Validation workshop for ICAT Botswana – Energy and Transport

ICAT Initiative for Climate Action Transparency

Initiative for Climate Action Transparency – ICAT validation workshop for the Energy and Transport sector

Deliverable #6

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Acronyms

BUR	Biennial update Report
DoE	Department of Energy
EFT	Enhanced Transparency Framework
GHGs	Greenhouse gases
ICAT	Initiative for Climate Action Transparency

GoB	Government of Botswana
MoA	Memorandum of Agreement
MoU	Memorandum of Understanding
MRV	Measuring, Reporting and Verification
NDCs	Nationally Determined Contributions
PV	Photo Voltaic
SB	Statistics Botswana
TJ	Terajoules
TWGs	Thematical Working Groups
UNEP-CCC	UNEP Copenhagen Climate Centre

Introduction

This report is for the validation workshop for the Initiative for Climate Action Transparency (ICAT) project for the energy sector for the Government of Botswana. The Government on Botswana (GoB) with support from the UNOPS Copenhagen Climate Centre are implementing the ICAT project for the energy sector (stationary and non-stationary sector). The ultimate objective of the project is to develop and enhance capacity for the GoB to measure the impacts of its policies and efforts on its Greenhouse gases (GHGs) emissions as per the NDCs in a transparent manner. Furthermore, these policies and efforts are to be reported publicly and transparently, thus fostering greater transparency, effectiveness, trust and ambition in climate policies globally. Consequently, the ICAT project in Botswana is aimed at fostering greater transparency in reporting its GHG emissions as per its nationally determined contributions (NDCs). This ambition is aligned and consistent to the Paris Agreement and its Enhanced Transparency Framework (ETF). Thus, the ICAT project aimed at creating an enabling environment to strengthen the current institutional arrangement and legal frameworks to ensure that the current measuring, reporting and verification (MRV) tools are transformed to ETF.

To achieve the intended objective of strengthening the institutional arrangements and legal framework to enhance greater transparency in reporting NDCs targets, the ICAT project had a set of specific tasks as follows:

- MRV needs and gaps assessment report;
- Analysis of existing MRV/transparency system and related support initiatives in the country;
- Support regular update of the MRV/transparency initiatives;
- Finalize work plan for ICAT support based on the needs and gaps assessment report;
- Provide an analysis on the recommendation to strengthen the institutional arrangements for coordination of the national MRV/transparency system;
- Support Botswana Ministry of Environment, Natural Resource Conservation and Tourism in tracking MRV/transparency initiatives and report support received in BUR;
- Support Botswana Ministry of Environment, Natural Resource Conservation and Tourism to set up a steering committee for coordination of international support to MRV/transparency;
- Support Botswana Ministry of Environment, Natural Resource Conservation and Tourism to set up a Technical Management Unit for the national MRV/transparency system;
- Application of selected ICAT guidelines such as solar PV for household use either nationally or in selected communities, prioritized by the Government of Botswana;
- Identify links and synergies with other support initiatives in Botswana to ensure ICAT outcomes are sustained;
- Develop an MRV/transparency tracking tool for NDC implementation in the energy sectors;
- Provide suggestions for the policy and institutional framework roadmap;
- Support the government to organize project-related workshops facilitate and provide workshop minutes and reporting (after the workshop); and,
- Support the team of international experts in the provision of training and capacity-building support to the country.

Project deliverables

The project has 6 deliverables which were submitted and had to be validated hence purposed of this validation workshop. The 6 deliverables that have been submitted are:

- Deliverable 1: Report on situational analysis on MRV mechanisms in the relevant institutions and relevant climate change data and information currently generated, also taking the information's quality and frequency into consideration and which gaps exist
- Deliverable 2: Report consolidating the inter-institutional consultations and policy/strategy analysis, the method and summary of each consultation and analysis
- Deliverable 3: Report on information necessary to track progress made in implementing and achieving Botswana's NDC, based on the Modalities, procedures, and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement, and an analysis of the target and policies included in Botswana's NDC. A minimum of 20 pages focusing on developing a list of indicators for NDC tracking and monitoring in the energy sector
- Deliverable 4: Report of minimum 20 pages providing a barrier assessment and recommendations for improving MRV systems in the energy sector
- Deliverable 5: Report of minimum 20 pages providing a roadmap to ensure the sustainability of ICAT Botswana's outcomes, including key steps and instruments for facilitating data sharing and improving MRV systems in Botswana's energy sector
- Deliverable 6: Report documenting the Final Validation Workshop (agenda, presentations, list of participants, photos/videos) and main outcomes of the ICAT Botswana project

Consequently, the validation workshop was undertaken in fulfilment of the deliverable 6 and it is on the basis of the validation workshop that this report is produced.

