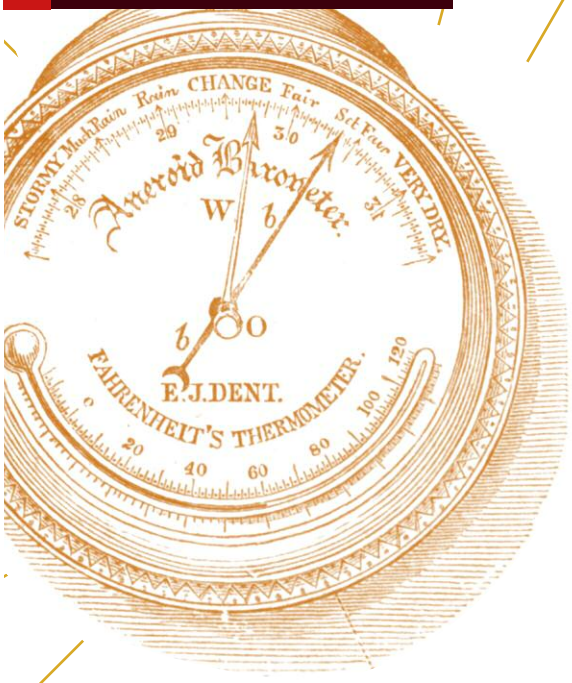
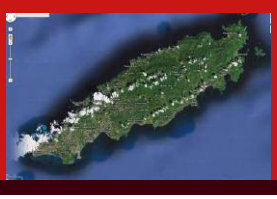
Climate Change and Disaster Risk Reduction

Caribbean Natural Resources Institute

Technical Report No. 401



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



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

Caribbean Natural Resources Institute (CANARI)
Technical Report No. 401
August 2014

Acknowledgements:
This case study is based on a review of the 2012-2013 project **"Promoting participatory information communication technologies (ICTs) for adding value to traditional knowledge in climate change adaptation, advocacy and policy processes in the Caribbean"** funded by the Technical Centre for Agricultural and Rural Cooperation (CTA) and implemented by CANARI.

This case study is dedicated to Allan Smith (Kaf), who died on March, 24 2010. He served as a member of staff of CANARI almost since its inception under the Eastern Caribbean Natural Area Management Programme (ECNAMP). Kaf's contribution to the work of CANARI has been unique and tremendous, because of what he did and because of the way he did it. He was rigorous and focused, always willing to explore new concepts and use new instruments, always wary of superficial and trendy ideas. While Allan Smith is indeed best known and respected as a biologist, he has, in many respects, been one of the early explorers and practitioners of the linkages between natural resource management and poverty reduction. He devoted much of his talent and energy to the testing and application of user-friendly tools for natural resource mapping and geographic information systems. He was one of the first inventors and users of kite photography for mapping and monitoring, and a strong believer that such tools could be made simple and accessible to many, especially to the communities that depend on natural resources for their livelihoods.

MacArthur
The John D. and Catherine T. MacArthur Foundation

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1. Introduction

Participatory Three-Dimensional Modelling (P3DM) is "a method that integrates indigenous spatial knowledge with data on elevation of the land and depth of the sea to produce stand-alone, scaled and geo-referenced relief models[1]." It has a wide range of potential applications, from participatory watershed and protected area planning, to participatory climate change vulnerability assessment and planning.

In 2012, the use of P3DM in participatory climate change vulnerability assessment was piloted by the Caribbean Natural Resources Institute (CANARI), a non-profit technical institute with nearly thirty years experience in using tools to facilitate the participation of stakeholders in natural resource management and governance.

Effects of climate change and variability in the Caribbean are projected to include extreme weather events, sea level rise, ocean warming and acidification, and changing rainfall and temperature patterns. These effects are occurring and are already having a significant economic and social impact.

