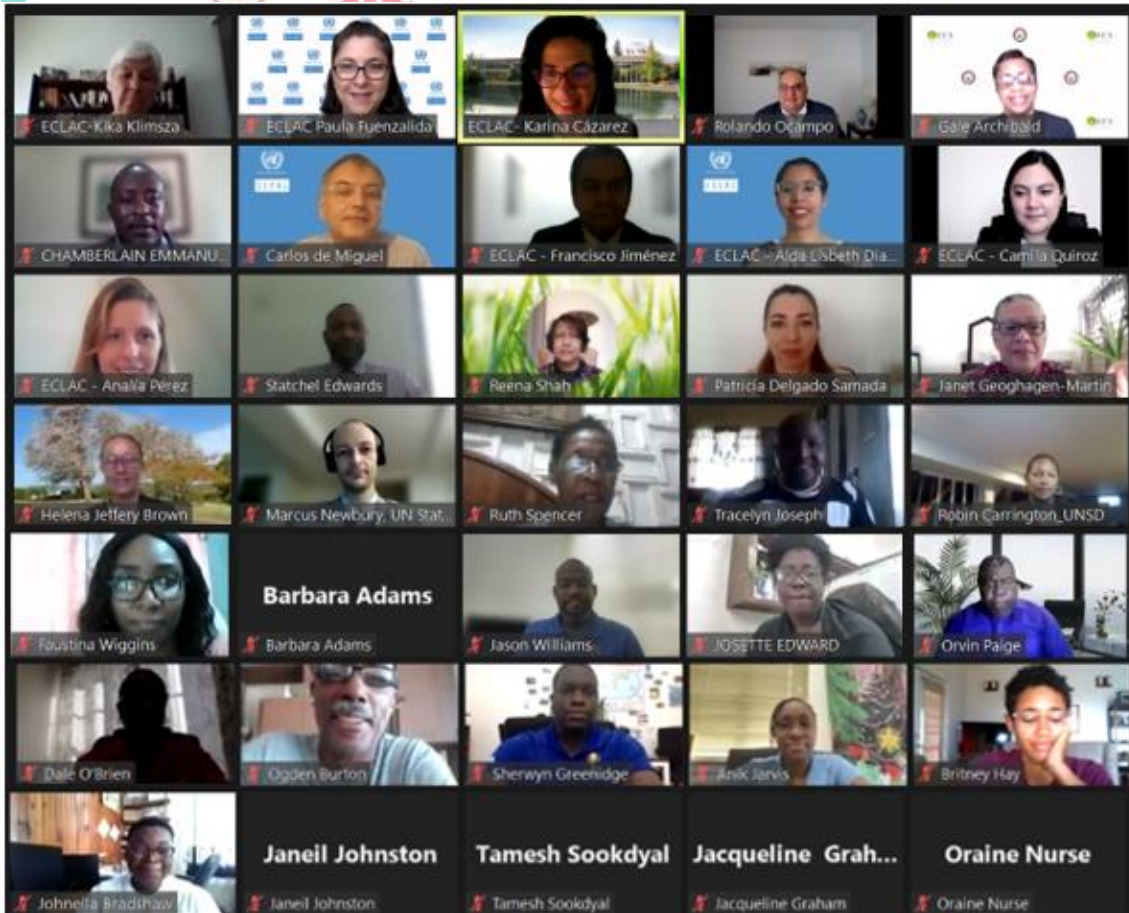


National online workshop: Generating climate change and disasters indicators for policy decision-making in Antigua and Barbuda



December 2021



Antigua and Barbuda
Statistics Division



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I. The workshop in numbers



3 days of workshop
03, 06 and 07 Dec
2021



40 registered participants
from **14** different national
institutions



4 indicators - and their Methodological
Sheets - on climate change and
disasters built during the workshop

II. Objectives of the workshop

- Train the participants to build selected environment, climate change and disasters indicators and its metadata.
- Identify data and capacity gaps to improve the Environmental Information System (EIS) and build a regional resilience platform.
- Have a better understanding of how geospatial data can enhance the use of environment, climate change and disasters indicators for effective decision making.