Objectives of the workshop

The overall goal of the ICAT validation workshop was for the reports produced under the ICAT project to be reviewed by the stakeholders and validated for adoption. This was deemed critical for the continuity of the ICAT project as the adopted deliverables would then be implemented.

The second objective of the workshop was to provide a half-day training on GHG Abatement Cost model (GACMO). The need for the second training was realised following the first training on the NDC training tools that have been developed under this project.

The Workshop programme and agenda

The workshop was held at Aquarian Tide Hotel from the 13th of February to the 15th of February 2023. The programme started at 09:00 to 16:30. Annex 1 depicts the validation workshop programme. The workshop attendee list is annexed in the report and constituted stakeholders from various governmental departments and business sector.

Presentation of the deliverables

The presenters for the validation workshops were:

- Alejandro Regatero Labadia UNEP-CCC
- Ivana Audia UNEP-CCC
- Dr Peter Zhou consultant for the Transport sector
- Dr Sennye Masike Consultant for the Energy sector

The validation started with opening remarks from the Department of Meteorological Services (DMS) as presented by Balisi Golopang which was followed by introduction of the participants. This was followed by Ivan Audia who introduced the ICAT programmes and its objective which in a nutshell is to increase the overall transparency capacities of the partner countries in assessing their contribution of climate policies and actions towards their NDCs. The speaker also noted that the ICAT provides appropriate methodologies and tools to support evidence-based policies. Effectively the speakers emphasised that ICAT aims to integrate guidance, capacity building and knowledge sharing to engage countries through common framework and tools.

This was followed by Labadia presentation who introduced the ICAT project for Botswana. The speaker presented the objectives of the ICAT projects, and the expected deliverables as highlighted in section 1.1. Furthermore, he eloquently summarised the combined 12 deliverables for the energy sector (stationary and mobile sectors)

Presentation on the energy sector (Stationary sources)

A high-level presentation was conducted on the 6 deliverables as listed above. The presentation highlighted salient and critical issues of the deliverables. These are highlighted under each deliverable.

Deliverable 1: Report on situational analysis on MRV mechanisms in the relevant institutions and relevant climate change data and information currently generated

The country has established a functional institutional architecture to implement climate change interventions and comply with UNFCCC requirements. The institutional arrangements constitute DMS, the National Climate Change Committee (NCCC) and the National GHG Inventory team. Furthermore, Statistics Botswana has been strategically included in the institutional arrangement as one of its statisticians has been included in the GHG inventory team.

In terms of legal framework, the country has developed policies and Acts that could enable data flow and exchange amongst the stakeholders. The existing legal framework instruments include, Botswana Climate Change Response Policy, National Energy Policy, Statistics Act of 2009, National Adaptation Plan Framework amongst others.

However, some limitation and weaknesses that required strengthening were identified. The recommendations to strengthen the institutional arrangements and legal frameworks included:

- Increase the National GHG inventory team.
- Set up a task group for each sector for the GHG inventory with the private sector represented in all the task groups.
- Strengthen the existing National GHG inventory team to undertake tracking the Adaptation and Mitigation to monitor implementation of the NDC.
- Build the capacities of the NCCC members and the national GHG inventory team to ensure that they effectively execute their mandate.
- Strengthen the legal frameworks on areas of institutional arrangements and data reporting/sharing, particularly the country's Statistics Act and Climate Change Response Policy.
- Develop a national strategy for mainstreaming the country's NDC into NDP.
- Establish a data management system for the NDC to be managed by the climate change focal point.
- Develop the QA/QC framework for the GHG emissions inventory.
- Strengthen the existing institutional arrangements to ensure that both the vertical and horizontal integration of the institutional arrangements are achieved.

Deliverable 2: Report consolidating the inter-institutional consultations and policy/strategy analysis, the method and summary of each consultation and analysis

This deliverable involved undertaking consultation with the stakeholders that have influence on the energy sector both directly and indirectly. A total of 20 institutions were consulted such as Department of Energy (DoE), Botswana

Oil, Botswana Energy Regulatory Authority (BERA), Botswana Power Corporation (BPC), Debswana etc. The consultation covered a wide range of aspects such as knowledge of the country's NDC, Paris Agreement and its Transparency Framework to suggestion on strengthening the institutional arrangements for improved reporting and transparency on the GHG emission inventory.

