NATIONAL SYSTEMS WORKSHOP

Deliverable 3.B

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Introduction

The Republic of Vanuatu has negligible GHG emissions and the forest sector act as a net sink; however, the Government of the Republic of Vanuatu is fully committed to effective, and transparent implementation of the Paris Agreement (PA). In order to comply with its treaties under the UNFCCC and the PA, Vanuatu prepared and submitted National Communication (NC) reports – NC1 (30 Oct 1999), NC2 (30 Aug 2016), and NC3 (22 Mar 2021), the First Biennial Update Report (BUR), (16 Dec 2021); Intended Nationally Determined Contribution (INDC), (29 Sept 2015).

The Initiative for Climate Action Transparency (ICAT) aims to help countries better assess the impacts of their climate policies and actions and fulfil their transparency commitments. It does this by increasing the overall transparency capacities of countries, including the capacity to assess the contribution of climate policies and actions on countries' development objectives, and providing appropriate methodological information and tools to support evidence-based policymaking. ICAT's innovative approach is to integrate these two aspects.

ICAT focuses on countries that can highlight the benefits of increased transparency to demonstrate policy impact and evidence-based action. ICAT generates evolving methodological guidance and extracts best practices, to be publicly available to all actors, increasing the global knowledge base. ICAT's work is country-driven, efforts build on existing MRV systems and knowledge in countries and complement previous or ongoing activities by other initiatives, where applicable. Support provided is tailored to the country's context and priorities. ICAT´s work is aimed at engaging national expertise as much as possible while encouraging peer-to-peer learning.

ICAT is supporting Vanuatu in building national capacity for compiling GHG inventories, building a foundation for the NDC targets and tracking, and creating the evidence platform for the climate policies through improving Vanuatu's national inventory system for collecting GHG-related data and estimating GHG emissions from the categories prioritized by Vanuatu.

The project will discuss the potential for extending the sectoral coverage and fine-tuning the national targets by using the national data as the evidence base. The project will propose the potential indicators for the NDC tracking in light of the potentially extended targets and identify the required data sets and the applicable institutional arrangements to enable the relevant data.

This part of the project deliverable involves training on National Systems Guidelines for the national experts facilitated by the GHGMI from 9th – 10th October.

Training Program

The National Systems Workshop of ICAT project was held in Port Vila on the 9th to the 10th of October 2024 at the Melanesian Hotel. The Workshop was facilitated by the Greenhouse Gas Management Institute (GHGMI) as the implementing partner of the project. The workshop gathered national experts of the ICAT project to build national capacity in National Systems for prioritized sectors in Vanuatu. These two days training developed the knowledge of the experts in understanding the key elements of the national system for GHG inventory, key components of

institutional arrangement, key features of inventory, cross- sectoral issues, uncertainty analysis, key category analysis, and information system.

Day 1

The first day of the training covered the key elements of the national systems for GHG inventory which includes:

- ➢ Legal basis
- ➢ Management structure and Institutional arrangements
- ➢ Resources
- ➢ Financial support systems
- ➢ Technical support systems
- ➢ QA/QC system

In addition, key components of institutional arrangements were discussed thoroughly, outlining the *organization mandate and legal background* which is fostering collaboration among organizations and individuals. *Expertise*, engaging qualified experts for effective data collection and processing. Sourcing out *data flows* to be able to manage datasets and actively identify stakeholders who provide necessary data. Implement systems for efficient data production, summarization, and archiving which are under *systems & tools*. Also, *Stakeholder Engagements* is a fundamental component which involve public, local communities, self-governments, businesses, and decision makers in the data collections process.

Moreover, cross-sectoral issues were conversed, and the necessity of Quality Assurance and Quality Control (QA/QC) was discussed. The purpose of QA/QC strategy is to enhance transparency, consistency, and accuracy in national GHG inventories. There is a great need in comprehensive documentation of QA/QC roles and the verification processes for precise reporting measures.

Day 2

The final day of the National systems workshop covered sessions on Uncertainty Analysis. Uncertainty is the lack of knowledge regarding the true value of a variable, and often described using density function. It is important because it identifies weakness in estimates and their sensitivities, guiding national efforts to reduce inventory uncertainties and inform methodological choices. The main causes of uncertainty are as follows:

- Lack of Data
- Model
- Misreporting and Miscalculation definition of category incorrect
- Random error
- Measurement error
- Lack of representatives of data/missing data

However, there two fundamental methods for calculating uncertainty, these are:

1. Error propagation
2. Monte Carlo method

Furthermore, reporting on uncertainty analysis will require key components that include uncertainty values at various levels, causes and sources of uncertainty, methods used, and results from expert judgment encoding. Uncertainty analysis should be updated when methodologies change, rather than annually.