III. Main outcomes of the workshop

- Four indicators and the methodological sheets of three of them were developed during the workshop. These indicators correspond to the Drivers, Vulnerability, Mitigation and Adaptation areas of the schematic framework developed by the IPCC that summarizes the complexity of climate change as a sequence of events:
 - I. **Drivers** - Relationship between livestock and agricultural land 1974 & 1984
 - II. **Vulnerability** – Dependency on fossil fuels for electric generation
 - III. **Mitigation** - Renewable energy share in the total electricity generated
 - IV. **Adaptation** - Proportion of important sites for terrestrial and marine biodiversity that are covered by either protected areas and areas in process to be protected in Antigua and Barbuda
- A space for **Inter-institutional cooperation** was enabled as the Statistic Division from the Ministry of Finance, Corporate Governance & Public Private Partnerships and the Department of the Environment from the Ministry of Health, Wellness & The Environment from Antigua and Barbuda provided the opportunity to interact with key stakeholders from various sectors. These discussions focused on the environment, climate change, and disasters statistics from key stakeholders such as the National Office of Disaster Services (NODS), the Meteorological Services (MET), and civil society organizations.



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IV. Summary of the sessions

DAY 1

0. Inaugural session and introduction to the workshop

The authorities from the Department of the Environment of the Ministry of Health, Wellness & The Environment of Antigua and Barbuda, the Statistic Division of the Ministry of Finance, Corporate Governance & Public Private Partnerships , the CARICOM Secretariat, the Environmental Sustainability Division of the Organisation of Eastern Caribbean States (OECS), the Environment Statistics Section of United Nations Statistics Division (UNSD), and the Statistics Division of the Economic Commission for Latin America and the Caribbean (ECLAC) opened the workshop by welcoming the participants and highlighting the following aspects:

- **The need for accurate, reliable, and updated data** - Antigua and Barbuda is highly vulnerable to climate-related events that have exacerbated over recent years, such as increasing temperatures, sea-level rise, severe tropical cyclones, and prolonged droughts. Therefore, the government recognizes the responsibility to track and monitor their occurrences and the need for accurate, reliable, and updated data on the environment, climate change and disasters.
- **The National Environment Data and Information System (NEIS)¹** – Antigua and Barbuda recently launched its National Environmental Information System that contributes to data that is freely available to the public. It is foreseen that the indicators developed from the workshop will be featured on the NEIS website under the appropriate Multilateral Environmental Agreement (MEA).
- **The need to strengthen the national statistical system** – reduced financial, technical, and human resources, and weak coordination between key data stakeholders, data producers and data suppliers constrain the availability of climate change data. There is an urgent need to improve dialogue and collaboration among key data actors to enhance the production, use and dissemination of environment, climate change and disasters statistics and indicators.
- **Antigua and Barbuda are working towards strengthening collaboration for better statistics** - The Department of Environment and the Statistics Division of Antigua and Barbuda collaborate to improve the availability and scope of the environment and climate change statistics needed for policy formulation and decision-making. Apart from creating the NEIS that has contributed to improved coordination of stakeholders and access to data, both agencies have recently signed a memorandum of understanding (MoU) to improve the availability of statistics.
- **The importance to incorporate existing regional frameworks** – these frameworks such as the regional framework for achieving development resilient to climate change, and the Liliendaal declaration on climate change and development, outline the concerns, issues, and actions to take in the Caribbean disasters and climate change context. This approach will contribute to

¹ <https://neis.environment.gov.ag/>

generating more effective indicators to inform decision making and policies for the region and the individual countries.

- **A call for an urgent yet coherent multidimensional approach** to adaptation and resilience-building at national and regional levels. A three-pathway strategy to achieve this in the region includes improving access to data and information to increase actionable climate knowledge. These foresee consolidating a regional environmental information system that can interlink individual information systems of OECS Member States. Those members who do not have a system in place yet, the platform will serve as the primary portal ensuring cost efficiency and inclusion.

After the inaugural session, participants had the opportunity to share with the audience, through a polling platform, insights about their professional background. Figures 1 and 2 below highlights the main results obtained from the poll. Most of the participants were both data users and producers, and most of them were experts on economics and sustainable development matters.

Figure 1: Who is attending the workshop data users or producers?