Some of the recommendations as suggested by the stakeholders to strengthen the institutional and legal frameworks included:

- Develop the MoA and MoU between the private and public sector on data sharing and information exchange on the NDC activities.
- Ensure that the private sector participation is fully enhanced by including its members in vital and strategic committees such as NCCC and sectoral working groups.
- Enforce the existing legal instruments particularly Statistics Act of 2009 to ensure data sharing and information exchange.
- Develop and operationalise the QA/QC framework for the country in line with the existing data quality assurance systems.
- Establish a QA/QC coordinator and link it to the sectoral working group and the technical management unit (TMU)
- Strengthen the DoE Statistics and Modelling unit to act as a technical management unit for the energy sectoral MRV
- Strengthen and widen the ToR for the NCCC to act as an inter-ministerial committee
- Develop the country's NDC financing strategy which will finance some aspects of the MRV system transition to ETF

Deliverable 3: Report on information necessary to track progress made in implementing and achieving Botswana's NDC

The presentation for the deliverable commenced by highlighting that the country has 13 identified mitigation measures covering exclusively the stationary energy sector. Consequently, the mobile energy sector, agriculture and forestry sectors have been excluded. Of the 13 sectors that have been identified, sustainable renewable risk mitigation initiative is listed amongst the sector, but its GHG emission reduction potential is estimated at 0. A total of 11 tracking tools have been developed consistent with the 2006 IPCC GHG emission inventory guidelines. The data requirement for tracking were identified as number of renewable units e.g., number of solar streetlight, number of solar boreholes, number of solar power stations, number of biodigesters, their capacity, sunshine hours in a year, avoided diesel consumption etc. This information is vital to estimate the energy production in Terajoules (TJ) which is the basic information for estimating the avoided GHG emissions as per the IPCC emission equations. The 11 tracking tools were presented for validation. The following are some of the recommendations that were made:

- The tracking tools should be used annually to track the country's NDC efforts. This will significantly improve data reliability and enhance transparency on reporting of the country's NDC.
- For the mitigation measures that use meters such as feed-in-tariffs, it is highly recommended that monthly readings are taken to calculate rather than estimate energy production.
- For mitigation measures that cover a wide range of stakeholders (household, commercial and public/government), the tracking tools should be used for each group as the scale of operations could be different.
- Statistics Botswana is tasked with collection, processing, analysis, dissemination and archiving of statistical information across the economy covering all major sectors. Thus, it is the lead data provider for mitigation measures. Therefore, it is important that Statistics Botswana is engaged at early stages on the data requirements for the tracking tools to ensure data availability and other stakeholders such as BITRI (solar streetlights), DoE (biogas), councils (solar streetlights), Ministry of Infrastructure and Housing

Development (retrofitting and solar appliances) and the Department of Animal Production (solar boreholes).

Deliverable 4: Report on barrier assessment and recommendations for improving MRV systems in the energy sector

Barriers are impediment for improving the MRV that will enable it to transit to the EFT. It is critical that the barriers are removed to create an enabling environment for the country to report its NDC mitigation efforts transparently. Some of the barriers that were discussed for validation and their classification are as follows:

- limited knowledge of the country's NDC and the Paris Agreement Transparency Framework. this barrier has categorised as high.
- Lack of institutional capacity - Most of the institutions indicated limited knowledge and skills in undertaking the GHG national inventory consistent with the IPCC methodology. The barrier was categorised as high.
- Lack of data and data gaps- NDC mitigation for the energy sector covers approximately 11 mitigation measures which require a lot of data. Some of the mitigation measures will be difficult to track with a high confidence level such as geysers, streetlights, boreholes. The barrier of data availability was categorised as high.
- Weak institutional arrangement on data and information exchange: there are no defined organisational mandates concerning NDC tracking and reporting due to lack of terms of reference (ToRs) for the institutions involved in the NDC mitigation implementation. This was categorised as medium.
- Limited trained personnel on GHG emissions inventory. The limitation was classified as being high.
- Low involvement and participation of the private sector. This was classified as high.
- Lack of financial resources. This barrier was classified as high.

Based on these findings, the following recommendations were presented to the stakeholders for validation:

- Develop and operationalise the stakeholder engagement strategy for NDC which will improve the stakeholders knowledge and their participation in the NDC.
- Training stakeholders on MRV/EFT and the IPCC guidelines.
- Establishing a Memorandum of Agreement (MoA) and a Memorandum of Understanding (MoU) on data sharing.
- Strengthening the legal framework for data and information sharing.
- Establish a data exchange platform to be managed by DMS in collaboration with Statistics Botswana.
- Establishment of the incentives such as carbon trading and sale of electricity to enhance private sector reporting.
- Development of the financing strategy for the NDC implementation and tracking.

Deliverable 5: Report on the roadmap to ensure the sustainability of ICAT Botswana's outcomes.

This is the last but one deliverable for the GoB ICAT project. It involved the development of the roadmap with its implementation plan. The table below which depict the core activities and strategic activities were presented to the stakeholders for validation.