Climate change adaptation action in the Caribbean islands has largely been at the national policy and planning level, where efforts have been focused to respond to international commitments. There have been few specific policies or plans developed to address priorities on the ground at the landscape or site level. Sectoral considerations or traditional knowledge have not been adequately considered, stakeholders are not effectively engaged, and there has been little on-the-ground action to build resilience or to "climate proof" key sectors such as tourism and agriculture. Further, the development and implementation of policy to address the impacts of climate change and extreme climatic events has been largely without the effective engagement of local communities, where useful traditional knowledge exists and much of the action will need to be taken. This is despite the recognition of the value of local people participating in climate-related decision-making, which has received attention in several official climate policy documents such as Article 6 of the United Nations Framework Convention on Climate Change (UNFCCC)[2].

Traditional and local knowledge are based on extensive periods of observation (often in one locality) and interaction with the environment and include practices that have been tested. In the Caribbean region, where there is often an absence of location-specific scientific data, traditional and local knowledge can provide a sound source of information to advise on the ground action on climate change. In many instances, these actions often provide simple and effective solutions to specific local problems which may be applied or adapted for application at other locations throughout the region.

The pilot project by CANARI aimed to demonstrate how this gap could be addressed by recognising and making more authoritative local and traditional knowledge and values in decision making about climate change adaptation in the Caribbean region through building of a three-dimensional model of the island of Tobago. The pilot also included training representatives from regional and national organisations on the use of P3DM and documenting and sharing the experiences and lessons learnt to catalyse use of the tool in the region.

The pilot was funded via a grant to CANARI from the Technical Centre for Agricultural and Rural Cooperation (CTA). CTA also supported co-facilitation of the model building by a Geographical Information Specialist from the Philippines and an experienced P3DM builder from Partners with Melanesians (PWM) from the Solomon Islands.

The project received additional financial support from the United Nations Development Programme Global Environment Facility Small Grants Programme (UNDP GEF SGP) through a small grant to the University of the West Indies (UWI). The Nature Conservancy (TNC)

1 Rambaldi G. and Callosa -Tarr J. (2002)
2 UN, 1992, p. 17`q c1

covered the expenses of four trainees. The local government authority, the Tobago House of Assembly (THA), assisted with implementation of the project.

This case study documents CANARI's experience in piloting the use of P3DM in the Caribbean and identifies lessons learnt and recommendations on how it can be used to strengthen the capacity of CSOs in the islands of the Caribbean to play a larger and more effective role in biodiversity conservation and sustainable development. The case study was written as part of the CANARI project Consolidating the role of civil society in biodiversity conservation in the Caribbean islands[3], funded by the John D. and Catherine T. MacArthur Foundation.

3 For more information on the project see http://www.canari.org/civil_sub1.asp

2. The pilot site

2.1 Selection of the project area

CANARI and two of its partners, the Centre for Resource Management and Environmental Studies (CERMES) of the University of the West Indies and the Caribbean Public Health Agency (CARPHA) (formerly the Caribbean Environmental Health Institute [CEHI]), with the guidance of CTA, selected Tobago as the project site based on the following criteria:

- Existence of protected areas designation and management
- Experience with responding to climate related impacts
- CANARI and other partners had a history of working or currently work in the area
- Established relationship with local partners
- Interest of various local partners to engage in the P3DM exercise
- Existing GIS capability with local partners or access readily available through external interested parties
- Available venues in the community for 50 people for 10-12 days to construct the model
- Considerable potential available to build on P3DM exercise
- Legal and legislative environment exist that could support actions drawn from the building of the P3DM
- Existence of terrestrial and marine components and an approximate size of 300 km^2 of land mass

2.2 The island of Tobago

Geographical location

Tobago is one of two main islands in the archipelagic state of the Republic of Trinidad and Tobago in the southern Caribbean. Tobago, south of Grenada in the Lesser Antilles and northeast of the island of Trinidad, is located at latitude 11° 15' N, longitude 60° 40' W. The island has a total land area of approximately 300 km2 and is approximately 40 km long and 10 km wide and shares maritime boundaries with Barbados to the northeast (Maps 1[4] and 2[5]).

