment tools**

Tools	Type of data collected	Advantages	Challenges	Human resources/skills
Participatory three-dimensional mapping	<ul style="list-style-type: none"> <li>• Qualitative</li> <li>• Quantitative (e.g. number of buildings, length of beaches, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Because the model is produced to scale the information collected can be placed into a geographic information system (GIS) and used by a variety of planners</li> <li>• Enables a wide variety of stakeholders to be involved in discussions</li> <li>• The final model can be used in further planning processes</li> </ul>	<ul style="list-style-type: none"> <li>• P3DM takes time to complete.</li> <li>• Can be expensive</li> </ul>	<ul style="list-style-type: none"> <li>• GIS expert</li> </ul>
Livelihood analysis	<ul style="list-style-type: none"> <li>• Livelihood activities and the assets they draw upon</li> <li>• Exposure and sensitivity of livelihood activities and assets</li> <li>• climate change threats</li> <li>• Current and future adaptive capacity</li> <li>• Priority actions to reduce livelihood vulnerability</li> </ul>	<ul style="list-style-type: none"> <li>• Provides information on exposure, sensitivity and adaptive capacity</li> <li>• Takes into account cultural, economic, environmental, social and political factors in assessing vulnerability.</li> <li>• Provides information on ways to improve livelihoods as well as assessing their vulnerability</li> </ul>	<ul style="list-style-type: none"> <li>• Can be time consuming</li> <li>• Needs a trained facilitator to help with livelihood analysis</li> </ul>	<ul style="list-style-type: none"> <li>• Facilitator for livelihood analysis with relevant skills, preferably perceived to be neutral (i.e. no personal stake in the outcomes)</li> </ul>
Value chain analysis	<ul style="list-style-type: none"> <li>• Qualitative</li> <li>• Quantitative</li> </ul>	<ul style="list-style-type: none"> <li>• Provides information on ways to improve the enterprise while assessing its vulnerability</li> <li>• Provides information on all the livelihood assets</li> <li>• Provides information on sensitivity, exposure and adaptive capacity of the enterprise</li> </ul>	<ul style="list-style-type: none"> <li>• Can be time consuming</li> <li>• Needs a facilitator for value chain processes to help</li> <li>• Requires lots of background information on the enterprise</li> </ul>	<ul style="list-style-type: none"> <li>• Enterprise owners</li> <li>• Enterprise staff</li> <li>• Facilitator of value chain analysis process</li> </ul>



**Step 4. Source any background information that might be useful**, for example:

- published statistics on, for example, population, employment, average income, literacy rates, health and nutritional status, and land use and tenure;
- maps of the geographical area, including administrative units, watersheds or ecological zones, past and potential disasters, and resource use;
- project reports and research relating to livelihoods and various threats, including climate change; and
- any earlier disaster risk or vulnerability assessments.

### 3.3.2. Data analysis

Once you have collected all your data, you will need to analyse it. How you do this will vary according to the tool, e.g. survey and focus group data might be analysed using software such as Excel, online survey tools or a specialised statistical analysis program (see Step 5 under 3.3.1 and 3.4.1 for more information), whereas analysis of a photo journal or P3D map is best done through a participatory process with those that have helped compile it and other relevant stakeholders.

Questions to consider in your analysis, particularly those captured via surveys, interviews and focus groups:

- Are common themes emerging from respondents' answers?
- Are there unexpected answers? Or answers that you expected but are missing?
- Are there particular themes or issues raised within a specific demographic, e.g. people of a specific age, gender, income bracket or level of education?
- Are there any significant trends in responses, for example an increasing or decreasing focus on an issue based on location or over a time period?
- Are there any major divergences among participants' answers, e.g. community leaders holding a different view from the majority of households?

### 3.3.3. Communication of findings

The most productive way to share the findings will be in the context of planning and implementing adaptation strategies (see Sections 4 and 5). At this stage you can also use the maps compiled through the rapid mapping or P3DM process to note the location and nature of proposed adaptation actions.

In some instances, you may want to distribute the findings to selected stakeholders before you have reached that stage, e.g. those that contributed or collected data. As with all communication processes, you will need to decide on the most appropriate products and dissemination channels to reach your target audiences (see Section 2).

### 3.4. Surveys

Surveys can provide insights into people’s level of awareness of climate change and its impacts, the types of strategies for addressing impacts, and the various resources available in a community or sector. You can ask questions that provide quantitative information (numbers and facts), such as household size, sources and level of income, or how often a community is affected by a particular climate hazard. You can also include questions that provide qualitative information (descriptions), such as perceptions and attitudes about an issue. Surveys, unlike semi-structured interviews and focus groups, typically use a fixed format where participants are asked exactly the same questions in the same order. This fixed format ensures reliable and comparable information across the surveys. Surveys can be administered in a variety of ways, for example face-to-face, online, via telephone or Skype, or via mail or email).



#### Materials needed to conduct a survey

- Clipboards
- Printed copies of survey
- Pens

#### 3.4.1. Steps specific to conducting surveys

##### Step 1. Determine the sample size

In deciding on sample size you should consider whether you need a sample that is representative of the entire community/sector or just of a particular group (e.g. community leaders, women, youth, or fisherfolk). Your sample size will depend on the objective of your survey and the type of information you aim to collect, the number of staff/volunteers available to conduct the surveys and analyse the data, and the time you have available to complete the survey process (Martin and Bridgmon, 2012). For example, if the goal is to assess knowledge of the local climate and how it has changed over last 30 years, you might select a small sample of 10-20 people who are over 50 years in age. If the goal is to examine the views of people throughout the community about climate change and its impacts on their livelihoods, your sample size would need to be much larger.

## Step 2. Develop the survey questions

You can use two main types of questions:

- **closed-ended questions**, where the respondent selects from a limited number of possible answers, for example, the options for “Do you think climate change is a major threat to the community?” would be ‘Yes’, ‘No’ or ‘Don’t know’; or for “What is your level of access to climate information?” might be ‘High’, ‘Medium’ or ‘Low’. It is easiest to compare responses to this type of question.
- **open-ended questions** which provide for respondents to express opinions or perceptions, for example “How could government support households to address climate change?”). However, this type of question will probably elicit more useful responses if it is part of a semi-structured interview (see Section 3.4).



### Tips for developing survey questions

- **Keep them simple.** Avoid using technical terms or jargon that may be poorly understood by respondents.
- **Be concise.** Avoid long questions with multiple elements. They can be confusing as respondents don't know which part to answer.
- **Avoid leading questions** that direct participants to a particular answer. Instead of giving their honest opinion, participants will choose what they think is a good answer for you.
- **Avoid loaded terms.** Loaded terms, like corruption or fines, can result in a negative reaction regardless of the question asked.
- **Keep the survey short:** the quality of the responses will decline if it takes too long to get to the end of the survey.
- **Pilot the survey on a small scale** before finalising and launching the full survey. This enables you to check that your selected interviewers have the necessary skills and respondents find the questions clear are providing the type of information you need.

Box 9 provides a sample survey including questions on exposure, sensitivity and adaptive capacity related to climate change. Note that all the questions are closed-ended except for Question 3, which is open-ended.

### Step 3. Determine how you will administer the survey

Decide on the most effective and efficient way to administer your survey. For example, face-to-face interviews would probably be most effective for a survey of households in a small community. On the other hand, you might choose to use an online survey when targeting young people between 18-25 years. A number of user-friendly online survey tools are available, including SurveyMonkey, SurveyGizmo or Google Forms.

### Step 4. Conduct the survey

If you are conducting an **online survey**, you will need to send out targeted invitations with links to the survey as well as publicise it (including the closing date) through news releases or your social media platforms. You will also need to check periodically for responses and send out reminders until the survey is closed. Make sure there is an introductory section at the start of the online survey that explains the purpose of the survey, information about your organisation and how the findings will be shared. There should be an option to respond anonymously and participants should specifically give their consent to use of the data as outlined.

For surveys administered **face-to-face or by telephone/Skype surveys**, you will need a team of staff/volunteers that has been adequately oriented. The size of the team will depend on the number of surveys and the time and funding available. Using fewer interviewers may reduce the margin for error or inconsistencies but on the other hand means the whole process may take longer.



#### Tips for conducting effective interviews

- At the start of a face-to-face or telephone survey, introduce yourself and your organisation and explain the purpose of the survey. Explain options related to confidentiality and anonymity.
- Allow the participant to ask any further clarifying questions about the purpose of the survey and what will be done with the data they provide. Avoid discussing the expected outcomes of the survey as this can bias the respondent's answers.
- During the survey, stick to the questions as written and don't try to explain them as that could also bias the respondent's answers.
- Do not express any emotions or appear judgmental if you find an answer strange or surprising. Your role is just to administer the survey and accurately capture the responses.
- At the end of the survey, reiterate how you will share the findings and make sure you have their contact details if needed.

Make sure all team members have reviewed the survey questions, are comfortable with the wording and know how to fill in the answers. If they are inexperienced, conduct an orientation session using the tips provided in this section. If any of the respondents is likely to speak a language not spoken by anyone on the team, you would need to recruit a new team member or use an interpreter.

### **Step 5. Analyse the information collected from the surveys**

Once the surveys are completed, pull together all the information collected for analysis. You may want to use software to support analysis. However, software can be costly and you will need to budget for licenses and training.

Quantitative information can be input into Microsoft Excel or more powerful software, such as Minitab, Stata or SPSS, for statistical analysis<sup>9</sup>. Using simple statistics, you can calculate the percentage of participants giving each answer and determine its significance. You can also do correlations and trend analysis. For example, are there answers common to a specific demographic, including people of a specific age, gender, income bracket or level of education? Are there trends in how participants answer a pair or group of questions? You can then create graphs, such as bar or pie charts, to visualise findings and aid statistical analysis.

Qualitative information, including text, can be analysed using Microsoft Word or specialised software like ATLAS.ti, NVivo and QDA Miner<sup>10</sup>.

Online survey software, such as Survey Monkey, generally includes fairly easy-to-use analysis options and if you do a mix of online and face to face data collection, you can still input the face-to-face data into the online system for analysis.

9 For more information on choosing your statistical analysis software, see Upadhyay, R. 2014. Choose your data mining and Statistics Software/ Language. <http://ucanalytics.com/blogs/choose-your-data-mining-statistics-software/> [Accessed 2 February 2017]

10 For more information on choosing a software package for qualitative data analysis (CAQDAS), see University of Surrey. n.d. Choosing an Appropriate CAQDAS Package. <http://www.surrey.ac.uk/sociology/research/researchcentres/caqdas/support/choosing/> [Accessed 2 February 2017]



## Box 9: Sample Questions for Survey

Interviewer: (if conducted face-to-face) \_\_\_\_\_ Date: \_\_\_\_\_

Name of participant: \_\_\_\_\_

Gender: Male  Female

Age: 0-17  8-30  31-45  46-60  61+

1. How do you earn a living? Farming  Fishing  Tour guiding   
 Office work  Own business  Other  (explain): \_\_\_\_\_

2. Have you heard of climate change? Yes  No  Unsure   
 If yes, where did you get information about climate change?  
 Radio  TV  Newspapers  Community meeting/talk   
 Workshop  Other  (explain): .....

3. Can you describe what is climate change? (if answered yes above)  
 .....

4. Have you noticed any of these changes in your community:  
 Hotter temperatures? Yes  No  Unsure   
 Rising sea levels: Yes  No  Unsure   
 More extreme floods: Yes  No  Unsure   
 More extreme droughts: Yes  No  Unsure   
 If no or unsure for all, skip to question 8.

5. Have these changes in weather or sea levels impacted on your household or job (if not mentioned above)? Yes  No  Unsure   
 If yes, how: .....

6. Do you use any strategies to deal with these changes? Yes  No  Unsure   
 If yes, please describe strategies: .....

7. Is there potential for your community to work together to better address changes in weather or sea levels? Yes  No  Unsure   
 If no, please describe why not: .....

8. Do you need other resources or support to better cope with changes in weather or sea levels? Yes  No  Unsure   
 If yes, describe these resources: .....

9. Which organisations do you think can best provide these resources or support? (check all that apply) Local community groups  Government  NGOs  Private sector

### 3.5. Semi-structured interviews and focus groups

Semi-structured interviews and focus groups are used mainly to collect qualitative data and to allow for more in-depth exploration and discussion of people’s perceptions of the economic, political and socio-cultural factors shaping vulnerability to climate change. They contain mostly open-ended questions, which allow for dialogue, both with the interviewer and, in the case of focus groups, between peers. The interviewer is encouraged to probe responses in order to get to the root causes of the vulnerabilities and to better understand the types of adaptive capacity available. Based on respondents’ answers to one question, the interviewer can introduce additional probing questions or diverge from the script (e.g. the order of the questions).

Semi-structured interviews and focus groups are best used to gain insights from key stakeholders with specialised knowledge or needs within a community or sector. The flexible format also allows for integration of other vulnerability assessment methods, including mapping, participatory photography and video, and livelihood analysis.



#### Materials needed to conduct semi-structured interviews and focus groups

- Digital audio recorder (especially if there is no human recorder but useful anyway)
- Printed copies of interview/focus group guide
- Notebook or paper
- Pen
- Registration sheet for focus groups

#### 3.5.1. Steps specific to conducting surveys semi-structured interviews and focus groups

##### Step 1. Determine the sample size

As with surveys, you need to decide on sample size and composition and the same considerations and criteria apply.

##### Step 2. Develop the interview or focus group guide

The interview or focus group guide comprises a set of core questions/areas you intend to cover in the interview or focus group, together with some back-up probing questions you may need to encourage more in-depth discussion. The interview guide is designed to encourage conversation, while ensuring that all critical topics are covered. Box 10 provides a sample interview guide including questions on exposure, sensitivity and adaptive capacity related to climate change.



## Tips for designing the interview or focus group guide

- **Use simple, short, open-ended questions.** Use words like ‘describe’ and ‘how’ to prompt respondents to share their views and go into detail.
- **Have one core question per topic area and no more than 8-10 in total.**
- **Put in probing questions as reminders to the interviewer**, such as ‘who?’, ‘what?’, ‘where?’, ‘when?’ ‘why?’, ‘how many?’, that encourage further elaboration or clarify answers that are confusing or complex.
- **Pilot the guide** to check that your selected interviewers/moderators have the necessary skills and that respondents find the questions clear and that they are generating the type of conversation you intend. Make sure the process is not too lengthy e.g. aim for interviews to be no longer than 30-45 minutes and focus groups between 45-90 minutes depending on group size.

### Step 3. Determine how you will administer the interview or focus groups

You need to decide whether you will interview participants individually, in pairs, or in groups. Face-to-face interviews are preferably to telephone or Skype for this type of data collection. If you want to collect sensitive information, such as income level or job status, an individual interview is probably best. Paired interviews or focus groups encourage respondents to reflect and build on their peers’ inputs and are also good for exploring shared experiences, such as a recent flood in the community. Focus groups are usually comprised of people with similar backgrounds and/or interests, with no more than 6-10 persons to allow everyone to participate fully.

### Step 4. Conduct the interviews or focus groups

Once your team of interviewers/moderators has been adequately briefed and oriented, they should be guided by the ‘Tips for conducting effective interviews and focus groups’ outlined below.

### Step 5. Analyse the information collected from the interviews and focus groups

Once the semi-structured interviews and focus groups are completed, pull together all the information collected for analysis. You will need to write up or transcribe information from audio or video recordings. This process is time-intensive so plan accordingly. For example, an experienced transcriber can take four hours to transcribe one hour of tape. Consider hiring a transcriber if you have a lot of recordings and limited staff/volunteers.



## Tips for conducting effective interviews and focus groups

- Start by introducing yourself and your organisation and explain the purpose of the exercise. Request participants' consent if you are using a digital recorder and explain the guidelines relating to confidentiality and anonymity.
- For focus groups, ask participants to introduce themselves, preferably using an icebreaker technique to put people at their ease. For example, you could ask them to choose the name they want to be referred to during the session and then add a word starting with the same letter that describes their character - strong Susan, laid-back Larry, generous Geena, shy Sam etc. This can also provide you with an indication of who may need drawing out and who may have a tendency to dominate the discussion.
- Encourage participants to ask any further clarifying questions about the purpose of the survey and what will be done with the data they provide.
- During the session, focus on building rapport with the respondent(s) and encouraging them to share their views openly; stress that there are no 'wrong' or 'right' answers. Listen attentively to what they have to say and treat all responses with respect. Allow for silences, and give them time to think.
- Avoid stating any personal opinions. Use neutral comments such as "I see" or "that is an interesting point".
- Take detailed notes even if you are using a digital recorder. Try to capture some of what people say verbatim so that you do not lose the flavour of what is being said.
- At the end of the survey, reiterate how you will share the findings and make sure you have their contact details if needed.

As with surveys, you may want to use software to support analysis. However, software can be costly and you will need to budget for licenses and training. Quantitative information can be input into Microsoft Excel or more powerful software, for example Minitab, Stata or SPSS, for statistical analysis<sup>11</sup>. Qualitative information, including text, photographs, audio and video, can be analysed using ATLAS.ti, NVivo or QDA Miner<sup>12</sup>. Use graphs, such as bar or pie charts, to visualise your findings and aid analysis.