Table 1: Roadmap for the stationary energy sector

Core activity	Specific activities	Milestone
Adoption of the NDC tracking tools	• Consultation workshops on NDC tracking tools	• Workshop conducted • Workshop report
Development of MoA/U on data sharing and MRV arrangement	• Consultations workshops amongst stakeholders (DMS, Statistics Botswana, private sectors), to identify roles and responsibilities	• MoA/U signed

Strengthening the energy thematic group/task group to take responsibilities of TMU	• An assessment of the current structure of thematic group structure, roles and responsibility • The current roles and responsibilities • Recommend on additional members for strengthening	• Established fully functional strengthened energy thematic working group/task group • ToRs for the thematic working group including MRV/ETF system
Establish a steering committee for mobilising international and domestic resources for MRV/ETF	• Consultation with relevant ministry and DMS • Identification of the core activities of the steering committee • Identification of the key positions of the steering committee based on international best practices • Selection of the committee members from the institutions	• An established functional steering committee • Developed ToRs for the steering committee
financing strategy for the MRV/EFT	• Develop the budget for the MRV/ETF • Determine the financing gap • Identify the funding sources • Develop the strategic activities to raise revenue	• Developed financing strategy detailing budget, financing gap, financing source and activities for implementation • Financing strategy handed to the steering committee
Developed stakeholder engagement strategy	• Consultation meeting to Identification of all stakeholders involved in energy MRV • Determine stakeholders involvement and activities • Develop strategic activities for enhancing stakeholders engagement	• Stakeholder engagement strategy presented and endorsed by the climate change focal point
National GHG inventory team strengthened to track NDC	• An assessment of the current team competency and capability to analyse the mitigation measure and track the NDC GHG emission reduction • Identify areas of strengthening and additional skills required • Nominate additional members as per the skill requirement	• Additional members included • Members trained on the NDC tracking tools
Development of the QC/QA plan	• Review the Statistics Botswana data quality framework • Review the IPCC QA/QC plans • Develop the country's QA/QC • Establish the QA/QC coordinator	• Developed and Adopted QC/QA plan
Established data exchange platform and storage	• Consultation meeting with stakeholders on establishment of the MRV/ETF data exchange • Engage the IT department to develop MRV/ETF portal for data exchange • Develop the operations manual • Training workshops	• Fully functional IT systems • Trained stakeholders

Presentation on the Transport sector (mobile energy sector)

Like the stationary energy sector, the 5 deliverables main findings and recommendations were presented for validation. These are highlighted below.

Deliverable 1: Report on situational analysis on MRV mechanisms in the relevant institutions and relevant climate change data and information currently generated

Under this deliverable, the following highlights were presented to the stakeholders

- Botswana has experience in some form of MRV through its reporting on NC, BUR, NAMA, TNA and with the advent of the NDC reporting under the Paris Agreement, additional structures and effort is required to have an effective MRV system that will meet ETF requirements under Paris Agreement.
- The national development imperatives are in place although some improvements in policy and legal framework will be required for a coordinated effort to undertake proper MRV for GHG Emissions, GHG Mitigation and MRV for Support, which are the key pillars of the MRV system considered.
- Indications are that stakeholders are more familiar with preparation of GHG emissions although only Tier 1 2006 IPCC methodology has been used in the latest 2014/2015 GHG NIR. Some quality assurance/control and verification are also undertaken.
- However, in the case of transport additional data being collected are not used to migrate to Tier 2 and Tier 3 GHG inventory approach. Additional discrete data and emission factors will also require revision and refinement.
- A consolidated database capturing transport data from public and private entities is required.
- Several Transport measures are mentioned but quantification of impacts has not been done due to lack of well-defined assumptions.
- Capacity and data availability and completeness limits the GHG mitigation options that can be analysed for the transport sector.
- MRV support coming as direct climate finance, technical assistance and technology transfer are not readily documented at national level although some data can be assessed from donor/Development partner websites.
- Monitoring and reporting unconditional and conditional financing of NDC mitigation measures will be required but were not provided at time of the study.
- Institutional arrangements exist for MRV for GHG Emissions and MRV GHG Mitigation, but they need strengthening, involving all relevant sectors (including transport) in provision of data and undertaking GHG mitigation analysis.

Deliverable 2: Report consolidating the inter-institutional consultations and policy/strategy analysis, the method and summary of each consultation and analysis

The main findings based on the inter-institutional consultation that were highlighted at the presentation were:

- Ministry of Environment and Tourism (MENT) and DMS are considered adequate apart from adding resources for the NDC MRV.
- The NCCC is considered an inter-ministerial organ but its legal status and effectiveness is limited at the moment. The proposal is that inter-ministerial body for NDC/MRV should have power to make binding decisions and can agree on resource allocation.
- The SB is considered well placed apart that it may have to establish an NDC/MRV desk to manage information related to climate action.
- The GHG Inventory team is considered relevant but has to include other sectors not represented and private sector participation.