Map 1: Tobago's location in relation to the Caribbean

Map 2: Satellite image of the island of Tobago

Natural resources

The review of taxa in Trinidad and Tobago is far from complete, however it is well evidenced that due to its small size, location, and geological relationship shared with the South American continent, the country has a high species diversity to surface area ratio. The range of terrestrial ecosystems include evergreen seasonal, semi-evergreen seasonal, deciduous seasonal, littoral woodlands, lower montane rainforests, seasonal montane forests, montane rainforests, elfin woodlands, swamp forests (including mangrove woodlands), palm swamps, marshes and savannahs. These support approximately 2,160 species of flowering plants, 110 of which are endemic; 433 species of

4 www.islandbrides.com
5 Produced by CTA from http://maps.google.com/

birds (210 in Tobago); 100 mammals; 37 amphibians and 93 reptiles including 47 snakes (21 in Tobago). Marine systems include the water masses, mud bottoms, coral reefs and communities, sandy bottoms, rocky shores, sea grass beds and mud flats. These support a range of macro and microbiota including a large array of commercially important fish species and 36 species of reef building corals[6].

The Tobago Main Ridge Forest Reserve on the island of Tobago has been recognised by UNESCO for its "outstanding universal value." The Forest Reserve is on record as the oldest legally protected forest reserve geared specifically towards a conservation purpose. It was established on April 13th, 1776 by an ordinance which states in part, that the reserve is "for the purpose of attracting frequent showers of rain upon which the fertility of lands in these climates doth entirely depend." Also, the Main Ridge Forest Reserve was voted the "World's Leading Eco-Tourism destination" by the World Travel Awards in 2003, 2004, 2005 and 2006, thereby illustrating that it has intrinsic ecological value that tourists from all over the world seek and that it has enough of a management system in place to foster sustainable development in the global eco-tourism sector[7].

Population, economy and livelihood activities

The 2011 national census recorded 60,874 people residing on the island of Tobago[8].

Trinidad and Tobago has one of the highest growth rates and per capita incomes in Latin America and the Caribbean region. Economic growth between 2000 and 2007 averaged slightly over 8%, significantly above the regional average of about 3.7% for that same period; however, Gross Domestic Product has slowed down since then and contracted during 2009-2011 due to depressed natural gas prices and changing markets. Growth had been fueled by investments in liquefied natural gas, petrochemicals, and steel with additional upstream and downstream investment planned. Trinidad and Tobago is the leading Caribbean producer of oil and gas, and its economy is heavily dependent upon these resources but it also supplies manufactured goods, notably food products and beverages, as well as cement to the Caribbean region. These economic activities largely occur in Trinidad. Exploration for natural gas in Tobago commenced in the last five years[9].

Tobago's economy is tightly linked to Trinidad's. The principal economic forces specific to Tobago are tourism and government spending. It is reported that approximately 60% of the population is employed by the local government authority, THA. The tourism sector is the second largest employer[10]. Fisheries and the agriculture sector (mainly rearing of pigs and small ruminants and farming of food crops) also provide employment on the island. Many residents of the island supplement their income from the THA through the livelihood streams listed above[11].

Brief review of recent climate related impacts

Trinidad and Tobago experiences the year-round warm, humid conditions associated with the Tropics. Mean temperature is around 26 °C, dropping by only a degree or so in the cooler months of December to February. The wet season occurs through June to December, during which the islands receive around 200 mm-250 mm per month. Inter-annual variability in the Southern Caribbean climate is influenced strongly by the El Niño Southern Oscillation (ENSO). El Niño episodes bring warmer and drier than average conditions between June and August, and La Niña episodes bring colder and wetter conditions at this time.

Observations from meteorological data suggests that the average ambient temperature increased by 0.6 °C over the period 1961-1990 at an average rate of 0.2 °C per decade, consistent with the observations of the increase of the global average over the same period. However, more recent data analysis indicates an increase of 1.7 °C over the period 1961-2008, implying an increase in the rate of warming. There has been no statistically significant change in mean rainfall over Trinidad and Tobago since 1960. However, the largest changes in rainfall are observed in the months of June, July and August (wet season) where, on average, rainfall has decreased by 6.1 mm per month (2.6 %) per decade[12].