<sup>11</sup> For more information on choosing your statistical analysis software, see Upadhyay, R. 2014. *Choose your data mining and Statistics Software/ Language*: <http://ucanalytics.com/blogs/choose-your-data-mining-statistics-software/> [accessed 2 February 2017]

<sup>12</sup> For more information on choosing a software package for qualitative data analysis (CAQDAS), see University of Surrey, UK: <http://www.surrey.ac.uk/sociology/research/researchcentres/caqdas/support/choosing/> [accessed 2 February 2017]

## Box 10: Sample Semi-Structured Interview Guide

Interviewer:

Date:

Name of participant:

Organisation/Title:

Age:

Gender:

### A. Awareness and knowledge of climate change

1. **What have you heard about climate change?** *If useful/relevant probe for e.g.*
  - *understanding of difference between natural and human-induced climate change*
  - *clarity on areas of common confusion, e.g. difference between weather and climate*
2. **What do you think are the causes of climate change?** *If useful/relevant probe for e.g.*
  - *Have you ever heard of “greenhouse gases”? What are they?*

### B. Perceptions, attitudes and behaviours

3. **Have you observed any effects of climate change in your community, and if so what are they?** *Probe for those you would expect in this community*
4. **Who do you think is most affected by these effects of climate change and how?** *If useful/relevant, probe for e.g.*
  - *how is climate change affecting farming and different crops?*
  - *how is climate change affecting fishing and fish catch?*
  - *what are the main impacts of climate change on your livelihoods/well-being/health*
  - *do you think you and your family are amongst the most vulnerable to climate change? Why?*
  - *between men and women, who is the most vulnerable to climate change? Why?*

### C: Practices in Climate Change Adaptation/Adaptive Capacity

5. **What have you and other community members done to address climate change in the community?**
6. **What resources do you or other community members have to take action on climate change? What other resources would you need?** *If useful/relevant, probe for e.g.*
  - *what barriers are there to effective community cooperation and action on climate change?*
  - *what role do you see for the government in supporting your community to address climate change?*
  - *what role do you see for CSOs or the private sector in supporting your community to address climate change?*

### 3.6. Participatory photo journaling

Participatory photo journaling involves stakeholders from communities, businesses and/or government agencies working together to take photographs that are then organised to tell the story of climate change vulnerabilities in a given area or sector. The stakeholders decide what they want to show and how they want to show it. The photos can be used to help stakeholders to determine exposures, sensitivities and adaptive capacities. For example, a photo of a man walking through a flooded house shows exposure and sensitivity, while photos of someone planting trees along the beach front to stabilise an eroded coastline show adaptive capacity. It is a good way to make the realities of climate change real to a wide audience.

#### 3.6.1. Steps specific to developing a participatory photo journal to assess vulnerability

##### Step 1. Establish the basis on which the photo journal will be created

Before you can start to photo journal, you will need to:

- choose the geographic area you propose to cover, using criteria such as community interest in doing a vulnerability assessment there, or that the area has already been prioritised for a vulnerability assessment; and
- determine the vulnerabilities in the area, either by extracting data from a previous vulnerability exercise or through a special vulnerability assessment exercise related to the photo journal. In the case of the latter, this would probably involve both brainstorming with stakeholders and assessment in the field.

It is important to involve key stakeholders throughout this step (see Step 2 in Section 3.2.1 for guidance on determining who they are).

##### Step 2. Determine what the photo journal should depict

In conjunction with key stakeholders, determine which of the identified vulnerabilities you want to capture in the photo journal. Note these in a storyboard. The storyboard is a series of drawings that show the images that are to be captured. The storyboard will show the title of the photo journal, the kinds of images that will be captured and the order in which they will appear in the photo journal. You can visit the area prior to the brainstorming session to collect ideas on what should be captured in the photo journal.

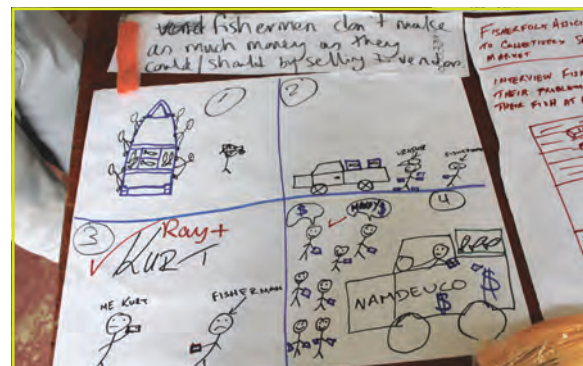


Figure 27: Fisherfolk message and the images that will convey that message in the storyboard, November 2011. Photo: CANARI



You may also want to determine how the photo journal can best be presented to your target audiences, e.g. as photo story, as a slide show, or in print format (see Section 2 for how to select products and dissemination channels) or you may decide to do this later in the process when it becomes apparent which stakeholders are most vulnerable to climate change and which have or need adaptive capacity.

### **Step 3. Ensure you have the necessary equipment**

You will need the following equipment:

- Still shot camera: use a camera with at least 20 mega pixels and a large storage capacity.
- Memory cards: the number and size of memory cards you will need depends on the amount of information you expect to collect and how often you are able to download from the card(s) to a computer; as a guide, choose memory cards that can hold at least 32 megabytes of information.
- Spare batteries.
- Notebook (or clipboard with paper), pens and pencils to collect information in the field and to keep track of the photographs collected.
- Tripod to steady the camera.
- Projector, preferably with 3000 lumens or above as a good projector will be faithful to the quality of photograph especially if it is bright.
- Computer with software to collate the information and clean the photographs. Choose one with a good processor, ports for external connections through USB and HDMI ports and software such as Adobe Photoshop.
- Underwater cases if collecting images underwater.

### **Step 4. Create your photo journaling team(s)**

Assign teams to collect the information. At least two persons should work together in a team. Each team should be given part of the storyboard to collect the relevant information.

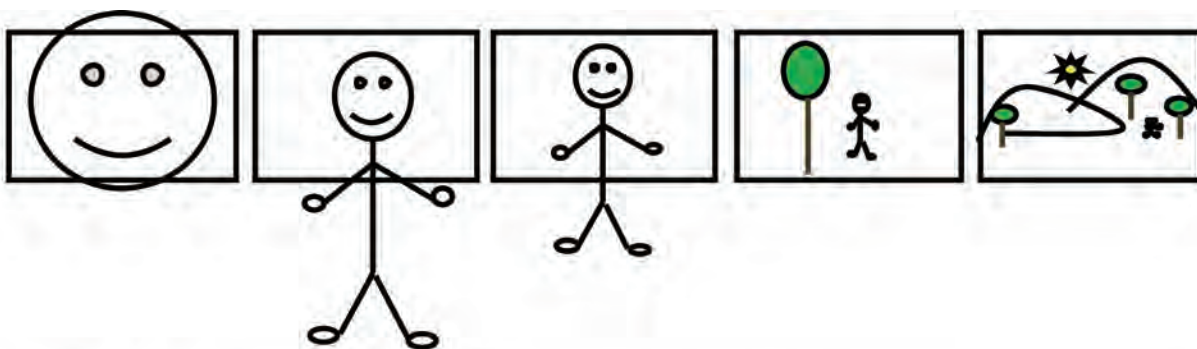


## Tips on effective photo journaling

To photo journal, you need to:

- understand the different parts and functions of the camera. The power button, lenses, and menus are of particular importance;
- know the correct way to hold the camera. Each camera is different but a good rule if you are not using a tripod is to place your elbows on your body to anchor your arms. This keeps the camera steady. Standing with your feet slightly apart can also keep you steady and minimise shaking;
- understand that there are basic types of shots ranging from an extreme close up to an extreme long shot. Each can be used to convey something different. An extreme close up can convey deep emotion while an extreme long shot can tell you where an image is located. (See Figure 28 below);
- practice using the camera before going into the field; and
- know how to download the photographs onto a computer after collecting the images in the field.

If you are not already familiar with these techniques, you will need training before you start.



From left to right:

**Extreme close up; close up; mid shot; long shot; extreme long shot**

*The image inside the box or frame will be captured in the video.*

Figure 28: Five types of 'shots'. Source: CANARI

## **Step 5. Collect the images in the field**

Images can be of people, things and places that show the various elements of vulnerability. For example, pictures of:

- floods, coastal erosion, sea level rise, and high temperatures (e.g. showing hard, cracked earth on a sunny day to evoke the feeling of heat) illustrate exposure;
- people, places and things affected by the impacts of climate change illustrate sensitivity; and
- things being done adapt to climate change illustrate adaptive capacity, (e.g. storm drains to reduce floods, planting trees on hills to stabilise them and prevent landslides, etc.).

You can also take pictures of areas affected by climate change where things clearly need to be done but this is not happening as this would imply a lack of adaptive capacity.

## **Step 6. Compile and edit the photos for the photo journal**

Once the images have been collected, you will start to put them together in a story. This involves downloading onto the computer the photographs you have taken. It is a good idea to create separate folders for each part of the storyboard. All participants should work together to choose and clean the images that best illustrate the exposures, sensitivities and adaptive capacities in the community or sector. Invite others from the community or other stakeholders who did not participate in the participatory photo journal to offer opinions on the images. Return to the field to collect further images if needed.

Once you have all the images you need, you can make the final decisions on the product formats you will use and create them.

## Box 11 Case study: Photojournaling Caura Valley's Water Woes

The Caura River flows through the Caura Valley in Trinidad and Tobago and is a popular site for recreation and religious activities. The Caura Valley community, however, felt that the river was slowly dying since the water level had reduced. Some households also had no access to pipe-borne water and depended on the Caura River for their water. Although deforestation was identified as the major factor for the reduction of water in the river, climate change was also perceived to be both a current and future threat.

Participants in a pilot project to look at community-based climate change adaptation in the area decided to document the impacts of the uses of the river and climate change on the Caura River and on their livelihoods. The group determined their objectives, messages and target audiences then created a story board that identified what they wanted to show. They also learned to use cameras to take photographs.

Over two weeks, they collected images of places, people and things either affecting the Caura River or impacted by the use of the Caura River. The participants got together to choose the best images, clean them and put them together in a photo journal. The photo journal was shared with decision-makers and technical persons in government agencies and private sector organisations to encourage adaptive action. The Caura Valley community decided to pilot a rainwater harvesting system to supplement supply of water from the river (see Box 19 in Section 5 *Rainwater harvesting to ensure local water security, Trinidad and Tobago*).



Figure 29: Caura Valley community storyboards its photojournal. Photo: CANARI

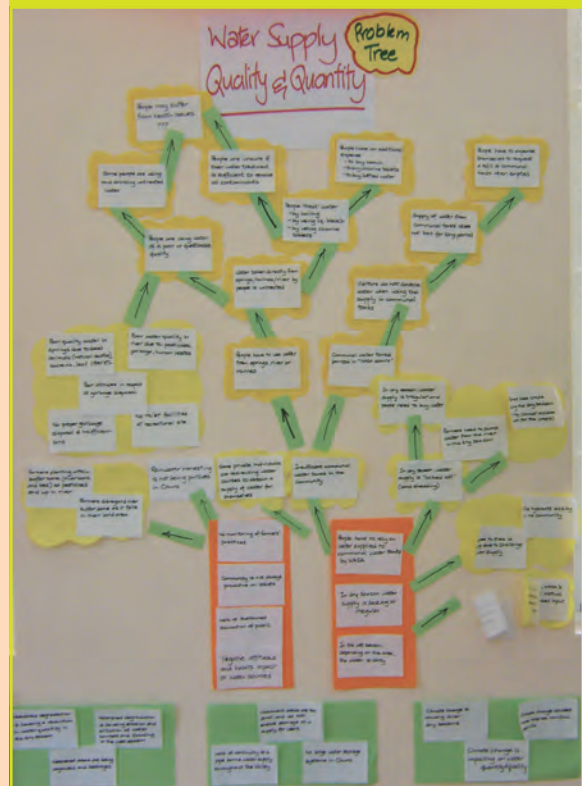


Figure 30: Problem tree. Photo: CANARI

### 3.7. Rapid community mapping

Community mapping can be used to gather and interpret spatial or geographic information about climate change vulnerability. Community mapping can be a rapid exercise where, for example, participants draw a rough map on a sheet of paper or it could be a detailed exercise where carefully scaled and drawn maps are used in the exercise. The process below describes a rapid mapping process.

#### 3.7.1. Steps specific to using rapid community mapping to assess vulnerability

##### Step 1. Collect tools and equipment that will be needed

There are several different ways in which you can approach the mapping exercise. You might decide to start by having the community to create its own map of the area, to which they add the features they think are important. This ensures that the map represents community members' perspectives on the relative importance and size of, and distance between, the features they map. Alternatively, you can source an existing map of the area that already shows basic features such as main roads, waterways and key infrastructure (e.g. from Google Maps or the Lands and Survey Division). This then forms the base for the community mapping exercise.

You will also need to assemble the following materials:

- Sheets of paper (letter size or larger)
- Pens, coloured pencils, markers, crayons, etc.
- Clip boards

##### Step 2. Planning the community map

Brief participating stakeholders on the rapid community mapping exercise. Explain to the participants that they will want to note on the map things that are or will be affected by climate change, such as major buildings, houses, forests, waterways, drains, burial grounds, roads, and popular tourist sites. For example, an eroded beach may be a feature that is captured on a community map. While exposure and sensitivity may be easily captured, adaptive capacity may be more difficult to capture on a map.

Divide the stakeholders into groups to collect different types of information. You may also want groups to collect information about vulnerability in different areas of the community (e.g. one to the north of the community and one to the south).

Ask the groups of participants to trace several blank copies of the blank map onto sheets of paper. You can include important information, such as the location of the main roads and buildings like the community centre and police station on the blank map. Show north on the map.

Ask the group of participants to collectively create a legend so that everyone knows what symbols and colours are used to represent different features. For example, a blue line might represent a river while a red square might represent a fire house. The legend is a collection of all the symbols and colours used on the map. Remind the participants to note new features on the legend as they identify them in the field.

### Step 3. Collect the information in the field

Ask the community members to identify on the map the location of areas that are exposed to different types of risks, such as floods and beach erosion (illustrating exposure). They should also include the locations of sites such as large population centres that may be affected by floods or areas where people are affected by mosquito-borne diseases, which would illustrate sensitivity. Identifying the location of sea walls, mangrove forest restoration or storm drains would show adaptive capacity.

### Step 4. Analyse the information collected

Note and discuss areas that show exposures, sensitivities and adaptive capacities. Discuss with the participating stakeholders and verify whether there is consensus that the information is correct.

## Box 12 Case study: Mapping Caura

In 2012, the Caura Valley community in Trinidad used rapid community mapping as one of the methods to document its vulnerabilities to climate change. The community created a simple base map from a Google map. They ensured that north was located on the map and created a legend. Community members walked around the community and mapped features that depicted their vulnerability such as areas that were prone to flooding. After the features were mapped in the field, they returned to the briefing area to discuss what they had found with each other. The map was revised based on the discussions. The completed map was shared with the wider community and used to begin to brainstorm possible adaptation actions.



Figure 31: Rapid community mapping in Matura Salybia, April 2016. Photo: CANARI



### 3.8. Participatory three-dimensional modelling (P3DM)

Participatory three-dimensional modelling (P3DM) is another tool that uses local knowledge to assess vulnerability and identify possible adaptation strategies. It facilitates the engagement of a wide range of stakeholders, such as community members, government ministers, technical persons, civil society and academia, in the process of assessing vulnerabilities in the areas where they live and work. The three-dimensional model can be used to depict the past, present and future and is therefore a good tool to show the impacts of climate change and to plan for adaptation and resilience building. Because the model is produced to scale, the information collected can be placed into a geographic information system (GIS) and used by a variety of planners. P3DM however, takes time to complete (typically between two weeks and two months).



#### Materials needed for P3DM

- Table (or wood for a table that is built prior to model-building) - size and scale determined by the GIS Specialist
- Corrugated cardboard
- Nails of varying lengths
- Glue
- Crepe paper
- Push pins, thumb tacks, map pins, etc.
- Rulers
- Paint (white and other colours to be determined by the stakeholders)
- Paint brushes of various sizes
- Paint thinner
- Cameras
- Wool or twine
- Paper towels or cloth towels
- Logbook or notebook
- Buckets
- Fans
- Maps of the area (e.g. Google maps)
- Information about climate change to be placed on walls around the model-building site

### 3.8.1. Steps specific to using P3DM to assess vulnerability

#### Step 1. Identify any specialist expertise you will need.

Unless you already have expertise in Geographic Information Systems (GIS) on your team, you will need to engage a GIS specialist to:

- provide or create contour maps<sup>13</sup> of area to be mapped;
- recommend the scale of the model (e.g. 1:5000km);
- provide an estimate of the materials that will be needed, based on the proposed scale; and
- digitise the completed model once completed so that it can be georeferenced<sup>14</sup>.

#### Step 2. Developing the contour maps.

Ask the GIS expert to determine the scale of the model and ask him/her to produce contour maps in the chosen scale. Print at least four copies of these contour maps to scale. For example, if you want to produce a scaled model of 1:5000km, the printed maps should be the size of the finished model. This means that the printed maps are large.

#### Step 3. Purchase the necessary materials

See list of materials.

#### Step 4. Facilitate the model building

##### a) Preparations

- Place at least one map of the area (e.g. a Google map) on the wall, and preferably several maps showing different types of information (e.g. land use maps, satellite images, etc.).
- Place information about what is climate change and expected impacts on the area on walls around the room as well. This allows the stakeholders to refer to information about climate change and its impacts when needed.

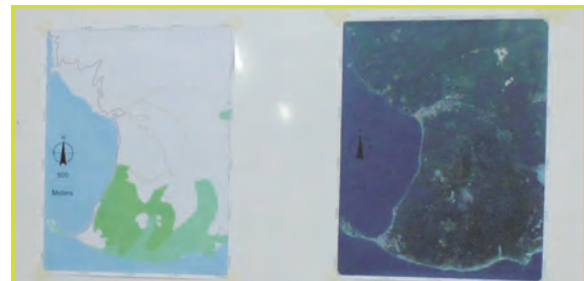


Figure 32: Maps of the area to be built in the model.  
Photo: CANARI

##### b) Constructing the base model

- Place one of the large, scaled maps on the table and glue it to the table. This is the reference for the model.
- Use the other maps to trace individual contours onto the cardboard and cut out the individual contours. These individual contours form the layers of the model.

<sup>13</sup> A contour shows the height of the land above sea level. A contour map shows contours in increments above sea level.

<sup>14</sup> Georeferencing means that the coordinate system of a map or aerial photo image can be related to a ground system of geographic coordinates.

- Glue the cardboard to the table. Use the notebook to keep track of the contours that have already been completed and those that remain.
- Once all the contours have been glued to the table, leave the model to dry for at least three hours. Then glue crepe paper to the outer layer of the model, which makes it easier to work with. Leave to dry for at least ten hours.
- Now paint the model white. More than one coat of white paint may be needed and the model should be left to dry after each coat of paint. This is the base model. The stakeholders will use the base model to populate features such as roads, rivers, forests, sea level in 1950 versus sea level in 2015, and protected area boundaries.