- TMU comprising of various experts can inform decision making by the inter-ministerial body and policy/strategy formulation. The TMU can lead development and reviews of NDC/MRV reports before submission to both NCCC and UNFCCC/Paris frameworks.
- Comprehensive institutional involvement that encompass vertical and horizontal coordination of central government with regional institutions, semi-state , non-state, funders etc is needed.
- integrated Climate Change Information and database systems similar to what is being proposed for SB to enhance in addition to its already important role in support of data sets for the GHG Inventory is needed.
- NDC/MRV work is dictated from the highest level in the countries and that even Sectoral Group report are signed off by senior officials before the reports are considered at a higher level.
- So far QA/QC system for NDC MRV data purposes is considered inadequate in some cases non-existent.
- The QC provided by SB is currently the main source, but none is seen at lower/sector levels apart from the fact that some organizations may have their internal processes for data collection and quality assurance.
- The Data Processing Centre, at SB is to be equipped with sector data management specialists ensuring that data is credible and of good quality.

Deliverable 3: Report on information necessary to track progress made in implementing and achieving Botswana's NDC

The Botswana NDC has mentioned only one transport measure that has no targets and the GHG reduction potential has not been determined. The expectation in the NDC is that the transport measure will be reported from 2025 to 2030. A tracking tool has been developed for this transport measure to compute GHG reduction on an annually basis using vehicle import statistics and vintage of existing vehicles in the country. The opportunity exists to compute GHG reduction potential of other transport measures that are applicable to Botswana although they are not in the NDC. Both the ICAT Transport Guide and GACMO provide options for determining the GHG reduction potential of the other transport measures. Additional transport measures that include shift from road freight to rail freight, electric rail compared to diesel fuelled trains and introduction of electric cars have been presented in the Transport NDC Tracking tool basing on GACMO as additional resource. The Tracking tools developed here only show GHG reduction potential and not abatement costs as the GACMO is intended to determine.

The following recommendations were highlighted for validation:

- More transport GHG reduction measures can be included in the NDC
- Involvement of specific stakeholders/organizations in the impact analysis of the GHG reduction measures should however be aligned with specific stakeholder e.g. all road transport measures should be done by DRTS; all railway transport measures by Botswana railways etc
- All annual data sets and computations should be captured to present historical series and comparisons over the years.
- Training the targeted stakeholders on quality assurance and then provide QC for the data sets used in the NDC tracking.
- The collation of the GHG reduction impacts of the transport measures to be made by the Transport Sectoral Working Group as proposed and further up by the TMU.
- Final compilation of NDC tracking will be undertaken by the Technical Management Unit for purpose of both domestic and international reporting.
- Capacity Building on Tools is useful to track a number of transport measures that can be implemented in Botswana
- Training of the nominated contact person in each targeted transport stakeholder organization will require training on the collection, manipulation of appropriate data and also on using Tools.

Deliverable 4: Report on barrier assessment and recommendations for improving MRV systems in the energy sector

The barriers that were identified and presented for the transport sector covered institutional arrangements, legal and policy frameworks and resources. These are highlighted below:

- Low level of awareness particularly by the private sector stakeholders on expectation of MRV/EFT
- NCCC is considered inadequate to drive the MRV towards the EFT.
- Inadequate transport activity data and country specific emission factors.
- No comprehensive central data management system that includes transport data for MRV.

- Limited tools in use particularly for GHG mitigation impact analysis and tracking financing.
- Limited international financial support for transport apart from government budget for transport.
- Need for a strong legal framework and operationalisation of the transport climate policies and Acts.

Some of the recommendations that were highlighted to the participants included:

- Awareness raising campaign at country level involving all stakeholders.
- Establish required institutions under Deliverable 2 with specified roles.
- Create and coordinate data supply chain from data providers, QA/QC, capturing and management, archiving.
- Expedite the SB Data Management Strategy and enhance SB data management centre with required skills and related training provided to those providing and managing information/data.
- Training of selected experts from the Sector Working Group, Task Teams, TMU on existing tools for GHG Inventory, GHG Mitigation and tracking Implementation support.
- Technical Assistance (TA) for Training of MRV scope and training trainers for continued training
- Mobilize climate Finance that caters for all sectors as proposed by MFEDP.
- Develop Legislation for data provision with lead coordination body.

Deliverable 5: Report on the roadmap to ensure the sustainability of ICAT Botswana's outcomes.

Table 2 below the roadmap activities to be implemented for strengthening the country MRV which will transit to the ETF.