6 Government of Trinidad and Tobago Clearing House Mechanism
7 http://whc.unesco.org/en/tentativelists/5646/- UNESCO
8 The government of Trinidad and Tobago, Min of Planning and Sustainable Development, Central Statistical Office, Trinidad and Tobago 2011 Population and Housing Census Demographic Report.
9 CIA, World Fact Book
10 Kairi Consultants Limited (2012)
11 Kairi Consultants Limited (2012)
12 Government of the Republic of Trinidad and Tobago National Climate Change Policy, July 2011

In the recent past, Tobago has experienced episodes of extreme climatic events which have resulted in loss of life and property. In November 2004, two people were killed and five were wounded in a landslide after six hours of heavy rain[13]. Tobago has also been subjected to indirect impact of tropical cyclones. In September 2004, feeder bands of hurricane Ivan caused widespread damage. Populations in the low-lying coastal areas of Tobago had to be evacuated to shelters. Again in October 2010, feeder bands of hurricane Tomas severely affected eastern areas in Tobago. Rain gauges at Crown Point Tobago recorded 127.5mm of rainfall between midnight and noon. Flooding was reported in seven villages in eastern Tobago and two in the western end of the island. Landslides were reported in 13 villages in the north eastern side of the island[14].

According to the Climate Change Policy for Trinidad and Tobago, prepared in July 2011, Tobago is expected to experience sea level rise, increasing temperature and decreasing rainfall which would increase vulnerability in specific sectors such as:

- decreased yield in agriculture due to reduced rainfall, increases in ambient air temperature, salinisation of soils, desertification of soils and increases in invasive species, pests and diseases;
- negative impacts on human health because of increased vector and water borne diseases, reduced water supply and food security due to reduced rainfall, increases in ambient air temperature, and increased flooding;
- damage and loss of human settlements and infrastructure due to flooding as a result of increases in intensity of heavy rainfall events;
- impacts on fisheries due to ocean acidification;
- loss of property and infrastructure affecting sectors in coastal zones due to inundation, coastal erosion, soil salinisation, coral bleaching, and loss of coastal wetlands; and,
- reduction in freshwater resources due to temperature increase and increased evapotranspiration, decreased precipitation and salt water intrusion.

All of the above impacts are expected to be exacerbated by human activities including inappropriate land use and poorly planned physical development and deforestation.

13 International Strategy for Disaster Reduction (EIRD), 2012
14 Report of the World Meterological Organization RAIV Hurricane Committee Thirty-Third Session, Grand Cayman, Cayman Islands, 8 to 12 MARCH 2011

3. Methodology for the pilot

CANARI conducted a stakeholder identification and analysis to target key policymakers to promote buy-in and support the building and use of the model and to select and invite participants to be trainers, informants and observers. Target groups were identified to carry out different roles in the building of the model. Target groups identified were trainers from regional and national organisations, secondary school students from Tobago to assist with the creation of the blank model, residents from Tobago who had direct interest or stake in the management of natural resources (informants) who would be invited to put their knowledge of the resources on the map and observers from national and regional organisations who could benefit from using P3DM as a tool in natural resource management. The building of the three dimensional model, the training of trainers, and facilitating a participatory video (PV) process to conduct an evaluation of P3DM and the activities, were executed concurrently. The process is described in phases. These are mobilisation, model building, training of trainers, handing over, formulating action on climate change and sharing of lessons.

3.1 Mobilisation phase

CANARI drafted a mobilisation plan to stimulate the interest of key stakeholders to participate in the P3DM exercise in Tobago during the period 29th September to 12th October 2012. Mobilisation strategies were proposed for each target group and documented in the plan. Using the proposed strategies as a basis, a work plan for mobilisation was formulated detailing the activity, the lead partner, other partners involved in the particular activity, the resource for the particular activity, the output and the timeframe.

Activities conducted included 10 face-to-face meetings with policy makers, resource users and the media prior to the model building and two mobilisation meetings in north east Tobago and Scarborough to stimulate interest among natural resource users about one month prior to model building.