### c) *Creating the 3D Model*

- Invite groups of stakeholders (informants) to model-building sessions at different times. For example, you may want to invite fisherfolk for a three-hour session to input information on the model on the first day then invite the Fisheries Division for a similar three-hour session on the fourth day. This allows the stakeholders to have meaningful discussions on issues pertaining to particular sectors.
- Although you may have started to create a legend before the model is built, it will be completed while the model is being built. The legend should show all the information that is on the model. For example, a red push pin can be used to represent fire houses while green wool can be used to represent a forest trail.
- Begin each session with a brief overview of the exercise and of climate change and climate change vulnerability.

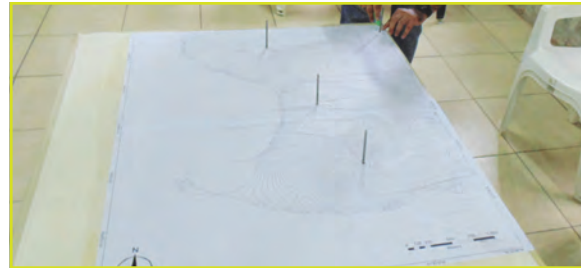


Figure 33: A contour map is glued to the base table. Photo: CANARI



Figure 34: Carbon paper is attached to the back of the contour maps. Each contour is traced onto a sheet of cardboard. Photo: CANARI



Figure 35: The cardboard cutout of the contours are glued together on the table. Photo: CANARI



Figure 36: Once all the contours are glued together and the model allowed to dry, the cardboard is covered with crepe paper to create a smooth surface. Photo: CANARI

- Help the informants to find their location on the model so that they are properly oriented.
- Use probing questions to elicit the information you require from the stakeholders. If possible, get responses on where things are currently located, where they were located in the past and where they could potentially be located in future. Ensure that information is collected on exposures, sensitivities and adaptive capacities. (Note, as the model is a spatial tool it will mainly be physical information that is collected.)
- Use tacks, pins, twine and wool in the initial stages of information gathering as these are not permanent and can be moved as needed. Label the tacks etc. by placing small pieces of paper with information on or near them. These are largely temporary and can be changed as informants add new information to the model. You may want to keep some of the tacks and map pins as permanent symbols to denote features such as buildings. Note the symbols on the legend.
- Once the informants have agreed upon the placement of the information about climate change vulnerability in the area, you can begin painting the information onto the model. The paint will be permanent. Note the colours on the legend. Leave the painted model to dry for at least 24 hours.
- Take high quality photographs of the model and the legend and give these to a GIS expert to digitise the map. The map can then be shared with other stakeholders in GIS software.



Figure 37: The model is painted white and left to dry. Photo: CANARI



Figure 38: Stakeholders add information to the model using yarn, pins, etc. that can be moved for accuracy. Photo: CANARI

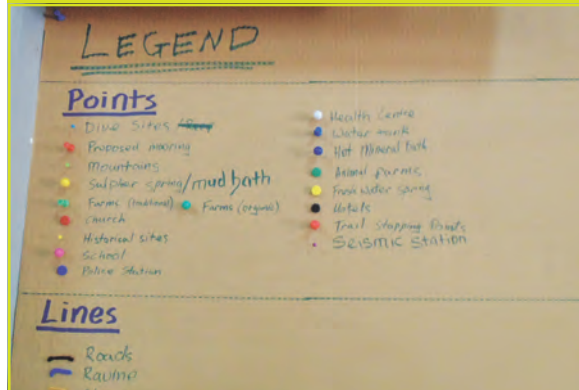


Figure 39: A legend or key is created that tells what each symbol or object represents on the model. Photo: CANARI



Figure 40: The yarn and other temporary information are then removed and painted onto the model. Photo: CANARI



### **Box 13: Case study – Using P3DM to assess climate change vulnerability**

In 2012, CANARI piloted the use of P3DM in Tobago. Over the course of two weeks, stakeholders from around the island (e.g. fisherfolk, hunters, business owners, environmentalists, religious groups, government agencies, etc.) built a scaled model of the entire island and used it to show the location of Tobago's resources. The completed model was handed over to the local governing body, the Tobago House of Assembly (THA). In a further exercise, civil society, government officials and other stakeholders were invited to use the model to depict climate change adaptation and prioritise their actions.

CANARI facilitated another P3DM exercise in the Soufriere-Scotts Head-Galion area of Dominica to build awareness of the impacts of climate change on its resources in 2014. The four-day model building exercise saw more than 40 persons from many stakeholder groups attending to place their information on the model. The completed model was handed over to the local village council in April 2014.

### **3.9. Livelihood vulnerability analysis**

Livelihood vulnerability analysis is a systematic, participatory approach for analysing the vulnerability of a community's livelihoods to climate change. It aims to engage the community in identifying how climate change is affecting their livelihoods, the drivers of vulnerability and ways to build resilient and sustainable livelihoods. The analysis focuses not just on how community members earn a living, such as fishing, farming or small businesses, but also focuses on the wider concept of livelihoods assets and wellbeing. It also examines the opportunities and assets available to the community, and the different policies and institutions shaping these opportunities.

Through understanding the livelihood activities and assets within a community, you can analyse how they will be affected by climate change and the factors that make them more or less vulnerable. You can identify ways that communities can respond using their available assets. Additionally, you can identify entry points for building adaptive capacity and resilience into the future.

Livelihood vulnerability analysis can focus on an entire community. In this case, you will need to analyse the livelihoods of a range of different stakeholders (e.g. farmers, fisherfolk, government workers, business owners and pensioners). Or your analysis could focus just on a specific demographic (e.g. women or youth) or sector (e.g. forest or coastal management), in which case the analysis will be narrower in scope focusing only on the relevant livelihoods and stakeholders.

## Box 14: Key concepts in livelihood vulnerability analysis

A livelihood is **sustainable and resilient** when it:

- can cope with and recover from threats and shocks;
- does not depend on external support;
- can maintain or enhance its capabilities and assets now and in the future;
- does not compromise the productivity of the natural resource base; and
- does not undermine the livelihoods of others.

**Livelihood activities** are the strategies that people develop to make a living and support their basic needs. These strategies include how people earn an income e.g. paid labour, professional work or a small business. Livelihood activities also include subsistence strategies e.g. farming or fishing to feed your family.

**Livelihood assets** are the resources upon which people draw to pursue their livelihood activities and ensure human well-being. The DFID livelihoods framework (see DFID 199923), suggests that individuals and households must be able to access a balanced portfolio of assets to ensure their well-being. Individuals or households that have a range of livelihood assets are generally less vulnerable to threats or shocks. The DFID framework identified five types of livelihood assets (financial, human, natural, physical and social). CANARI research suggests that in the Caribbean context it is also important to include cultural and political assets.

### Types of livelihood assets:

- **cultural assets:** beliefs, values and worldviews, and sites of historical and religious significance (e.g. culture of cooperation and trust, festivals, and heritage sites);
- **financial assets:** inflows of money, credit/debt, property and insurance (e.g. savings and income from employment, trade and remittances);
- **human assets:** knowledge and education, technical or other skills, and health (e.g. literacy and nutrition, local expertise, and availability of productive labour);
- **natural assets:** access and ownership of natural resources (e.g. biodiversity and ecosystem services, land, water, and coastal areas);
- **physical assets:** infrastructure (e.g. housing, roads, schools, health centres and telecommunications), equipment and goods (e.g. livestock and handicrafts);
- **political assets:** power and ability to access and influence decision-making and policy (e.g. political representation, policy forums, local councils and action plans); and
- **social assets:** people's networks and relationships (e.g. family ties, active community groups, professional associations), and their means of interaction such as via websites or email lists.

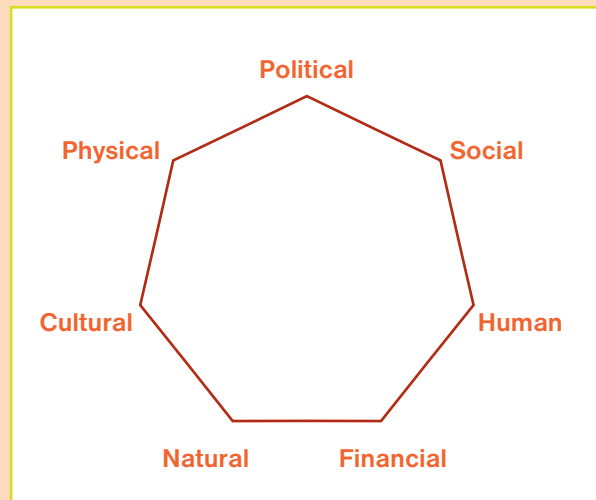


Figure 41: Caribbean livelihoods framework. (adapted from DFID framework)

Source: DFID, 1999





## Materials required for livelihood analysis

- Flip chart easel and flip chart paper
- Laptop and projector for slide presentations
- Note paper
- Markers
- Pens
- Masking tape
- Printed copies of the activity guide and handouts

### 3.9.1. Steps specific to conducting a livelihood vulnerability analysis

#### Step 1. Plan and design the livelihood vulnerability analysis

Livelihood analysis will cover all or some of the following:

- identifying livelihood activities and the assets they draw upon;
- assessing the exposure and sensitivity of livelihood activities and assets to various threats from climate change;
- identifying ways that people currently cope with threats;
- determining how livelihood activities and assets can contribute to adaptive capacity into the future; and
- determining priorities and actions to reduce livelihood vulnerability (considering exposure, sensitivity and adaptive capacity).

However, the approach you take will depend on who is providing the information and factors such as literacy levels, time available, etc. You can use various exercises and games that are interactive and facilitate dialogue and knowledge sharing, including diagramming, ranking of threats or people's strategies for managing threats, and developing storylines of livelihoods and how they have changed<sup>15</sup>.

Write up a guide for each exercise or game you use for the livelihood analysis. The guide should include a description of the exercise, the discussion questions to be covered, and whether the exercise will be done in pairs, small groups (three to five people) or with the whole group. The guide should also list any materials or equipment needed for the exercise.

<sup>15</sup> For more information on exercises and tools, see International Federation for Red Cross and Red Crescent Societies (IFRC) Livelihoods Centre: <http://www.livelihoodscentre.org>

## **Step 2. Implement the livelihood vulnerability analysis**

*a) Organise and facilitate workshops or focus groups* with your targeted respondents.

### *b) Define key concepts*

Review and explain what is a livelihood, including the concepts of livelihood activities and livelihood assets. Discuss how these concepts can be used to assess vulnerability to climate change and why this is important. Explain that you can assess: the different climate change threats affecting livelihoods (exposure); how badly livelihoods will be impacted by climate change (sensitivity); and identify ways that households and the wider community can respond using their available assets (adaptive capacity). Use examples and diagrams to illustrate these concepts.

### *c) Identify the different livelihood activities within the community/target group*

Ask participants to identify the livelihood activities upon which they depend (e.g. farming, fishing, tour guiding, small business etc.) and list each of them on flip chart paper. Discuss which are the most common livelihood activities and why.

### *d) Review and identify the different types of livelihood assets available to the community/target group*

Recap what are livelihood assets and the different types of assets. Ask participants to give examples to clarify that they have understood. Explain to participants that they will examine in depth their vulnerability to climate change focusing on livelihood assets and why this is important.

Ask participants to list all the different types of assets – cultural, human, natural, physical, political, social - that they draw upon for their livelihood activities. You can have them work in small groups of three to five people where each group is assigned one to two asset types to discuss. (e.g. focusing on natural assets, they might list land, soil, forests, fisheries, etc.).

### *e) Analyse the exposure and sensitivity of livelihood assets to climate change*

Ask participants to consider how their livelihood assets might be impacted by various threats from climate change. For example, you can have participants remain in their small groups and answer the following questions for each asset they have listed:

- i. Potential climate change threats that asset is exposed to? (E.g. sea level rise and more intense droughts, forest fires and floods)
- ii. How sensitive is asset to threats from climate change? (Participants can assess sensitivity as high, medium or low)
- iii. What existing non-climate threats are impacting the asset? (E.g. deforestation is an existing threat to forests, soils and biodiversity under natural assets)
- iv. Based on above, what is their level of concern for this asset? (Participants can list as high, medium or low)

See Table 4 as an example. You can discuss, as a group, how and why different asset types are impacted by climate change, whether there are commonalities, or impacts unique to certain assets.

<b>Table 4: Example of analysis of exposure and sensitivity of natural assets</b>				
<b>Asset Type</b>	<b>Potential climate change threats exposed to?</b>	<b>How sensitive is it?</b>	<b>Existing non-climate threats?</b>	<b>Level of concern?</b>
Natural assets E.g. forests	<ul style="list-style-type: none"> <li>• Hurricane damage</li> <li>• Drought</li> <li>• Extreme heat</li> <li>• Floods/landslides</li> <li>• New invasive species</li> </ul>	<ul style="list-style-type: none"> <li>• High</li> <li>• Medium</li> <li>• Low</li> <li>• Medium</li> <li>• High</li> </ul>	<ul style="list-style-type: none"> <li>• Deforestation</li> <li>• Overhunting</li> <li>• Pests</li> <li>• Uncontrolled burning</li> </ul>	Medium

**f) Analyse how livelihood assets contribute to adaptive capacity for climate change**

Ask participants to explore how their livelihood assets can support adaptive capacity and assess whether they have the capacity to address climate change threats.

Firstly, you can identify strategies they have used to manage climate-related hazards and give examples (e.g. beach erosion, droughts, floods and forest fires). Then have participants discuss whether existing strategies have the potential to address future threats from climate change (e.g. sea level rise and more intense droughts, floods, and forest fires).

Next you can ask participants to consider the livelihood assets available to the community to address climate change, and which can support the above adaptation strategies. They can consider the following questions for each asset they have listed:

- What role/influence does this asset have within livelihood activities?
- How can this asset contribute to adaptive capacity?

Participants can then rate their adaptive capacity for climate change based on each listed asset. The group should consider the role of the asset, potential threats from climate change and strategies available to manage these threats in their ratings. Participants can list adaptive capacity as high, low or medium. See Table 5 as an example.

**Table 5: Example of analysis of how natural assets contribute to adaptive capacity**

Asset Type	Role/influence on livelihood activities?	Contribution to adaptive capacity?	Rating of adaptive capacity
Natural assets e.g. forests	<ul style="list-style-type: none"> <li>• Timber and non-timber products for subsistence and sale in markets</li> <li>• Wildlife for hunting and pet trade</li> <li>• Plants for medicine and horticultural sector</li> <li>• Site for tourism and recreation</li> <li>• Protection of watershed and freshwater resources</li> </ul>	<ul style="list-style-type: none"> <li>• Forest biodiversity and ecosystem services can support a range of livelihoods over the long-term if sustainably managed</li> <li>• Healthy, intact forests act as buffers against natural hazards like floods, landslides, and heatwaves</li> </ul>	Medium

**g) Assess overall vulnerability of livelihoods to climate change:**

Have participants reflect on the findings from the earlier exercises, including their exposure, sensitivity and adaptive capacity, and assess the overall level of vulnerability of their livelihood activities and assets to climate change. Ask participants to explain how they reached their decision. Discuss whether there is consensus about overall vulnerability or why there is none.

If you have time, you can include further discussion and exercises on how to address vulnerability and build sustainable livelihoods. You can focus on ways to reduce exposure and sensitivity to threats from climate change across livelihoods as well as ways to build adaptive capacity.

**3.10. Value chain analysis**

Value chain analysis reviews the steps involved in delivering a product or service and tries to identify measures that could be taken to reduce the cost of the operation and increase the value of the product or service. For example, instead of transporting seeds to a facility 10 km away to be made into bracelets, the entrepreneur might instead decide to manufacture his bracelets near where the seeds are collected to reduce fuel costs.

Value chain analysis also provides an opportunity to analyse the enterprise for climate vulnerabilities and determine adaptation actions that it could undertake. The elements of vulnerability - exposure, sensitivity and adaptive capacity can be determined at each step in the value chain.



**Materials needed for value chain analysis**

- Paper
- Makers
- Pens, pencils, crayons, etc.
- Masking tape

### 3.10.1. Steps specific to a value chain analysis to assess vulnerability in enterprises

#### Step 1. Identify the value chain steps and capture the value chain on a large sheet of paper

You can use probing questions to elicit the information as well as observation of the processes in the enterprise. The value chain should include all activities in the enterprise, such as collecting the raw material (including planting if that is part of the enterprise), transporting it to be processed, washing, storing, manufacturing, transporting to the stores, advertising and training to improve skills. Technology and infrastructure associated with the enterprise can also be included. You may need several sheets of paper for this exercise. Figure 43 shows a simple structure for the value chain.



Figure 42: A value chain analysis allowed Climate ACTT participants to assess the vulnerability of one of the small businesses in Salybia, Trinidad to climate change. Photo: CANARI

#### Step 2. Determine the enterprise's exposure to climate change

Identify and discuss the impacts of climate change that could affect each step of the enterprise's value chain, such as sea level rise, drought, intense rainfall or high winds during storms. For example, drought might affect availability of seeds for jewellery while landslides caused by intense rainfall could reduce access to markets. Document these and note whether the exposure is high, moderate or low.

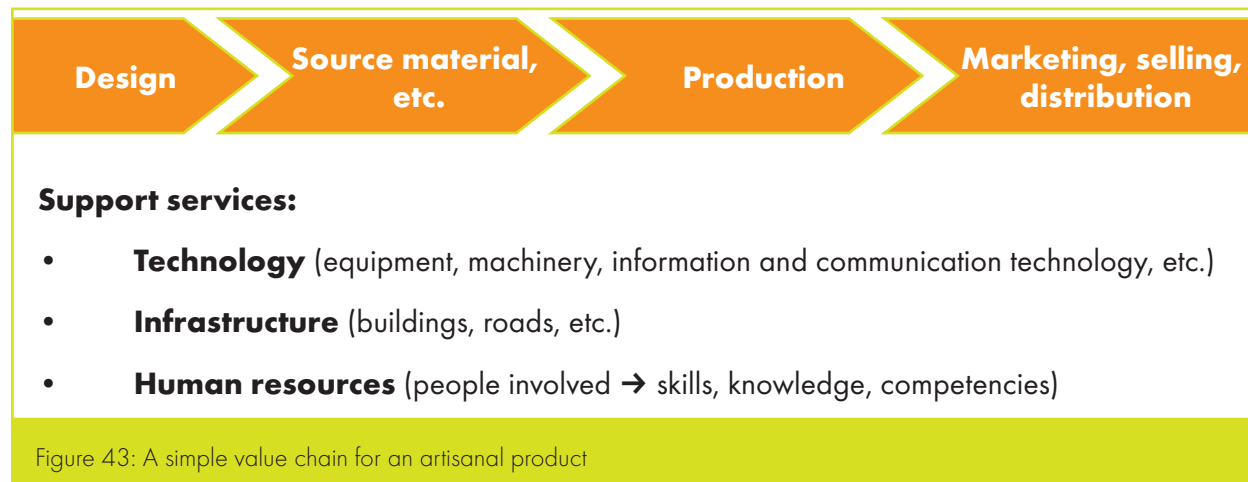
#### Step 3. Determine the enterprise's sensitivity to the impacts of climate change impacts

Discuss and document the perceived sensitivity of the enterprise to the identified climate change impacts. Consider things like whether the buildings are sturdy and can withstand high winds, location of buildings in relation to the coast and susceptibility of the enterprise to diseases (e.g. high sensitivity to vector-borne diseases like chikungunya or dengue would affect productivity). Note whether the sensitivity is high, medium or low.