Key Category Analysis (KCA) was also described and discussed. It identifies categories prioritized within the national inventory system due to their significant influence on total greenhouse gas emissions. The purpose of KCA is to inform methodological choices and identify categories requiring attention for resource allocation and inventory improvement[1].

In addition, the core data components of an information system for data management to support activity data and emissions calculations were discussed. The key components included:

- Activity data
- Emission factors
- Parameters affecting the activity data and the choice of emission data but not directly used in the emissions calculations (e.g., climate and ecological parameters, fuel characteristics, etc.)
- Metadata
- Uncertainty

There are also data collection principles that need to be considered[2]. Data management includes data collection, processing, emission estimation, and reporting, with a focus on quality assurance and control (QA/QC). The data management approaches and the IPCC splicing techniques which can be found here, (https://www.ipcc-nggip.iges.or.jp/public/2006gl/vol1.html), were explained concerning filling data gaps to maintain time series consistency.

Finally, the workshop concluded with a discussion on future perspectives regarding the growth and extension of national expertise as part of the national system.

Conclusion

The objective of this training was well achieved as the national experts came in with little knowledge regarding National inventory systems. By the end of the training, the national experts accomplished the objectives and mastered the basic techniques and tools to identify key components and describe national inventory systems and applied this knowledge to describing Vanuatu's national inventory system. All experts reflected that this technical training was delivered and facilitated well in a manner that matched their level of understanding and was easy to absorb.

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[1] *See Annex B*
[2] *See Annex B*

The training was successful, however, if given a follow-up opportunity, we recommend having an extended training session (at least, 3 – 5 days) to develop a deeper understanding of the mechanisms of the national inventory system.

Meeting Title: National System

Date: 9 October 2024
Location: Melanesian Hotel
Time: 9:30am -5:45pm
Prepared by: [Florancza Abel]

Attendance

Present:

1. Olia Glade
2. Zechariah Bani
3. Johnethy Morris
4. Anita Kay
5. Florancza Abel

Absent:

None noted

Agenda

1. Key Elements of the National System for GHG Inventory
2. Key Components of Institutional Arrangements
3. Key Features of Inventory
4. GHG Inventory Process
5. Cross-Sectoral Issues: QA/QC System and Plan
6. Group Discussion on QA/QC Implementation

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Session 1: Key Elements of the National System for GHG Inventory

Legal Basis:

- A Memorandum of Understanding (MoU) is to be established between climate change and relevant stakeholders, requiring signatures from both parties.

Management Structure and Institutional Arrangements:

- Ensure active involvement of responsible individuals in data collection and provision.

Resources:

- Identify experts and consultants for task execution. Emphasize the importance of building expertise for training new professionals.

Financial Support Systems:

- Secure necessary funding for project implementation, ensuring transparency regarding the use of funds.

Technical Support Systems:

- Develop comprehensive procedures, including methodology, information support, and archiving of documents.

QA/QC System:

- Establish quality control measures involving qualified individuals for data acquisition. Incorporate external reviews for quality assurance, detailing roles, timelines, and responsibilities.

Session 2: Key Components of Institutional Arrangements + Session 3

Organization Mandate and Legal Background:

- Foster collaboration among organizations and individuals.

Expertise:

- Engage qualified experts for effective data collection and processing.

Data Flows:

- Manage datasets and actively identify stakeholders who provide necessary data.

Systems & Tools:

- Implement systems for efficient data production, summarization, and archiving.

Stakeholder Engagements:

- Involve public, local communities, self-governments, businesses, and decision-makers in the data collection process.

Key Features of Inventory

Report Narrative:

- Prepare a comprehensive national inventory report for submission to UNFCCC, covering inventory arrangements, QA/QC processes, and improvements.

Sectoral Inventory Reports:

- Include detailed reports for sectors such as Energy, IPPU, Agriculture, Waste, and LULUCF.
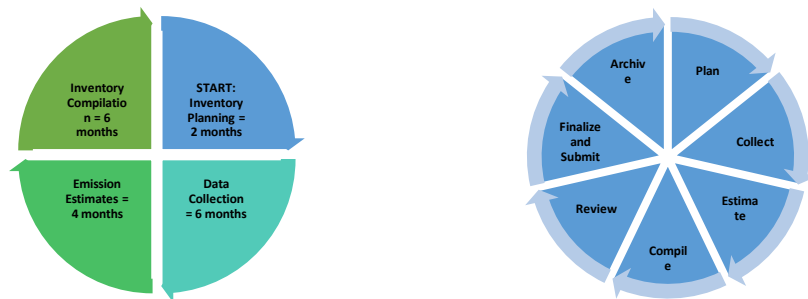
Reporting Tables:

- Develop common reporting tables for emissions categorized by sector and gas type.

