INITIATIVE FOR CLIMATE ACTION TRANSPARENCY (ICAT)

5/24/2020

DELIVERABLES 1&2-

A FUNCTIONING KNOWLEDGE MANAGEMENT SYSTEM

AND

MRV SYSTEM REPORT

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DISCLAIMER

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Assessment of EMA – T&T National Climate Mitigation MRV System

Introduction

The Paris Agreement was adopted in December 2015 and entered into force on 4th November 2016. Trinidad and Tobago ratified the Paris Agreement in February 2018. As part of the Paris Agreement, Trinidad and Tobago submitted its plans for reducing greenhouse gas (GHG) emissions, known as the Nationally Determined Contribution (NDC), which stipulates the reduction in cumulative emissions from a business as usual (BAU) baseline by 15% in the transport, industry, and power generation sectors, to be achieved by 2030.

The Paris Agreement requires governments to report on the implementation of their NDCs through a robust accountability and transparency system, known as Monitoring, Reporting and Verification (MRV) Systems, that are to produce accurate, transparent, comparable, complete and consistent information regarding the emission and mitigation of GHGs.

The Government of the Republic of Trinidad and Tobago (GoRTT), through the Ministry of Planning and Development (MPD), has developed a National Climate Mitigation MRV System to support Paris Agreement Enhanced Transparency Framework (ETF) reporting of GHG inventories, NDC tracking, mitigation assessment and data management tools.

The development of the National Climate Mitigation MRV System, and Trinidad and Tobago's Knowledge Management System (KMS) are integral to the GHG emission reporting process. Trinidad and Tobago must implement both systems in order to provide more accurate emissions estimates to the UNFCCC and the Paris Agreement, as well as to inform decision makers on potential climate change policy measures and mitigation activities.The success of a National MRV System is essential to leveraging climate finance in the future, which is available for developing countries to help achieve the goals set out in the NDC.

The Pilot Project under the Initiative for Climate Action Transparency (ICAT) serves to test the aforementioned system and includes the delineation of roles and responsibilities of institutions and stakeholders chosen/invited to participate, capacity building requirements (human, technical, financial and institutional) of these entities, and to identify potential improvements/obstacles before a full national roll-out. This report outlines the current technical/institutional capacity of the Environmental Management Authority (EMA) as holders of the Knowledge Management System and will highlight the potential opportunities for improvement to ensure that the EMA can fulfil their roles/responsibilities within the system.

ICAT Pilot Project: What is being tested?

Trinidad and Tobago's Pilot Project is an initial small-scale implementation of T&T's National Climate Mitigation MRV System. The Pilot Project facilitates the testing of the following:

- Organisational Structure of the National MRV System.
- Data flow inputs/outputs to the Knowledge Management System (KMS).
- Ease of use of the recommended MRV System templates.
- Ability to identify obstacles/opportunities for the improvement of the National MRV System before a full national roll-out.

Pilot Project Objectives

The objectives of this Pilot Project for the MRV System include the following:

- To ensure that Trinidad and Tobago's monitoring, reporting and verification of its GHG emissions is in accordance with applicable international standards i.e the Intergovernmental Panel on Climate Change 2006 Guidelines, whilst taking national circumstances into account.
- To coordinate and enhance cooperation amongst the selected ministries and stakeholders in T&T's MRV System through their designed roles and responsibilities.
- To test the efficacy of the organisational structure of T&T's National Climate Mitigation MRV System.
- To test the operational procedures of data flow inputs/outputs to the KMS by T&T's identified key institutional players.
- To test the ease of use of T&T's MRV System templates by the relevant stakeholders and identify any additional technical capacity necessary for their use.
- To ascertain that stakeholders are adhering to the TACCC (transparency, accuracy, completeness, comparability and consistency) principles through their comprehensive use of the MRV System Templates.
- To support key institutional players with relevant technical information, knowledge and guidance to implement the National Climate Mitigation MRV System Pilot Project through the use of detailed tasks and templates.
- Identify obstacles and opportunities for the improvement of the National MRV System and the recommended templates.

Who is involved?

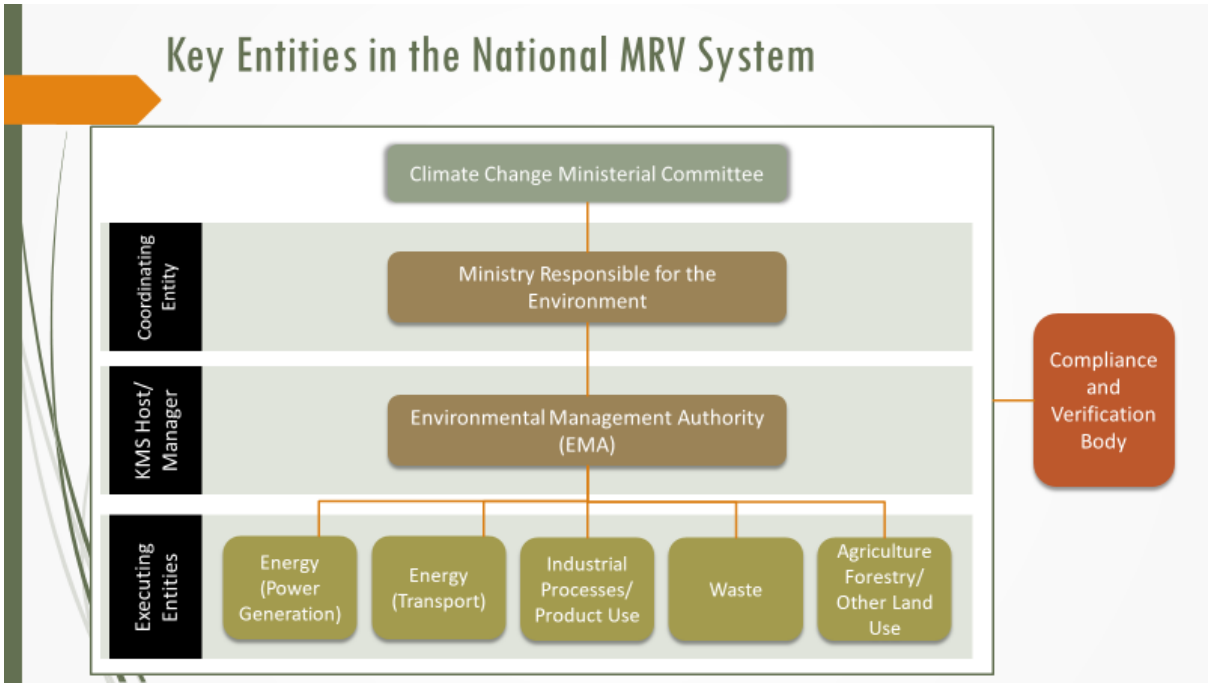
- Coordinating Entity (Ministry responsible for the environment) which is currently the Ministry of Planning and Development
- Environmental Management Authority (Host/Manager of the KMS)
- Volunteer Stakeholders:

    1. Shell Trinidad and Tobago
    2. NuIron
    3. Ministry of Energy and Energy Industries
    4. Ministry of Public Utilities
    5. Heritage Petroleum
    6. Methanex
    7. Powergen
    8. SWMCOL
    9. Trinidad Cement Limited
    10. Trinity Power
    11. PPGPL
    12. T&TEC
    13. PTSC
    14. Atlantic
    15. Trinidad Generation Unlimited

- Consultant and Management Team including the Project Team of the Nationally Determined Support Programme which had oversight of the operationalization of the Knowledge Management System (KMS)

Institutional Arrangements

The institutional arrangements for T&T's National MRV System are based on the country's overall climate change objectives and its commitments as described in its first Nationally Determined Contribution (NDC), within the overall international MRV design/system under the UNFCCC. Through critical analysis of relevant documentation/case studies, T&T has identified all relevant stakeholders, roles/responsibilities of all stakeholders, their current technical/institutional/financial capacity, their future capacity needs and a defined organisational MRV structure.



As the **Host and Manager of the Knowledge Management System (KMS)**, the EMA has the following responsibilities related to the national MRV System:

- Compilation of data from the different institutions inputting into the KMS.
- Maintenance of a database that stores calculations, reported data, expert judgement and analysis.
- Maintenance of a data archiving system that allows for institutional memory over time.
- Inclusion of a section that is public and has a searchable database for published reports.
- Maintains checks that all relevant stakeholders inputting data into the system are running the relevant Quality Control checks and procedures.
- Works with the coordinating entity for standardised templates for reporting data.
- Applies procedures as defined by the coordinating entity for the collection of data, preparation of GHG emission inventory estimates, communication and submission of reports.

Based on the responsibilities highlighted above, the EMA—at a minimum—should have working knowledge of the following to perform their envisaged roles:

1. Trinidad and Tobago's MRV Templates (See Annex 1 for descriptions) with specific emphasis on the Key Category Analysis Template, QA/QC Document, Methodologies Data/ Documentation Template and the Data Archiving System Template.
2. 2006 IPCC Guidelines Volume 1 which considers General Guidance and Reporting with particular emphasis on KCA level and trend calculations, uncertainty assessments (level 1 and 2) and QA/QC checks.
3. 2006 IPCC Guidelines Volumes 2-5 (Energy, IPPU, AFOLU and Waste).

N.B.:At present the EMA Air Unit comprises 4 technical staff with each member being responsible for at least one volume of the sector specific guidelines according to the IPCC.

ICAT Pilot Project Orientation: EMA

Objective: To provide clarity on expectations and deliverables for the EMA staff (Holder of the KMS) to successfully operate within Trinidad and Tobago's National Climate Mitigation MRV System and Knowledge Management System (KMS).

Before the start of the Pilot Project, all 4 members of the EMA were enrolled in the IPCC 501 course at the Greenhouse Gas Management Institute. This course covered Key Category Analysis, Uncertainty Analysis, QA/QC checks and data collection/archiving procedures. In order to gauge the current technical/institutional capacity at the EMA, the following were designed:

(1) A participant capacity survey (full results in Annex 2)
(2) Practical exercises designed to test KCA, Uncertainty Analysis and QC checks based on the 2006 IPCC Guidelines and GHGMI 501 course. (Practical exercises and answers can be viewed in the attached zip file.)

Highlighted Capacity Survey Results

Technical Capacity

All members of the EMA team received prior training in IPCC guidelines through the GHGMI 501 course and training sessions conducted through the Third National Communication Project. Only 1 of the 4 participants (EMA core team) deemed the previous training to be adequate for the proposed new work tasks assigned to the EMA, with the following being highlighted as necessary next steps for improvements of the team's technical capacity:

1. Practical exercises with data showing calculation methodologies, KCA and Uncertainty Analysis.
2. More exposure to and use of the KM at the EMA.
3. More exposure to and use of the IPCC software.