#### Step 4. Determine the adaptive capacity of the enterprise

Discuss and document the things that are in place to help the enterprise recover from shocks. This might include number of persons with skills relevant to adaptive capacity, training for the enterprise, varied sources of raw material and different access routes to markets, alternate sources of electricity, savings and/or bank account with access to credit,

and access to technology. Also note if the adaptive capacity is high (good), medium or low (poor). For example, an enterprise with electricity both from the grid and a solar energy system, high levels of savings and insurance for its workers and equipment might be rated as ‘high’.



### Step 5. Identify and build consensus on key vulnerabilities to prioritise for action

Discuss and document which parts of value chain are most and least vulnerable to climate change and rank them in order of priority for action. Present the completed value chain analysis to other members of the enterprise for their input and build consensus about key vulnerabilities and priorities.

### Step 6. Develop and implement an action plan (see Sections 4 and 5) to adapt to climate change and improve the resilience of the enterprise

#### Box 15: Case study: Using value chain analysis to assess a chocolate making enterprise

The Brasso Seco Chocolate Company in Trinidad and Tobago makes organic dark chocolate. The community-owned enterprise is located in the mountains of the Northern Range in Trinidad. The community entrepreneurs used a value chain analysis to determine how vulnerable its enterprise was to climate change. It worked with a business expert to develop a very simple value chain for its product, noting all the processes that went into getting the cocoa beans to transform into chocolate bars and then sold to the final consumer. For each part of the completed value chain, they discussed their vulnerabilities and then brainstormed possible adaptation actions. The entrepreneurs then determined priority actions based on needs and available budget. One of the key findings was that the enterprise was often affected by heavy rains that caused landslides. Landslides in turn damaged poles that took electricity to the community and interrupted production of chocolates. The entrepreneurs decided to install a solar energy system on their production house so that the enterprise would have a constant supply of electricity. Landslides also prevent access to markets and had damaged homes of workers but there were not enough available funds to address these issues.



### 3.11. Useful resources

Bobb-Prescott, N. 2014. *Case study on the use of participatory three dimensional modelling to facilitate effective contribution of civil society in the Caribbean islands in planning for action on climate change*. CANARI Technical Report 401, Laventille. Available at [http://www.canari.org/documents/401CasestudyP3DM\\_001.pdf](http://www.canari.org/documents/401CasestudyP3DM_001.pdf)

Caribbean Natural Resources Institute [CANARI]. (2004). *Guidelines for stakeholder identification and analysis: A manual for Caribbean natural resource managers and planners*. Guidelines Series No. 5. Laventille: Trinidad. CANARI. Available at <http://www.canari.org/wp-content/uploads/2016/04/Guidelines-5-Guidelines-for-stakeholder-identification-and-analysis.pdf> [Accessed 12 January 2017]

Caribbean Natural Resources Institute [CANARI]. (2011). *Facilitating participatory natural resource management: A toolkit for Caribbean managers* Port of Spain, Trinidad and Tobago: CANARI. Available at <http://www.canari.org/wp-content/uploads/2015/04/PNRM-ToolkitEnglish1.pdf>

Conservation International. (2016). *Understanding vulnerability and resilience. Appendix 3 of the Report of the training workshop Assessing vulnerability and building resilience to climate change* Available at <http://www.canari.org/wp-content/uploads/2015/12/CACTT-second-workshop-report.pdf>

International Federation for Red Cross and Red Crescent Societies [IFRC] Livelihoods Centre. <http://www.livelihoodscentre.org>

Rambaldi, G. and Callosa -Tarr J., (2002). *Participatory 3-Dimensional Modelling: Guiding Principles and Applications*. Los Baños, Laguna, Philippines: ASEAN Regional Centre for Biodiversity Conservation

UK Department for International Development [DFID]. (1999). *Sustainable Livelihoods Guidance Sheets*, April 1999. Available at <http://www.eldis.org/vfile/upload/1/document/0901/section2.pdf> [Accessed 3 August 2016]

## Planning for adaptation

- 4.1. Introduction
- 4.2. Key steps in adaptation planning
- 4.3. Useful resources

## Box 16: Key terms used in Section 4

<b>Adaptive capacity</b>	The full range of capabilities, resources and institutions available to an individual, community, organisation or society to implement climate change adaptation actions (adapted from IPCC, 2007).
<b>Capacity building for climate change adaptation</b>	Efforts to develop the human knowledge, skills and resources needed within a community or institution to effectively respond to climate change (UNISDR, 2009).
<b>Climate change adaptation</b>	The adjustment of human or natural systems, including specific measures to address the actual or potential impacts of climate change (adapted from IPCC, 2014).
<b>Disaster</b>	A serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses that exceed the ability of the affected community or society to cope using its own resources (UNISDR, 2009).
<b>Disaster risk reduction</b>	Systematic efforts to reduce disaster risks by analysis and management of the underlying causes of disasters, wise management of land and the environment, and improved disaster preparedness (adapted from UNISDR, 2009).
<b>Hazard</b>	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 (UNISDR, 2009).
<b>Resilience</b>	The ability of a community, society or natural system to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner (UNISDR 2009).
<b>Vulnerability</b>	The characteristics and circumstances of a community, organisation or system that make it susceptible to the damaging effects of a hazard, including economic, environmental, physical and social factors (UNISDR, 2009).

## 4.1. Introduction

CSOs can play a critical role in planning for effective climate change adaptation and resilience building. They can act both as advocates to catalyse planning and as facilitators of the participatory processes needed for development of effective adaptation plans. They can also bring their expertise to the table in adaptation planning processes initiated by others.

Adaptation planning builds on the findings from vulnerability assessments (see Section 3) to develop relevant and effective ways to address the impacts of climate change on a particular geographic area or sector. Adaptation planning should also consider how to take advantage of any opportunities that may arise as a result of climate change.

Adaptation planning can result in the development of stand-alone climate adaptation plans, which specifically address the impacts of climate change and the vulnerability of the community or sector to these impacts. Alternatively, it can focus on integrating climate adaptation measures into existing plans for local or sectoral development, such as community disaster management plans or sectoral strategic plans. This is often referred to as ‘mainstreaming’ climate change.

These comprehensive adaptation plans can then provide the basis for different stakeholders to take adaptation actions (see Section 5), based on their particular mission, skills and resources.

## 4.2. Key steps in adaptation planning



### Tip on adaptation planning

**Adaptation planning is an iterative rather than a one-off process.**

Effective adaptation actions must respond to changing circumstances, whether in terms of climate, community demographics, local or national leadership, or policy. Effective adaptation planning therefore requires continuous analysis, decision-making and action over time to ensure that future plans reflect new data and lessons learnt from earlier planning and implementation phases.

### Step 1: Determine the scope of your planning process

Adaptation plans can be done on many different scales, for example, regional, national, local, community, or for a particular sector. CSOs will mainly be involved in leading community or sectoral adaptation planning and contributing to plans at the other levels.

## Step 2: Background research

Once you have determined the broad scope of your planning exercise, you will need to do further background research on the community or sector you are working with before you start the formal, participatory planning process, including:

- review and analysis of existing assessments of the community's vulnerability to climate change or facilitation of a participatory vulnerability assessment (see Section 3);
- systematic identification of key stakeholders<sup>16</sup> (an exercise that should be continued throughout the planning process as you are unlikely to be able to identify all of them from the outset); and
- analysis of key stakeholders, for example, to determine who has relevant expertise, who will be most affected by the impact of climate change, who might be resistant to the changes that adaptation would require, what are their communication preferences, and when and where is the best time for engagement of different categories of stakeholders.

This research should be done using a participatory approach<sup>17</sup>, involving new stakeholders as and when you identify them.

## Step 3: Develop the goal of, and methodology for, the adaptation planning process

This step involves:

- development of a broad goal and some specific objectives for the planning process, to be reviewed and refined with the wider stakeholder base;



Figures 44 & 45: Amphibians are good indicators of environmental health because their skin is acutely sensitive to minor changes in temperature, humidity, and air or water quality. Photos: Natalie Boodram/CANARI (top); Carlos C. Martinez Rivera (bottom)



Figure 46: Certain species of plants are also important indicators of environmental health. Water lilies is a particularly good indicators of water quality. Photo: Natalie Boodram/CANARI

<sup>16</sup> For more information, see CANARI, 2004.

<sup>17</sup> For guidance on facilitating participatory processes, see CANARI, 2011. Facilitating participatory natural resource management: A toolkit for Caribbean managers

- identification and securing of the expertise and resources (human, financial and material) that you need to conduct an effective adaptation planning process. This often includes sourcing additional external technical or facilitation expertise, for example from government agencies, businesses or other CSOs that work in sectors relevant to adaptation (e.g. agriculture, energy, environment, water, transport or gender) or have specialised skills (e.g. participatory three dimensional mapping or participatory video);
- creation of a project team with clear roles and responsibilities;
- development of a stakeholder engagement strategy that focuses on engaging the widest possible range of stakeholders in the subsequent steps; and
- development of a work plan and timeline.

#### **Step 4 Collectively develop the adaptation plan**

During this critical stage, you actively engage stakeholders in identifying and prioritising the key actions that could be taken to adapt to climate change and improve resilience. When done effectively, this process helps to secure widespread buy-in to the final plan and starts to identify who is best placed to implement different actions. As the CSO leading the process, you must be sure that you, or the people you contract, have high levels of competency in:



Figure 47: Caura Valley residents plan for adaptation. Photo: CANARI

- communicating about climate change (see Section 2): climate change is a complex issue and participants may have a low or confused level of understanding of what is driving it and what adaptation and resilience mean;
- facilitation of equitable participatory processes (see Tip);
- managing conflict (it is rare that all stakeholders agree on everything) and building consensus; and
- documenting and feeding back to stakeholders the outcomes of their discussions.

Processes may vary according to what has already been done in the community or sector but should include:

#### **a) Participatory visioning**

Visioning processes encourage stakeholders to share their aspirations and vision for the community or sector and to think and plan for the long-term. Developing a collective,





## Tip to use 'sticky dots' as a tool for rapid prioritisation of actions

Put the full list of the brainstormed actions (either on flip chart paper or, better still, on individual sheets of paper) on the wall. Then give each participant 3-5 sticky dots (depending on the number of potential actions identified) and ask them to stick these on the 3-5 actions that they see as the top priorities, based on the agreed criteria.

This can be done very quickly and generally results in a pretty clear consensus on the top priorities, plus an indication of others that it may be worth considering.

positive image of a **sustainable and resilient community** also helps to shift focus from their vulnerability to climate change and other challenges that are discouraging or seem overwhelming.

**b) *Sharing and review of the findings of the vulnerability assessment*** (and any other relevant assessment) particularly with stakeholders who were not involved in the original exercise.

**c) *Identification and prioritisation of potential actions***

This activity is normally done by:

- brainstorming everyone's ideas for adaptive and resilience building actions to address the climate change impacts identified in the participatory vulnerability assessment. Potential actions can build on existing efforts to manage climate-related impacts or be entirely new. They might seek to reduce exposure (e.g. relocating inland to avoid rising sea levels) or sensitivity (e.g. irrigating a farm to reduce the impacts of rainfall variability), or build adaptive capacity (e.g. livelihood diversification to ensure a secure income and robust local economy);
- collectively developing criteria for prioritising the actions, e.g. whether they address multiple threats or benefit a particularly vulnerable group; and
- sorting the actions by order of priority, with the main focus on identifying the key priorities that could be acted over the next few years.

### **Step 5: Assess the feasibility of, and resources needed to implement, actions**

Depending on the criteria used for prioritising the actions, you may need to further screen the identified priorities to ensure they are environmentally, financially, technically and socially feasible. At this point, you would probably just estimate a ballpark cost for each activity, with detailed budgeting being done during the proposal development and implementation phases.



## Tips

Even when the main focus of your plan is on adaptation at the community or sectoral level, you may want to **include advocacy or practical actions that strengthen the capacity of the institutions critical to your success**, e.g. those that provide climate information, technical assistance, funding or other resources to communities and CSOs or have portfolios relevant to climate change adaptation. Such actions might include:

- capacity building to increase their understanding of climate change and its impacts, adaptation options, the national and international policy context, and how local institutions can facilitate local action;
- forging partnerships with meteorological and disaster management agencies, universities and other key stakeholders generating and sharing climate information; and
- advocacy around the value of and strategies for multi-stakeholder participation in local institutions to effectively facilitate adaptation planning.

Similarly, you should consider **how local adaptation priorities could be integrated into wider planning processes** as this increases the potential impact through tackling climate change adaptation on multiple fronts. You and/or other key stakeholders can advocate for the relevant government departments and agencies to implement priority adaptation actions and participate in relevant stakeholder consultations or public hearings to review proposed plans, projects and policies that could affect the outcomes of your local adaptation plan.

There are three main planning processes into which local adaptation priorities and actions can be integrated:

**Development planning**, which focuses on how to allocate resources to maintain or enhance economic growth, infrastructure and public services such as schools and health centres. It involves a range of sectors, including agriculture, education, energy, tourism, and water and sanitation. Local adaptation priorities can be effectively incorporated into plans within the various sectors, for example, climate-proofing tourism enterprises under a tourism re-development plan for the community or promoting rainwater harvesting systems as part of a strategy to improve rural water supply to farmers.

**Disaster risk reduction planning** is a way to reduce the risk of a disaster by planning ahead. It seeks to reduce a community's exposure or sensitivity and build resilience to future hazards. Climate change increases the risk of natural hazards and related disasters due to hurricanes, drought, floods and forest fires. Planning what to do if these disasters strike, and become more extreme with climate change, can reduce the potential for major damage and loss to communities. For example, local adaptation priorities to enhance awareness and preparedness for climate-related hazards, like hurricanes, can be integrated into community disaster preparedness plans. Putting in place early warning systems to forewarn communities when a hazard is expected is also key.

**Environmental planning:** actions to address climate change often rely on healthy ecosystems and their effective management. For example, mangroves protect against coastal erosion and inundation and mangrove conservation or reforestation can help address sea level rise and extreme storms and surges. Healthy ecosystems also contribute to the overall health and resource security of communities and enhance their adaptive capacity. Integrating local adaptation priorities into planning for coastal zone, forest or watershed management is therefore very valuable.

### **Step 6: Define lead roles and responsibilities for each priority action**

It is also useful to identify which organisation or group is best positioned to lead on each action, so that they can begin the process of advocating for the action, seeking implementation partnerships, fundraising etc. This would be determined by the existing knowledge, skills and resources available to different stakeholders, but also by their interests. Encourage and support stakeholder groups that have a strong interest in and passion for a particular action to seek funding for any necessary capacity building in project proposals.

### **Step 7 Document and share the adaptation plan**

A clearly written and presented adaptation plan is essential to secure funding and provides a sound basis for advocacy. But it is also useful to document the process by which it was arrived at, and any lessons learnt.

## **4.3. Useful resources**

CARE International. (2010). *Community-based adaptation toolkit* [online]. Available at [http://www.careclimatechange.org/tk/cba/en/Open\\_Toolkit.html](http://www.careclimatechange.org/tk/cba/en/Open_Toolkit.html) [Accessed 7 October 2016]

Caribbean Disaster Emergency Management Agency [CDEMA]. (2011). *Climate Smart Community Disaster Management Module and Facilitator's Handbook*. St. Michael, Barbados: CDEMA. Available at [http://www.cdema.org/cris/climate\\_change\\_adaptation\\_mitigation/CSCDM\\_FINAL\\_Facilitators\\_Handbook\\_web\\_version.pdf](http://www.cdema.org/cris/climate_change_adaptation_mitigation/CSCDM_FINAL_Facilitators_Handbook_web_version.pdf) [Accessed 6 March 2017]

Conservation International. (2013a). *Adapting to a changing climate: A community manual*. Washington, DC: CI. Available at [http://www.conservation.org/publications/Documents/CI\\_Climate-Change-Adaptation\\_Training\\_Community-Manual.pdf](http://www.conservation.org/publications/Documents/CI_Climate-Change-Adaptation_Training_Community-Manual.pdf) [Accessed 7 October 2016]

Conservation International. 2013b. *Adapting to a changing climate: A training guide*. [http://www.conservation.org/publications/Documents/CI\\_Climate-Change-Adaptation\\_Training\\_Training-Guide.pdf](http://www.conservation.org/publications/Documents/CI_Climate-Change-Adaptation_Training_Training-Guide.pdf)

WeADAPT Climate adaptation planning, research and practice. <https://www.weadapt.org/>

# Taking action to adapt and build resilience

- 5.1. Introduction
- 5.2. Why focus on community-based adaptation actions?
- 5.3. Why focus on ecosystem-based adaptation actions?
- 5.4. Steps in implementing your adaptation project
- 5.5. Useful resources

## Box 17: Key terms used in Section 5

<b>Adaptive capacity</b>	The full range of capabilities, resources and institutions available to an individual, community, organisation or society to implement climate change adaptation actions (adapted from IPCC, 2007).
<b>Capacity building for climate change adaptation</b>	Efforts to develop the human skills and resources needed within a community or institution to effectively respond to climate change (UNISDR, 2009).
<b>Climate change adaptation</b>	The adjustment of human or natural systems, including specific measures to address the actual or potential impacts of climate change (adapted from IPCC, 2014).
<b>Community-based adaptation</b>	Climate change adaptation activities developed in partnership with at-risk communities, in order to promote local awareness of, and appropriate and sustainable solutions to, current and future climatic conditions (CARE International, 2010).
<b>Ecosystem</b>	A system of living organisms, the physical environment and the interactions and relationships within it. Coral reefs, dryland savannas, forests and mangroves are all examples of ecosystems.
<b>Ecosystem-based adaptation (EBA)</b>	The conservation, sustainable management and restoration of natural ecosystems to help individuals, communities and organisations adapt to climate change and build resilience (Conservation International, 2013).
<b>Resilience</b>	The ability of a community, society or natural system to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner (UNISDR 2009).
<b>Vulnerability</b>	The characteristics and circumstances of a community, organisation or system that make it susceptible to the damaging effects of a hazard, including economic, environmental, physical and social factors (UNISDR 2009).