3.2 Model building

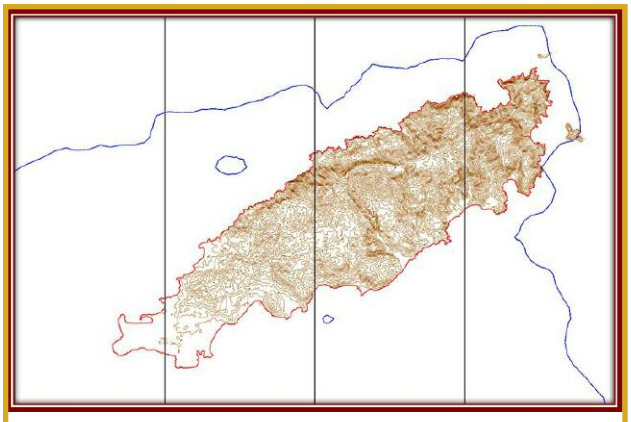
3.2.1 Preparatory phase

Sourcing the data and preparation of base maps (inclusive of choosing the mapping scales)

The UWI Department of Geomatics, Engineering and Land Management in the Faculty of Engineering in collaboration with CTA suggested the mapping scale of 1:10,000 and 20m contour intervals. Given the data they had, UWI provided CTA with basic information on the area of Tobago, proposed contour line intervals for mapping and the maximum height of mountains on the island. CTA then used this, along with information provided by CANARI on livelihoods in the marine environment, to calculate the unit elevations for the model and the required personnel hours to create the blank model. Specifications calculated were:

- 4' x 10' base, 3 or 4 mm carton board sheets, consolidated into a total of 113 layers.
- Layers per unit used were:
  - Unit 1 : -100 to 210 m (15 layers)
  - Unit 2 : -100 to 530 m (31 layers)
  - Unit 3 : -100 to 580 m (35 layers)
  - Unit 4 : -100 to 550 m (32 layers)
- Personnel hours required using 30 youth (plus trainees) were approximately 3.5 days.

Two copies of base maps were produced for each unit by UWI.



Map 3: Visualised model on the units produced by UWI

Procurement of materials and services

The base tables were custom made with specifications given by CTA. The tables were designed to be exactly 4 ft x 8 ft in size, approx 2 ft high. The design for the tables can be found at http://www.iapad.org/tips/base_table.htm.

Legend drafting

The formulation of a draft legend was one of the objectives included in the Introductory and Planning Workshop. Participants brainstormed and produced an extensive listing of areas, lines and points that they believed would be important information needed in decision making about climate change in Tobago. This listing was then discussed and edited. This edited listing was used as the draft legend for the wider group of informants to build on during the model building exercise.

3.2.2 Constructing the three dimensional model

During the first five days the blank model was constructed with the assistance of 19 students from secondary schools in Tobago and the 22 trainees. 106 residents of Tobago and the trainees populated the model from Day 6 to 14.

Secondary students tracing contours.

PWM facilitator and secondary students gluing layers.

3.2.3 Analysing policy recommendations

A team of residents representing different stakeholder groups that had been involved attended a session on Day 14 of the model building to analyse lessons learnt from the activity and prepare statements on the impact of climate change on their livelihoods, their approaches to coping with the impacts and their recommendations to policy makers on decision making about planning for climate change. The outputs of this session were presented at the Handover Ceremony on the following day, when the model was presented.

3.2.4 Training of trainers

The first five days of the training were dedicated to the introduction of basic concepts on participatory approaches, facilitation, geographical information systems (GIS) and P3DM to trainees and the building of the blank model. Trainees were exposed to a range of interactive and creative facilitation methods, including visual representation, brainstorming, round robin, small group work, plenary discussion, individual reflection, role play, peer coaching, video, games, energiser, and questioning. Trainees also had lectures on GIS and P3DM building. Training on evaluation using participatory video was done on Day 5.