At the time of the survey:

1. 3 out of 4 of the EMA Team (core) indicated that with guidance they would be able to perform GHG emission estimates, key category analysis and uncertainty analysis.
2. Only 2 members of the EMA team had done a brief review of the T&T Guidance documents (These documents were presented and given to the EMA team prior to the start of the Pilot Project).

Recommendations

At this stage, the EMA team did not meet the required technical capacity for full participation in the KMS/MRV pilot project and interaction with the relevant data providers. After analysis of the results of the participant capacity survey, practical exercises and the proposed official start date of the pilot project (1st week of September), the following actions were recommended:

(1) Allotted time during EMA working hours for the EMA team to complete their GHGMI online 501 course training. Practical exercises and certification examination are included in the online training.

(2) Allotted time during EMA working hours for the EMA team to complete further capacity-building training using practical exercises and methodological instruction (provided by consultant).

A second set of practical exercises (see attached zip file) were designed for training/instruction with the EMA team to assist in their GHGMI IPCC certification exam due to the observed lack of technical capacity. The EMA and consultant remained in constant communication through emails, calls and virtual meetings until the 2nd week of September (EMA team sat the IPCC 501 exam). Throughout the process the members of the unit showed marked improvement in their ability to understand GHG inventory cross-cutting issues, double counting of GHG emissions between reporting sectors and KCA/Uncertainty assessment methodologies. All members of the EMA team passed the IPCC 501 and gained their certification. After consultation with the MPD Management team, it was determined that the EMA staff had enough working knowledge in the aforementioned topics to participate in the Pilot Project and interact with the selected stakeholders.

EMA-Stakeholder Interactions-

On the 22nd October 2019, the MPD and consultant held an MRV System Pilot Project Implementation session with all participating stakeholders and the core members of the EMA team. During the session, the expected activities of both entities were assigned; with practical examples on the use of T&T's templates being demonstrated. Each EMA member was assigned at a minimum- 4 stakeholders to interact with based on their previously highlighted GHG sectoral interests and their previous working relationships with stakeholders under T&T's Source Emitter Registration Programme. The following (tasks 1-5) were identified for the EMA during this portion of the Pilot Project-

(1) Engage stakeholders and provide technical advice on their required inputs to the KMS. Examples include-IPCC calculation methodologies, sector-specific QC check, chosen activity data sets and chosen emission factors.
(2) Engage with consultant team to report any obstacles encountered during the process.
(3) After stakeholder submissions- use the T&T QA/QC document and checklist to carry out the appropriate QC checks.
(4) Communicate with the stakeholders any identified issues with their submissions and to recommend any further explanations, recalculations and/or resubmissions.

(5) Prepare a report for the consultant team highlighting issues encountered and the recommendation of possible solutions.

Task	Obstacle Encountered by EMA Team	Solution to allow for continuation of Pilot Project
1	During the initial phases of the pilot project and stakeholder communications- The EMA team did not feel comfortable providing advice to the stakeholders due to their lack of capacity in sectoral reporting of GHG emissions and the use of the IPCC guidelines. For this phase of the pilot, the EMA team concentrated on sending email reminders/telephone calls to keep the stakeholders engaged.	The EMA team requested the assistance of the consultant to guide the relevant stakeholders on their inputs into the KMS, calculation methodologies, IPCC guidelines and use of the T&T templates. This activity was conducted by the consultant/ EMA representative through emails, telephone calls and virtual meeting rooms until stakeholder submissions were complete.
2	There was constant communication between the consultant and the EMA core team through emails / phone calls to provide guidance and address obstacles throughout the process. Weekly meetings were held from the 2nd week in November using virtual meeting rooms to provide further updates. N.B.- These meetings included the KMS consultant- Mr. Randyll Pandohie who addressed issues related to the KMS and stakeholder inputs.	N/A
3	The EMA team requested the consultant carry out the QC checks of stakeholder inputs as they did not feel comfortable with sector-specific issues that needed to be addressed.	The consultant agreed to carry out the QC checks of stakeholder inputs and provide guidance on further clarifications, recalculations and resubmissions. It was agreed that the EMA team would still carry out the QC checks informally for the consultant to gauge their current capacity and ability to carry out the necessary QC checks.
4	Due to the problems encountered during task 1 and 3, the EMA is no longer responsible for this task.	Task 4 will be carried out by the consultant after the necessary QC checks are completed and analysed.
5	No obstacles encountered. The EMA submitted the required document for review by the MPD and consultant. (See Annex 3)	N/A

Multi-Criteria Analysis (Performance of the EMA team during the Pilot Project)

N.B.- Names and scores of EMA staff members participating in the pilot project have been removed for confidentiality purposes. Separate document inclusive of the aforementioned EMA staff member results has been submitted separately to the MPD for internal use.

Criteria	Criteria Weight (Sum to 100 across all categories)	EMA-1	EMA-2	EMA-3	EMA-4
Communication with assigned stakeholders	10				
Communication with consultant team	10				
Enthusiasm towards achieving the goals of the Pilot Project	10				
Technical ability to perform KCA, Uncertainty Assessment and general QC checks	10				
Technical ability to perform GHG emission estimation by sectoral	10				
Technical ability to perform sector specific QC checks	10				
Familiarity and use of the 2006 IPCC guidelines (inclusive of annexes)	10				
Familiarity and use of T&T's MRV System Templates	10				
Familiarity and use of 2006 IPCC software	10				
Familiarity and use of T&T's Knowledge Management System	10				
Total Criteria Score	100				

Rating System based on Consultant Expert Judgement

Criteria Score (Out of 100)	Readiness of EMA team to perform envisaged tasks during Full Scale Implementation of T&T's MRV System
85-100	100% prepared for Full Scale Implementation of T&T's MRV System
70-84	75% prepared for Full Scale Implementation of T&T's MRV System
60-69	50 % prepared for Full Scale Implementation of T&T's MRV System
50-59	40 % prepared for Full Scale Implementation of T&T'
30-49	25% prepared for Full Scale Implementation of T&T's MRV System
1-29	Unprepared. Needs to re-do/complete all training received prior.

Observed Technical and Institutional Barriers

(Performance of required tasks for Full Scale Implementation of T&T's MRV System)

Technical Barriers	Institutional Barriers
Working knowledge of sector specific GHG methodologies and QC checks	Human Capacity present within the EMA unit to perform envisaged action tasks for full-scale implementation of T&T's National Climate Mitigation MRV System.
Working knowledge of 2006 IPCC Guidelines (inclusive of 2019 refinements and attached annexes)	Time (during working hours) to perform envisaged action tasks for full-scale implementation of T&T's National Climate Mitigation MRV System.
Working knowledge/interaction – T&T's Knowledge Management System (KMS)	Lack of communication plan for formalised interactions with assigned stakeholders and the coordinating entity.
Working knowledge/use with all of T&T's Guidance Document	

Identified Barriers and Recommendations

Identified Barriers	Recommendations
Working knowledge of sector specific GHG methodologies and QC checks	Sector specific knowledge was the main barrier observed during the pilot project (for the EMA team). It is advised that the EMA team be given time during office hours to complete the necessary courses/theory to get up to speed. The two members who do not have access to the sector specific courses should be provided access to- one sector specific course in the GHGMI catalogue at a minimum. Each member of the unit should choose a different sectoral course to ensure that all reporting sectors have the adequate technical expertise.
Working knowledge of 2006 IPCC Guidelines (inclusive of 2019 refinements and attached annexes)	Time constraints given the EMA team's current workload was the main identified issue relating to this barrier. The EMA team should combine their sectoral studies with the familiarisation of each relevant volume of the 2006 IPCC guidelines and their annexes.
Working knowledge/interaction – T&T's Knowledge Management System (KMS)	After completion of the pilot project, the EMA team should attempt their action tasks with stakeholder inputs and the 3rd National Communication inventory report as a practical exercise to gain more experience interacting with the KMS. Further guidance for this

	interaction should be provided by the KMS consultant.
Working knowledge/use of T&T's Guidance Documents	Time constraints given the EMA team's current workload was the main identified issue relating to this barrier. The EMA team needs to have advanced working knowledge of all designed guidance documents to ensure all action tasks are completed as envisaged. Specific time should be allotted and added to their workplan for completion of task. (Minimum 2 days)
Human Capacity present within the EMA unit to perform envisaged action tasks for full-scale implementation of T&T's National Climate Mitigation MRV System.	Due to the important envisaged role of the EMA team in T&T's MRV System; the following options are recommended for the increase in human capacity given the scheduled action items and current work responsibilities- (1) At a minimum two additional hires to the EMA air unit. This would allow for all participating members to balance their current work responsibilities with the additional workload. Stakeholder interactions identified action tasks and compilation of the GHG Inventory were taking into consideration. (2) A new Unit within the EMA can be formed with a minimum of three members. This unit would be responsible for all T&T MRV System action tasks as their only schedule of work. Though both options mentioned above are feasible, the creation of a new unit with T&T's GHG MRV System action tasks as their specific responsibility is preferred.
Time (during working hours) to perform envisaged action tasks for full-scale implementation of T&T's National Climate Mitigation MRV System.	Given the EMA team's current workload, it is advised that specific time should be allotted for the identified action tasks. All members of the unit should work in synergy and with similar deadlines for deliverables, to ensure the timely completion of QC checks and compilation of annual GHG inventory reports and estimates. In moving forward, work related to operating the system and report compilation should be built into annual workplans and applicable Key Performance Indicators should be applied

	within the standard operating procedures of the EMA.
Lack of communication plan for formalised interactions with assigned stakeholders and the coordinating entity.	Stakeholder communication was performed ad-hoc by members of the EMA air unit with each member having different observed levels of interaction. To allow for institutionalisation of the communication process- the EMA team should draft a communication plan with the relevant procedural elements. This communication plan should be archived and referenced in the National Inventory Improvement Plan in the next inventory cycle.

Stakeholder Interactions-

On the 22nd October 2019, the MPD and consultant held an MRV System Pilot Project. Implementation session with all participating stakeholders and the core members of the EMA team. During the session, the expected activities of both entities were assigned; with practical examples on the use of T&T's templates being demonstrated.

The consultant in his presentation highlighted the step by step procedural guidance and expected outputs from stakeholders. To gauge the human, technical and organisational capacity of the stakeholders at the inception of the pilot project, stakeholders were asked to complete a capacity assessment survey. Figures 1,2 and 3 below show highlighted slides from the session with results from the capacity assessment survey attached in Annex 4.