## 5.1. Introduction

Once an overall adaptation plan has been established, CSOs can play a key role in taking action to adapt and build resilience to climate change. This role might include:

- raising awareness of climate change to promote better understanding of climate change and its impacts and promote changes in behaviour to enable adaptation actions;
- conducting research to build the knowledge base, for example on local impacts and vulnerabilities to climate change;
- designing and implementing practical adaptation projects;
- identifying and documenting best practices and innovations in adaptation and resilience building;
- advocating for changes in planning, policies and legislation at the local and national levels to create an enabling environment for adaptation and resilience building; and
- serving as a watchdog to ensure that businesses, government and the public comply with climate change policies and regulations.

The type of action the CSO selects from the adaptation plan will depend on its mission, capacities and resources. In some instances, actions will be most effective if they are done in partnership with other key climate change stakeholders, such as government agencies, academia, businesses and other CSOs at both the national and community level. When the action focuses on adaptation at the community level, it is also critical to identify and engage as many community stakeholders as possible in the design and implementation of the action.



Figure 48: Growing certain tree species on coffee farms in Jamaica and protecting nearby forests can help to increase resilience to climate change. Photo: Wendy Willis



Figure 49: Reserva Privada Zorzal – the Dominican Republic's first private protected area. Photo: Charles Kerchner



Figure 50: The National Parks Trust in the British Virgin Islands designated sanctuaries to preserve and protect its terrestrial and marine habitats for generations to come. Photo: British Virgin Islands National Parks Trust



Section 5 highlights the benefits of two common approaches to community-based adaptation (CBA) and ecosystem-based adaptation (EBA). It also provides examples from the Caribbean of both CBA and EBA actions taken by CSOs. Finally, it briefly outlines the steps and resources needed for implementing any project effectively.

## 5.2. Why focus on community-based adaptation actions?

Community-based adaptation (CBA) actions are those you design and implement in partnership with at-risk stakeholders in communities in order to promote local awareness of, and appropriate and sustainable solutions to, current and future impacts of climate change (adapted from CARE International, 2014). As noted earlier, many communities in the Caribbean islands are extremely vulnerable to the impacts of climate change.

CBA seeks to reduce these vulnerabilities and build resilience and CSOs can play a critical role in leading and facilitating the CBA process. All communities possess a wide range of expertise and extensive knowledge of their local climate, environment and the issues affecting their livelihoods. However, community members may lack the full understanding of the causes and potential impacts of climate change needed to plan and adapt effectively.

CSOs can facilitate CBA processes to fill these gaps by building greater awareness of climate change and its impacts and empowering community members to make decisions about how to adapt. CSOs can also build linkages with external networks and organisations to facilitate community access to climate information, funding and other resources needed to implement effective adaptation actions.

Best practice in CBA is that it is:

- **community-driven**, where selected actions are based on the needs, values and priorities of the community;
- **participatory**, providing opportunities for equitable participation of all local stakeholders;
- **collaborative**, building linkages and networks that facilitate the integration of local and scientific knowledge to inform decision-making;
- **relevant and practical**, ensuring actions are culturally appropriate, have direct benefits locally and are viable over the long-term; and
- **learning-oriented** and able to adapt to new information or uncertainty.

Boxes 18 and 19 provide two examples of CBA in the Caribbean.

## Box 18: A community-based coral reef monitoring programme, Belize

The Belize Coral Watch Programme promotes community-based monitoring of coral bleaching events, which are likely to increase with rising ocean temperatures due to climate change. While coral bleaching events are monitored at the regional and national scales using satellite data and monitoring stations throughout the Caribbean, the localised impacts on coral reefs are not well documented. The Belize Coral Watch Programme is coordinated by a local CSO, Ecomar, in collaboration with The Nature Conservancy. It is part of a wider Mesoamerican Coral Reef Watch Programme launched in 2008 across Mexico, Honduras and Belize.

Local fisherfolk, tour guides, recreational divers and protected area managers help to implement the monitoring programme. Coral Watch volunteers are trained to assess coral health and record their observations. They learn how to distinguish between dead coral, diseased coral and bleaching coral. They also learn about the ecological relationships within the reef. Materials have been developed, including Coral ID Cards and a Coral Watch Observation Slate, to support the volunteers in monitoring and recording data. The Belize Coral Watch Programme has also developed a Volunteer Handbook and training module with a DVD to facilitate capacity building and training of volunteers.

The project supports wider adaptation action as data from the Coral Watch Programme helps to identify stressed coral reefs where marine biologists then do detailed surveys and develop response plans in collaboration with the relevant authorities. Data is also incorporated into the management plans for marine protected areas in Belize. Ecomar also uses the monitoring programme to raise awareness of the impacts of climate change on coastal communities and the need for action.

See <http://www.ecomarbelize.org/coral-watch1.html> for more information about the Belize Coral Watch Programme.



Figure 51: Coral Reef, Belize. Direct link: [https://commons.wikimedia.org/wiki/File:Coral\\_Reef,\\_Belize.jpg](https://commons.wikimedia.org/wiki/File:Coral_Reef,_Belize.jpg). Credit: Andy Blackledge

## Box 19: Rainwater harvesting to ensure local water security, Trinidad and Tobago

Increased drought poses a significant challenge across the Caribbean. As rivers and reservoirs dry up, water supply will be disrupted and communities will experience water shortages. The community of Caura Valley, Trinidad has taken steps to enhance its water security through installing a rainwater harvesting system for its community centre in 2013. In the Caura Valley, several households do not have access to pipe-borne water. They rely on the supply of water to communal tanks by the Water and Sewage Authority or collect water themselves from local rivers and springs. The rainwater harvesting system helps provide these households with an alternative water supply and reduces demand on the existing water supply.

The project was implemented by the Caura Valley Village Council under a small grant from the Global Environment Facility Small Grant Programme, with technical support from CANARI. A team from the community received six weeks of training before installing the rainwater harvesting systems. These systems comprise a catchment area (e.g. galvanised roof), delivery system (e.g. guttering and pipes), storage tank, and a treatment system that ensures the water is safe for use. The training drew on the pioneering work of the Global Water Partnership – Caribbean in installing rainwater harvesting systems to address water shortages and climate change regionally. This community-based adaptation project now serves as a successful model for other communities in Trinidad and Tobago.



Figures 52 & 53: Caura Valley residents install a rainwater harvesting system. January 2013.  
Credit: CANARI



See <http://www.canari.org/wp-content/uploads/2014/09/CauraValleyCommunityCaseStudy2013.pdf> for more information about rainwater harvesting in Caura Valley.

### 5.3 Why focus on ecosystem-based adaptation actions?

Ecosystem-based adaptation (EBA) involves the conservation, sustainable management and restoration of natural ecosystems to help people and systems adapt to climate change and build resilience. Like CBA, it uses a participatory and community-driven process, but with a strong focus on solutions that build ecological resilience over the long-term. For example, a healthy coral reef will protect against coastal erosion and storm surges and provide habitat and breeding grounds for marine biodiversity, supporting the fishing and tourism industries.

Ecosystems provide essential services to people, including the biodiversity and natural resources that support local livelihoods. Ecosystem services can be categorised as follows:

1. **Cultural services** including non-material benefits that people obtain from ecosystems, such as aesthetic experiences, spiritual enrichment, education and recreation.
2. **Provisioning services** including the material or energy outputs from ecosystems, such as food, water, timber, fuel and medicines.
3. **Regulating services** that regulate processes, such as flood control, pest control, water purification, and waste management. For example, a healthy forest ecosystem regulates water flow and reduces flash flooding.
4. **Supporting services** that make all other ecosystem services possible, such as photosynthesis, soil formation, the carbon and nutrient cycles, and pollination.



Figure 54: Dolphins help to control species populations by consuming a wide variety of fish and squid. *Photo: Simon Mettler*



Figure 55: Reptiles contribute to species biodiversity by dispersing the seeds of native vegetation. *Photo: Stephen Mendes*

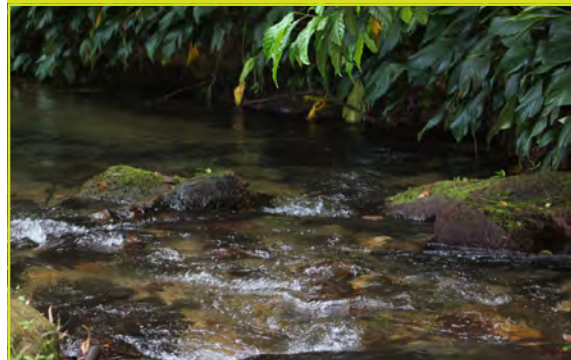


Figure 56: River ecosystems contribute to all four categories of ecosystem services. Fresh water provision, sanitation, erosion regulation, recreation, ecotourism, soil formation, and nutrient cycling are only some of the services provided by river ecosystems. *Photo: Natalie Boodram/CANARI*



Ecosystem services are also an important safety net in times of disaster. For example, if roads flood and food shipments are disrupted, a community may still be able to fish in local rivers or coastal areas to feed themselves. These services can provide a community with alternatives and give it an opportunity to recover.

EBA can offer a more cost-effective option for adaptation than solutions involving infrastructure or technology (Baig, *et al.*, 2016). For example, protecting the forests in a watershed to maintain freshwater supply and quality requires a lower financial investment than building a water treatment or desalination plant. Protecting mangroves to address coastal erosion and rising sea levels is also less costly than building a sea wall.

Boxes 20 and 21 provide two examples of EBA in the Caribbean.

### **Box 20: Mangrove reforestation to protect coastal and marine zones, Cuba**

Mangrove restoration is the focus of an EBA project to address coastal erosion, flooding and saltwater intrusion in Artemisa and Mayabeque provinces, Cuba. The project is being implemented by the provincial governments, forestry enterprises and local communities, with funding from the United Nations Development Programme between 2014-2019. The project focuses on an 84 km stretch of coastline, which is one of the areas most vulnerable to hurricanes and storm surges in Cuba. Rising sea levels and saltwater intrusion also threaten groundwater resources that are the source of drinking water for Cuba's capital, Havana, and provide irrigation for agriculture in the coastal plains. Mangroves serve as an important natural buffer that reduces wave action and coastal erosion and flooding along this coastline. However, over the last decade, mangroves have been cleared for timber and infrastructure development, including a coastal road and drainage channels. The project focuses on restoring these mangroves and their buffering function in areas that are severely degraded and prone to flooding.

Natural regeneration and replanting techniques are being used to restore the red mangroves (*R. mangle*) on the coastal edge. Mangrove replanting involves using boats to collect seedlings of local species and propagating them in cleared areas. Replanting is labour intensive, and is being done by state-owned forestry enterprises in collaboration with local communities. These reforestation efforts have been informed by research on mangrove ecology and regeneration by national universities and government agencies in Cuba, including the Forestry Department. Additionally, the project includes outreach and education to local communities about the importance of mangroves and addressing threats from deforestation as well as climate change.

See <http://adaptation-undp.org/explore/caribbean/cuba> for more information about the project.



Figure 57: Mangrove reforestation in Cuba. Credit: Boricuaeddie - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=3055361>

## **Box 21: Integrated pest management: An EBA strategy for farmers in Jamaica**

Integrated pest management is an important EBA action since new agricultural pests are emerging with climate change. In Jamaica, farmer field schools were established to build capacity for integrated pest management under a 2013-2015 training programme coordinated by the Ministry of Agriculture and Fisheries and funded by the Food and Agriculture Organisation. Integrated pest management has focused on the Beet Armyworm (*Spodoptera exigua*) in the parish of St. Elizabeth. There were major outbreaks of the pest in 2009 and 2012 in St. Elizabeth. Long periods of drought and higher temperatures created conditions that favoured the Beet Armyworm. Onion and scallion production in St. Elizabeth were affected by the outbreak, resulting in almost \$5 million US in losses.

Integrated pest management is an EBA strategy involving a combination of techniques such as biological control, habitat management and use of pest-resistant species. In the case of the beet armyworm, crop rotation and proper sanitation in the fields can help to reduce its spread. Insect traps, which can be made from simple materials, can also be used to attract and eliminate beet armyworm adults. Chemical pesticides are only used if fields are badly infested as integrated pest management seeks to minimise the risks to human health and the environment.

Local farmers were provided with hands-on training in these different pest management techniques in the field schools. Using these techniques, local farmers have managed to control the beet armyworm and significantly increase onion and scallion production in St. Elizabeth.

See Jamaica Information Service 2014 <http://jis.gov.jm/st-elizabeth-farmers-trained-combat-beet-armyworm/> for more information about integrated pest management of the Beet Armyworm in St. Elizabeth.



## 5.4. Steps in implementing your adaptation project

The main steps involved in implementing your adaptation project are those you would take in any project (see Table 6 for a list of key steps). However, you will find that adaptation is an iterative process that involves learning by doing. Often as you embark on a new step, it causes you to review and refine an earlier one. If you are implementing a CBA action, as with the planning phase, you should also ensure that you consult with and involve community stakeholders in every step.

If your CSO does not currently have project management skills, you will need to source external expertise, either to act as project manager and/or to build the capacity of permanent staff or volunteers within your CSO. You can also consult print materials that provide guidance, such as CARE’s Project Design Handbook (CARE, 2002).

**Table 6: Key steps in designing and implementing a project**

Step #	Activity
1	<b>Select the adaptation action from the adaptation plan</b> that best matches your mission, competencies and resources/access to resources. If you have no adaptation plan, best practice is to develop one before taking action.
2	<b>Define and document</b> (typically in the form of a project concept note or proposal) <b>the scope of your project</b> , including <ul style="list-style-type: none"> <li>• Overall goal</li> <li>• Specific objectives</li> <li>• Desired results (short and long-term)</li> <li>• Indicators of success</li> <li>• Risks and assumptions</li> <li>• Activities</li> <li>• Inputs/resources needed</li> <li>• Budget</li> <li>• Timeline</li> </ul>
3	<b>Submit the proposal and secure funding/other resources needed.</b>
4	<b>Establish the project team and define clear roles and responsibilities.</b>
5	<b>Implement the project activities.</b>
6	<b>Monitor the project and adapt</b> in response to unexpected circumstances, e.g. a disaster, difficulties in mobilising community partners, assumptions were wrong, etc. Seek the approval of the funder for any changes that affect your original budget lines.
7	<b>Evaluate and report on the project</b> at key stages, e.g. mid-term and end of project or at agreed stages to trigger the receipt of more funding.
8	<b>Document lessons learnt</b> for future reference.

## 5.5. Useful resources

CARE International. (2002). *Project Design Handbook* [online]. Available at [http://www.careclimatechange.org/files/toolkit/CARE\\_Project\\_Design.pdf](http://www.careclimatechange.org/files/toolkit/CARE_Project_Design.pdf) [Accessed 20 December 2016]

CARE International. (2010). *Community-based adaptation toolkit* [online]. Available at [http://www.careclimatechange.org/tk/cba/en/Open\\_Toolkit.html](http://www.careclimatechange.org/tk/cba/en/Open_Toolkit.html) [Accessed 7 October 2016]

Caribbean Disaster Emergency Management Agency [CDEMA]. (2011). *Climate Smart Community Disaster Management Module and Facilitator's Handbook*. St. Michael, Barbados: CDEMA. Available at [http://www.cdema.org/cris/climate\\_change\\_adaptation\\_mitigation/CSCDM\\_FINAL\\_Facilitators\\_Handbook\\_web\\_version.pdf](http://www.cdema.org/cris/climate_change_adaptation_mitigation/CSCDM_FINAL_Facilitators_Handbook_web_version.pdf) [Accessed 6 March 2017]

Conservation International. (2013a). *Adapting to a changing climate: A community manual*. Washington, DC: CI. Available at [http://www.conservation.org/publications/Documents/CI\\_Climate-Change-Adaptation\\_Training\\_Community-Manual.pdf](http://www.conservation.org/publications/Documents/CI_Climate-Change-Adaptation_Training_Community-Manual.pdf) [Accessed 7 October 2016]

Conservation International. 2013b. *Adapting to a changing climate: A training guide*. [http://www.conservation.org/publications/Documents/CI\\_Climate-Change-Adaptation\\_Training\\_Training-Guide.pdf](http://www.conservation.org/publications/Documents/CI_Climate-Change-Adaptation_Training_Training-Guide.pdf)

WeADAPT Climate adaptation planning, research and practice. <https://www.weadapt.org/>

# Adaptation in action: case studies of practical climate change adaptation projects in the Caribbean

- 6.1. Youth Climate Advocacy and Resilience Building Endeavour (YCARE), Trinidad and Tobago
- 6.2. Developing awareness of climate change in North East Tobago
- 6.3. Assessing vulnerability to climate change within the Lambeau community, Tobago
- 6.4. Building a resilient community enterprise using ecosystem-based adaptation in Fondes Amandes, Trinidad
- 6.5. Promoting awareness and action on climate change and its impacts on sea turtles in Trinidad and Tobago
- 6.6. Increasing community adaptation and ecosystem resilience to climate change in Portland Bight (2011 – 2012)
- 6.7. Heart for climate: climate change advocacy in Trinidad and Tobago
- 6.8. #1point5toStayAlive, an advocacy campaign on climate justice

Section 6 presents eight case studies of climate change adaptation projects, implemented by CSOs based in Caribbean islands. Five of these case studies were implemented in Trinidad and Tobago under the Climate ACTT project (see Acknowledgements on p3). The remaining three case studies describe activities in Jamaica, Trinidad and Tobago, and across the region and beyond. They span the spectrum from projects that focus on public education and awareness building, to regional and global advocacy, as well as practical CBA projects.