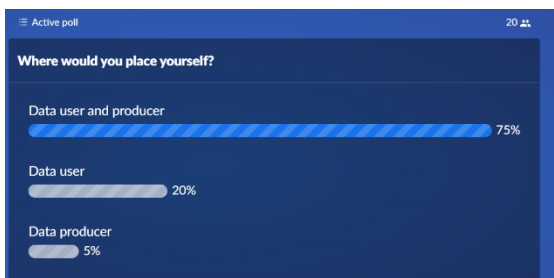


Figure 2: Participants professional experience



1. Climate change and disasters indicators for Antigua & Barbuda: Needs and priorities

- **Antigua and Barbuda's Environmental Challenges** – as a nation recognized as a SIDS, the country is highly vulnerable to high-intensity hurricanes, frequent droughts, higher temperatures, and sea-level rise. Moreover, it imports 100% of its fossil fuels for energy. Many of its original forests and ecosystems have been lost, affecting biodiversity and the indiscriminate disposal of waste and wastewater has impacted the ecosystems and biological features.
- **The State of Environment Report²** – Antigua and Barbuda published its first State of the Environment Report in 2021. The report has a list of indicators for various thematic areas such as climate change and atmosphere, land use, water, biodiversity, culture and heritage, cross-sectoral areas, energy, and environmental governance. Each of the themed sections in the report provides an overview of the existing state, trends, drivers and pressures, and the actions undertaken over time to protect, restore and enhance the environment.

² <https://environment.gov.ag/assets/uploads/attachments/5c8dc-final-soe-report-2021-compressed.pdf>



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- **The National Environmental Data & Information System (NEIS)³**- Antigua and Barbuda has recently launched its National Environmental Data Information System (NEIS), an online platform that will improve the country's reporting to regional and international conventions. The system is scalable, meaning that it can be extended to other Multilateral Environmental Agreements (MEAs) and it will contribute to the Regional Environmental Information System.
- **Major data gaps** - air quality, wastewater discharge, environmental health, certain agricultural datasets, and certain hydrology related datasets are areas with major data gaps and those that Antigua and Barbuda is working to strengthen.
- **The Global Set of Climate Change Statistics and Indicators** - The global set of climate change statistics and indicators serves as a framework with statistics, indicators, and metadata to support countries in preparing their own sets of indicators according to their priorities and resources to support climate action. It is organised according to the IPCC framework areas: drivers, impacts, mitigation, vulnerability, and adaptation. The set contains multi-purpose indicators to report to various global agendas such as the Paris Agreement, the SDGs, and the Sendai Framework.
- **Climate change and disasters statistics and indicators in the Caribbean** - Work on environment statistics in the Caribbean community started in 1999 through a UNSD/CARICOM project. Since then, various countries such as Antigua and Barbuda, Belize, Jamaica, Suriname, and Saint Lucia have strengthened their capacities to produce environment and climate change and disasters statistics and indicators. One of the main products of these efforts is the regional publication on environment statistics, first published in 2002, and the first publication on Climate Change Statistics in 2020. There is also a CARICOM Advisory Group on Statistics and a CARICOM Programme in Environment and Social/Gender Statistics. Currently, CARICOM is working on strengthening the compilation of Agriculture, Gender and Environment statistics in the region.
- **The need to rethink statistical capacity in the Caribbean** – Capacity was interpreted as training the NSO with no strategic, not linked to multi-year programme or National Statistics Development Plan (NSDS). Capacity was focused on collection and compilation, ignoring the broad statistical business process and a high cost mainly due to travel expenses. OECS is rethinking statistical capacity using a holistic approach from data production to data dissemination. The Covid-19 pandemic highlighted the weak elements of National Statistical Systems (NSSs). It demonstrated the importance of communication, advocacy, format and use of data. Also, new skills to manage large data and data science need to be considered. NSDS are a leverage tool to strengthen capacities in a sustained way and should accompany the National Development Plans (NDPs). Building a robust Environmental Information System requires both data producers and users to be part of the capacity development process.
- **The Escazú Agreement** - A Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean was entered into force on the 22nd April 2021 and is open to the 33 Latin American and Caribbean countries. The

³ <https://neis.environment.gov.ag/>



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Agreement offers strategic guidance for policy formulation and environmental governance and focuses on making environmental information available for policymaking. There is a strong emphasis on capacity building and cooperation for better data, participation, and decision-making. Antigua and Barbuda were one of the first countries to sign in (2018) and ratify (2020) the Agreement.