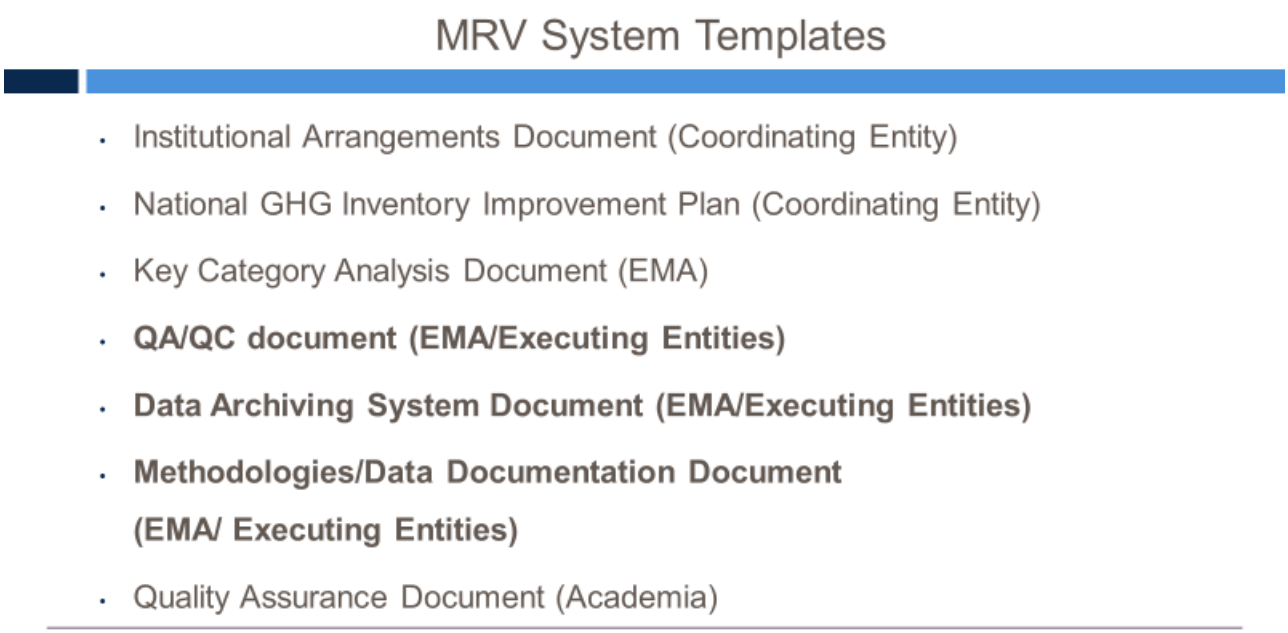


Figure 1. Slide from Ryan Deosaran Presentation

Figure 2. Slide highlighting step by step process for stakeholders

- Fill out the Stakeholder Methodologies/Data Documentation document within the KMS.

- Ensure that all sections are completed and all relevant information is referenced, documented and attached. Instructions for this document are provided in the KMS.

Figure 3. Slide highlighting stakeholder steps

Stakeholder Data Analysed and Reviewed during the Pilot Project

As indicated earlier in this report, stakeholders were asked to provide the following as their outputs during the pilot project-

(1) Activity data for their selected category/sub-category
(2) Quality Control checks performed during the collection of activity data
(3) Completed Methodologies and Data Documentation template inclusive of IPCC Inventory Data, category Information, activity data, emission factors, uncertainty estimates, comments on Category Estimates and improvements.
(4) Completed Quality Control document inclusive of checks on submitted background information, justification of expert judgement, unit checks and calculation methodologies.

All submissions from stakeholders were analysed and a rating system on preparedness for full integration into the KMS/MRV system was conducted by the consultant. Figures 4 and 5 below highlight the outputs submitted by the stakeholders during the Pilot Project and the rating system based on the quality of outputs respectively. N.B.- If there was no submission of a particular output by the stakeholder, this resulted in a score of zero. Partial outputs were graded on the quality of

data analysed. Stakeholder names and information has been withheld for confidentiality purposes. A separate document inclusive of the stakeholder names has been submitted separately to the MPD for internal use.

Stakeholder Listing	Completion of Initial Survey	Communciation with EMA/Consultants	MDD- IPCC Inventory Data	MDD - Category Information	MDD- Methodology for Category	MDD- Activity Data	MDD-Emission Factors	MDD - Uncertainty	MDD- Comments on Category Estimates	MDD- Improvements	QA/QC documentation
	No	Yes	Yes	No	No	No	No	No	No	No	No
	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
	Yes	Yes	Yes	No	Yes	Yes	No	No	No	Yes	No
	Yes	Yes	No	No	No	No	No	No	No	No	No
	Yes	Yes	Yes	No	No	No	No	No	No	No	No
	No	Yes	Yes	No	Yes	No	No	No	No	No	No
	No	Yes	No	No	No	Yes	Yes	No	No	No	Yes
	Yes	Yes	Yes	No	No	No	No	No	No	No	No
	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
	No	Yes	No	No	No	No	No	No	No	No	No
	Yes	Yes	Yes	No	Yes	No	Yes	No	No	No	No
	Yes	No	No	No	No	No	No	No	No	No	No
	Yes	Yes	Yes	No	No	No	No	No	No	No	Yes
	Yes	No	No	No	No	No	No	No	No	No	No

Figure 4. Stakeholder Output Table

Completion of Stakeholder Tasks	Rating													
Completion of Initial Survey	10	N/A	0	10	N/A	10	N/A	10	10	10	N/A	10	N/A	10	N/A
Communciation with EMA/Consultants	10	8	8	7	N/A	9	9	9	7	7	N/A	9	N/A	6	N/A
MDD - IPCC Inventory Data	5	5	5	5	N/A	5	5	0	5	5	N/A	5	N/A	5	N/A
MDD- Category Information	5	0	5	0	N/A	0	0	0	0	4	N/A	0	N/A	0	N/A
MDD- Methodology for Category	5	0	4	4	N/A	0	5	0	0	4	N/A	5	N/A	0	N/A
MDD- Activity Data	5	0	4	4	N/A	0	0	5	0	4	N/A	0	N/A	0	N/A
MDD-Emission Factors	5	0	3	0	N/A	0	0	5	0	0	N/A	5	N/A	0	N/A
MDD- Uncertainty	5	0	0	0	N/A	0	0	0	0	0	N/A	2	N/A	0	N/A
MDD- Comments on Category Estimates	5	0	5	0	N/A	0	0	0	0	0	N/A	0	N/A	0	N/A
MDD- Improvements	5	0	5	5	N/A	0	0	0	0	0	N/A	0	N/A	0	N/A
QA/QC documentation	10	0	0	0	N/A	0	0	10	0	0	N/A	0	N/A	10	N/A
Demonstration of Sector Specific Knowledge	10	8	8	8	N/A	6	6	9	6	6	N/A	8	N/A	6	N/A
Readiness for Incorporation into MRV/KMS	10	6	6	7	N/A	4	6	8	5	7	N/A	8	N/A	4	N/A
Participation in Pilot Project	10	6	6	7	N/A	8	8	8	6	7	N/A	8	N/A	4	N/A
Total Percentage	100	**36.7**	**59**	**57**	**N/A**	**42**	**43.3**	**64**	**39**	**54**	**N/A**	**60**	**N/A**	**45**	**N/A**

Figure 5 Stakeholder Ratings based on Pilot Project Outputs

Rating System based on Consultant Expert Judgement

Criteria Score (Out of 100)	Readiness of Stakeholders to perform envisaged tasks during Full Scale Implementation of T&T's MRV System

85-100	100% prepared for Full Scale Implementation of T&T's MRV System
70-84	75% prepared for Full Scale Implementation of T&T's MRV System
60-69	50 % prepared for Full Scale Implementation of T&T's MRV System
50-59	40 % prepared for Full Scale Implementation of T&T'
30-49	25% prepared for Full Scale Implementation of T&T's MRV System
1-29	Unprepared. Needs to re-do/complete all training received prior.

3rd NC/BUR Data Analysed and Reviewed during the Pilot Project

During the duration of the pilot project, GHG emission estimates provided by the 3rd NC/BUR consultant became available. The following was analysed for future incorporation in the T&T Knowledge Management System-

(1) Activity Data provided to the consultant during the 3rd NC/BUR project

(2) Quality Control checks performed during the collection of activity data (if activity data was available)

(3) Completed excel sheets and templates inclusive of key category analysis, uncertainty estimates and emission factors.

(4) Completed Quality Control checks provided by 3rd NC/BUR consultant (if available)

(5) Explanation, documentation and justification of expert judgement used in the compilation of the GHG inventory

The following tables highlight the data analysed, gaps in the MRV System information submitted and recommended MRV improvements for T&T's next inventory cycle.

Overview of GHG Inventory

Data Analysed	Analysis of Gaps in MRV System Information	MRV Improvement for T&T next GHG Inventory Cycle
Access to new data, recalculations, Revisions of 2nd NC GHG emission estimates	Issues not addressed. No new data, input parameters, recalculations or revisions submitted in the 3rd NC/BUR	Comparison of information documented in the 2nd NC and 3rd NC/1st BUR highlight an increase in available AD during the latest reporting cycle. During the next reporting cycle- the EMA team should request the new data sets (submitted in 3rd NC) for the 2nd NC timeseries and make the relevant recalculations and revisions if available.
GWP – IPCC AR 5	For the submissions of national GHG inventories from 2015, Annex I Parties shall use the GWP values provided in Table 2.14 of the errata to the IPCC WGI contribution to the Fourth Assessment Report (AR4), based on the effects of GHGs over a 100-year time horizon (Decision 15/CP.17). The Trinidad and Tobago TNC and BUR use GWPs from the IPCC Assessment Report 5. For consistency in Global GHG estimates- GWPs from IPCC AR 4 should be used.	GWPs from IPCC AR 4 should be used. If the EMA/Coordinating entity decided to use the AR5 GWPs- the reasoning and justification should be documented and archived in the KMS.
IPCC Categorisation and Codes	Inconsistencies were observed in the IPCC categorisations and codes in the submitted excel files in comparison to the designations given in the Key Category Analysis and Uncertainty Assessment conducted by the 3rd NC/BUR consultant. Example- In the energy sector calculation sheets, specific calculations are shown for PPGPL, LNG, CNG and kerosene mixed with diesel. These do not appear in the same format in the KCA and Uncertainty Assessment calculation sheets. No documentation with reference to the aggregation of provisional sub-categories to categories was submitted.	During the next inventory cycle, the EMA team must ensure that all submitted documentation is in accordance with the IPCC categorisations and codes to ensure transparency and comparability in reporting. Justifications of any deviations in IPCC categories and codes should be documented and archived in the KMS.
Uncertainty percentages for Activity Data	Analysis of the Activity Data provided to the 3rd NC/BUR consultant showed that no accompanying uncertainty estimates were submitted. Checks confirmed that the consultant used default IPCC uncertainty percentages. No justification on the use of these percentages in the calculations was provided.	During the next inventory cycle, stakeholders will be asked to submit uncertainty percentages for their activity data. If IPCC defaults are used by the stakeholder, justification is required, and the documentation archived in the KMS.