## 6.1. Youth Climate Advocacy and Resilience Building Endeavour (YCARE), Trinidad and Tobago



Implemented by Caribbean Youth Environment Network  
Trinidad and Tobago Chapter

### 6.1.1. About the organisation

The Caribbean Youth Environment Network (CYEN) is a regional non-profit, civil society, charitable body that focuses its resources on empowering young people and their communities to develop programmes/actions to address socio-economic and environmental issues. The CYEN programme aims at addressing issues such as poverty alleviation and youth employment, health and HIV/AIDS, climatic changes and global warming, impacts of natural disasters/hazards, improvement in potable water, conservation and waste management, and other natural resource management issues.

CYEN Trinidad and Tobago Chapter (CYEN-TT) is one of 18 CYEN chapters in the Caribbean region, and its focus is mainly on the themes of water, climate change, biodiversity, coastal and marine issues, and sustainable land management.

CYEN-TT firmly believes that youth should be engaged in environmental issues and has hosted several workshops to raise awareness of the impacts of climate change on water and other sectors. It has also successfully engaged young people in the United Nations Framework Convention on Climate Change (UNFCCC) process.

CYEN-TT actively engages in advocacy and has an online reach of over 50,000 persons through its social media. The organisation also interacts with various government agencies and United Nation bodies and is regularly invited to local and regional environmental meetings and actively contributes to policy decision-making.



Figure 58: Members of the CYEN-TT Youth Climate Advocacy and Resilience Building Endeavour (YCARE). Photo: CYEN-TT



Figure 59: The CYEN-TT YCARE Workshop. Photo: CYEN-TT

### 6.1.2. Project overview and approach

CYEN-TT's focus was on increasing the level of youth advocacy for climate change adaptation in Trinidad and Tobago through a pilot capacity building project to engage, enable, and empower members of the Holy Faith Convent Couva Eco-Heroes Environment Club (HFCC-EHC), the Couva community, and the CYEN-TT membership. CYEN-TT also recognised the need to add structure to its climate change advocacy work by developing a climate change adaptation advocacy strategy.

CYEN-TT trained several of its members, along with members of HFCC-EHC in advocacy tools such as photojournalism, social media, artistic expression, spoken word, and journalism. Together, they developed a photo journal on the climate change impacts and vulnerability in Couva, a spoken word video on climate change, hosted a YCARE blog to share climate change adaptation information, and filmed presentations on the various advocacy tools. The project participants developed an article and a report on the climate change impacts on Couva that were subsequently shared with the HFCC and the Couva community. CYEN-TT also produced a training manual of the process for use in other fora. In keeping with its advocacy focus, all products are available on its YCARE website



(<https://ycareblog.wordpress.com/>) to build youth awareness of climate change and capacity to advocate for adaptation.

With the help of the Global Water Partnership-Caribbean (GWP-C), CYEN-TT held several consultations with its wider membership to collect information as the basis for constructing the CYEN-TT Climate Change Advocacy Strategy. The strategy identifies what are the key messages CYEN-TT want to share and who should be targeted using various communication products and dissemination pathways. CYEN-TT plans to share the Advocacy Strategy with all its members to inform their individual and collective climate change advocacy work. The strategy will also be shared with partners and potential donors so they can understand the strategic focus of CYEN-TT's climate change advocacy.

### 6.1.3. Key results

The key results of the YCARE project were:

- increased community resilience through raising awareness of climate change impacts and vulnerabilities;
- HFCC-EHC members' enhanced awareness of climate change impacts and capacity for advocacy and adaptation;
- enhanced capacity among CYEN-TT membership on climate change advocacy; and
- increased ability among CYEN-TT members to plan activities (e.g. project management, logistical arrangements for workshops and events, financial planning, etc.).



Figures 60 - 61: Utilising photojournalism as a climate change advocacy tool. Photos: CYEN-TT

#### 6.1.4. Lessons learnt

- Having a climate change advocacy strategy can make the organisation more effective in its efforts to engage youth in climate change fora.
- Visually appealing products, such as photo journals and videos with targeted messages, are effective at increasing community stakeholders' awareness of the importance of climate change adaptation.
- Participatory development of climate change adaptation advocacy products ensures that participants take ownership of the messages and increases their willingness to be involved in climate change adaptation advocacy and action.



Figure 62: Assessing the vulnerability of the fishing community in Couva, Trinidad to climate change. Photo: CYEN-TT

## 6.2. Developing awareness of climate change in North East Tobago



Implemented by Environmental Research Institute Charlotteville

### 6.2.1. About the organisation

Founded in 2011, Environmental Research Institute Charlotteville (ERIC) is a non-profit, civil society organisation comprising senior experts in conservation, resource management, rural development, marine and terrestrial ecology and responsible tourism. Since April 2014, ERIC has been fully operational in North East (NE) Tobago, with a rented facility including office, training room, dive centre, and a regularly-updated online presence ([www.eric-tobago.org](http://www.eric-tobago.org)).

Its recent projects have related primarily to organisational and technical capacity building of community-based organisations (CBOs) in NE Tobago towards co-management of a proposed marine protected area (MPA). ERIC is a member of the Council of the Presidents of the Environment (Trinidad and Tobago) and acts as vice chair of the Improved Forest and Protected Area Management Project (Steering Committee, Tobago. ERIC has hosted and provided short lectures on NE Tobago ecology and sustainable development for residents and visiting groups from the University of Trinidad and Tobago; Austin University, Texas, Trinity College, Connecticut, United States of America; Glasgow University and Cardiff University, United Kingdom; and the Adam Mickiewicz University, Poland.

### 6.2.2. Project overview and approach

While working and communicating with CBOs in NE Tobago that participate in decision-making about the future development of the area, ERIC's team identified the need for, and importance of, building their awareness of climate change issues and capacity to respond to

them. None of the CBOs had persons that fully understood or focused on climate change issues. The CBOs also lacked capacity to gather and share information with other community members in order to make informed decisions regarding climate change adaptation and resilience.

This project sought to address these gaps. ERIC also wanted to show the impact of climate change on coastal resources and developed an innovative way to do this. The project aimed to raise awareness of climate change impacts from ridge-to-reef and the importance of implementing



Figure 63: A Climate ACTT participant from ERIC displays a map highlighting the communities in NE Tobago. Photo: ERIC



adaptation strategies to improve resilience within NE Tobago communities. It did this through:

- training and creating a network of NE Tobago climate change champions, who then shared their knowledge of the impacts of climate change on both the terrestrial and marine environments, primarily with their respective communities; and
- creating a coral reef climate change awareness snorkelling tour where climate change champions shared the impacts of climate change on coral reef ecosystems with both locals and visitors.

ERIC held a series of climate change awareness workshops with representatives of 10 CBOs from NE Tobago to build the capacity of the climate change champions. ERIC first trained community members who were part of its organisation to be climate change champions so that they in turn could train their peers (i.e. training of trainers followed by peer training). As part of the training, the climate change champions assessed the vulnerability of the communities they lived in, using participatory community mapping. They then shared the information they collected with members of their organisations and other NE Tobago communities at a meeting, which resulted in preliminary discussions of no-regrets adaptation actions. For more information see: <http://www.eric-tobago.org/climate-change-champions.html>.



Figure 64: First annual NE Tobago climate change champions meeting. Photo: ERIC

The coral reef climate change awareness snorkelling tour (<http://www.eric-tobago.org/pirates-bay-snorkel.html>) was a practical experience to raise awareness of climate change impacts on coral reefs. ERIC's ecologists mapped the tour route and developed a guide to explain to visitors the features of the coral reef and the of climate change on it. Thereafter climate change champions were trained to safely deliver the tour to local and foreign visitors. The tour provided a source of income to the climate change champions and to ERIC, which marketed the tour. It is now a part of ERIC's regular programme of work.

ERIC maintained an online presence throughout the project through Facebook; it also submitted two articles to print media (<http://www.eric-tobago.org/press-and-media.html>) and had television coverage for certain activities.

### 6.2.3. Key results

The key results of the project were:

- increased local and visitor awareness of the impacts of climate change on the marine resources of NE Tobago and development of possible adaptation/resilience-building measures;
- development of, and increased engagement in, a network of 14 community climate change champions to build awareness of climate change in NE Tobago;



Figure 65: Coral reef climate change awareness snorkelling tour. Photo: ERIC

- increased peer communication about climate change in NE Tobago;
- increased income for four community members in NE Tobago through guiding the climate change awareness snorkelling tours; and
- increased income for ERIC through marketing the climate change awareness snorkelling tours.

#### 6.2.4. Lessons learnt

- Peer communication about climate change is an effective method of helping community members to understand about climate change.
- Practical examples increase stakeholders' understanding of climate change. A ridge-to-reef approach to climate change awareness can help community members to develop holistic, no-regrets adaptation measures.



Figure 66: Collaboration and peer to peer training between climate change champions in NE Tobago. Photo: ERIC



### 6.3. Assessing vulnerability to climate change within the Lambeau community, Tobago



Implemented by Environment Tobago

#### 6.3.1. About the organisation

Established in 1996, Environment Tobago (ET) is a national, environmental, non-governmental and volunteer and membership organisation. Its mission is “to conserve Tobago’s natural and living resources and advance the knowledge and understanding of such resources, their wise and sustainable use, and their essential relationship to human health and the quality of life”. ET accomplishes this through environmental education, community outreach and awareness programmes. The organisation also advocates for greater protection and sustainable use of Trinidad and Tobago’s natural resources.

ET has formed relationships with government and other environmental non-governmental organisations on matters affecting the environment, such as strengthening of policy and legislation, solid waste disposal issues and methods, and the implementation and enforcement of marine and terrestrial conservation laws. It is well-respected in the environmental field throughout Trinidad and Tobago and the region.

#### 6.3.2. Project overview and approach

Environment Tobago has been increasingly concerned about the impacts of climate change on communities around Tobago. ET sought to provide a baseline for future adaptation strategies and to build and demonstrate its capacity to serve Tobago’s communities



Figure 67: Crab trap, Little Rockly Wetland, Lambeau, Tobago.

Photo: ET

using Lambeau and environs as a pilot. Lambeau and environs had already been identified in reports as an area of ‘immediate impact’ from climate change. The reports found that the area would likely be exposed to climate variability, particularly hurricanes, drought and flooding (including storm surge) in the near term, while coastal erosion and slippage worsened prospects in the medium term. The potential impacts of climate change were shown to include soil aridity, saline intrusion, increased storm intensity, loss of

wetlands and destruction of coastal communities leading to loss of lives and livelihoods.

ET first conducted a review of the available literature on vulnerability in the area and in Tobago. It conducted knowledge, attitudes, practices and perceptions surveys with the persons making use of the assets in the community (shops, beaches, etc.). It also conducted interviews with key decision-makers, and climate change experts, the Tobago House of Assembly<sup>18</sup> and other organisations that have assets in the study area. ET identified and mapped climate change risks using geographic information system (GIS) tools, and produced a documentary film of the process and results, which it shared on its YouTube channel. The project and results were presented in a report.

ET found that Lambeau and environs were highly exposed and sensitive to climate change impacts (especially storm surge) and had limited adaptive capacity. They found in the community a lack of understanding of climate change.



Figure 68: Crab hole, Little Rockly Wetland, Lambeau, Tobago. Photo: ET



Figure 69: View of tourist accommodation from the coastline, Lambeau, Tobago. Photo: ET

<sup>18</sup> The Tobago House of Assembly is Tobago's local government body



### 6.3.3. Key results

The key results of the project were:

- ET members increased their understanding of the complexity involved in addressing climate change issues in a coastal community;
- Lambeau community members increased their interest in their natural surroundings as well as, awareness of the value of the natural assets;
- ET members increased their awareness of ecosystem services and their potential to improve or preserve resilience to climate change; and
- ET increased its competency to conduct and communicate vulnerability assessments and related activities that can help to build adaptation strategies.

### 6.3.4 Lessons learnt

- Awareness building is a critical step for stakeholders to build resilience and adapt to climate change.



Figure 70: Multiuse beaches, Lambeau, Tobago. Photo: ET

- Climate change awareness and education should be conducted with all stakeholders, including decision-makers and resource users, so they can understand ways to adapt and build resilience to climate change.
- As a result of the highly publicised nature of ‘climate change’, many persons have heard about climate change but do not really understand it or the importance of adapting to it in small communities.
- Collection of relevant data can be a slow process with dependencies on many external actors, necessitating effective preparation and communication.



Figure 71: Multiuse beaches, Lambeau, Tobago. Photo: ET

## 6.4. Building a resilient community enterprise using ecosystem-based adaptation in Fondes Amandes, Trinidad



Implemented by the Fondes Amandes  
Community Reforestation Project

### 6.4.1. About the organisation

The Fondes Amandes Community Reforestation Project (FACRP) was initiated by local community residents in 1982 to promote fire prevention and agro-forestry for sustainable development. Fondes Amandes is located within the St. Ann's valley in the Northern Range, Trinidad. During the annual dry season, the Fondes Amandes community and the surrounding watershed face major threats from forest fires. Frequent forest fires have led to the loss of forest and biodiversity, land degradation and reduced water quality. With support from the government and private sector, FACRP established a system of fire traces and community fire prevention efforts have kept a significant area of the watershed free from fire since 1997. Agro-forestry techniques have been used to convert fire-damaged areas into lush forest and enhance livelihoods. Local species of hardwood and fruit-bearing trees have been planted throughout the watershed. Seeds and other materials from these trees are collected for local craft and jewellery. With reforestation, the area's diverse flora and fauna are thriving, including rare species of birds, butterflies and large mammals like the ocelot (*Leopardus pardalis*). FACRP increasingly serves as a site for nature-based learning and tourism. It has established a visitor centre and trails for nature hikes and trained local residents as tour guides.

### 6.4.2. Project overview and approach

With climate change, FACRP faces a new set of challenges. More extreme weather disrupts tours and other outdoor activities as well as affecting biodiversity and freshwater resources. Hotter, drier conditions can also lead to more extreme forest fires. FACRP has sought to 'climate proof' its tourism enterprise, which is an important source of income for the community.

FACRP adopted an ecosystem-based approach to 'climate proof' its tourism enterprise and build resilience focusing on solutions that conserve and restore natural ecosystems. Using a participatory process, FACRP also engaged a range of stakeholders, including the Fondes Amandes community, government agencies such as the Office of Disaster Preparedness and Management and Tourism Development Company Ltd, and the University of West Indies in Trinidad and Tobago.



FACRP first assessed the threats from climate change and vulnerabilities within its tourism enterprise. It focused on threats to key resources, such as the river, trails, and herbal plants and seeds used for locally-made herbal products and jewellery. FACRP received additional training on value chain analysis to enhance the vulnerability assessment. Value chain analysis allowed FACRP to map out the production, marketing and sales processes for its various products and services and systematically assess threats from climate change.

Based on the vulnerability assessment, FACRP identified the major threats to its enterprise and priorities for action. It has now begun to implement ecosystem-based adaptation actions for three identified threats to its tourism enterprise: extreme heat, reduced river flow and the rising incidence of mosquito-borne viruses, such as Zika. Resilient hardwood tree species were



Figure 72: Mosquito repellent developed by FACRP using natural oils and local herbs. Photo: FACRP

identified and propagated with the aid of community volunteers. These tree species will provide shade along trails reducing risks from heatstroke and support reforestation in highly exposed areas of the watershed. The most important herb species for locally-made herbal products were also propagated. FACRP has constructed a new nursery to house both hardwood tree and herb seedlings in a climate-controlled environment. With technical support from UWI, FACRP has mapped a new trail to upland streams to offer alternative options for river hikes and reduce overcrowding at the main river further downstream. FACRP has also developed and trialed an eco-friendly mosquito repellent using natural oils and local herbs such as lemongrass (*Cymbopogon citratus*).



Figure 73: FACRP's new climate resilient species nursery. Photo: FACRP

### 6.4.3. Key results

The resilience of FACRP's tourism enterprise has been enhanced using an ecosystem-based approach. In particular, FACRP and the wider community have built their capacity to plan and adapt to climate change through:

- enhanced knowledge of climate change impacts and vulnerabilities within their tourism enterprise and potential adaptation actions;
- identification of and research into resilient, local tree species that can withstand hotter, drier conditions and more extreme weather to support reforestation. FACRP has so far identified 10 resilient species including hog plum (*Spondias mombin*), lucky seed (*Adenanthera pavonina*) and juniper (*Genipa americana*); and
- development of a nursery and a reliable local supply of herb and tree species for locally-made products and planting along hiking trails, which are central to the tourism enterprise.