2. What is needed to produce climate change and disaster statistics and indicators?

- **The Framework for the Development of Environment Statistics (FDES)** - The FDES is a tool to support strengthening capacity to develop environment statistics in countries. Using a common statistical framework, helps to enhance comparability and availability of environment statistics. The framework covers issues and aspects of the environment relevant for policy analysis and decision-making, such as climate change. Embedded into the FDES is the Basic Set of Environment Statistics, a set of statistics to support countries to prioritize the development of environment statistics. Another tool derived from the FDES is the Environment Statistics Self-Assessment Tool (ESSAT) which can assist countries in diagnosing the state of their environment statistics and national needs.
- **Data, statistics, and indicators.** Although often used as a synonym, data, statistics, and indicators are different. Transforming data into statistics requires the application of a statistical processing operation based on validation rules and quality standards. Once statistical series are available, these are used as inputs to build indicators. Production of statistics and indicators must be demand-driven, led by national policies and objectives.
- **Relevant statistical classifications and typologies.** Statistical classifications are a set of discrete, exhaustive, and mutually exclusive categories that describe the characteristics of a particular population. Classifications and typologies are necessary to ensure the comparability of statistics between countries and within a country.
- **The geospatial dimension of environment, climate change and disaster statistics and indicators.** Geospatial information allows better understanding of where and what phenomena are occurring. The ability to analyse and find spatial patterns in data to provide powerful insights for decision-making is possible through a combination of local data and geospatial tools. Different sources such as cartography, census and surveys, administrative records, remote sensing, monitoring stations, scientific research, modelling, and crowdsourcing are used to produce geospatial environment, climate change and disasters information for decision-making. Some of these sources are open data, for example, Amazon web services⁴ and Google Earth Engine⁵.
- **Types of data sources used in Antigua and Barbuda:**
Strengths: The most used data sources for environment, climate change and disasters statistics are administrative records, population and housing censuses and surveys. Antigua and Barbuda

⁴ <https://aws.amazon.com/es/earth/>

⁵ <https://earthengine.google.com/>



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has a national environment statistics database that DOE has developed with technical guidance from the Statistics Division. There are synergies between the Statistics Division, DOE, and other stakeholders. As for the national data, in some cases, national and local data sources are used instead of the regional or international ones because using the national data gives more accurate data as opposed to global datasets, which sometimes have a lower resolution/precision.

Weaknesses: The data collection process could be extensive and time-consuming because of environmental factors. For example, face to face surveys might be interrupted by storms, rain, and other environmental factors. Also, surveys are expensive, and there is a need for more human and financial resources to conduct needed surveys. Another big challenge is the inconsistency of environment statistics from stakeholders to the Statistics Division and DoE. Often, data is not processed in the correct format, and some stakeholders do not follow international standards and guidelines.

A way forward to address those challenges is developing Memorandums of Understanding with critical stakeholders, more significant synergies, proper networking between stakeholders, standardising data collection, training, developing methodological sheets and strengthening the National Statistical System in Antigua and Barbuda and advocating and communicating the official statistics.

DAY 2

3. How to produce climate change and disaster indicators?

- **Statistical processing.** Transforming data into statistics and indicators requires a comprehensive process that involves data collection, validation, structuring, description, a compilation of statistical series, selection and processing of statistics, aggregation, and a combination of different statistics to build an indicator. Environmental, climate change and disasters data can be obtained from various sources such as censuses, surveys, administrative records, remote sensing, monitoring systems, scientific research and estimation and modelling. Data validation encompasses several steps and different techniques and criteria according to the data source and theme. Another critical step is elaborating metadata to provide the data users with information about the statistics (e.g., definitions, units, survey methods, etc.).
- **ECLAC's methodology to produce environment, climate change and disasters indicators.** ECLAC's methodology is based on an inter-institutional collaborative approach. The method to build indicators consists of three stages. First, the preparation stage involves training and review of institutional context and conceptual frameworks. The second stage covers the design and building of an indicator set. A and the final stage corresponds to the institutionalization and updating process of the built indicators.

Insights from the Q&A and discussion session:

After the theoretical session, the audience participated in an interactive session using Slido where they share their main takeaways, challenges and solutions being implemented in Antigua and Barbuda.

The follow figures summarise the results of the interactive session.