Uncertainty Percentages for Emission Factors	The 3rd NC/BUR consultant used IPCC default uncertainty percentages provided in the 2006 IPCC guidelines. No justification on the use of these percentages were provided.	During the next inventory cycle, stakeholder will be asked to submit uncertainty percentages for their chosen emission factors. If IPCC defaults are used by the stakeholder, justification is required, and the relevant documentation submitted and archived.
QA/QC checks (stakeholder)	No Quality Control checks for the collection of activity data were submitted.	During the next inventory cycle, stakeholders are responsible for the collection of AD and calculation of GHG emission estimates. Stakeholders are required to provide Quality Control checks on both aspects in the T&T QA/QC document and submit to the KMS.
QA/QC checks (consultant)	In the draft BUR GHG Inventory chapter, the 3rd NC/BUR consultant highlighted the QC checks to be followed on AD collected and GHG emission calculations. No documentation of Quality Control checks was submitted.	During the next inventory cycle, stakeholders are responsible for the collection of AD and calculation of GHG emission estimates. Stakeholders are required to provide Quality Control checks on both aspects in the T&T QA/QC document and submit to the KMS.
Expert Judgement	Analysis of the GHG calculation excel sheets and BUR chapter (draft) indicated that the consultant used expert judgment. No documentation of expert judgement was provided.	During the next inventory cycle - stakeholders and the EMA team are required to document and justify the expert judgement used. All documentation must be archived in the KMS.

Energy Sector

Data Analysed	Analysis of Gaps in MRV System Information	MRV Improvement for T&T next GHG Inventory Cycle

Reference Approach Estimates for the Energy Sector	For the timeseries 2006-2018, reference approach estimates were only calculated for the year 2018. Comparison of the reference and sectoral approach in the energy sector allows inventory compilers the opportunity to check the accuracy and completeness of GHG emission estimates in the energy sector.	In the next inventory cycle, the stakeholders and/or EMA team representatives responsible for Reference Approach calculations should calculate estimates for the missing years (2006-2017) to complete the timeseries.
Category 1.A.1.a.i (electricity generation)	Analysis of information provided for T&T power generation found the following- (1) All relevant stakeholders within this sector provided relevant Activity Data for Tier 1 calculation methodologies. (2) Relevant stakeholders did not provide Quality Control Checks and Uncertainty estimate information for the submitted activity data sets. (3) 3rd NC/BUR consultant used IPCC default emission factors and uncertainty estimates. No justification documented and archived. (4) No QC checks documented and submitted for calculation of GHG estimates.	In the next inventory cycle, stakeholders and EMA team representatives are required to provide Quality Control checks for Activity data and calculation methodologies, and justification of emission factor, uncertainty estimates (even if IPCC default used) and tier of calculation methodology chosen. All of the above must be documented and archived in the KMS. Using the IPCC decision tree and given the access to Activity Data in the category, T&T can move to a Tier 2 approach if a country specific emission factor is calculated. Country specific emission factor justification should be documented, validated and archived in the KMS before use in the preparation of the next GHG inventory. N.B.- During the pilot project it was observed that one of the stakeholders provided different default emission factors for electricity generation from the US EPA. If these are submitted during the next inventory cycle, justification should be provided and analysed from the stakeholder by the EMA team.
Category 1.A.1.b (Petroleum Refining)	Analysis of information provided for T&T petroleum refining found the following- (1) All relevant stakeholders within this sector provided Activity Data for Tier 1 calculation methodologies.	In the next inventory cycle, relevant stakeholders are required to provide Quality Control checks for activity data and calculation methodologies, and justification of emission factor, uncertainty

	(2) Relevant stakeholders did not provide Quality Control Checks and Uncertainty estimate information for the submitted activity data sets. (3) 3rd NC/BUR consultant used IPCC default emission factors and uncertainty estimates. No justification documented and archived. (4) No QC checks documented and submitted for calculation of GHG estimates.	estimates (even if IPCC default used) and Tier of calculation methodology. All of the above must be documented and archived in the KMS.
Category 1.A.2 (Manufacturing Industries and Construction)	Analysis of information provided for highlighted sub-category- (1) 3rd NC/BUR consultant confirmed that data available was not in the format for disaggregation for the sub-categories under manufacturing and construction. The related emissions were "Included Elsewhere (IE)" as applicable and reported under "non-specified". No documentation of the justification for the change in categorisation for reporting was submitted. (2) Double counting and misallocation of energy emission checks between the energy and IPPU sector. The IPCC guidelines state the following- Allocating emissions from the use of fossil fuel between the Energy and the Industrial Processes or the IPPU Sectors can be complex. The feedstock and reductant uses of fuels frequently produce gases that may be combusted to provide energy for the process. Equally part of the feedstock may be combusted directly for heat. This can lead to uncertainty and ambiguity in reporting. To help to overcome this problem, the 2006 Guidelines introduce practical guidance on when to allocate CO2 emissions released from combustion of fuel to the subcategory fuel combustion within the energy source category or to the industrial process source category. This rule is given in Box 1.1 in Chapter 1, Volume 3 of the 2006 Guidelines. Energy related emissions for IPPU processes (cement, iron and steel, ammonia and methanol etc) are not reported and no justification was submitted. N.B. Analysis of justification is integral to	During the next inventory cycle, the EMA team should clarify the categorisations used during reporting in the previous two reports and ensure their consistency. Justification of allocation between the energy and IPPU sector should be documented and archived in the KMS.

	ensuring that allocation of emissions and double counting issues are addressed if necessary.	
Category 1.A.3 (Transport)	Analysis of information provided for the transport sector found the following- (1) Expert judgement is used by the consultant to disaggregate the relevant data. Example- All users of motor gasoline are considered low mileage and light duty vehicles and all users of diesel are considered heavy duty trucks. No justification of expert judgement submitted. (2) Stakeholders within this sector provided Activity Data for fuel consumption (top down). (3) Relevant stakeholders did not provide Quality Control Checks and Uncertainty estimate information for the submitted activity data sets. (4) 3rd NC/BUR consultant used IPCC default emission factors and uncertainty estimates. No justification documented and archived. (5) No QC checks documented and submitted for calculation of GHG estimates.	In the next inventory cycle, relevant stakeholders are required to provide Quality Control checks for activity data and calculation methodologies, and justification of emission factor, uncertainty estimates (even if IPCC default used) and Tier of calculation methodology. Documentation of expert judgement used to disaggregate fuel consumption into appropriate category must be provided. All of the above must be documented and archived in the KMS.
Category 1.B.2 (Oil and Natural Gas venting and Flaring)	Analysis of information provided for venting and flaring found the following- (1) All relevant stakeholders within this sector provided Activity Data for Tier 1 calculation methodologies. (2) Relevant stakeholders did not provide Quality Control Checks and Uncertainty estimate information for the submitted activity data sets. (3) 3rd NC/BUR consultant used IPCC default emission factors and uncertainty estimates. No justification documented and archived. (4) No QC checks documented and submitted for calculation of GHG estimates.	In the next inventory cycle, relevant stakeholders are required to provide Quality Control checks for activity data and calculation methodologies, and justification of emission factor, uncertainty estimates (even if IPCC default used) and Tier of calculation methodology. All of the above must be documented and archived in the KMS. N.B.- During the pilot project it was observed that some of the stakeholders provided different default emission factors for venting and flaring using the API compendium. If these are submitted during the next inventory cycle, justification from the stakeholder should be provided and analysed by the EMA team.

IPPU Sector

Data Analysed	Analysis of Gaps in MRV System Information	MRV Improvement for T&T next GHG Inventory Cycle
Category 2.A.1 (cement production)	Analysis of information provided for cement manufacture in T&T found the following- (1) In calculating the GHG emission estimate, the consultant used a combination of a Tier 1 and Tier 2 approach for the relevant timeseries due to a lack of clinker production data from 2006- 2013. No documentation of a comparison of Tier 1 and Tier 2 approaches or justification of the hybrid approach used was submitted. (2) Stakeholder provided cement and clinker production data that was available. (3) Stakeholder did not provide Quality Control Checks and Uncertainty estimate information for the submitted activity data sets. (4) No QC checks documented and submitted for calculation of GHG estimates. (5) No documentation of the judgement used for explanation of emissions allocation between the energy and IPPU sector for this category.	During the next inventory cycle, the EMA team should calculate the Tier 1 estimate for cement production and compare against the Tier 2 approach (use extrapolation if applicable to complete timeseries) to ensure consistency in calculation methodology approach. Documentation to justify allocation of emissions between the energy and IPPU sector for this category is required. Stakeholder is required to provide Quality Control checks for activity data and calculation methodologies, and justification of emission factor, uncertainty estimates (even if IPCC default used) and Tier of calculation methodology. All of the above must be documented and archived in the KMS.
Category 2.B.1 (Ammonia Production)	Analysis of information provided for ammonia production in T&T found the following- (1) In calculating the GHG emissions estimate, the 3rd NC/BUR consultant used a Tier 2 approach with a country specific emission factor. No background data, calculation sheets or justification of expert judgement was provided. Initial analysis of difference between the country specific emission factor and the default IPCC EF showed a difference in the range of 450-725 Gg of CO2 per annum.	During the next inventory cycle, the EMA team should justify, document and validate the country specific emission factor before use. Documentation to justify allocation of emissions between the energy and IPPU sector for this category is required. Stakeholder is required to provide Quality Control checks for activity data and calculation methodologies, and justification of emission

	(2) Data gaps observed by the consultant were filled through the use of Ammonia production national statistics. (3) Stakeholder did not provide Quality Control Checks and Uncertainty estimate information for the submitted activity data sets. (4) No QC checks documented and submitted for calculation of GHG estimates. (5) No documentation of the judgement used for explanation of the allocation between the energy and IPPU sector for this category.	factor, uncertainty estimates (even if IPCC default used) and Tier of calculation methodology. All of the above must be documented and archived in the KMS.
Category 2.B.8.a (methanol)	Analysis of information provided for methanol production in T&T found the following- (1) In calculating the GHG emissions estimate, the 3rd NC/BUR consultant used a Tier 2 approach with a country specific emission factor. No background data, calculation sheets or justification of expert judgement was provided. The worksheet indicates that the Lurgi Conventional Process is used- however the country specific emission factor of 0.67 is the same as the default IPCC factor for conventional steam reforming without a primary reformer. Further analysis to confirm the difference in emission factors should be conducted during the Quality Assurance process. (2) Data gaps observed by the consultant were filled through the use of Ammonia production national statistics. (3) Stakeholder did not provide Quality Control Checks and Uncertainty estimate information for the submitted activity data sets. (4) No QC checks documented and submitted for calculation of GHG estimates. No documentation of the judgement used for explanation of the allocation between the energy and IPPU sector for this category.	During the next inventory cycle, the EMA team should justify, document and validate the country specific emission factor before use. Documentation to justify allocation of emissions between the energy and IPPU sector for this category is required. Stakeholder is required to provide Quality Control checks for activity data and calculation methodologies, and justification of emission factor, uncertainty estimates (even if IPCC default used) and Tier of calculation methodology. All of the above must be documented and archived in the KMS.
Categories 2.A.2., 2D and 2 F	Analysis of information provided for the categories of lime production, non-energy products from fuels and solvents and product used as substitutes for ozone depleting substance (F-Gases) found the following-	During the next inventory cycle, the EMA team should analyse the F-gas data and based on good practice guidance convert the data into the format as needed to complete the calculations.

