Initiative for Climate Action Transparency

Building National Mitigation Scenario Modelling Capabilities
Antigua & Barbuda Project

Mitigation Modelling Data Collection Procedures Manual

7th December 2021

PREPARED UNDER

Initiative for Climate Action Transparency (ICAT) supported by the German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety, the Children´s Investment Fund Foundation, the Italian Ministry for Ecological Transition, and ClimateWorks.

Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

CIFF
CHILDREN'S
INVESTMENT FUND
FOUNDATION

climateworks
FOUNDATION

MINISTERO DELLA
TRANSIZIONE ECOLOGICA

The ICAT project is managed by the United Nations Office for Project Services (UNOPS)

UNOPS

Table of Contents

List of Abbreviations

AFOLU	Agriculture, Forestry and Other Land Use
APUA	Antigua Public Utilities Authority
CCMRVH	Caribbean Cooperative Monitoring, Reporting and Verification Hub
DMU	Monitoring, Evaluation and Data Management Unit
DOE	Department of Environment
EPMA	Environmental Protection and Management Act
GACMO	Greenhouse Gas Abatement Cost Model
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GHGMI	Greenhouse Gas Management Institute
ICAT	Initiative for Climate Action Transparency
IPCC	The Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
IRENA	International Renewable Energy Agency
LEAP	Low Emissions Analysis Platform
LULUC	Land Use and Land Use Change
MRV	Monitoring, Reporting and Verification
NCT	National Coordinating Team
NDC	Nationally Determined Contribution
RE	Renewable Energy
SDG	Sustainable Development Goal
SIDS	Small Island Developing States
SIRMZ	Sustainable Island Resource Management Zoning Plan
UNFCCC	United Nations Framework Convention on Climate Change
UNOPS	United Nations Office for Project Services

Background

Antigua & Barbuda is a sovereign small island developing state (SIDS) in the Eastern Caribbean (421 km^2). As is characteristic of a SIDS, Antigua & Barbuda experiences a disproportionate level of risk from natural disasters, including those related to climate change. Antigua & Barbuda has a resident population of 96,655, with tourism being the main driver of economic growth, accounting for nearly 60% of national GDP.

The country is committed to implementing measures to grow its economy in a low carbon and sustainable manner. The Antigua & Barbuda Department of Environment (DOE), Ministry of Health and the Environment is responsible for climate measurement, reporting, and verification (MRV) functions, which includes implementing climate change planning and management, monitoring all climate change issues within a national context, and reporting to the United Nations Framework Convention on Climate Change (UNFCCC).

The DOE is focused on designing high-impact, transformational projects that maximize funding directly available to the public, private, and civil society actors to meet an ambitious environmental agenda. One such project was ICAT (Initiative for Climate Action Transparency) which focuses on developing a sustainable national economy-wide GHG emission projections and mitigation analysis modelling capability in Antigua & Barbuda. This project featured establishing a national modelling framework and underlying dataset to assess GHG emissions, targeted policies and support the updating and tracking Nationally Determined Contributions (NDCs). Additionally, it focused on prioritising and analysing mitigation policies and GHG emission and capacity building to maintain, use and improve the modelling framework in the future. This project was supported by the ICAT secretariat, the Greenhouse Gas Management Institute (GHGMI), and consultants at the Caribbean Cooperative MRV Hub (CCMRVH) and was funded by ICAT.

Introduction

Data collection is critical for developing and updating a country's greenhouse gas (GHG) inventory of emissions and removals, GHG projections, and tracking of progress towards NDC commitments. According to the Intergovernmental Panel on Climate Change (IPCC), data collection procedures are necessary for finding and processing existing data, as well as for generating new data by surveys or measurement campaigns. It further established that formalised data collection activities should be created or adapted to national circumstances, as well as reviewed periodically as part of implementing good practice. This is also important to support related MRV efforts. Greenhouse gas mitigation analysis can be challenging and, as such, also relies on accurate inputs from data collection activities. Specifically, these activities need up-to-date activity data from national and, in some cases, international data sources. Collection of representative input data for mitigation modelling is especially important to aid in the provision of a reliable evidence base on which formulate national and international policies relating to GHG mitigation policies and measures.

As part of this ICAT project on building mitigation models for Antigua & Barbuda, a series of outreach engagements with national data providers were conducted. These engagements were followed by bilateral communications and consultations through formal and informal requests with data providers to collect required data and provide expert judgment for model development.

This manual seeks to highlight the data collection process throughout the Antigua and Barbuda model development. It features how the data was screened, the types of data collected, and the channels utilised to facilitate these data. In addition, limitations in the data collection process and recommendations for improvement in the future are also outlined.

Methods of Data Collection

Before collecting data for the two modelling tools selected for Antigua & Barbuda (i.e., LEAP and GACMO), the data needs for these models were identified and plans were established to gather model input data starting with the key sources for the country (i.e., Energy sector). To start this process, a OneDrive electronic file system to organize and archive project data was created with all existing data resources (e.g., reports, databases)

that were already within the DOE. Qualitative and quantitative data were both considered in the data collection process.