Days 6 to 11 were allocated to action learning for the trainees. This included the trainees co-facilitating the three dimensional model making with the residents of Tobago, inputting data on the model and capturing footage for the evaluation. Each daily session began with reviewing lessons learnt from the previous day and ended with viewing of video footage captured on that day. Days 11 and 12 were used to demonstrate to trainees how to capture and digitise the information accumulated on the model, edit the participatory video footage and prepare for the Handover Ceremony.

4. Handing over

The populated model was handed over to the THA on 12th October 2012. The ceremony included the presentation of prepared statements by residents of Tobago on the impact of climate change on livelihoods, their approaches to coping with the impacts and their recommendations to policy makers on decision making about planning for climate change. The THA conveyed appreciation to all participants for sharing their experiences. The organisation also shared plans to carry the model around the island so that more residents would be aware of the impacts of climate change on the island and to use the input provided by the residents to advise development planning on the island.

Project partners examine the final model

5. Using information provided from the model for action on climate change

27 participants from civil society engaged in a two-day workshop held from the 24th – 26th October 2012 in Tobago to further build their understanding of the concept of climate change, analyse lessons learnt from the P3DM activity about the impacts of climate change on their livelihoods, identify and examine their approaches to coping with the impacts of climate change and to create a plan for dealing with the impacts of climate change. They developed a Civil Society Agenda to address the impacts of climate change in Tobago.

6. Sharing lessons

This project entailed using various products to disseminate lessons learnt and experiences on the use of P3DM to facilitate the input of local knowledge into climate change action.

- Workshop reports for each workshop were produced and disseminated to participants and media releases were produced and disseminated to promote key milestones of the project in Tobago.
- 10 blog posts were used to share information on the building of the model in Tobago with national, international and regional audiences, during the period 28th September - 2nd October 2012. These blogs were also posted by CTA and CANARI on their website and Facebook pages.
- CANARI also posted the daily rapporteur reports prepared by the trainees on its Facebook page during the Training of Trainers.
- 400 copies of a 4-page policy brief produced in three languages (French, Spanish and English) were produced and disseminated via listservs, emails to specified target audiences and hard copies at strategic regional events. Events included the United Nations Education Scientific and Cultural Organisation (UNECSO) Sub-Regional Meeting On Environmental Policy Formulation and Planning in the Caribbean, held 15th – 16th May 2013, United Nations Development Programme (UNDP) Knowledge Fair, 5-6 June 2013, and the 7th Annual Caribbean Conference on Comprehensive Disaster Management, held 10th 13th December 2012. The policy brief is also available on the project webpage on CANARI's website.
- A 16 minute video documentary on the P3DM activity has been produced and is posted on CANARI's YouTube channel.

7. Results

Results included:

Capacity built in 22 resource managers from the region for facilitating participatory processes

The Training of Trainers built the capacity of the trainees to facilitate participatory processes (P3DM and participatory video). Trainees went on to facilitate building of models in St. Vincent and the Grenadines (in March 2013) and Grenada (in April 2013).

Capacity built in at least 20 resource users in Tobago to analyse the impacts of climate change

At the Handover Ceremony resource users highlighted the impacts of climate change on their livelihoods and the measures they were engaging in to cope with the impacts of climate change. Impacts highlighted included decreased and erratic rainfall, coral die out, decreased fish catch and the increased prevalence of bush fires. Fisherfolk reported that they had started sailing further offshore to get fish. Farmers said they were now supplementing their income with additional activities such as fishing and were digging new wells to have access to water during the dry spells.

The follow-up workshop contributed to enhancing civil society understanding about climate change, the impacts on natural resources and related livelihoods, and potential actions that could be undertaken as outlined in a Civil Society Agenda.

Improved understanding of and appreciation for the value of traditional knowledge in decision-making about climate change

Key decision-makers relayed their frustration in getting up-to-date data to advise on decision-making on climate change on the island and indicated their delight in having current data for decision-making. Resource users reported that the use of the model in the follow-up workshop enabled them to easily share their concerns and issues on natural resource management issues.

Communities are more empowered to assume their role in decision making to influence policies and actions for building resilience to climate change and extreme climatic events

During the follow-up workshop participants reported feeling more empowered to discuss and take action on climate change issues. The exercise itself provided Tobagonians with the opportunity to use their improved understanding to draft a plan for civil society to take action on climate change.