	(1) The 3rd NC/BUR consultant indicated the following- these categories were Not Estimated (NE) as the data was not readily available and the effort required to gather the data in this cycle was disproportionate with the expected change in results. Activity data for F-gases was provided in a format not consistent with the needs for IPCC calculation methodologies.	For categories 2.A.2 and 2.D, the EMA representative should highlight to the relevant stakeholders the activity data and format required for calculations.

Waste Sector- Solid Waste Disposal

Data Analysed	Analysis of Gaps in MRV System Information	MRV Improvement for T&T next GHG Inventory Cycle
Category 4.A (Solid Waste Disposal)	Analysis of information provided for Solid Waste Disposal in T&T found the following- (1) In calculating the GHG emission estimate, the consultant used the Tier 2 FOD model (categorisation of waste). Conversations with the consultant confirmed that the classification of landfills and categorisation of waste was provided over the phone. Expert judgement was used to fit the information provided, into the IPCC waste categorisation format. No documentation of expert judgement on acceptance of the aforementioned was submitted. (2) There was no comparison between Tier 1 and Tier 2 FOD Model GHG emission estimates documented. (3) Stakeholder provided relevant activity data that as available. No documentation of the classification of landfills and categorisation of waste was provided. (4) Stakeholder did not provide Quality Control Checks and Uncertainty estimate information for the submitted activity data sets. (5) 3rd NC/BUR consultant used a hybrid of country specific, IPCC default input factors and uncertainty estimates. No justification documented and archived.	During the next inventory cycle, the relevant stakeholder should provide background documentation on the categorisation of landfills and waste used during the last inventory cycle. In preparation for the next inventory report, it is advised that the stakeholder categorises T&T"s landfills based on the IPCC definitions and if feasible, undertake a categorisation study on waste based on the waste categories in the IPCC guidelines. The stakeholder is required to provide Quality Control checks for activity data and calculation methodologies, and justification of emission factor, uncertainty estimates (even if IPCC default used) and Tier of calculation methodology. All of the above must be documented and archived in the KMS.

	(6) No QC checks documented and submitted for calculation of GHG estimates by consultant.	

MRV Report on the Pilot Project*

As indicated earlier in this report, critical analysis of the datasets provided by the pilot project stakeholders and the 3rd NC/BUR consultant were based on the following criteria:

- quality control checks on all outputs
- outputs being in the recommended format
- completion of all recommended documentation
- The application of the 2006 IPCC reporting guidelines for all included sectors.

N.B.- No new data sets were found or applicable during the period of the pilot project.

Analysis of the information provided by both the pilot project participants and the 3rd NC/BUR consultant mirrored each other. In both cases, and though both activity data was available and GHG emission estimates calculated, the following was not submitted by the majority:

- quality control checks on activity data and calculations
- justifications on the use of chosen emission factors
- justifications on the use of expert judgement
- relevant background data.

The missing information and documentation is integral to the procedural elements of the T&T National Climate Mitigation MRV System and ensures that the T&T GHG inventory cycle is conducted using the principles of transparency, accuracy, completeness, consistency and comparability as required by the Paris Agreement. The improvement suggestions provided in the analysis of the 3rd NC/BUR consultants data are expected to be used by all relevant stakeholders during T&T's next inventory cycle.

*The initial workplan envisaged the need for a separate report on the power generation sector (energy sector) with regards to the MRV system. As work progressed, the pilot project opened up to stakeholders from different sectors and representing multiple categories/sub-categories. In undertaking the critical analysis, none of the information provided for the power generation sector lay outside of or was contradictory, to what was captured in the summary above.

MRV Report on Power Generation Sector

Data sets analysed by the MRV consultant for the Power Generation Sector:

- All submissions by Trinity Power and TGU
- All submissions provided by 3rd NC/BUR consultant for Category 1.A.1.a.i (electricity generation-2006 IPCC)

Data Gaps found during analysis:

- All relevant stakeholders within this sector provided relevant Activity Data in the correct units and format for Tier 1 calculation methodologies.
- Relevant stakeholders did not provide Quality Control Checks and Uncertainty estimate information for the submitted activity data sets.
- 3rd NC/BUR consultant used IPCC default emission factors and uncertainty estimates. No justification documented and archived.
- No QC checks documented and submitted for calculation of GHG estimates.

N.B.- No new data sets were found or applicable during the period of the pilot project.

Recommended Improvements for the Power Generation Sector:

In the next inventory cycle, stakeholders and EMA team representatives are required to provide Quality Control checks for Activity data and calculation methodologies, and justification of emission factor, uncertainty estimates (even if IPCC default used) and tier of calculation methodology chosen. All of the above must be documented and archived in the KMS. Using the IPCC decision tree and given the access to Activity Data in the category, T&T can move to a Tier 2 approach if a country specific emission factor is calculated. Country specific emission factor justification should be documented, validated and archived in the KMS before use in the preparation of the next GHG inventory.

Annex 1

Template/Document Title	Key Institutional Players			
	Coordinating Entity (MPD)	Holder of the KMS (EMA)	Executing Entities (Ministries + Stakeholders)	Quality Assurance Working Group
Roles and Responsibilities Document (Inclusive of Organisational Structures of MRV System)				
National MRV Coordinator Job Description				
Trinidad and Tobago's Institutional Arrangements Document				
Trinidad and Tobago's Memorandum of Understanding Template				
Trinidad and Tobago's Confidentiality Agreement Template				
Trinidad and Tobago's National GHG Inventory Improvement Plan				
Unit Tables				
Trinidad and Tobago's Key Category Analysis Document				
National QA/QC Coordinator Job Description				
Trinidad and Tobago's QA/QC Document				
Trinidad and Tobago's Data Archiving System Document				

Trinidad and Tobago's KMS Functionalities				
Trinidad and Tobago's Methodologies/Data Documentation				
Trinidad and Tobago's Quality Assurance Document				

Template/Document Title	Summary/Description
Roles and Responsibilities Document (Inclusive of Organisational Structures of MRV System)	Identifies key institutional players including the Coordinating Entity (MPD), Holder of the KMS (EMA), Executing Entities (Ministries and Stakeholders) and the Compliance and Verification Body. The technical and institutional capacities with respect to GHG accounting procedures and the MRV System are assessed, and their respective roles and responsibilities are outlined.
National MRV Coordinator Job Description (inclusive of the cross cutting and detailed checklist for the GHG Inventory)	This document provides the ideal roles and key responsibilities for Trinidad and Tobago's National MRV Coordinator in order to coordinate and manage the development of Trinidad and Tobago's national GHG inventory. Checklists for crosscutting issues of the GHG inventory, as well as a detailed checklist of the national GHG inventory are included.
Trinidad and Tobago's Institutional Arrangements Document	This document allows those responsible in the Coordinating Entity to document and assess the existing institutional arrangements present for ministerial/stakeholder executing entities included in the MRV System. Analysis of these findings will allow Trinidad and Tobago to plan for its future inventory development and ensure the following: ● To facilitate future improvement prioritisation. ● To ensure sustainability and integrity of Trinidad and Tobago's national GHG inventory. ● To promote the institutionalisation of the GHG inventory process.
Trinidad and Tobago's Memorandum of Understanding Template	The purpose of this document is to promote and carry out cooperative activities between the coordinating entity and relevant stakeholders related to climate change issues including, inter alia, GHG emission/reduction estimates, mitigation actions and support received for climate change policies/actions according to their respective competencies and based on principles of information exchange, reciprocity, equality and mutual benefit.

Template/Document Title	Summary/Description
Trinidad and Tobago's Confidentiality Agreement Template	This document allows for an agreement between the coordinating entity, holder of the KMS and the relevant ministerial executing entity/stakeholder for the supply of confidential information for the development of Trinidad and Tobago's national GHG inventory emission estimates.
Trinidad and Tobago's National GHG Inventory Improvement Plan	This document, when completed, will allow Trinidad and Tobago to identify and prioritise improvements to the National Climate Mitigation MRV System. As the MRV System evolves, these highlighted improvements will allow for more transparency, accuracy, completeness, comparability and consistency for Trinidad and Tobago's future GHG inventories.
Unit Tables	This document provides relevant/applicable conversion tables for all ministerial and stakeholder executing entities involved within Trinidad and Tobago's National Climate Mitigation MRV System. Use of these conversion tables will further improve TACCC principles within the system for units of data and GHG emission calculations.
Trinidad and Tobago's Key Category Analysis Document	This document provides the template for Trinidad and Tobago to identify the sources and sinks present that have the largest contribution to Trinidad and Tobago's GHG net emission totals. A key category analysis tool has been provided to work in conjunction with the IPCC reporting software used in the KMS.

National QA/QC Coordinator Job Description	This document provides the ideal roles and responsibilities of Trinidad and Tobago's National QA/QC Coordinator in order to coordinate and manage QA/QC checks for Trinidad and Tobago's national GHG inventory. A QA/QC checklist for the National Coordinator is also provided.
Trinidad and Tobago's QA/QC Document	This guidance document provides a template for the establishment of a National QA/QC Programme that improves TACCC principles for Trinidad and Tobago's GHG inventory. Checklists have been included for the following: inventory and QA/QC coordinators, sector leads and specific management roles for QA/QC procedures.
Trinidad and Tobago's Data Archiving System Document	This document aims to facilitate the following: ● Provide Trinidad and Tobago with safeguard measures to avoid loss of data and information. ● Allow for Trinidad and Tobago to reproduce and update GHG estimates entered into the KMS. ● Allow/facilitate future inventory staff to develop Trinidad and Tobago's subsequent GHG inventories.
Trinidad and Tobago's KMS Functionalities	This table provides a template for the functionalities of the KMS at inception. Use of the National GHG Inventory Improvement Plan will inform if changes or additions need to be made to these functionalities for future GHG inventories.
Trinidad and Tobago's Methodologies/Data Documentation Document	This document assists Trinidad and Tobago's stakeholders involved in GHG estimates/removals to document and report relevant activity datasets, relevant emission factors and the origin/reasoning of chosen methodologies. The information provided will also allow for future GHG inventory teams to access the following:

	• What chosen methods were used. • How relevant activity data/emission factors were obtained. • How information relevant to the inventory was obtained.
Trinidad and Tobago's Quality Assurance Document	This document provides checklists for expert reviewers/chosen personnel not involved in the operational running of the MRV system to run quality assurance checks on Trinidad and Tobago's national GHG inventory estimates. Checklists provided for the reviewer include the following: • Cross-cutting checks for Trinidad and Tobago's national GHG inventory. • Checklists for the energy, IPPU, AFOLU and waste sectors.