National Inventory Report under the ETF:

- Outline responsibilities of the inventory agency, methodologies, and estimates for various greenhouse gases.

GHG Inventory Process

- Outline detailed timelines and procedures for planning, data collection, emission estimation, and inventory compilation. Ensure systematic documentation of uncertainties and assumptions.

Session 4: Cross-Sectoral Issues: QA/QC System and Plan

- Discussed the necessity of a QA/QC strategy to enhance transparency, consistency, and accuracy in national GHG inventories. Emphasized comprehensive documentation of QA/QC roles and verification processes.

Session 5: Group Discussion

- Facilitated a group discussion on the QA/QC table template, reinforcing the understanding and implementation of QA/QC principles.

Next Meeting

Date: 10 October 2024
Time: 9:30am – 5:45pm
Location: Melanesian Hotel

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Meeting Title: Cross-Sectoral Issues
Date: 10 October 2024
Location: Melanesian Hotel
Prepared by: [Florancza Abel]

Attendance

Present:

1. Olia Glade
2. Zechariah Bani
3. Johnethy Morris
4. Anita Kay
5. Florancza Abel

Absent:
None noted

Agenda

1. Uncertainty Analysis
2. Key Category Analysis (KCA)
3. Information System
4. Plenary Discussion on Growing and Extending National Expertise

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Proceedings

Session 1: Uncertainty Analysis

- **Definition of Uncertainty:**
  Uncertainty refers to the lack of knowledge regarding the true value of a variable, often described using a probability density function (PDF).
- **Importance of Uncertainty Analysis:**
  It identifies weaknesses in estimates and their sensitivities, guiding national efforts to reduce inventory uncertainties and inform methodological choices.
- **Causes of Uncertainty:**
  - Lack of Data
  - Model
  - Misreporting and Miscalculation definition of category incorrect
  - Random error

- Measurement error
- Lack of representativeness of data/missing data
  - Best available estimates, including census and survey data, published data (e.g., default IPCC values), and expert judgment.
  - Encoding expert judgment into uncertainty values via PDF.
- **Methods for Calculating Uncertainty:**
  1. **Error Propagation:**
     - Use of simple spreadsheets and guidelines; applicable when standard deviation/mean < 0.3.
  2. **Monte Carlo Method:**
     - More complex, requiring specialized software; suitable for large uncertainties and non-normal distributions.
- **Reporting on Uncertainty Analysis:**
  Key components include uncertainty values at various levels, causes and sources of uncertainty, methods used, and results from expert judgment encoding.
- **Frequency of Analysis:**
  Uncertainty analysis should be updated when methodologies change, rather than annually.

Session 2: Key Category Analysis (KCA)

- **Definition of KCA:**
  KCA identifies categories prioritized within the national inventory system due to their significant influence on total greenhouse gas emissions.
- **Purpose of KCA:**
  - Informs methodological choices.
  - Identifies categories requiring attention for resource allocation and inventory improvement.
- **Approach to KCA:**
  - Conducted at decision tree levels using the 2006 IPCC Guidelines (Table 4.1).
  - **Level Assessment:** Categories summing to 95% of total emissions should be prioritized.
- **Trend Assessment:**
  Identifies categories with significant trends differing from the overall inventory.
- **Reporting on KCA:**
  Results should include base year and latest year data, detailing both quantitative and qualitative analyses.

Session 3: Information System

- **Core Components of Information System:**
  - Activity data, emission factors, associated data, metadata, and uncertainty.
- **Data Collection Principles:**
  - National and direct data preferred over international and surrogate data.
  - Public data is favoured; peer-reviewed data is prioritized.

- **Data Processing and Reporting:**
  The process includes data collection, processing, emission estimation, and reporting, with a focus on quality assurance and control (QA/QC).
- **Data Management Approaches:**
  - **Ad-hoc Approach:** Low functional capacity (e.g., paper-based records).
  - **Systematic Approach:** High functional capacity through automation and dedicated applications.
- **Time Series Consistency:**
  Emphasis on filling data gaps to maintain consistency.

Session 4: Plenary Discussion on Growing and Extending National Expertise

- A discussion on future perspectives regarding the growth and extension of national expertise as part of the national system.