Table 2: Roadmap for the mobile energy sector

MRV Stage	Action	Activity
GHG Inventory	Capacity building of transport sector practitioners on data collection, GHG Inventory calculations, data QA/QC	• Design templates for data collection for each transport subsector • Training selected practitioners from public and private sector entities on data requirements, collection, collation • Training on IPCC 2006/2019 Guidelines • Create an expert Group for training on QA and QC and offer 3rd party QC
	Creation of a centralized transport sector portal within SB national database	• Data base development for transport statistics for GHG inventory
	Development of Country transport specific emission factors	• Experts conduct analytical work using available country data sets
GHG Mitigation	Capacity Building for GHG Mitigation Impact analysis	• TA for training selected transport experts on data requirements, assumptions, analytical work, indicators for tracking NDC implementation • Selection of tools to be adopted for the transport sector and Training on the selected tools for GHG mitigation e.g. GACMO
Implementation Support	Mobilization of climate finance to support data collection, required instrumentation and software tools, training workshops	• Revise national Environmental Fund to cater for domestic and International funds • Accounting of domestic and international funds going into transport sector

		• Allocation of funds for training workshops, data collection and acquisition of software/tools and TA
Institutional framework	Creation of an Integrated Institutional Framework for MRV	• Agree on the institutional structure with high-level decision-making body, TMU and thematic/sectoral Working Groups (WG for transport well defined including private sector stakeholders) • Ensure transport stakeholders in NCCC and TMU
Policy Framework	Creation of a Legal framework for data provision and protection	• Review existing sectoral policies to cater for MRV data requirements • Develop and sign MoUs/MoAs for data provision and protection with transport stakeholders especially private sector

Discussions on the deliverables and recommendations

Following the presentation of the key deliverables for the (mobile and stationary) source, the floor was open for discussions and debate. The following are the issues that were raised by the stakeholders:

1. **Thematic working groups (TWGs)**

One of the aspects that was specifically indicated in the terms of reference was the establishment of the thematic working groups. During the presentation, one of the findings from the consultation was that instead of establishing the thematic working groups, it will be ideal to the using the existing thematic working groups in the country. There are currently TWGs which were established during the development of National Development Plan 10. They were formulated to support national development, planning, implementation, monitoring, reporting and evaluation of Botswana's Vision 2036 and National Development Plan 11. The relevant one of the energy sector is the sustainable environment thematic working group. However, it was advised that these working groups are not suitable and appropriate for the supporting the MRV/EFT programme. it was advised that there is a need to establish the Thematic working group which could be sectoral working groups.

2. **MoA and MoU**

The presented noted the need for establishment of MoA and MoU between the various energy sectors to enable data exchange and flow amongst the stakeholders. However, the stakeholders were sceptical whether there is a need for MoA/MoU as data between the government departments and Statistics Botswana can be easily shared. However, it was noted that the NDC transit to other non-government department particularly the private sector. Furthermore, even between the Statistics Botswana and the focal point being DMS, there is a need for MoU which will clarify the role of SB in terms of what data to collect for the NDC tracking and the data quality. Thus, it was stressed that MoU/MoA are required to ensure that roles and responsibilities are clarified, and each party knows its expectation. Furthermore, it was emphasised that MoA/U are critical as they will indicate area of expectations.

3. **Strengthening the legal framework**

Strengthening the legal framework was another point that was raised by the stakeholders for data sharing and exchange. The concern being how do we strengthen the legal framework as already government departments are sharing the information. However, it was advised that NDC include not only the governmental departments but the private sector (business communities. Therefore, it is fundamental that Statistics Act of 2009 which was formulated to guide Statistics Botswana includes this critical sector. This point was highly emphasised as NDCs will involve

participation of the farmers, household, and the commercial sector.

4. **Prioritisation of the adaptation components of the NDCs**

Some of the participants indicated that the economy of Botswana is ecosystems-based as evident from the reliance on livestock and tourism sectors. therefore, there is also a need to also prioritise the adaptation component of the NDCs. It was noted that as far as the GHG emission are concerned the country contribution is insignificant and therefore we should be worried about the seemly catastrophic impacts. The point was noted by the Climate change focal point together with the ICAT personnel.

5. **The GHG emission inventory team ability to do both GHG emission inventory and NDC tracking**

One of the recommendations from the deliverables is that the National GHG inventory team should be tasked with tracking the NDC in addition to conducting the GHG inventory. However, the participants questioned the ability of the National GHG Inventory to do the 2 tasks. It was indicated that for them to conduct both tasks (tracking the NDC and undertake the inventory) they will have to be strengthened by increasing their members. Furthermore, they will need to be further trained on NDC tracking. However, it was indicated that since the NDC tracking and GHG inventory are similar tasks they could easily do both tasks.

6. **Transparency in the selection of the GHG emission inventory team**

Another recommendation that was National GHG inventory team should be increased by including additional members from DoE and Botswana Power Corporation. One name that was suggested was Mr Sello. However, it was noted that there is a need to be transparency in selecting the members as some of the members could not be interested in the exercise and will therefore not be prioritised the NDC tracking and the national GHG inventory exercise. The advice was noted, and it was agreed that in selecting the additional members, it should be assessed whether a member is interested also taking into account their responsibilities at work.