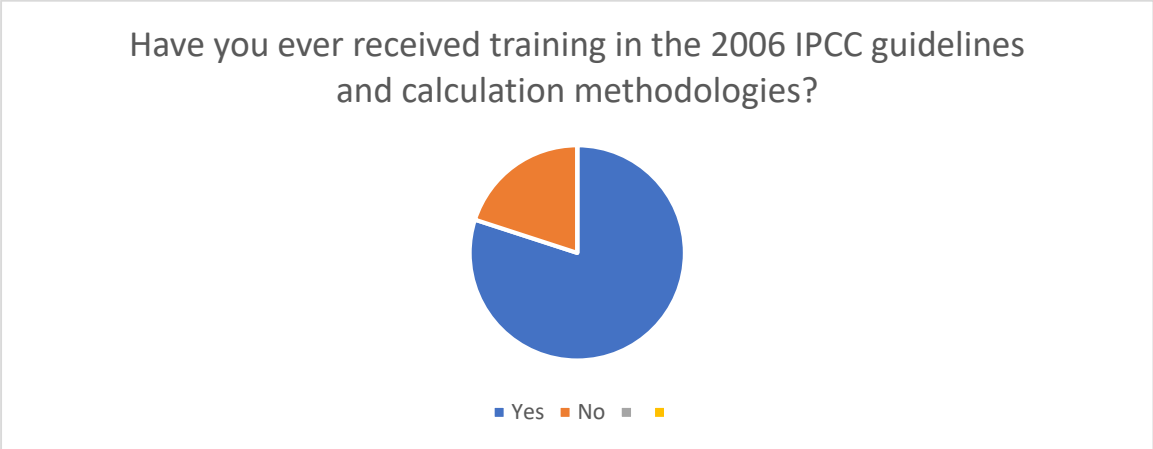
Annex 2

EMA Capacity Survey Results-

A total of 5 participants from the EMA completed the survey. Four members of the air unit (responsible for GHG inventory and KMS) and a member of the Research department (going to Ghana in October to receive training in GIS for AFOLU sector).

Organisation – Environmental Management Authority

(1)

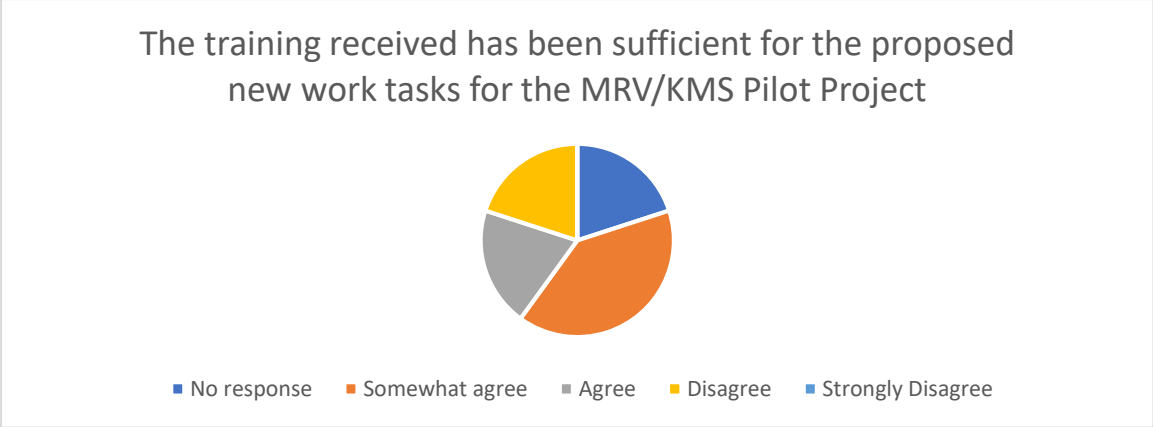


If yes, please elaborate –

IPCC Inventory Software training (October 2018) – 4 participants

Greenhouse Gas Management Institute Online training- 4 Participants (two members enrolled in the IPCC 501 course- Crosscutting Issues and good practice guidance, two members enrolled in the Diploma in GHG MRV). All

(2)

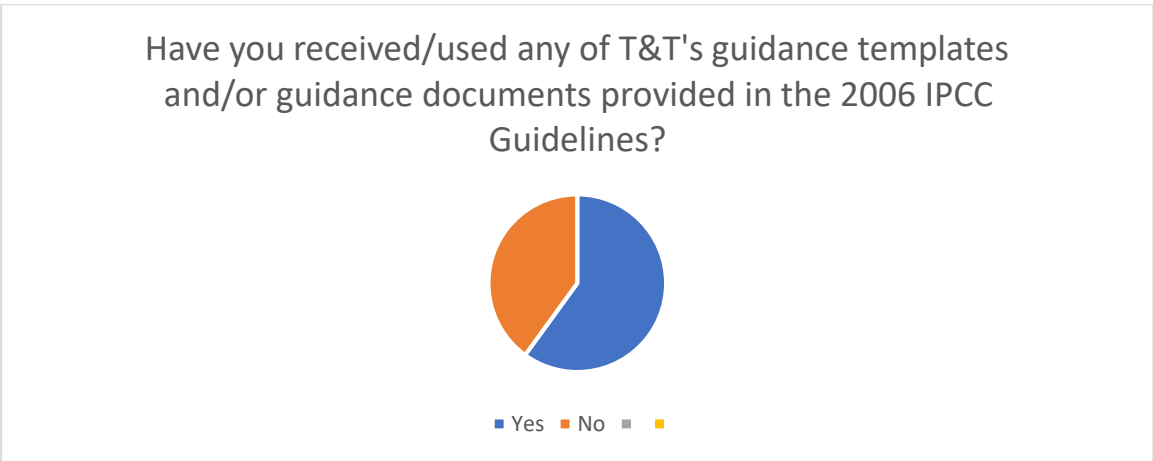


(3) What can be improved in these training sessions for participants to gain the required expertise in the 2006 IPCC Guidelines and Calculation Methodologies?

Four participants highlighted the need for more practical exercises with data in calculation methodologies (Example-KCA and Uncertainty analysis).

More exposure to and use of the KMS at the EMA (4 participants)

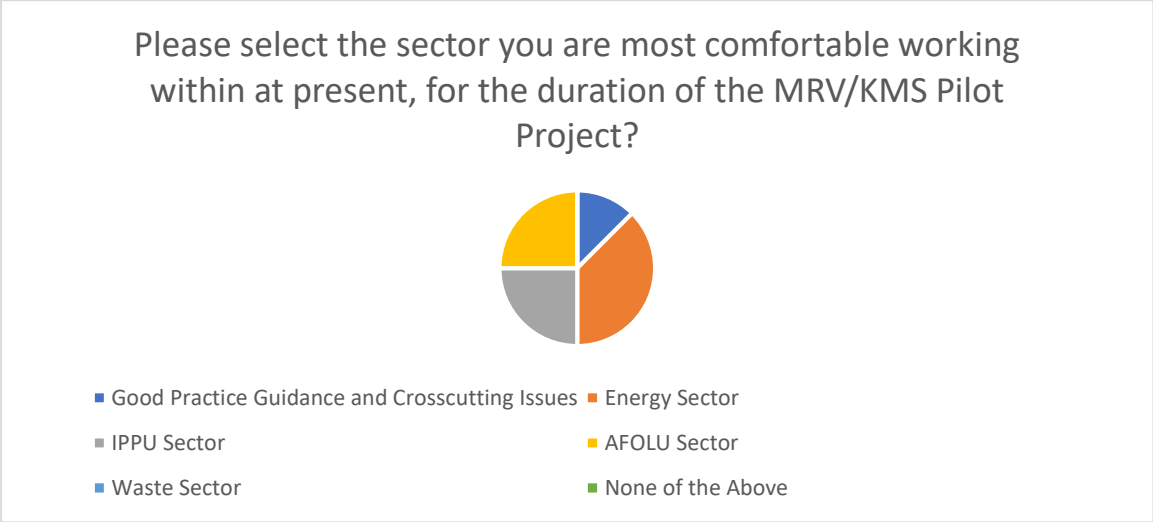
(4)



If yes, please elaborate-

Brief review of 2006 IPCC guidelines (1 participant)
Brief review of T&T Guidance documents (2 participants)
National Climate Change Policy (1 participant)

(5)



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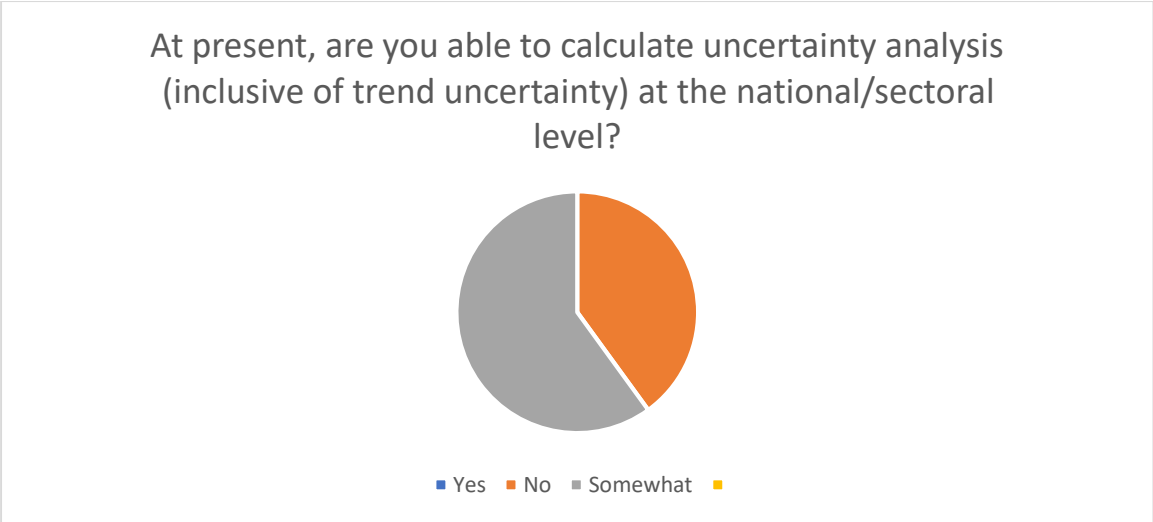
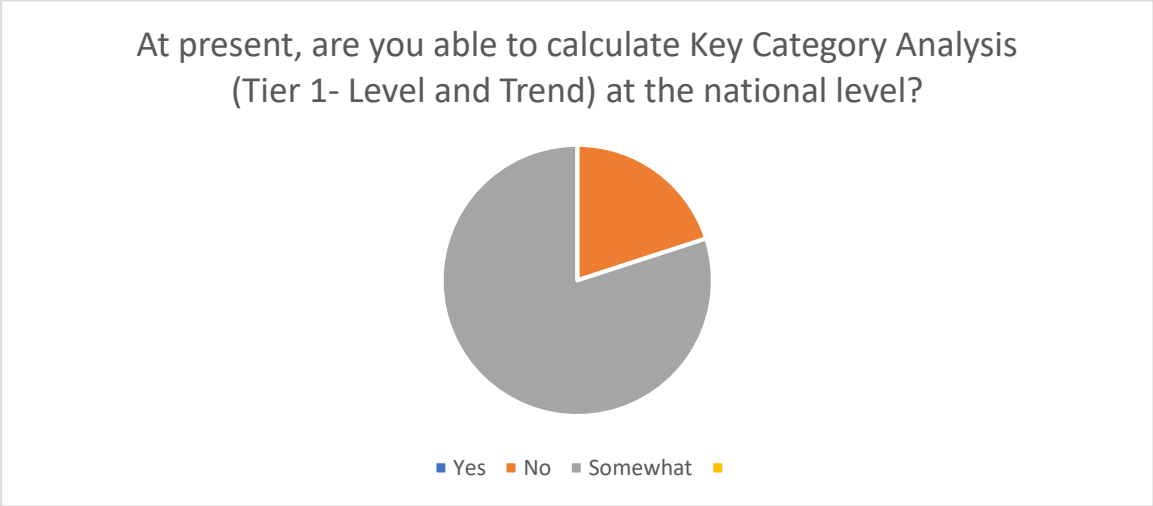