Capacity built in at least 120 persons from communities in Tobago, inclusive of key decision-makers, on action needed to build resilience to climate change and extreme climatic events

The project team visited key decision-makers identified in the stakeholder identification and analysis to mobilise participation in the model building as well as to share knowledge on action for climate change in Trinidad and Tobago and the wider Caribbean region. During the building of the model trainees facilitated the analysis of the impacts of climate change on livelihoods of people in Tobago.

8. Benefits and challenges of the use of P3DM in Tobago

Benefits identified from the exercise included that P3DM:

- allowed participation from all stakeholders of various literacy levels;
- enabled clear and easy communication among stakeholders;
- captured and stored vast quantities of data in relatively little time;
- allowed a large quantity of information to be presented at once;
- enabled exchange of traditional knowledge and history about the island among stakeholders during the building of the model as well as when the model was on display;
- allowed for the validation of the data among stakeholders;
- allowed for the integration of scientific data and local knowledge;
- provided up-to-date land use data for development planning;
- eliminated the need for the translation of technical data to more user friendly formats to inform on-the-ground action.

Challenges identified from the exercise included that P3DM was very time and resource intensive for facilitators as well as participants. In addition, during this pilot multiple activities taking were place at the same time with various outputs - namely model building, participatory video, training of trainers, blogging, and documentary production. This made concentration on analysis of the knowledge gained for input into decision making challenging for participants.

9. Lessons learnt about using P3DM as a method for civil society engagement in climate change vulnerability assessment and planning

- P3DM requires buy-in of key decision-makers (community leaders, local media and government personnel) to mobilise participants.
- The P3DM facilitator needs to have a range of competencies inclusive of networking skills, GIS mapping, event management and promotion, facilitation, and communication and advocacy. They also need to be able to work with participants to place data on the model that is relevant to climate change vulnerability assessment and planning and to guide participants to use the data to formulate a rational plan for action.
- A stakeholder analysis as part of the development of a mobilisation strategy is valuable in identifying relevant stakeholders for participation at various stages in climate change vulnerability assessment and planning.
- Various strategies are needed to mobilise and engage civil society groups.
- The site for building a P3DM model needs to be in a location that is frequently traversed by the target participants, so that they can minimise the time lost from earning a livelihood during the model building process.
- The P3DM methodology must include facilitated sessions to improve understanding of the basic concepts of climate change and to analyse the impacts of climate change on their livelihoods. This facilitates analysis of impacts and recommendations for policy and action and so supports civil society engagement in climate change vulnerability assessment and planning.

10. Conclusions

The P3DM methodology allowed stakeholders engaged in various livelihood activities and with various literacy levels to participate in analysing and documenting non-traditional local knowledge on the impacts of climate change. This knowledge is captured in a model which houses a significant amount of up-to-date information on how climate change will affect Tobago. The model building exercise and follow-up activities facilitated sharing of knowledge among stakeholders and presention of information in a format to advise planning for adaptation actions by all stakeholders, including civil society.

P3DM is a very effective participatory tool that combines collection of knowledge with analysis and communication for awareness and action. It is a suitable tool that can be used in the Caribbean islands to facilitate participatory vulnerability assessments and planning. It is best used where stakeholders are committed and able to engage in a very time intensive process and where there are sufficient resources to support the facilitation. CANARI plans to continue to use P3DM to facilitate participatory processes under its Climate Change and Disaster Risk Reduction programme as well as its other work.

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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 equitable participation and effective collaboration in managing the natural resources critical to development.
Our programmes focus on research, sharing and dissemination of lessons learned, capacity building and fostering regional partnerships.

For more information please contact:

Caribbean Natural Resources Institute (CANARI)
Fernandes Industrial Centre,
Administration Building
Eastern Main Road, Laventille, Trinidad, W.I.

Tel: (868) 626-6062 • Fax: (868) 626-1788
Email: info@canari.org • Website: www.canari.org

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