Figure 3: Main takeaways of the theoretical session

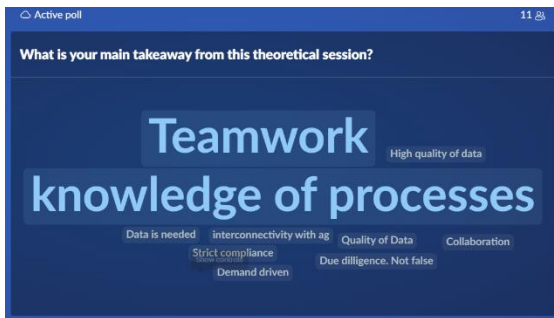


Figure 4: Major challenges to build new indicators

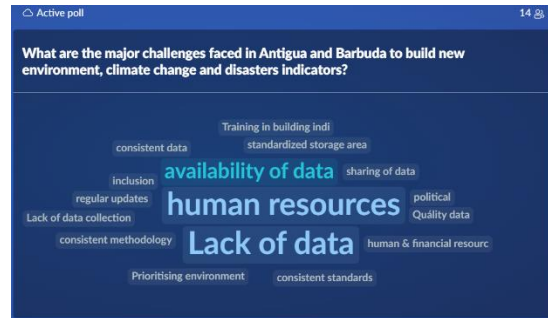
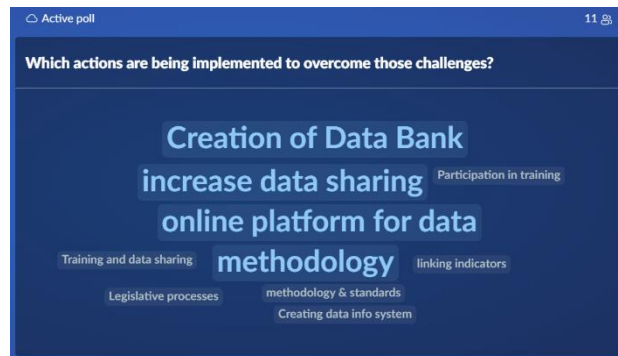


Figure 5: Actions being implemented to overcome the challenges



4. Building selected indicators with national data (Part I)

In this practical session, participants were divided into four groups where they worked together and used national data to build the following climate change and disasters indicators based on three of the five areas of the IPCC framework:

- I. **Drivers** - Relationship between livestock and agricultural land 1974 & 1984
- II. **Vulnerability** – Dependency on fossil fuels for electric generation
- III. **Mitigation** - Renewable energy share in the total electricity generated
- IV. **Adaptation** - Proportion of important sites for terrestrial and marine biodiversity that are covered by both protected areas and areas in process to be protected in Antigua and Barbuda

DAY 3

5. Results of quiz on Methodological Sheet

On the third day, participants started the workshop by answering an interactive quiz related to the methodological sheet. This activity allowed participants to define a methodological sheet, understand its relevance, and identify the aspects contained in a methodological sheet. Figure 6 shows (in the green bars) that most of the participants who took part in the activity answered all questions correctly.

Figure 6: Methodological sheet quiz results



6. Methodological Sheets for climate change and disasters indicators

- **Going through the content of a Methodological Sheet** – participants were guided through all twenty-one fields that form the methodological sheet template proposed by ECLAC. These fields cover content such as the name, description and characteristics of the indicator, its scope, limitations, relevance, graphical representation, periodicity, and other relevant information to the indicator's data.



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7. Building selected indicators with national data (Part II)

This last session was a practical exercise where participants were divided into three working groups to develop the methodological sheets of the indicators, they had built the previous day. The three methodological sheets were then presented in plenary by a representative of the team.

Closing remarks

Representatives from ECLAC's Statistics Division, the Department of Environment, and the Statistics Division of Antigua and Barbuda closed the workshop by expressing their gratitude to all the participants for their work during the three-day workshop and emphasised the following:

- Having a platform like this workshop is an excellent opportunity for **strengthening the National Statistical System** in Antigua and Barbuda. This space must be used to network and have the interconnectivity to have proper data to inform decision making.

V. Useful links

- **Workshop materials** (agenda and presentations):
<https://www.cepal.org/en/events/antigua-and-barbuda-national-workshop-generating-climate-change-and-disasters-indicators>
- **Manual 61: Methodological Guide for developing Environmental and Sustainable Development Indicators in Latin American and Caribbean countries:**
https://www.cepal.org/sites/default/files/publication/files/37890/SLCL3021_en.pdf
- **Framework for the Development of Environment Statistics (FDES):**
<https://unstats.un.org/unsd/envstats/fdes.cshtml>
- **Basic Set of Environment Statistics:**
<https://unstats.un.org/unsd/envstats/fdes/basicset.cshtml>
- **Environment Statistics Self-Assessment Tool (ESSAT):**
<https://unstats.un.org/unsd/envstats/fdes/essat.cshtml>
- **Global Set of Climate Change Statistics and Indicators:**
https://unstats.un.org/unsd/envstats/ClimateChange_StatAndInd_global.cshtml
- **State of the Environment 2021 – Antigua and Barbuda and Redonda:**
<https://environment.gov.ag/assets/uploads/attachments/5c8dc-final-soe-report-2021-compressed.pdf>
- **National Environmental Data & Information System (NEIS):**
<https://neis.environment.gov.ag/>