Two of the participants that answered somewhat above- indicated that they may be able to do the calculation with use/review of notes.

(7)

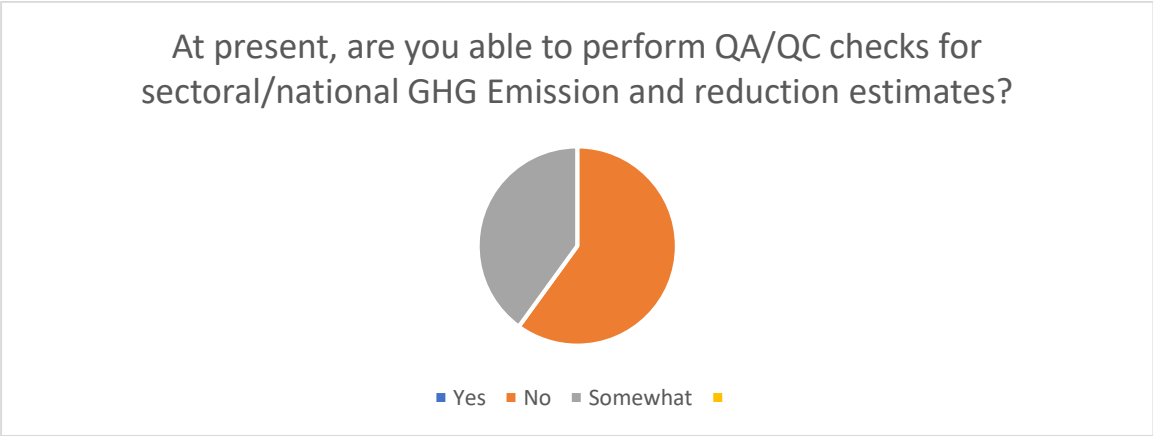


Two of the participants that indicated somewhat as their response gave the following comments-

(a) Needs to improve and go over theory but more practice is necessary.

(b) Covered in online 501 IPCC GHGMI course; difficulty in completing the course due to no dedicated time to focus on the theory given other work responsibilities.

(8)

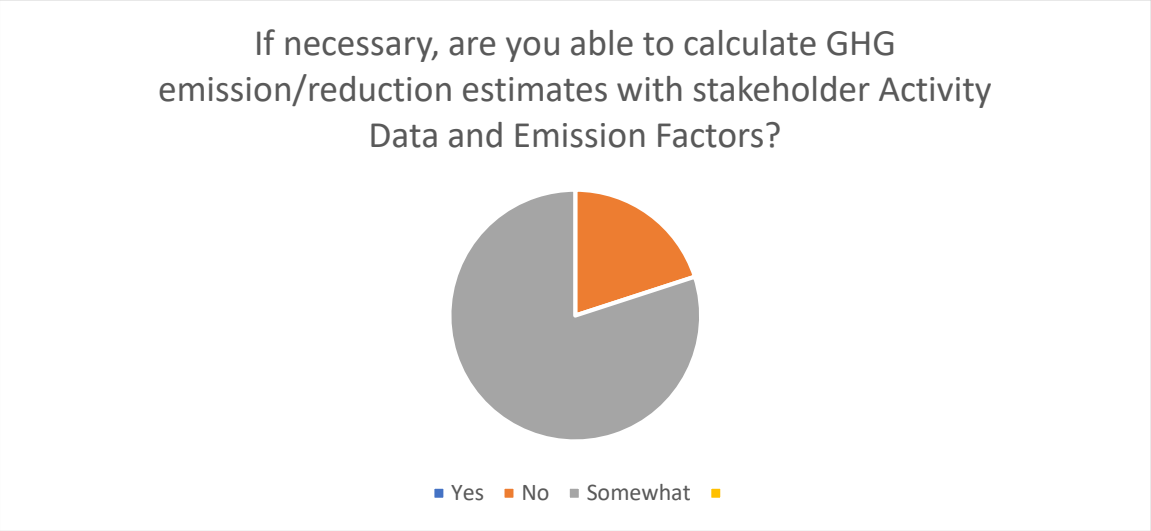


If yes for sectoral, please list the relevant sector/sectors-

No participants indicated yes for the above. Of the two participants that answered somewhat to the above, the following was indicated-

May be possible using notes.
Energy and IPPU sector through normal SER (source Emitter Registration) applications.

(9)

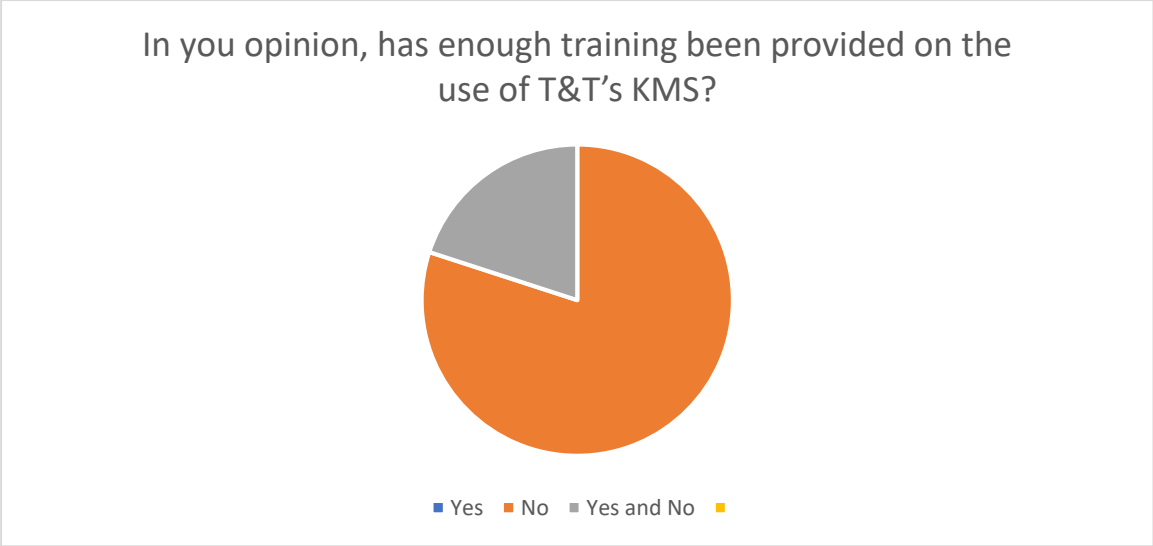


If yes, please list the relevant sector/ sectors –

1 Participant- Energy and IPPU (More exercises and practice required)

1 participant- AFOLU (More exercises and practice required)

(10)



If no, please elaborate-

3 Participants that answered no to the above, indicated the following-

More use/experience interacting with the KMS is needed. Practical exercises with data inclusive of submissions from the data provider side are necessary.

One participant answered yes and no. It was indicated that previous training was not specific enough to the responsibilities of the EMA team. The online courses do have that training and capacity can be built upon completion.

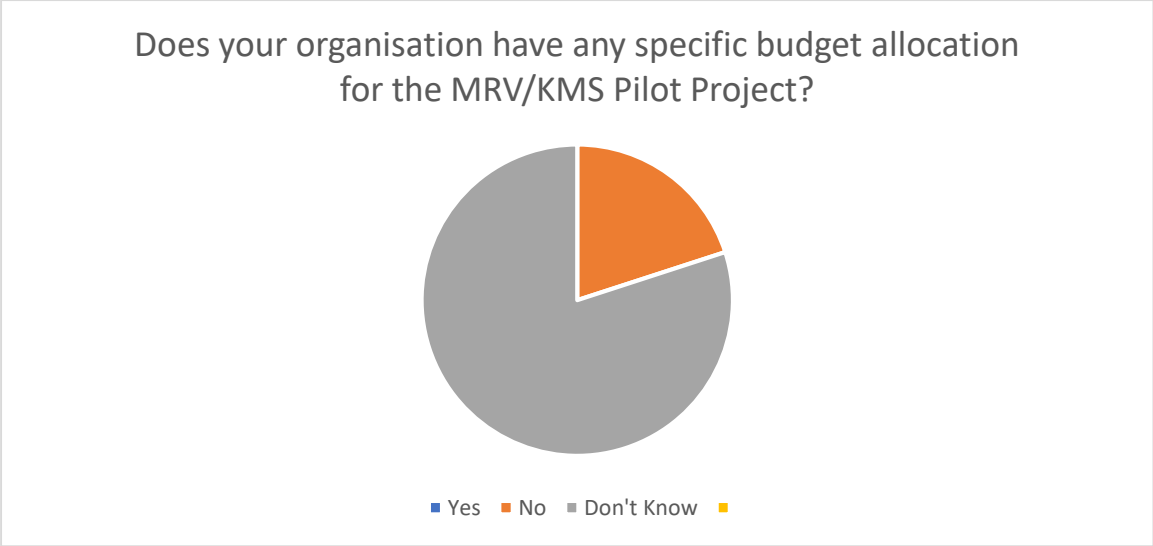
(11) What can be improved in these training sessions, to make you more comfortable interacting with the KMS?