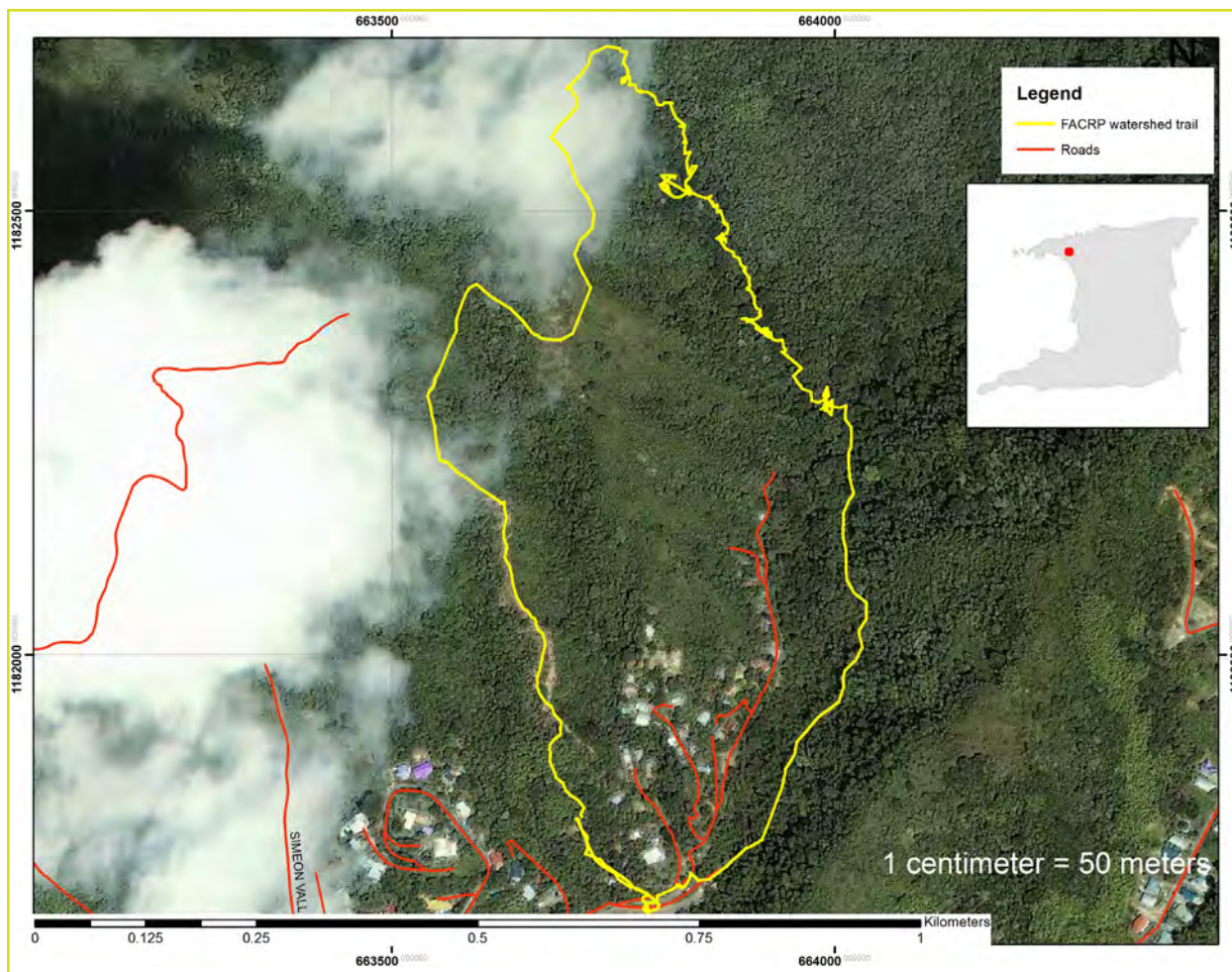


Figure 74: A map of the Fondes Amandes watershed trail. Photo: FACRP

#### 6.4.4. Lessons learnt

Key lessons from FACRP's efforts to 'climate proof' its tourism enterprise are:

- ecosystem-based adaptation is a cost-effective way to build resilience that provides multiple benefits, including biodiversity conservation, disaster risk reduction and livelihood security;
- value chain analysis is an innovative and comprehensive tool for assessing the vulnerability of a community enterprise to climate change;
- a participatory process that engages a diverse range of stakeholders is critical to ensure buy-in and enable a community organisation to access external expertise and resources for adaptation and building resilience; and
- ongoing monitoring and evaluation of climatic changes and adaptation outcomes is important to ensure success over the long-term and promote learning and innovation to respond to future uncertainty.

## 6.5 Promoting awareness and action on climate change and its impacts on sea turtles in Trinidad and Tobago



Implemented by Turtle Village Trust

### 6.5.1. About the organisation

Turtle Village Trust (TVT) is a non-profit organisation founded in 2006 as a partnership between five community groups in NE Trinidad and SW Tobago and a number of corporate sponsors. The goal was to strengthen existing sea turtle conservation efforts and use this as the basis for further community empowerment and the development of a wider eco-tourism product. Its activities have since expanded to include over 20 coastal communities. TVT has worked in partnership with government to conduct research on sea turtles, conserve sea turtle nesting sites through beach patrols and monitoring, public education, and promote eco-tourism. TVT's conservation efforts are of global importance since Trinidad and Tobago is home to the third largest nesting population of leatherback sea turtles in the world.



Figure 75: A leatherback (sea turtle) hatchling making its way to sea. Photo: TVT

## 6.5.2. Project overview and approach

With increasing impacts on sea turtles from climate change, TVT has turned its attention to raising awareness about climate change as a means to effectively engage and empower coastal communities and the wider public to take action.

Climate change poses a major threat to coastal and marine ecosystems and their biodiversity. Sea turtles – including leatherback, green, hawksbill, loggerhead and olive ridley – are under particular threat from rising sea levels and temperatures due to climate change. Rising sea levels erode and flood nesting beaches, while rising nest temperatures affect sex ratios among turtle hatchlings. More females will be hatched than males at higher temperatures, skewing the population. Within the marine environment, rising ocean temperatures and coral bleaching affect coral reefs, which are important foraging grounds and habitats for sea turtles. Climate change also leads to greater uptake of carbon dioxide into oceans, resulting in acidification and seaweed blooms that obstruct nesting beaches. These threats from climate change compound existing challenges for sea turtles due to coastal development, incidental capture in fishing nets, poaching, and plastic debris and pollution.

TVT initiated an education and awareness project on climate change and its impacts on sea turtles in 2016. Under the project, they implemented the following activities:

- development of a communication plan to identify target audiences, key messages and appropriate products and dissemination pathways to educate and raise awareness of climate change, its impacts on sea turtles and ways to take action;

**What is climate change?**

Climate change is any major change to the climate for a very long time (decades or centuries). Climate changes used to occur so slowly but now we're seeing them happening very quickly and causing a lot of damage to the environment and endangered species like sea turtles.

**Q: Is climate the same as weather?**  
**A:** Climate is what we experience in temperature, rainfall, wind over a very long time. Weather tells us about what happens at a particular time and place. Weather is local and temporary but the climate is the big picture over a large area.

**Q: What is making the Earth's climate warmer?**  
**A:** Scientist have discovered that humans are causing this warming. The Earth has a very high temperature because of a buildup of carbon dioxide and other greenhouse gases in the atmosphere due to our activity.

**Q: Why is climate change bad?**  
**A:** Climate change can cause a lot of damage to villages and cities, make people sick and hurt animals including sea turtles that want to nest in Trinidad & Tobago and their baby hatchlings.

**Climate change affects you, me and our friends in the sea right here in Trinidad and Tobago!**

**We can already see and feel the impacts of climate change!**

Check the ones you've seen and felt

- Higher temperatures on land and in the sea
- More rain
- Increases in sea level
- More flooding
- More stronger hurricanes
- Heat waves

**Kid ACTIVITY**

Colour the picture and also see if you can find four items that do not belong in the sea!

1. \_\_\_\_\_ 3. \_\_\_\_\_  
2. \_\_\_\_\_ 4. \_\_\_\_\_

**How does climate change hurt sea turtles? Here are four ways!**

- 1. Flooding on coasts** makes it hard for sea turtles to find healthy coral reefs & seagrass beds, which is where they look for food.
- 2. Higher sand temperatures** mean too many female turtles are born and not enough turtles who can be dads, which mean NO baby hatchlings.
- 3. Higher ocean temperatures** mean more seaweed on the beaches, blocking turtles' access to nesting areas.
- 4. Coral bleaching** (thanks to higher ocean temperatures) means coral reefs are more vulnerable to death, which means less food for young sea turtles that primarily feed on coral reefs.

Figure 76: Educational brochure developed by TVT. Graphics courtesy: TVT



- design of a survey to assess the target audiences' understanding of climate change before and after TVT's education and awareness efforts, including their knowledge and perceptions of, and behaviours that contribute to or reduce, the impacts of climate change. Using this survey, TVT has collected data that will be used to refine their messaging and assess the impact of their education and awareness efforts over the long-term; and
- development of educational materials to support targeted outreach and awareness raising in coastal communities and schools in Trinidad and Tobago. Educational materials included brochures and a poster series highlighting climate change and its drivers, local and regional impacts and how these affect sea turtles, and ways to take action on climate change and conserve sea turtles.

### 6.5.3. Key results

The capacity of TVT to implement coordinated and strategic outreach and awareness raising on climate change has been enhanced through this project. Building on this capacity, TVT has begun to roll out its climate change awareness campaign in coastal communities and schools in Trinidad and Tobago. The aim is to enhance knowledge of climate change and its impacts on sea turtles and to shift behaviour towards sustainable and climate-friendly practices. These practices include less use of plastics, recycling and energy and water conservation that reduce greenhouse gas emissions and benefit sea turtles and their habitats. Enhancing knowledge is a key part of the process of empowering coastal communities to take concrete action to adapt to climate change, including building resilience of eco-tourism livelihoods based on turtle watching.

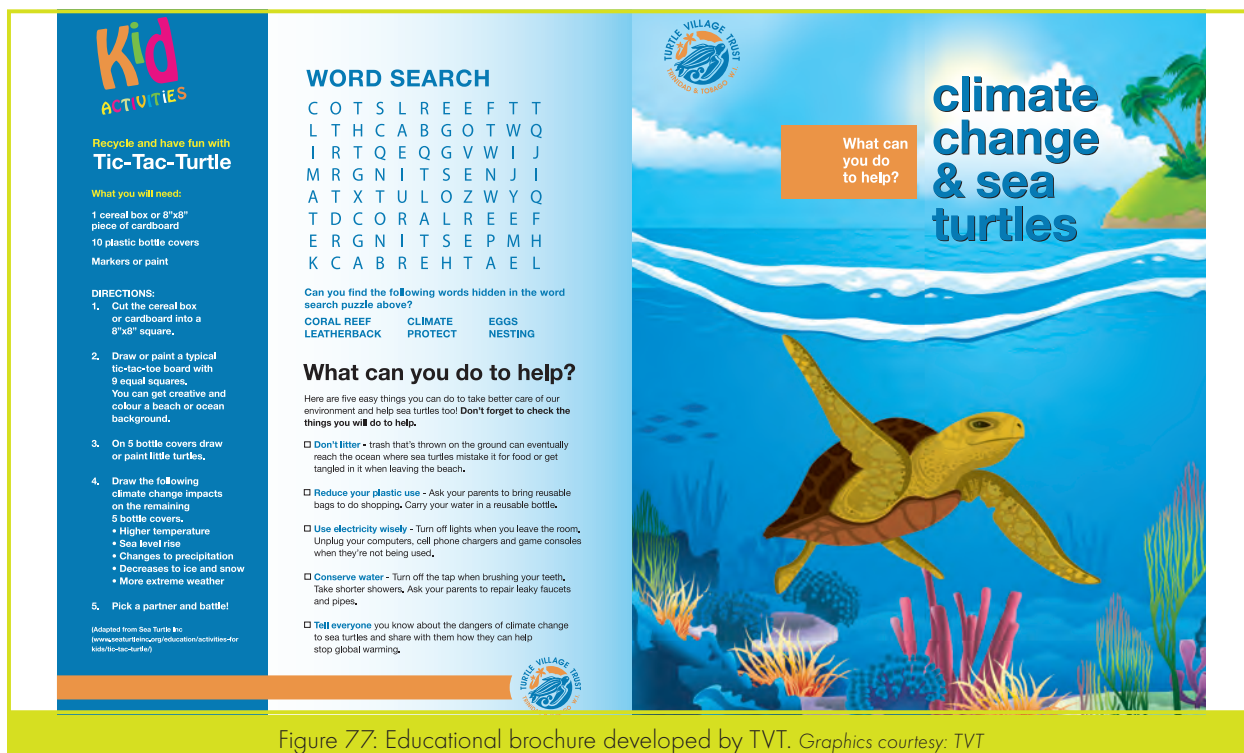
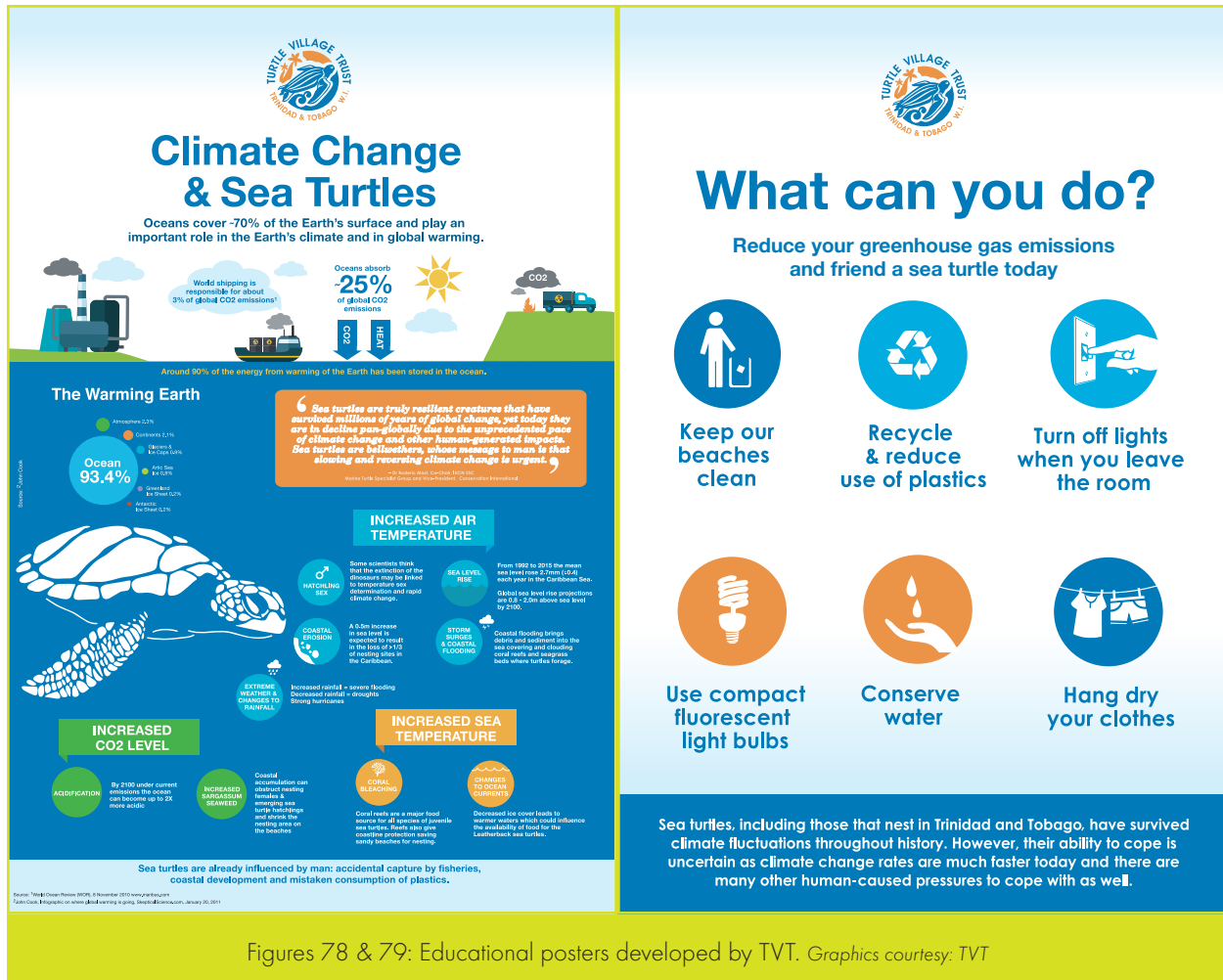


Figure 77: Educational brochure developed by TVT. Graphics courtesy: TVT



Figures 78 & 79: Educational posters developed by TVT. Graphics courtesy: TVT

### 6.5.4. Lessons learnt

Key lessons from TVT’s education and awareness efforts are:

- it is critical to develop a communication plan to guide education and awareness on climate change and ensure the messages and methods of delivery are carefully tailored to the target audience. The communication plan should be developed through a participatory process that engages the organisation’s key stakeholders, including the staff, board and local community partners, and ensures their buy-in and the sustainability of results;
- specialised training on communicating about climate change, including technical language and tools for disseminating information, is important to build the capacity of an organisation and enable it to effectively raise climate change awareness within their local communities; and
- ongoing monitoring and evaluation of education and awareness activities is key to identify best practices and gaps and ensure effectiveness over the long term.

## 6.6. Increasing community adaptation and ecosystem resilience to climate change in Portland Bight (2011 - 2012)



Implemented by Caribbean Coastal Area Management Foundation (C-CAM)

### 6.6.1. About the organisation

Caribbean Coastal Area Management Foundation (C-CAM) was established in 1997 to promote coastal conservation in Jamaica. C-CAM's approach to natural resources management is based on the maximum involvement of communities through co-management based on the best available scientific and social information. C-CAM works with a wide range of stakeholders to manage the Portland Bight Area (extracted from <http://www.ccam.org.jm/about/who-we-are> and <http://www.ccam.org.jm/about/how-we-work>).

### 6.6.2. Project Overview and approach

The Portland Bight Protected Area (PBPA) lies in south central Jamaica. It is the largest protected area in the island, covering a total area of 187,615 ha of which 51,975 ha are terrestrial. This includes 8,200 ha of wetlands. The coastal settlements are particularly vulnerable to climate change, including increased frequency of hurricanes, storms, floods, storm surge and droughts as well as sea level rise, because they are low-lying and their populations largely depend on fishing, charcoal burning and agriculture.