7. **Data management framework**

Data management framework was highlighted as an important element as NDC tracking will require a lot of data from all the sectors mainly governmental departments, commercial sectors (tourism, agriculture, transport etc). it was thus decided that it is crucial that the validation workshop develop and agree on a framework that will guide data processes. the data management framework was debated at length, and it was agreed that it should be a bottom-up approach where the sector generate the data. Furthermore, the need for standardised Quality assurance (QA) as emphasised. The data generated by the sectors will then be submitted to the sectoral working group (energy) which will then be managed by the SB. Figure 1 depicts the agreed data management systems are endorsed at the validation workshop.

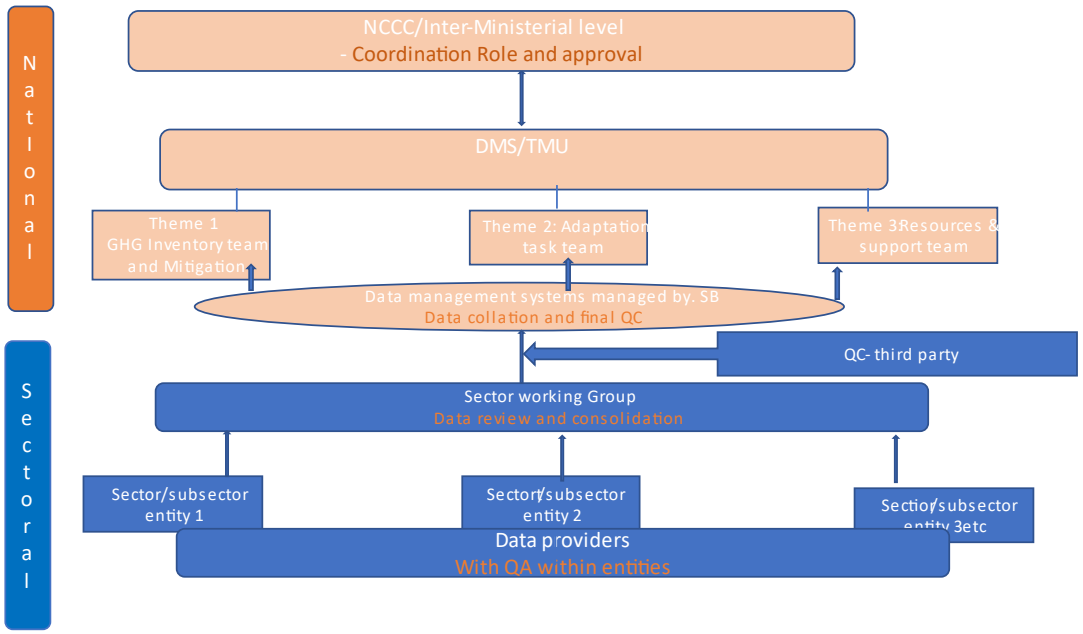

Figure 1: Proposed changes in institutional arrangements

8. for the implementation of the roadmap

The participants noted that to sustain the implementation of the activities to strengthen the institutional arrangements and continue to track the NDC mitigation measure and report in a transparency manner, resources are needed. Furthermore, it was noted that with limited resources priorities could change as the limited resources are channelled to critical economic activities such as adaptation. Therefore, the need for mobilising resources by developing a financing strategy for both the NDC adaptation and mitigation implementation and tracking.

9. Establishment of the sectoral working groups

Establishing the sectoral working groups was also extensively discussed to support the tracking of the NDCs. The importance of including all relevant sectors mainly the private sector/business community was highly emphasised to ensure there is participation on the NDC tracking. Additionally, it was noted that the approach will enhance data flow and exchange as the member of the working groups will be connected to the various sectors that generate the data and owners of the data.

10. Technical management unit

A technical management unit is responsible for the operations and improvement of a system to ensure efficiency and quality in the NDC tracking. Subsequently, the unit provide support, in terms of data availability and quality. This is one of the requirements of a good MRV that will transit to ETF. One of the recommendations from the ICAT study is to improve the existing DoE Statistics and Modelling Unit to act as a technical management unit for the energy sectoral MRV. This was validated by the stakeholders who noted that it is critical to use existing institutions and the units to avoid duplication of duties. It was noted that currently the statistics and modelling unit deals with data on energy and can easily assume this responsibility.

11. Scepticism on implementation of the roadmap and the recommendations

The workshop attendees noted that the recommendations are sound. However, they consistently raised the issues of their implementation. They highlighted the need for ensure that there is a clarity on who is going to implement the recommendations and the roadmap. However, it was emphasised that the climate change focal point is the lead

agent which should take the role of implementing the ICAT roadmap. It was further emphasised that the noted roadmap has the implementation plan which clearly indicate the responsible agent and time frames. However, the initial responsibility rests with the DMS to disseminate the ownership of the product for implementation.