No response- 1 Participant

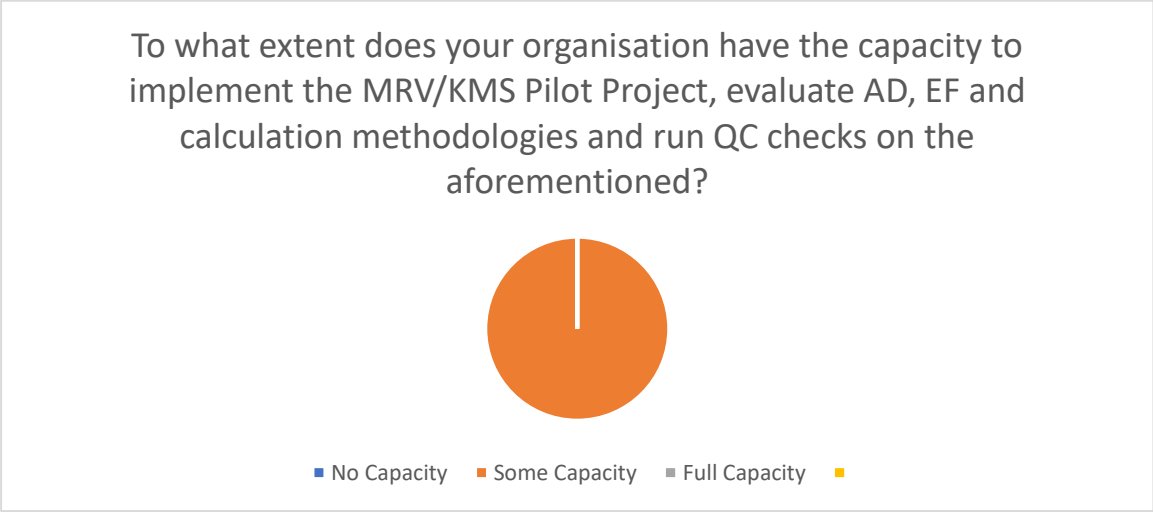
More Practical Exercises – 3 Participants
One on one sessions with the EMA/KMS team- 1 Participant

Organisational Capacity

(1)


Does your organisation have any specific budget allocation for the MRV/KMS Pilot Project?
Yes
No
Don't Know

(2)


To what extent does your organisation have the capacity to implement the MRV/KMS Pilot Project, evaluate AD, EF and calculation methodologies and run QC checks on the aforementioned?
No Capacity
Some Capacity
Full Capacity

(3)

(4) What constraints does your organisation face in using the KMS?

Human resource was the main indicated issue. Participants indicated that there was not enough dedicated staff for both the KMS and the current workload at the EMA- 4 Participants. Not enough time for both KMS work and current EMA timelines for deliverables- 1 Participant.

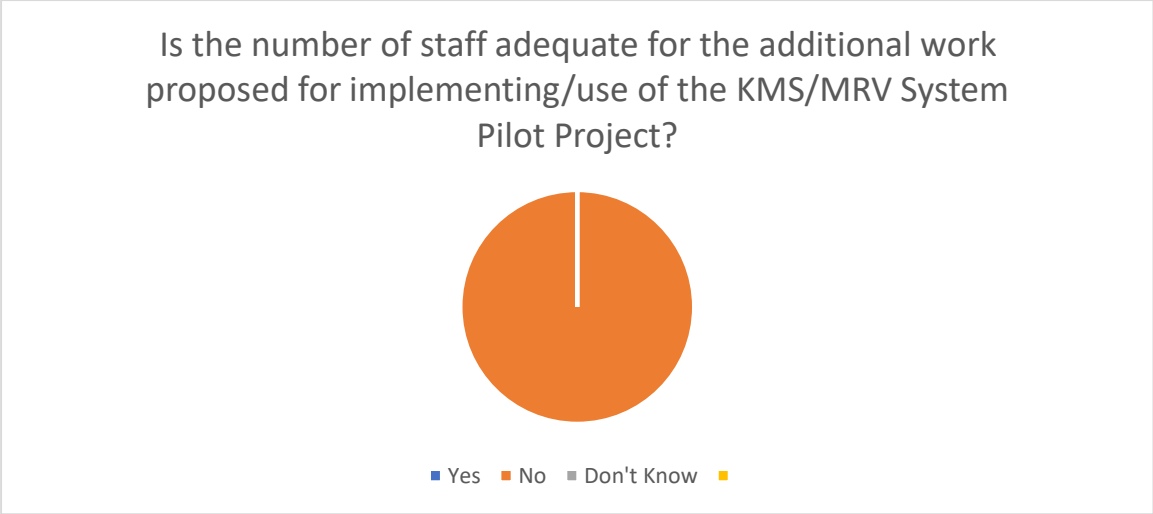
(5)

If yes, please list the department and the number of technical staff-

EMA Air Unit- 4 Members (Main team for the KMS)

Strategy and Research Department – 2 (Was identified by a participant as potentially having a role in the KMS)

(6)



Participants highlighted the need for more dedicated staff for the running of the KMS.

(7)

If yes, please elaborate-

Added constraints due to already existing timelines for BAU and project deliverables- 4 Participants
Existing Workload already heavy – 1 Participant
Need to add KMS as part of EMA yearly workplan to ensure KMS duties are given priority- 1 Participant
Dedicated roles/responsibilities in the KMS/MRV system based on strengths and weaknesses displayed on their current job descriptions- 1 Participant

(8) What additional skills and competencies do you believe are required for the staff to perform effectively within the KMS System and the aforementioned pilot project?

Data Management Training- 4 Participants
GIS Training for AFOLU sector- 2 Participants
QA/QC training - 3 Participants
Auditor/ Expert training (GHG Accounting and Verification)

(9) What training opportunities (identify specific areas) are required for staff to develop the appropriate skills and competencies mentioned in question 8?

UNFCCC training- 3 Participants
GHGMI Online Courses (Sectoral)- 4 Participants
QA/QC training- 1 Participant

Annex 3- Report Submitted by EMA team

Report on Pilot Project for Trinidad and Tobago's National Climate Mitigation Monitoring, Reporting and Verification (MRV) System / Knowledge Management System (KMS)

Introduction

The Pilot project began on December 02, 2019 and concluded on December 13, 2019. The major objectives of the Pilot Project were to test the ease-of-use of the Monitoring, Reporting and Verification (MRV) system templates, functionality of the Knowledge Management System (KMS), data flow inputs/outputs to the KMS, and to identify additional capacity needs required by the key players involved in the MRV System. The key players included the Technical Officers of the Air Unit of the Environmental Management Authority; fifteen (15) stakeholders from various sectors within Trinidad and Tobago which included energy, IPPU, and waste; the Project Coordinator and Project Assistant from the NDC Support Programme; and the MRV/KMS consultants.

Comments on Project Objectives from the EMA's Perspective

- Ease-of-use of the Monitoring, Reporting and Verification (MRV) system templates
  - These documents are still being drafted for the EMA. A QC guide will be beneficial for the EMA Team.
  - The stakeholders have been using the templates designed for them. Many stakeholders require guidance on its use. However, no major difficulties were reported.
- Functionality of the Knowledge Management System (KMS)
  - This section of the site is still in the design phase for the EMA. The EMA Team, Project Assistant and Project Consultants have been meeting weekly to discuss the design and functionality of the system. Because the EMA user pages are still being designed, the EMA team has not had any hands-on use to determine if they are comfortable in using the KMS in reviewing the submitted information. This can only be determined when the EMA user interface is fully functional.
  - A dedicated session is required for training on the use of the KMS with the manual [from stakeholder's submission of data, EMA review stage and acceptance of data, along with the use of all templates].
- Data flow inputs/outputs to the KMS
  - Stakeholders have been submitting data into the KMS;

- Some stakeholders require more guidance than others;
- Some stakeholders have been non-responsive;
- The majority of stakeholders have requested an extension to the deadline to submit data;
- Although some stakeholders have read the IPCC guidelines, stakeholders require a lot of guidance on the specific activity data and emission factors specific to their facility, as well as use of templates on the KMS; Stakeholders should be specifically pointed to relevant sections of the guidelines to assist them;
- The EMA team is having difficulty in assisting some stakeholders and are not comfortable advising stakeholders, as capacity must be built in the various sectors. However, Officers are doing the research and providing guidance to the best of their ability. The Project Consultants have been providing needed assistance and guidance to the EMA team during the Pilot Project;
- To be determined is whether submission of Activity Data by the stakeholders and calculation of the emissions by the EMA team will be the best approach. Although the stakeholders have submitted some of the information, they approach it from a project level rather than at a national level. If the stakeholders are to calculate the emissions from their facility, more capacity building will be required. However, some stakeholders have made the effort to read the IPCC guidelines and submit the data in the format required, which is commendable, and demonstrates that the current approach may work for some stakeholders. Others, although they volunteered to participate in the pilot project, have been unresponsive. However, it is yet to be determined the quality of the submissions made. Only after this is accessed can a decision on the best way forward be determined.

- Additional capacity needs required by the key players involved in the MRV System
  - Capacity building is a necessity for the EMA team. All Officers have completed 501 IPCC-Introduction to Cross-cutting Issues. However, only two (2) Officers – Vintee Kallideen-Ramdath and Treina Dinoo Ramlochan have access to the sector specific courses. Sade Grant and Sue Ann Ramnarine do not have access to the sector specific courses.
  - Time must be allocated to the Technical Officers to complete these courses. Currently, work plan items and performing business as usual functions take precedence over the completion of these courses. As such, the Officers who have access to the sector specific courses have not been able to dedicate the time to complete the courses.
  - The cost of the training required to successfully implement the KMS should not be borne by the Technical Officers.

Cost Estimate for Capacity Building (N.B.- Names of EMA officers have been removed for confidentiality purposes)

Option 1: Individual Courses

Course	Estimated Cost per Individual	Officer
401: Verification for Inventories and Projects	$400 - $750 USD	
511 IPCC: Energy	$250 - $395 USD	
521 IPCC: Industrial Processes and Other Product Use	$250 - $395 USD	
531 IPCC: Agriculture	$250 - $395 USD	
541 IPCC: Forestry and Other Land Uses	$250 - $395 USD	
551 IPCC: Waste	$250 - $395 USD	

Option 2 – Diploma in GHG Measurement Reporting and Verification

Estimated Cost per Individual	Officer	Comments
$2,950 USD		They have completed 501 IPCC.
$737.50 USD (refund)		These Officers applied to the GHGMI for financial assistance and were awarded a 50% discount ($1,475 USD). The EMA covered 25% ($737.50 USD) of the remaining cost and the Officer paid the other 25% ($737.50 USD). Invoice dated 04/18/2019.

Annex 4- Stakeholder Survey Results

N.B. – Official Survey Results detailing stakeholder name and information has been removed from the official submission for confidentiality purposes. Separate document inclusive of the aforementioned stakeholder results has been submitted separately to the MPD for internal use.