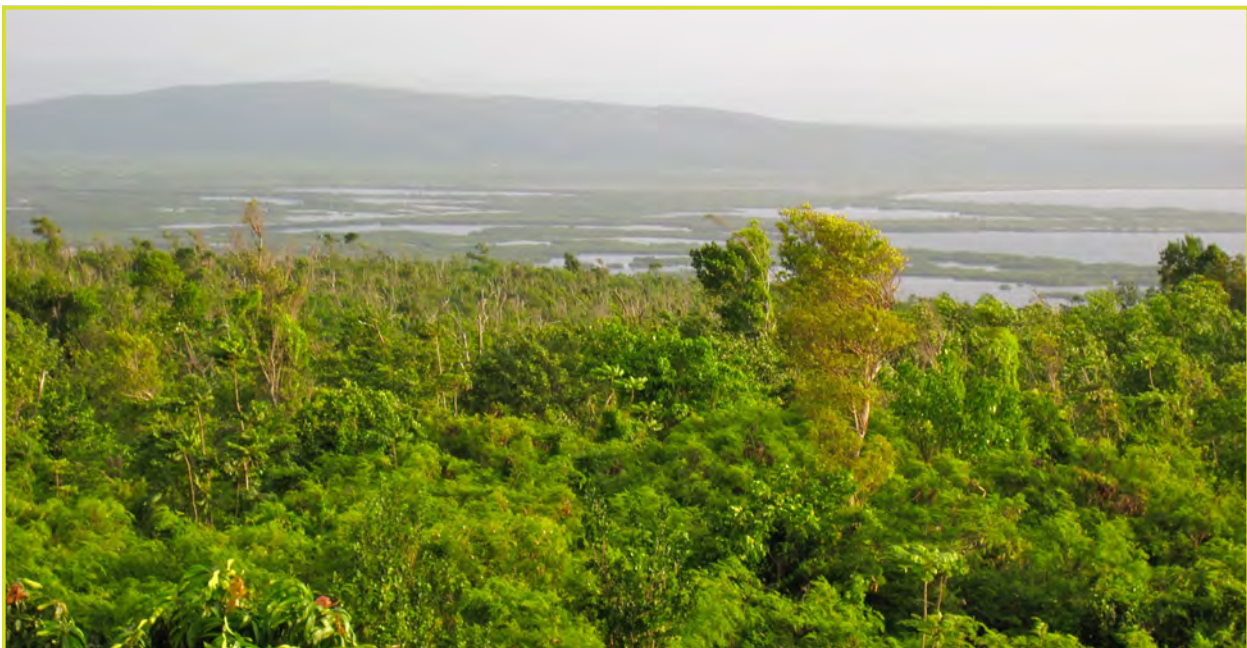


Figure 80: View from Portland Ridge, showing hurricane damage to forest in the foreground. Photo: Ann Sutton

The objective of the project was to increase community adaptation and resilience to climate change in the communities surrounding the three Portland Bight Fish Sanctuaries by:

- increasing awareness of the impacts of climate change in PBPA (through the schools' programme and Environmental Impact Assessment [EIA] workshops);
- decreasing potential impacts of climate change through improved land use planning (planning workshop); and
- demonstrating sustainable life styles (rainwater harvesting, alternative livelihoods, climate change adaptation expo).

This was C-CAM's first climate change adaptation project and it was very important because it has set the foundation for four subsequent projects, all of which used similar approaches, built on the recommendations arising from, and made use of the materials developed as part of, this project.

### 6.6.3. Methodology:

The project focussed on a participatory approach from the outset, starting with a Vulnerability Risk Assessment (VRA) among stakeholders, consultations with fishers through a meeting of the Portland Bight Fisheries Management Council (PBFMC) and consultations on technical issues with relevant government agencies. We also established a Project Management Committee. This was critical in getting stakeholders' (government and community) input and advice during implementation as well as feedback to allow for amendments to ensure that we were meeting project targets.

The VRA process, which was repeated at the middle and end of the project, was particularly important because it engaged stakeholders in prioritisation of the proposed interventions and thus generated buy-in and engagement.

### 6.6.4. Key results:

#### ***Result 1: Increased awareness of climate change impacts and adaptation at all levels of society, including:***

- schools climate change awareness programme, including a teacher's workshop, activities on World Wetlands Day (including a concert from Voices for Climate Change), display boards and manuals on climate change for teachers and students and a school competition;
- increased awareness of climate change among development planners through a special workshop attended by more than 30 planners and decision-makers many of whom had not previously been exposed to the concept;
- increased awareness of the general community through a climate change expo and through preparation and distribution of community disaster preparedness booklets for all the major settlements in the PBPA;



- increased capacity of local communities to respond to EIAs for mega-projects through workshops and the development and dissemination of a manual and meetings with the government to encourage it to make participation in the process easier for community members; and
- C-CAM functioning as first responder to disasters in southern Clarendon. One storage container was purchased, put in place and stocked with relief materials.

Long-term impacts

- All the educational materials developed were well received and all are still in use by C-CAM and its partners. C-CAM is still trying to influence the government to make the EIA process more accessible to communities.

### ***Result 2: Community-based monitoring established***

- Development of community monitoring programme (including workshops for community monitors and the development and circulation of a manual), and purchase of monitoring equipment.

Long-term impacts

- The community monitoring programme is still on-going and is providing useful data, as well as engaging community members.

### ***Result 3: Stakeholders involved in activities designed to minimise the impacts of climate change***

- Rainwater harvesting demonstration projects provided systems to more than 20 vulnerable families and community groups.
- Sustainable livelihoods entrepreneurship workshop held.
- Proposal for mangrove restoration submitted to Canadian International Development Agency by CaribSave to be implemented in partnership with C-CAM. Proposals submitted to Critical Ecosystems Partnership Fund and Forest Conservation Fund. Concept note submitted to Global Environment Facility by Clarendon Parish Development Committee to be implemented in partnership with C-CAM to implement green projects in Clarendon. Proposal submitted to Office of Disaster Preparedness & Emergency Management for mangrove restoration in the PBPA.

Long-term impacts:

- The rainwater harvesting solutions are still in use. The projects were funded and have led to many further activities in the area including the on-going construction and equipping of the Portland Bight Discovery Centre, which will have climate change as one of its themes and will serve as a focal point for alternative livelihoods including eco-tourism in the PBPA.





Figure 81: Mangrove islet at Two Bush Cay, Portland Bight Protected Area in 2011. This Magnificent Frigatebird nesting islet was badly damaged by hurricanes, from which it failed to recover because of sea level rise. This islet has since completely disappeared. *Photo: Ann Sutton*

### 6.6.5 Lessons learnt:

Many things contributed to the success of this project, with the most important being:

- the development of partnerships with funders, government, local communities and other stakeholders, which ensured smoother implementation, financial and in-kind support and buy-in;
- a Project Management Committee supports transparency and accountability;
- VRAs and other participatory approaches ensure input, financial support and buy-in from stakeholders and validate approaches; and
- the biggest challenge was the large number of community-based activities, which was a very large demand on the time of community participants and C-CAM team members.

The main sponsor of the project was the United Nations Development Programme Community Based Adaptation Programme. Other sponsors/partners were National Commercial Bank Foundation, Panos Caribbean, National Environment and Planning Agency, Christian Aid, Office of Disaster Preparedness & Emergency Management, Red Cross and Ministry of Labour & Social Security.

## 6.7. Heart for climate: climate change advocacy in Trinidad and Tobago



### 6.7.1. About the Organisation

IAMovement (pronounced 'I Am Movement') <http://iamovement.org/> is a non-profit organization based in Trinidad & Tobago, which aims to effect positive change through education, community building and environmental awareness initiatives.

### 6.7.2. Project Overview

As citizens of Small Island Developing States, the co-founders of IAMovement were concerned about climate change in Trinidad & Tobago and, after gathering background information, realised there was no platform for a climate conversation for the general public. This kick-started their first project - the People's Climate March held on September 21st 2014 at the Queen's Park Savannah, in tandem with over 2,600 events taking place in 162 countries around the world. This [local event](#) saw over 150 people coming out and taking part in the largest simultaneous global climate march in history.



Figure 82: POS to Paris People's Climate March. Photo: Dylan Quesnel



The success of this inaugural march set the stage for the following year. On November 29th 2015, IAMovement hosted a second Climate March event, dubbed ‘POS to Paris’ which was officially endorsed by the United Nations, the European Union, and the French Embassy of Trinidad & Tobago. This event was held alongside the rest of the world to shed light on the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21). In addition to the march around the Queen’s Park Savannah, IAMovement organised an ‘Eco-Village’ featuring 25 local environmental organisations which showcased their work on environmental education, awareness, and climate change adaptation and mitigation projects around the country. This allowed the public to engage with environmentalists and see first-hand what had been happening in Trinidad & Tobago.

At the end of the march, participants were encouraged to form a human ‘Heart for Climate’, which became an iconic statement for IAMovement and Trinidad & Tobago.



Figure 83: Heart for Climate. Drone photo: Robert Krogh

### 6.7.3. Project Methodology

In order for IAMovement to reach out to stakeholders during the planning phases of the 2015 event, the co-founders created an invitation list of environmental organisations, intergovernmental organisations, government ministries, embassies and schools. They also identified key stakeholders and invited them to be ‘ambassadors’ of the event. As ambassadors, these persons would share and promote the event within their communities. Lastly, they created a list of potential sponsors and partners based on identified costs for the event.

Once these lists were confirmed, IAMovement sent out individual invitations and personal follow ups, and used social media (Facebook and Instagram) to advertise the event. There was an in-house graphic designer and videographer who created a [short video](#) and digital flyers, which were posted repeatedly on social media platforms and shared amongst ambassadors and their stakeholders.

#### 6.7.4. Results

For the POS to Paris event:

- more than 400 people gathered to learn more about climate change;
- IAMovement attempted to host a ‘green’ event by not using single use plastic items such as disposable bottles and cutlery for anyone who brought these items, there were recycling bins around the Eco-village provided by [Plastikeep](#);
- financial sponsorship was received from the French Embassy, European Union, and private companies, with in kind donations of portapotties, banners and a medic; and
- opening speeches were given by Richard Blewitt, Resident Coordinator of the United Nations Trinidad and Tobago and His Excellency Hedi Picquart, Ambassador-designate of France to The Republic of Trinidad and Tobago.

Longer term impacts

- While IAMovement felt the POS to Paris event achieved its goals, it wanted to continue the climate conversation in Trinidad & Tobago using other communication means. This led to the creation of a documentary entitled ‘Small Change’, which premiered on September 23rd 2016 (see <https://vimeo.com/166644895>). The film takes the conversation forward and discusses climate change in a local context, with a focus on the state of our local economy and moves that can be made in the grassroots, private and public sectors to improve the existing state of our environment, while also having significant social and economic benefits for citizens of Trinidad & Tobago.
- IAMovement has plans to create a package of educational tools for varied target audiences that will create a groundswell of citizen awareness on climate change and what citizens can do to curb emissions.

#### 6.7.5. Lessons Learnt

One of the biggest lessons learnt was to establish sustainable partnerships and funding mechanisms while planning for any project. Having these at the start of all projects allows for proper execution.

Another lesson learned was to start planning at least six months prior to any event. This allows for further reach to engage a wider range of stakeholders, and also enhances vision for successful projects.

Lastly, the way in which you communicate with your target audiences will have an effect on how your message is received. IAMovement chose to focus on the positive aspects of economic diversification through eco-tourism and transitioning towards renewable energy versus the 'doom and gloom' of the fossil fuel industry. As a result, we have received positive feedback and interest in this movement by a wider range of stakeholders.



## 6.8. #1point5toStayAlive, an advocacy campaign on climate justice



Implemented by Panos Caribbean

### 6.8.1. About the organisation

Since its inception in 1986, Panos Caribbean has been working to help empower the most marginalized and vulnerable persons in the region through projects and other activities on issues related to children and youth, public health, media community and environment as well as gender. Panos Caribbean works to amplify the voices of the poor and the marginalized through the media and ensure their inclusion in public and policy debate, in order to enable Caribbean communities and countries to articulate and communicate their own development agenda. Panos Caribbean is a regional organisation that helps journalists to cover sustainable development issues that are overlooked and misunderstood.

### 6.8.2. Project Overview and Approach

In the second half of 2015, Panos Caribbean led a major regional awareness and advocacy campaign aimed at raising awareness of climate change issues in the region and at supporting Caribbean negotiating positions at the 21<sup>st</sup> Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21).

The campaign found its origin in the support provided by the Caribbean Community Climate Change Centre (CCCCC) to the region's response to the climate change challenge and in a meeting convened in Saint Lucia in July 2015 by Panos Caribbean, in collaboration with Saint Lucia's Ministry of Sustainable Development, Energy, Science, and Technology and several other partners<sup>19</sup>. At this meeting, in which government negotiators, journalists, artists, and civil society organisations participated, it was agreed that this regional campaign should be launched, under the banner **#1point5tostayalive**.

The campaign was formally launched on 8 October 2015 in Saint Lucia, at a ceremony involving then Minister of Sustainable Development, Dr James Fletcher, as well as representatives from the GEF Small Grants Programme, the diplomatic corps, the Commonwealth Foundation and Panos Caribbean.

19 These were the CCCCC; the High Level Support Mechanism Project on Climate Change for SIDS and LDCs, with implementing partners Climate Analytics and Charles & Associates; Friedrich Ebert Stiftung, Jamaica and the Eastern Caribbean; the Organization of American States; and the Organisation of Eastern Caribbean States (OECS) Commission

The main activities and instruments used were:

- an online campaign with a trilingual website ([www.1point5.info](http://www.1point5.info)), and the active use of social media, with a Twitter account (@1point5OK) and Facebook pages (<https://www.facebook.com/savethecaribbean> for the English language page);
- the involvement of Caribbean artists in the production and dissemination of songs<sup>20</sup>, paintings, photographs, poems, public service announcements, photographs and handicraft — all helping to convey the messages of the campaign prior to, during and post COP21;
- the participation of two Caribbean singers in COP21 [PICTURE 1], with a number of performances taking place over three days at a Wider Caribbean Pavilion;



Figure 84: Jamaican Aaron Silk and Belizean Adrian Martinez perform at COP21 in Paris, December 2015.

- the hosting of multiple events, including a meeting of the Haitian Civil Society Platform on Climate Change, held prior to COP21 and which helped to mobilise civil society, inform media houses and build linkages with government; and
- the formulation and implementation of a media liaison strategy that included the participation of Caribbean journalists in COP21, the production and dissemination of releases and articles for the print and electronic media, as well as arrangements for interviews and press conferences during COP21.

<sup>20</sup> Click this link <https://soundcloud.com/panos-caribbean/1point5-to-stay-alive> for the theme song, which is now being produced in video format.

### 6.8.3. Key results

It is always difficult to assess the impacts of communications work, but several tangible outcomes can be identified:

- stronger collaboration between governments, inter-governmental organisations, civil society and the media, thanks to a demonstration of converging interests and of the value of cooperation;
- empowered delegations in international processes, as indicated by one leading Caribbean negotiator in COP21, who said afterwards that he “felt that Caribbean people were behind us, that our work in Paris was followed and supported back home, and that increased our determination to succeed”;
- increased capacity of the media to understand and report on climate change issues, and to approach them with a perspective that is relevant to the Caribbean and its people; and
- contributions to securing the language “holding the increase in the global average temperature to well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 degrees Celsius above pre-industrial levels, recognising this would significantly reduce the risks and impacts of climate change” in the Paris Agreement.

### 6.8.4. Lessons learned and recommendations

- Communication is an essential tool in the effort to articulate and defend Caribbean climate change interests at the international level. It gives visibility to the issues and challenges facing the region and enables accountability from all stakeholders, including, critically, international actors.
- In communication initiatives, it is useful to employ a variety of media. When a particular message

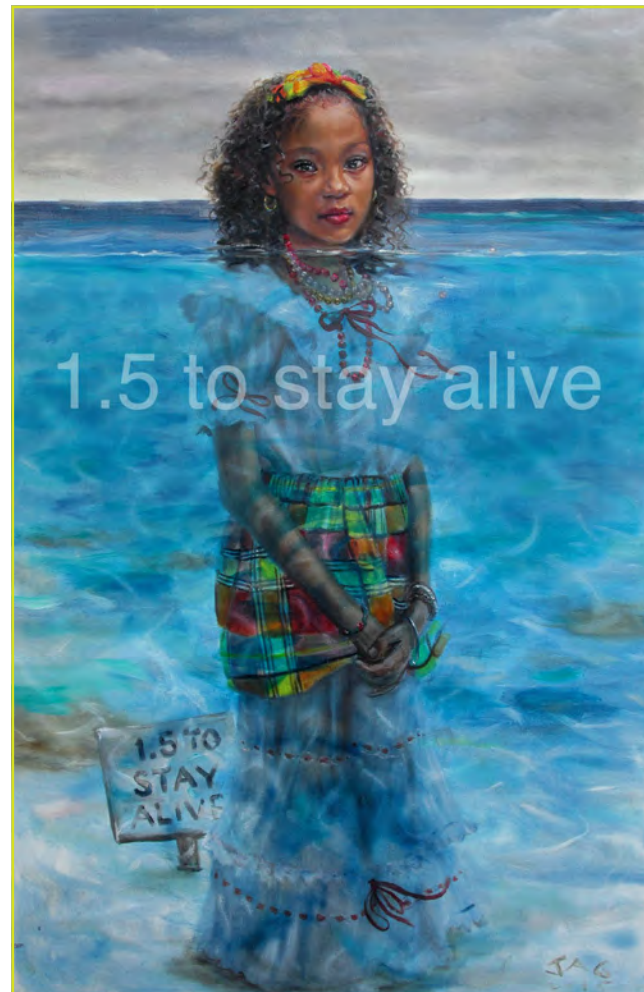


Figure 85: Painting by Jonathan Gladding of Saint Lucia, which became the emblematic image of the #1point5tostayalive campaign.

is conveyed simultaneously through several channels, for example at a press conference hosted by government officials and by artists or civil society activists, it becomes more powerful.

- Art can convey important messages more effectively than other media. The emblematic image of this campaign was without doubt Jonathan Gladding's painting [PICTURE 2], showing that artists can play a special role in any effort to raise awareness and mobilise participation, given their visibility and credibility. They are also able to express and convey messages in culturally relevant forms. The voice of a prominent reggae musician or a painting by a creative visual artist can have a greater impact than conventional educational material.
- Communication campaigns must be based on and relevant to the realities of the region and people they are meant to serve. Awareness of climate change and its impacts is growing in the Caribbean, but this awareness is fed primarily by global (northern) media, with little focus on the concerns of Caribbean people. Giving a voice to Caribbean issues and actors was one of the key factors of the success of this campaign.
- Issues of climate change are development issues: in and for the Caribbean. Dealing with climate change requires much more than science, technology and economics, it requires fairness in international agreements and instruments, bridging the gap between rich and poor, promoting gender equity and equality in negotiations and solutions, protecting the most vulnerable, and addressing the fundamental causes of climate change. The fight against climate change is a fight for climate justice.

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## Additional resources

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### **Caribbean Natural Resources Institute**

The Caribbean Natural Resources Institute (CANARI) is a regional technical non-profit organisation which has been working in the islands of the Caribbean for over 20 years.

Our mission is to promote and facilitate equitable participation and effective collaboration in the management of natural resources critical to development in the Caribbean islands, so that people will have a better quality of life and natural resources will be conserved, through action learning and research, capacity building and fostering partnerships.

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