Training on GACMO

The presentation and discussions were followed by training on GACMO which was conducted by Aiymgul Kerimray who introduced the GACMO and took the participants through the GACMO spreadsheet. This was followed by the exercise as depicted in Annex 2 which the stakeholders presented to the groups.

Conclusions and way forward

The validation workshop was generally deemed as success as its objective was met. It was agreed that the consultants will be update the deliverables and submit for implementation. Emphasis was placed on the implementation of the roadmap and on the development of the financing strategy.

Furthermore, the issue of prioritising the adaptation section of the NDC was also emphasised by the stakeholders. it was noted that adaptation is critical as some of the co-benefits of reducing the GHG emissions.

The deliberations on the institutional framework were concluded and stakeholders agreed on a tentative framework as presented above. The need to increase transport mitigation measures in the NDC was also proposed as an area that would constitute follow up activities.

Annexes

Annex 1: Workshop agenda/programme

AGENDA

ICAT Botswana Final Validation Workshop

(Monday 13 February 2023)

AQUARIAN TIDE HOTEL

13 February 2023, 09::00 – 16:30 GMT+2		
09:00 – 09:05	Opening prayer	**Volunteer**
09:05 – 09:20	Opening remarks	**Director (DMS)**
09:20 – 10:15	Introduction to the ICAT Initiative and ICAT Botswana Programme	**Ivana Audia, Alejandro Regatero (UNEP-CCC)**
10:15 – 10:30	***Health break***	
10:30 – 12:00	Presentation of project work – Energy Sector	**Sennye Masike (ICAT Botswana)**
12:00 – 12:30	Deliberation and endorsement – Energy Sector	**Stakeholders**
12:30 – 13:30	***Lunch break***	
13:30 – 15:00	Presentation of project work – Transport Sector	**Peter Zhou (ICAT Botswana)**
15:00 – 15:30	Deliberation and endorsement – Transport Sector	**Stakeholders**
15:30 – 15:45	***Health break***	
15:45 – 16:30	Closing remarks, wrap-up and closing reception	**All participants**

Capacity Building training on the GACMO methodology

(Tuesday 14 – Wednesday 15 February 2023)

AQUARIAN TIDE HOTEL

Day 1 – 14 February 2023, 09:00 – 16:30 GMT+2		
09:00 – 09:20	Welcoming remarks and introduction	**All participants**
09:20 – 10:30	Introduction to the GACMO methodology: Context and use in relation to NDC inventory, update and tracking	**UNEP-CCC / ICAT**
10:30 – 10:45	***Health break***	
10:45 – 12:30	GACMO Methodology – Applied exercise in relation to energy sector	**UNEP-CCC / ICAT**
12:30 – 13:30	***Lunch break***	
13:30 – 15:00	GACMO Methodology – Applied exercise in relation to transport sector	**UNEP-CCC / ICAT**
15:00 – 15:15	***Health break***	
15:15 – 16:30	Q&A and applied exercise group work	**All participants**
Day 2 – 15 February 2023, 09:00 – 16:30 GMT+2		
09:00 – 10:30	Reconvening, summary of Day 1 and applied exercise group work	**All participants**
10:30 – 10:45	***Health break***	
10:45 – 12:15	Solution to Applied exercise (1/2)	**UNEP-CCC / ICAT**
12:15 – 12:30	Group Photo	**All participants**
12:30 – 13:30	***Lunch break***	
13:30 – 15:00	Solution to Applied exercise (2/2)	**UNEP-CCC / ICAT**
15:00 – 15:15	***Health break***	
15:15 – 16:00	Q&A session and wrap-up	**All participants**
16:00 – 16:15	Closing Remarks	**Director (DMS)**

Annex 2: GACMO exercise

Exercise with GACMO model

14 February 2023

Exercise 1 Energy Balance

- Coal consumption by power plants in Botswana was 42991 TJ in 2019.
- Electricity production was 9013 TJ in 2019. (Convert electricity generation from TJ to GWh).
- Fill in the data on coal consumption by power plants and electricity generation in the corresponding cells of the “Start Year Energy Balance” Sheet.
- What is the resulting efficiency of power generation (cell S38)?

Exercise 2 Mitigation action

- According to the Birst Biennial Report of Botswana, construction of two 50 MW solar power plants is planned by 2030.
- In the Sheet “Main 30” fill in this mitigation action.
- How much emissions reduction is achieved with this measure in 2030?

Exercise 4 Economic assumptions

- According to the Birst Biennial Report, GDP is projected to grow with an annual growth rate of 2% by 2030.
- In the Sheet “Growth” fill in GDP annual growth rate by 2030.

Annex 3: List of Participants

PARTICIPANTS ON THE ICAT BOTSWANA VALIDATION WORKSHOP, 13th, 14th and 15th FEBRUARY 2023