To ensure data within DOE was not overlooked and to capture data from external resources, bilateral communications were conducted via calls and emails, consultations/ expert guidance, the use of literature and related documents. It is also important to note that prior to collecting data from external sources, the existing data was identified and evaluated to (i) prevent duplication of efforts and (ii) request data based on any gaps identified.

During data collection, communication was key between the data collectors, model developers, and the data providers. No primary data was collected for this project, but secondary data was gathered from data providers in government and the private sector and delivered to model developers who thoroughly evaluated the data. The model developers determined whether the available input data required further granularity to achieve the desired modelling resolution. In some cases, further consultations were needed to clarify characteristics of the datasets, provide and/or to address apparent discrepancies, and/or to identify the feasibility or timeline for obtaining updated data. The data collectors then either created a virtual meeting with all participants or contacted the data provider through email or call.

In cases where there were limited or no national data available, regional data sources were used as an appropriate benchmark. Below is a table showcasing the mitigation actions and input data that were used in developing the LEAP and GACMO modelling framework for Antigua & Barbuda. Additionally, it gives detailed information on the sources (literature, agencies etc) of the data and contact details for point persons to connect with, in the search for any updated data.

Limitations to data collection

Unavailability of national data

As with most SIDS, the data collection process presented many limitations. Most notably, the general unavailability of specific types of data was a major challenge. Where first-hand data was unavailable, regional or international data were used as a proxy as inputs for the models. The reason for this unavailability is typically explained by reasons including, but not limited to:

- Human resources – Generally, there has been difficulty allocating resources to conduct data collection throughout national government agencies in Antigua & Barbuda. These limitations often result in the lack of critical data to assist with the improvement of various processes within the agencies.
- Data Handling and Storage – In many cases where data is being actively collected, the data files are not digitised, which leaves them susceptible to damage or loss. Often this lack of digitisation results in an inability to share data that might be available quickly and efficiently. In addition, because all data is not digitised, there is a lack of metadata to accompany datasets.
- Inconsistency – For data that has been collected, there may be time series inconsistencies in the data collected. These inconsistencies leave data gaps which then must be filled through assumptions for modelling purposes.
- COVID-19 Pandemic - This unforeseen event inhibited data providers from conducting their own major data collection processes rendering data for some model parameters to be less current or representative of current national conditions than desired.

Despite these limitations in national data collection efforts, improvements are being made and planned to improve data quality for future modelling use.

Restricted data and Confidentiality

There were cases where the data required was available, but acquisition entailed a lengthy process due to sensitivity of select datasets. Some data were only partially collected due to confidentiality issues. Additionally, during the data collection process other identified datasets/information were restricted from sharing as they were in a draft

stage. For example, the updated NDC for Antigua & Barbuda was being finalized during the initial model development process and had not been accepted by Cabinet. Therefore, it took some time before it could be finalized and the assumptions in the NDC incorporated into the two modelling tools.

Recommendations for future data collection

Considering the challenges/limitations of data collection, a few steps are recommended to improve and expand future data collection efforts as Antigua & Barbuda's mitigation actions and targets continue to be assessed.

i. Institutional Arrangements – These arrangements are typically implemented between agencies during the GHG inventory compilation processes, although formal and informal agreements can be established for any type of data collection and sharing between agencies needed to support national GHG mitigation MRV, and policy analysis work. Arrangements can be in the form of formal legal mandates or informal memorandums of understanding (MOU). Whatever the chosen form, these agreements should be mutually beneficial where both agencies bring forth their needs regarding data and data sharing and come to a decision on how that sharing will be structured moving forward. This simplifies the task of acquiring data from an agency. An MOU between the DOE and Statistics Division has recently been signed and will assist with demographic and residential data sharing. Being the only standing institutional arrangement, additional arrangements between the DOE and agencies such as the Antigua and Barbuda Transport Board, Ministry of Agriculture Extensions Division and APUA should be agreed upon and implemented. These agreements would put in place quality control and quality assurance requirements, along with timelines for regular exchanges of data. The availability of updated datasets like electrical energy production, public and commercial and private transportation, and livestock tallies will only help to raise the quality of the model outputs. Regularly scheduled exchanges of the data identified in institutional arrangement agreements allow for a "living database" that will support the ongoing updating and of mitigation models, so they are available for on demand policy analysis and avoid the extra burden of ad hoc (i.e., rushed and lower quality) data requests.

ii. Evidence – Providing stakeholders with evidence of the need for the data they collect is a method to secure their participation in future data collection/sharing activities for mitigation modelling. Keeping stakeholders involved and aware of how the data provided is used during mitigation modelling and showcasing how it assists with projections and policymaking is beneficial for transparency and building trust. A suggestion is to host quarterly or yearly stakeholder update meetings to inform data providers of the ways in which the data has been used for modelling scenarios or informing policies. Alternatively, information could be shared with the stakeholders through media such as social media posts or newsletters.

iii. Capacity Building – The Monitoring, Evaluation and Data Management Unit (DMU) of the DOE should, when possible, continue to collaborate with other government agencies and private sector entities to build capacity in data collection methods, data storage and data management systems. As their capacities are increased, even with limited human resources, these agencies will be better able to improve the quality of the primary data collection tasks they administer. These collaborations can take the form of workshops or data drives.

The Annex was deleted from this document as it contained personal information